



## Arboricultural Impact Assessment

Proposed Alterations & Additions at  
1126 Barrenjoey Road, Palm Beach

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## 2 Introduction

### 2.1 Background

This Arboricultural Impact Assessment (AIA) was prepared for Adam & Lee-Anne Messenger in relation to four (4) trees and proposed alterations and additions at 1126 Barrenjoey Road, Palm Beach.

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

This AIA has been guided by the principles set out in the Australian Standard 4970-2025, *Protection of trees on development sites*.

### 2.2 Subject Site/Proposed Works

For the purpose of this report, the subject site is the area located within 10m of the proposed works.

The proposed works involve additions to the front (western) side of the building within the footprint of the existing deck.

### 2.3 Subject Trees

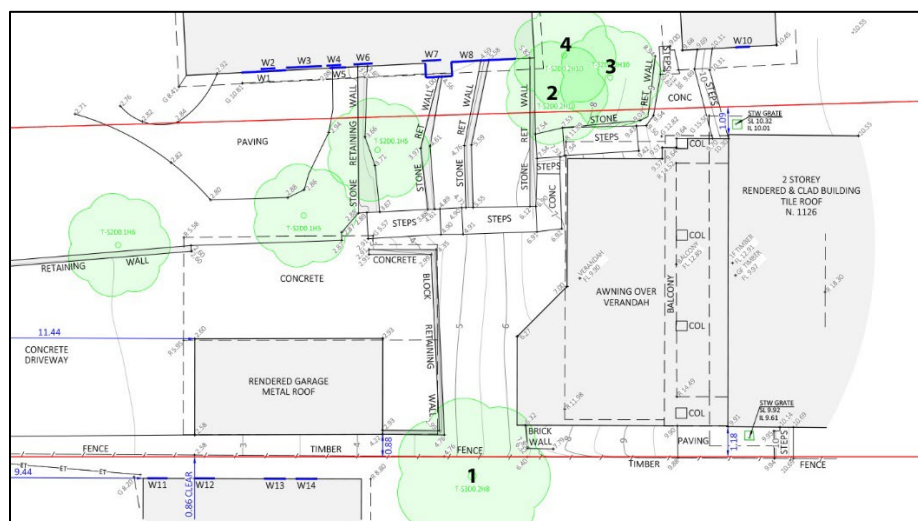
Four (4) trees with the potential to be impacted by the proposed works have been assessed. Refer to Figure A (following page) for tree locations. These are made up of the following species:

- Cheese Tree, *Glochidion ferdinandi* (Tree 1)
- Bangalow Palm, *Archontophoenix cunninghamiana* (Tree 2)
- Kentia Palm, *Howea forsteriana* (Tree 3 and 4)

Tree 1 is protected under SEPP (Biodiversity & Conservation) 2021. Tree 1 is located on the neighbouring property to the south.

Trees 2, 3, 4 are listed as exempt species within the Northern Beaches LGA. These trees are located on the neighbouring property to the north.

A detailed description of the subject trees is included in the Tree Assessment Table (Section 4 –page 7).



**Figure A:** Excerpt from the Survey Plan showing tree locations and numbering.

**Photo A:** Tree 1



**Photo B:** Trees 2, 3, 4



## 3 Methodology

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### 3.1 Site Inspection/Tree Assessment

Site inspection and tree assessment was undertaken by Alexis Anderson on the 15<sup>th</sup> of July, 2025. The trees were assessed from ground level using a Tree Assessment Table, as outlined in Section 4. The definitions and explanations of terms used are outlined in the Tree Table Definitions page which is included at Attachment A.

### 3.2 Plan Review

This report is based upon a review of the set of Development Application Issue plans prepared by Laura Cook.

No Landscape Plan, Hydraulics Plans or Engineering Detail was available for review at the time of assessment.

### 3.3 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 of undisturbed soil and roots required to maintain tree stability. Excavation within the SRZ can lead to whole tree failure.

