

ARBORTECH TREE GARDEN CARE

“Excellence in All Aspects of Tree Management”

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Prepared by Jason Paxton

Arboricultural Impact Assessment Report

For Development Application Submission.

August 2021

Client; Bill Anderson

Site Address, 1-3 Florida road Palm Beach 2108.



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1.Executive Summary.

Geoff Watson (Architect, The Design Section Pty Ltd) representing Bill Anderson has engaged the services of Arbortech Tree and Garden Care to prepare an Arboricultural Impact & Management Assessment to support a Development Application (DA) for Alterations and Additions at 1-3 Florida Road Palm Beach NSW.

Four (4) trees are discussed, Two (2) are located within the subject site, and Two (2) are located on the Road Reserve of Florida Road.

The *Northern Beaches Council (NBC)* (previously *Pittwater Council (PC)*) is the local government authority. 1-3 Florida Road Palm Beach NSW is not within a *Northern Beaches Council* (from herein *NBC*) designated *Heritage Conservation Area*. The subject site is zoned E4 Environmental Living. No discussed tree/s are known to be listed on any “*significant tree register*”.

I, Jason M Paxton, as a qualified Practicing & Consulting Arborist, have prepared this document based on “*Visual Tree Assessment*” (*VTA*) undertaken on Monday 9th August 2021.

Jason M Paxton is the sole author of this document.

The sole consent authority is the *NBC*.

The report discusses the necessity (relative to the proposed design) & specified strategy for management of the Three (3) trees identified & discussed.

The aim of this report is:

- i. Provide valid reasons to support the proposed development relative to tree management.*
- ii. Provide an achievable Tree Management Strategy for all discussed to be retained trees.*
- iii. Confirm no trees within adjoining private lands will be affected by the DA submission.*

2.Brief.

The Author has visited the site at 1-3 Florida Road Palm Beach, to consider trees viable for retention relative to the Development Proposal. This document is known as an Arboricultural Impact Assessment Report (AIAR) as part of the DA submission.

3.Method.

The site at 1-3 Florida Road Palm Beach NSW was visited to collect data on Monday 9th August 2021.

Tree diameter was measured using a diameter tape, DBH (diameter at breast height) 1.4m above ground level.

- The height and canopy spread were estimated.
- All tree data contained within this report is based on data obtained at the time of site inspection.
- The Australian Standard AS 4970–2009 *Protection of trees on development sites*, NBC (*Pittwater LEP & Pittwater DCP “Tree Management Provisions”*) as outlined within the NBC “*Tree Management Provisions*” as outlined in their

Pittwater Council Local Environment Plan, 2011 Clauses 5.9 & 5.9AA & the PC Development Control Plan 2011 Clauses E1, E3, E4 & E5) has been used as the benchmark for the preparation of this report.

- The trees were assessed using a basic Visual Tree Assessment (VTA¹) The subject trees were inspected visually from ground level only.
- The identification of genus and species is based on features, visible from a ground-level during inspection only, and has not been compared to herbarium specimens.
- The aspect was taken off the survey plan.
- TPZ, SRZ calculation, and encroachments were calculated using a TPZ, SRZ calculator.
- No root analysis, soil testing, ‘Restigraph®’ drilling, or aerial canopy inspection was undertaken during the assessment of the trees.4.Information Provided.

Plan Name	Plan Number	Drawn By	Date	Issue
DA Plan Living Level	WD-MOD.01G	GRW	Nov 2019	A
DA Elevations and Sections	WD-MOD.04D	GRW	Nov 2019	A
Plans By The Design Section Pty Ltd. Suite 5/40 Avalon Parade Avalon NSW 2107				

Table 1: Information Provided.

5.Observations.

The site is located on the Southwestern side of Florida Road Palm Beach with an open aspect to the North and East. The site is relatively steep rising in elevation from the Florida Road frontage

Two (2) trees, Trees # 1 & 2 are located within the subject site adjacent to the road reserve of Florida Road. Two (2) trees, Trees # 3 & 4 are located on the road reserve of Florida Road.

5.1. Individual Tree Observations.

Tree1, *Glochidion ferdinandi*, The tree is endemic to the locality, mature and displaying Fair, Health, Vigour and is located 2.4m to the West of the proposed

¹ VTA – Visual Tree Assessment, as referenced below, is a systematic inspection of a tree for indicators of structural defects that may pose a risk due to failure. The first stage of this assessment is made from ground level and no aerial inspection is undertaken unless there are visual indicators to suggest that this is merited. Details of the visual indicators are contained in *The Body Language of Trees* by Mattheck & Breloer (1994). The use of a Visual Tree Assessment is widely used and standardized approach. Invasive and other diagnostic fault detection procedures will generally only be recommended when visual indicators of potential concern are observed.

¹ Mattheck, C & Breloer, H 1994 *Field guide for visual tree assessment (VTA)*, Arboriculture Journal 18:1-23

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Inclinor. Relatively this is approximately 2.7m from the center of the tree. The TPZ is 6.48m, and the SRZ is 2.59m.

The tree has a single trunk that divides into codominant stems above 1.6m. Crown density is approximately 50% of typical for the species. The crown is phototropic to the Northwest (NW). There is a partial failure of a first-order branch within the crown (see Appendix 5, Image 9). Previous heavy pruning is noted throughout the crown.

Tree 2, *Unknown Spp.* The tree is DEAD, with a single trunk and an Arboreal Termites nest located at the top of the stem.

Trees 3 & 4, *Glochidion ferdinandi*, the trees are endemic to the locality, young displaying Fair, Health, Vigour, with single stems and small phototropic crowns to the North (N). The trees are less than 6m in height with a crown spread of less than 2m each. Both trees have a TPZ of 2m and an SRZ of 1.5m.

5.2 Tree Schedule Table.

#	Identification	Height (m)	Crown (m)	DBH(m) Base Día (m)	TPZ(m) SRZ(m)	Age	Health/ Vigour	Structure/ Form/ Habit	Comments
1	<i>Glochidion ferdinandi</i> (Cheese Tree)	<13	<12	0.54 0.56	6.48 2.59	M	F, F	F, F, NT	Locally Endemic, Medium Landscape Significance Retain Tree and Install Tree Protection Fencing.
2	DEAD TREE								Recommend removal of the tree.
3	<i>Glochidion ferdinandi</i> (Cheese Tree)	<6	<2	0.08 0.09	2 1.5	Y	G, G	F, F, NT	Locally Endemic, Low Landscape Significance Retain Tree and Install Tree Protection Fencing.
4	<i>Glochidion ferdinandi</i> (Cheese Tree)	<6	<2	0.07 0.08	2 1.5	Y	G, G	F, F, NT	Locally Endemic, Low Landscape Significance Retain Tree and Install Tree Protection Fencing.
G=Good F=Fair, P=Poor, D=Dead, M=Mature, SM=Semi Mature, Y=Young, T=Typical of species, NT=Not Typical of species, DBH=Diameter at Breast Height, TPZ=Tree Protection Zone, SRZ=Structural Root Zone									

Table 2: Tree Schedule.

6. Discussion.

Tree 1 has a TPZ incursion of 7.7%, this TPZ Incursion is Easily Acceptable under the Guidelines of AS 4970–2009 *Protection of trees on development sites*. There is no SRZ incursion.

The Two (2) supporting piers for the bottom landing will require some flexibility with their location. The pier holes **must be hand dug**, if any significant live diameter roots (greater than 5cm diameter) are located, the location of the piers must be repositioned to a location with no roots greater than 5cm diameter. Any roots less than 5cm diameter located should be cleanly cut using a hand saw.

If large diameter roots (greater than 5cm diameter) are located during the excavation process, the appointed site Arborist must be contacted to determine if the location or pruning of the roots will have any significant impact on the health and vigour of the tree.