### 3.4 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. Removal of these trees will have an impact on the landscape amenity or local environment.
- **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). Removal of these trees will not have a significant impact on the landscape amenity or local environment.
- **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.

### **3.5 Consideration for Tree Retention and Removal**

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 the 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.

## 4 Tree Assessment Details

### 4.1 Tree Assessment Table

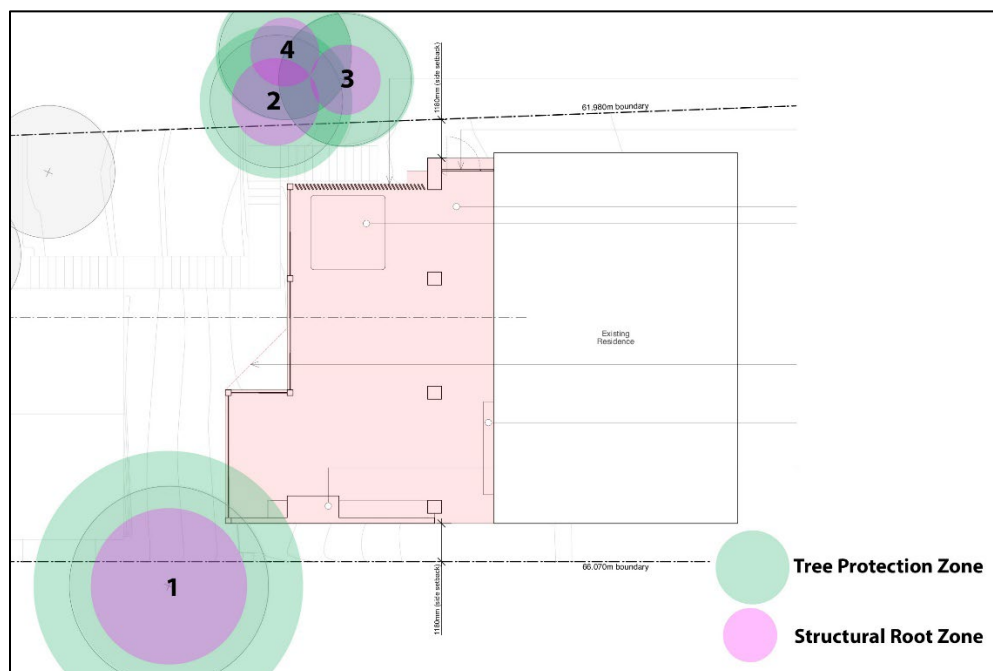
	Species	Trunk Diameter @ 1.4m	Height	Canopy Spread Radius	Age Class	Health/ Vitality	Structural Condition	Estimated Life Expectancy	Landscape and Environmental Significance	Retention Value
30	Cheese Tree, <i>Glochidion ferdinandi</i>	35cm	8m	3m	Mature	Fair	Fair	Long (30+ yrs)	3	Medium
		<b>Comments:</b> Located on the neighbouring property. The canopy has regenerated after previous lopping. The structural root spread appears to be concentrated directly upslope. The existing stormwater and electrical conduits are running parallel to the boundary within the TPZ.								
31	Bangalow Palm, <i>Archontophoenix cunninghamiana</i>	20cm 19cm	9m	3m	Mature	Good	Good	Long (30+ yrs)	3	Medium
		<b>Comments:</b> This species is exempt within the Northern Beaches LGA.								
32	Kentia Palm, <i>Howea forsteriana</i>	17cm	8m	3m	Mature	Good	Good	Long (30+ yrs)	3	Medium
		<b>Comments:</b> This species is exempt within the Northern Beaches LGA.								
33	Kentia Palm, <i>Howea forsteriana</i>	12cm	5m	3m	Mature	Good	Good	Long (30+ yrs)	3	Medium
		<b>Comments:</b> This species is exempt within the Northern Beaches LGA.								