It is Likely that will be no significant roots located within the proposed construction area. The crown is phototropic to the Northwest (NW) and there is no crown over the proposed construction area. It is relative that the majority of the root architecture is most likely located on the North (N) and Western (W) sides of the tree.

The tree is EASILY viable for retention and will not be impacted by the proposed development. Tree Protection Fencing will be required. The tree has a sufficient layer of mulch within the TPZ. Irrigation of the tree will be required during construction if rainfall drops below average, or during extended periods of dry or windy conditions.

Tree 2 is dead and therefore cannot be impacted.

Trees 3 & 4 are young locally endemic species located on the road reserve of Florida Road frontage. There is no TPZ or SRZ incursion for either of the trees.

The tree is EASILY viable for retention and will not be impacted by the proposed development. Tree Protection Fencing will be required. The tree has a sufficient layer of mulch within the TPZ. Irrigation of the tree will be required during construction if rainfall drops below average, or during extended periods of dry or windy conditions.

7. Recommendations.

The Author's recommendation is for **Trees 1, 3, and 4**, to be Retained, Protected, and managed as per the Tree Protection Plan and Guidelines set out in this report. **Tree 2** is dead, and with further decay and a dysfunctional root system, the tree will increasingly pose a risk to persons and property. The Author recommends that the tree is removed before the commencement of construction.

As with the guidelines of The Australian Standard AS 4970 – 2009 *Protection of trees on development sites*, an offset greater than 10% can be achieved by extending the TPZ (see Appendix 3, Tree Protection Diagram). It is specified that temporary fencing panels or similar in accordance with AS 4687—2007 *Temporary fencing and hoardings*. The tree protection fencing is to be erected in accordance with the specifications in the Tree Protection Plan (Appendix 4), AS 4970 – 2009 *Protection of trees on development sites*.

Within the TPZ an up to 10cm layer of Arborist Mulch or similar is to be applied and maintained for the duration of the project over the ground within the Tree Protection Area. This Mulch Product can be sourced from a local Arborist Company. At this time, the Greater Sydney Region has experienced average rainfalls, as a consequence soil moisture levels are good. If periods of rainfall decrease, the Tree Protection Area should be irrigated weekly or as required to compensate for soil moisture loss. Water is the number one limiting factor for tree growth and health.

It is additionally specified that no building materials of any description be stored, or any construction or other activities conducted within the TPZ without WRITTEN APPROVAL and or SUPERVISION by the suitably qualified (AQF Level 5) appointed site Project Arborist.

Prior to any construction.

1	Engage a suitably qualified project arborist with a minimum AQF 5 Diploma in Arboriculture to oversee and implement the tree protection plan.
2	Construction of tree protection fencing (see tree protection plan).
3	Mulch TPZ with a minimum of 10cm thick arborist mulch or similar.
4	Install the irrigation system within TPZ. And maintain adequate moisture levels.
5	All plans provided should have a copy of the tree protection plan (drawing). There should be a note to <u>check for the tree protection plan</u> . (drawing) on each plan provided.
6	Install Load Bearing/Sharing device as shown on a tree protection plan.
7	Install sediment fencing and contamination absorption control.

Tree removal.

8	No access within TPZ for machinery or persons
9	Temporary access within TPZ only with written authorization from project arborist before work.
10	A spill kit must be on site.
11	All tree pruning or removal must be carried out by a suitably qualified arborist with a minimum AQF Certificate 3 in Arboriculture.

During demolition.

12	All work must be supervised by the project arborist within 1m of TPZ.
13	No access within TPZ for machinery.
14	No Temporary access within TPZ only with written authorization from the project arborist.

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15	A spill kit must be on site.
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Critical checkpoints.

All work to be supervised by the project arborist	
16	After construction of TPZ fencing. (check for compliance)
17	After installation of Load bearing/sharing surfaces. (check for compliance)
18	TPZ fencing is not to be moved for any reason.
19	If temporary access is required into TPZ.
20	Before and during any excavation within the TPZ.
21	Before cutting any roots larger than 2cm in diameter.
22	Inspection and auditing by the project arborist every three months and at critical stages. The monitoring process must be recorded and included in the certification at the time of practical completion of the work. The critical stages will include, excavation, footings, and slabs, the installation of above or below ground services, erection and removal of scaffolding, ANY work required within the TPZ, and completion of works. As defined in. (AS 4970-2009 Protection of trees on development sites, section 5.4.3 page 21).
Note: Tree Protection Zone (TPZ) is defined in the Glossary of terms	

During construction work.

The project arborist must supervise all work	
23	Before and during any excavation within the TPZ.
24	Any work within the TPZ.
25	Removal or moving of Tree Protection Fencing. (for any reason)

During landscaping work.

26	Check landscape plan for compliance with Tree Protection Plan
27	All work is to be supervised by the project arborist within the TPZ. As described (AS 4970-2009 Protection of trees on development sites section 5.4.4 page 21).

Practical completion.

28	At the time of practical completion will be when all construction and landscaping works are complete. At this time, all tree protection measures can be removed, and the project arborist will access the tree condition and provide certification. As described in (AS 4970-2009 Protection of trees on development sites, section 5.5.2 page 21).
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Post construction.

29	The completion of any further building or landscaping work post construction period will not damage or injure trees.
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Final certification.

30	The project arborist at this time will access the trees and make any recommendations or requirements for a remedial that may be necessary to comply with (AS 4970-2009 Protection of trees on development sites section 5.5.2 page 21).
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If you have any questions relating to this report or implementation of recommendations,
please contact Jason Paxton on 0408 963 281

Regards,

A handwritten signature in black ink, appearing to read 'J. Paxton', with a stylized flourish at the end.

Jason M Paxton (AQF Level 5 Practicing and Consulting Arborist).

Appendix 1: Aerial Image of Site.



Image 1. [MapBrowser \(nearmap.com\)](https://nearmap.com)

Appendix 2: Site Survey with trees marked.



Image 2. DA Plan Living Level. The Design Section Pty Ltd.

Appendix 3: Tree protection Plan. TPZ, SRZ & Tree protection Fencing.