### 4.2 Tree Protection Zones

Tree Protection Offsets based on <i>AS4970-2009-Protection of Trees on Development Sites</i>		
Tree Number	Tree Protection Zone radius	Structural Root Zone radius
1	4.2m	2.2m
2	2.4m	1.0m
3	2.0m	1.0m
4	2.0m	1.0m



## 5 Potential Impacts of Proposed Works



**Figure B:** Excerpt from the Proposed Ground Floor Plan showing the TPZ and SRZ of retained trees.

### 5.1 Potential Impacts of Proposed Works on Retained Trees

Tree Number/Species	Retention Value	Works Proposed Within the Tree Protection Zone (TPZ)
1 Cheese Tree	Medium	<p>A single pier footing for the proposed building extension is located within the TPZ. The pier footing is located outside of the Structural Root Zone. Some minor root pruning may be required for pier excavation. It will be possible for tree roots to exist beneath the elevated sections of the proposed additions. The tree is expected to tolerate the proposed works with no notable impact.</p> <p>Existing underground services (stormwater and electricity) are located parallel to the boundary within the TPZ. Root pruning may have been undertaken in the past as part of these installations. Upgrades to these services may be required. Existing conduits should be used within the TPZ if possible. Any new conduits should be installed at the same alignment and depth as the existing ones to avoid any new root pruning.</p>
2 Bangalow Palm	Medium	No works are proposed within the TPZ. No impact is expected.
3 and 4 Kentia Palm	Medium	



**Incidental Impacts:** Trees are commonly impacted on construction sites in the following ways. These impacts can be easily avoided through awareness and basic tree protection measures.

- Stripping of existing ground cover, 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.

## **5.2 Trees Proposed for Removal**

No trees are proposed to be removed as part of this proposal.

## 6 Recommendations

### 6.1 Site Establishment –Prior to Construction

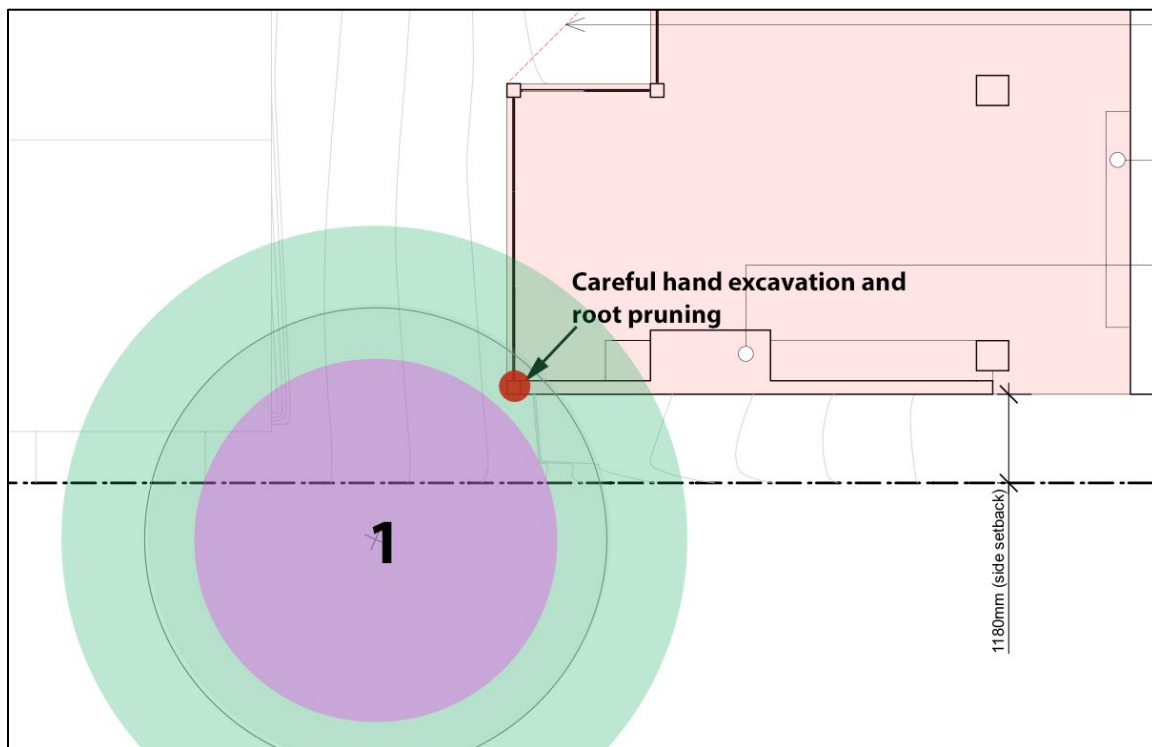
The existing retained trees are separated from the area of proposed works by boundary fencing and sloping stone shelf topography. No tree protection fencing is recommended for this project.