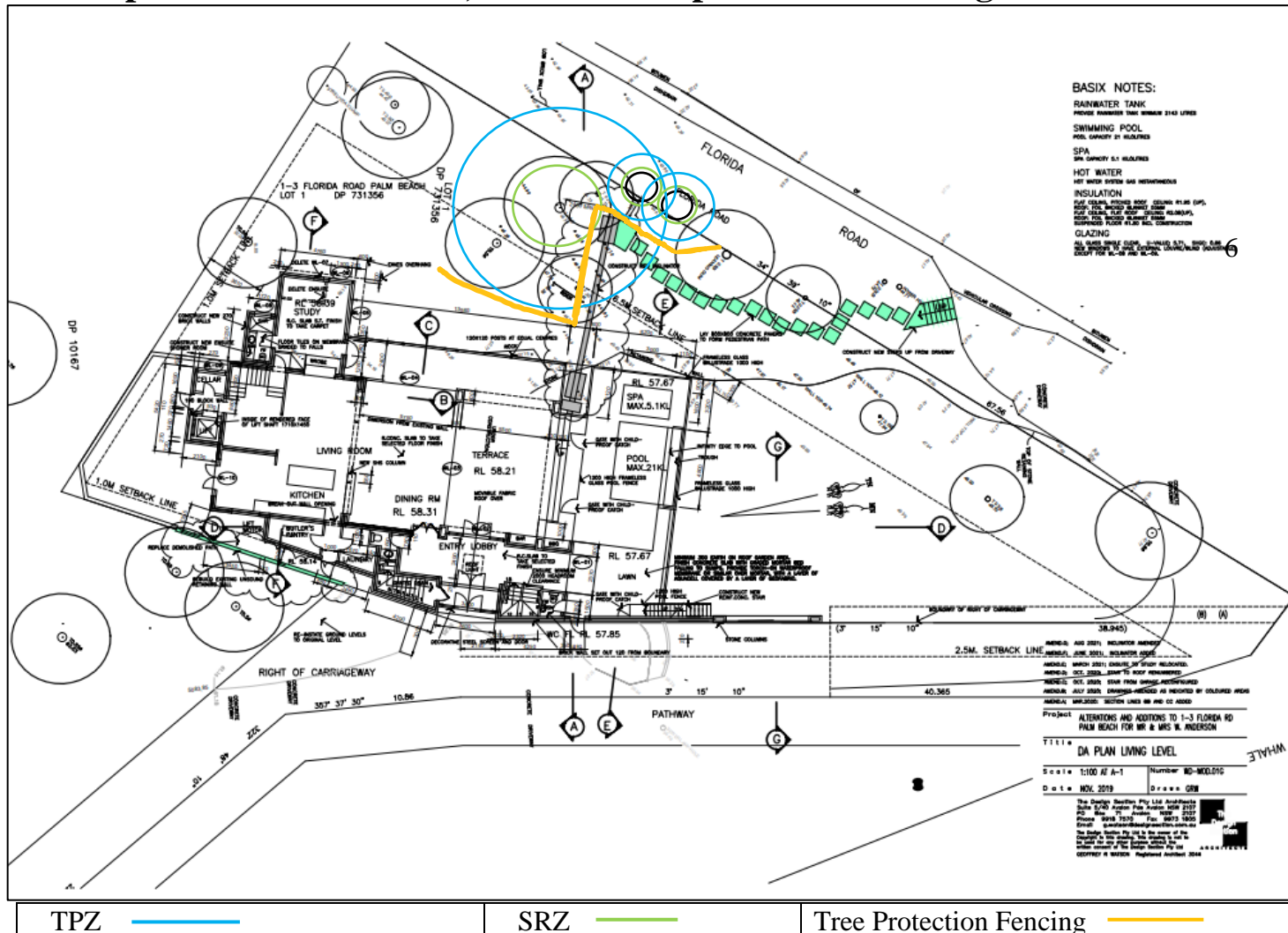


Image 3, Tree Protection Diagram.

Appendix 4: TPZ Incursion Diagrams.