### 6.2 During Construction

**Tree Protection Zones:** The following should be prohibited within Tree Protection Zone of Tree 1:

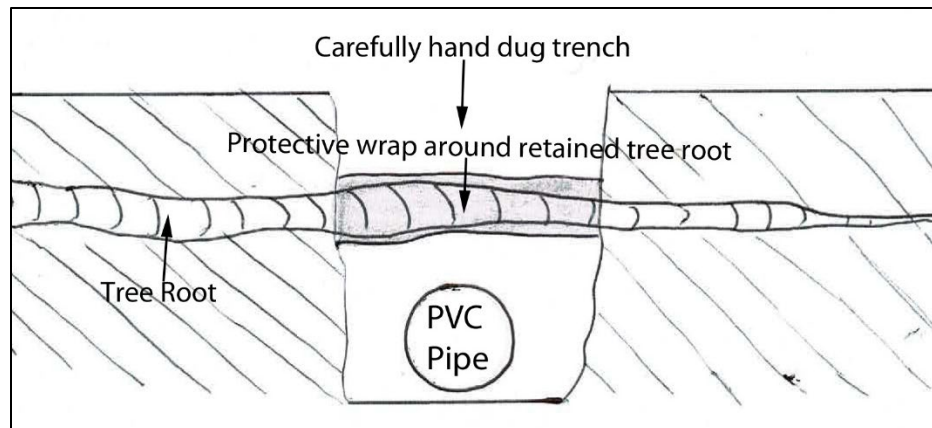
- Removal or stripping of topsoil / organic surface material.
- Landscape works involving retaining walls or ground levelling.
- Disposal of solid, liquid or chemical waste.
- Any excavation, fill or other construction activity other than that discussed in this report.

**Excavation for the pier footings:** Excavation for the pool footings must be undertaken with care using hand tools to the depth of rock within a 4.2m radius of Tree 1. This should firstly be undertaken as test digging in the preferred pier locations. The Project Arborist should be contacted if any tree roots greater than 100mm are encountered. Any smaller tree roots encountered should be cleanly pruned using a sharp saw.



**Figure C:** Area where careful hand excavation is recommended within the TPZ of T1.

**Underground Services Trenching (Tree 1):** Existing underground services (stormwater and electricity) are located parallel to the boundary within the TPZ of Tree 1. Upgrades to these services may be required. Existing conduits should be used within the TPZ if possible. Any new conduits should be installed at the same alignment and depth as the existing ones to avoid any new root pruning. Any excavation required within a 2.2m radius should be undertaken with care using hand tools. Roots greater than 30mm diameter should be carefully exposed, wrapped in protective cloth and tunneled beneath. This should be undertaken under guidance of an AQF Level 5 Arborist.



**Figure D:** Detail of recommended root treatment during underground services upgrades.

## 7 Statement of Impartiality

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- 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

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- 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.
- 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 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.

## Attachment A: 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.

**Trunk Diameter.** 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, 2025, *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 is 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, 2025, *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.

Significance Environmental Landscape &		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.

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