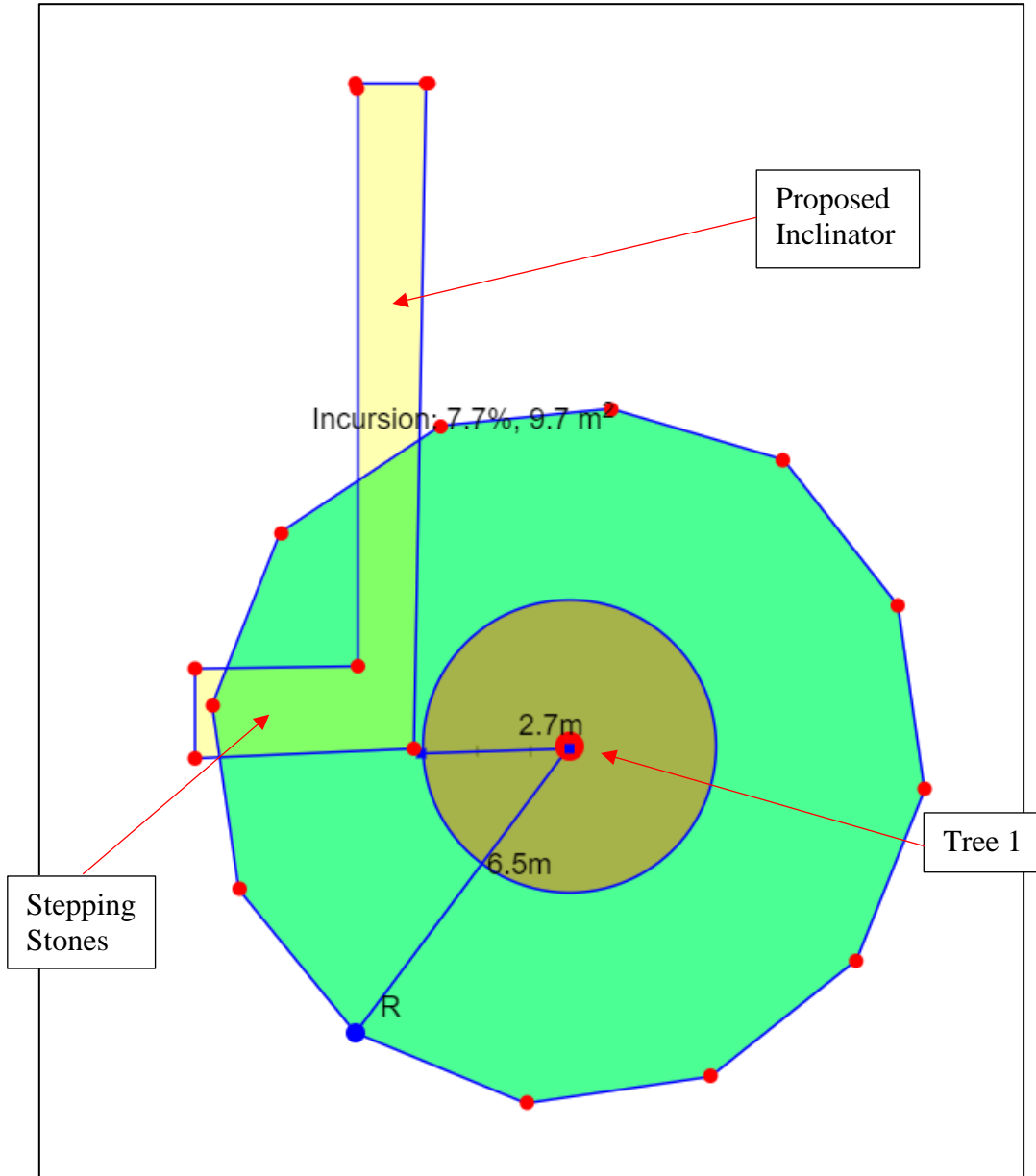


Image 4. Tree 6, TPZ Incursion Diagram.

Appendix 5: Images of Trees.

All images were taken by Author.



Image 6, Approximate location of inclinometer.



Image 7, Tree 1.

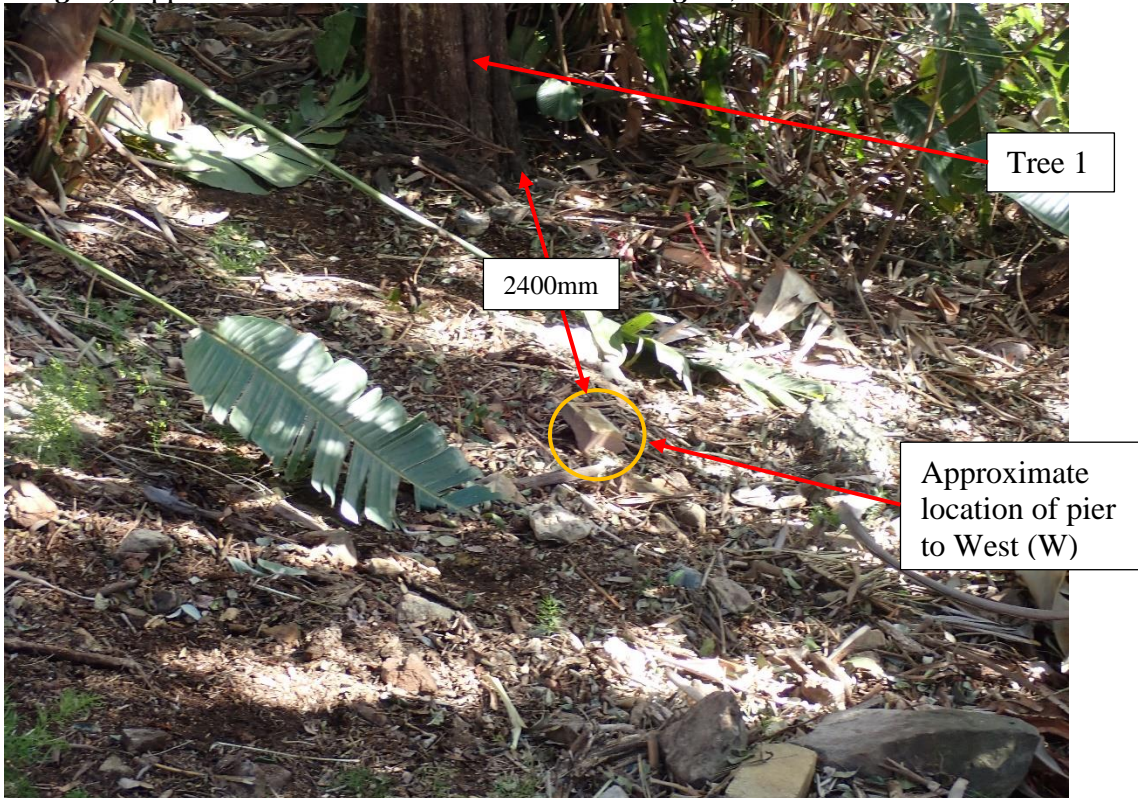


Image 8, Approximate location of Inclinometer Pier and proximity to Tree 1.



Image 9, Tree 1 showing partial branch failure & thin crown density.



Image 10, Tree 1 showing phototropic crown to the North (N).

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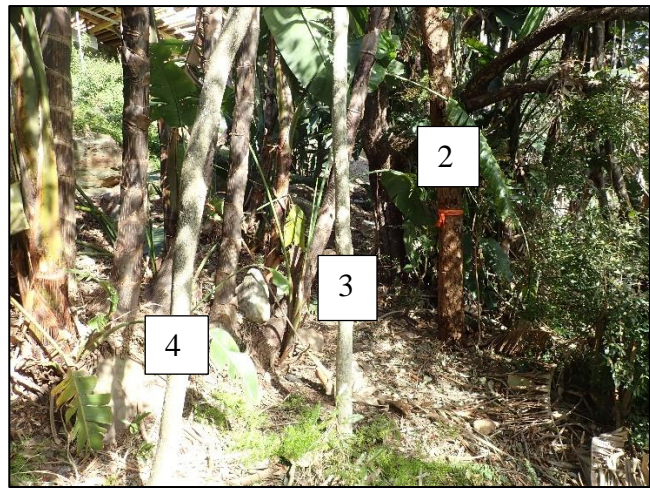
Image 11, Tree 2.



Image 12, Tree 2 no crown & termites' nest.



Image 12, Tree's 3 & 4.



Appendix 6: Tree Protection.

Tree protection zone.

The Australian Standard® AS 4970 – 2009 *Protection of trees on development sites* describes “The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance so that the tree remains viable.”

To determine the TPZ for the tree, the diameter at breast height (DBH) is multiplied by 12 (TPZ = DBH x 12), this is expressed as the radius from the center of the trunk measured above the buttress at ground level. A TPZ will not be less than 2m and should not be greater than 15m, except where canopy protection is required.

Structural root zone.

The Australian Standard® AS 4970 – 2009 *Protection of trees on development sites* describes “The SRZ is the area required for tree stability. A larger area is required to maintain a viable tree.

The SRZ only needs to be calculated when major encroachment into a TPZ is proposed.

There are many factors that affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). The SRZ may also be influenced by natural or built structures, such as rocks and footings. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula or Figure 1. Root investigation may provide more information on the extent of these roots.

$$SRZ\ radius = (D \times 50)0.42 \times 0.64$$

where

D = trunk diameter, in m, measured above the root buttress NOTE: The SRZ for trees with trunk diameters less than 0.15 m will be 1.5 m.”

Encroachments within the TPZ.

It is possible that construction activities can encroach into the TPZ, however, The Australian Standard® AS 4970 – 2009 *Protection of trees on development sites* says “If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ (see Clause 3.3.5), the project arborist must demonstrate that the tree(s) would remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods”.



Image 1: Good tree protection fencing as per AS 4970 – 2009. Image Paxton



Image 2: Poor tree protection fencing not complying with AS 4970-2009. Image Paxton



Image 3: Good tree protection fencing as per AS 4970 – 2009. Image Paxton.



Image 4: Tree protection Sign as per AS 4970 – 2009. Image Paxton.

Table 1, Activities restricted within the TPZ.

ACTIVITIES RESTRICTED WITHIN THE TPZ	
All machine excavation including trenching	Excavation for silt fencing
Cultivation of the soil	Preparation of chemicals
Storage of any description	Preparation of cement products
Parking of vehicles and plant	Refueling
Dumping of waste	Wash down & cleaning equipment
Placement or storage of fill	Lighting of fires
Soil level changes	Physical damage to the tree
Temporary or permanent installation of utilities and signs	
Mechanical removal of vegetation	Affixing signage or hoarding to trees
Movement of pedestrian or vehicular traffic	Anything that may harm the trees

Appendix 7: Land Zoning and Heritage Map.

Pittwater Local Environmental Plan 2014

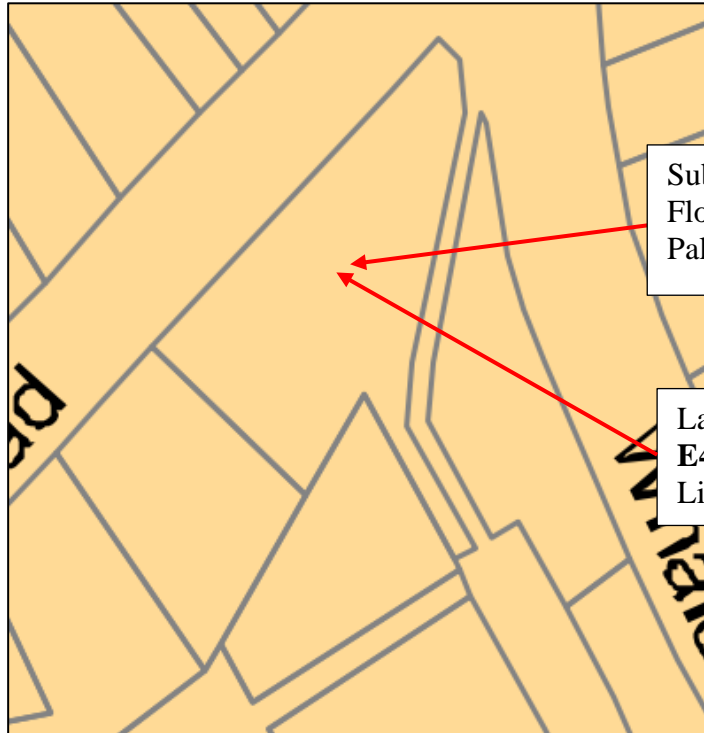
Land Zoning Map - Sheet LZN_015

Zone

- B1 Neighbourhood Centre
- B2 Local Centre
- B4 Mixed Use
- B6 Enterprise Corridor
- B7 Business Park
- E1 National Parks and Nature Reserves
- E2 Environment Conservation
- E3 Environmental Management
- E4 Environmental Living
- IN2 Light Industrial
- IN4 Working Waterfront
- R2 Low Density Residential
- R3 Medium Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU2 Rural Landscape
- SP1 Special Activities
- SP2 Infrastructure
- SP3 Tourist
- W1 Natural Waterways
- W2 Recreational Waterways

Cadastre

Cadastre 7/7/2012
© Land & Property Information (LPI)



Subject Site, 1-3 Florida Road Palm Beach

Land Zoning E4 Environmental Living

Pittwater Local Environmental Plan 2014

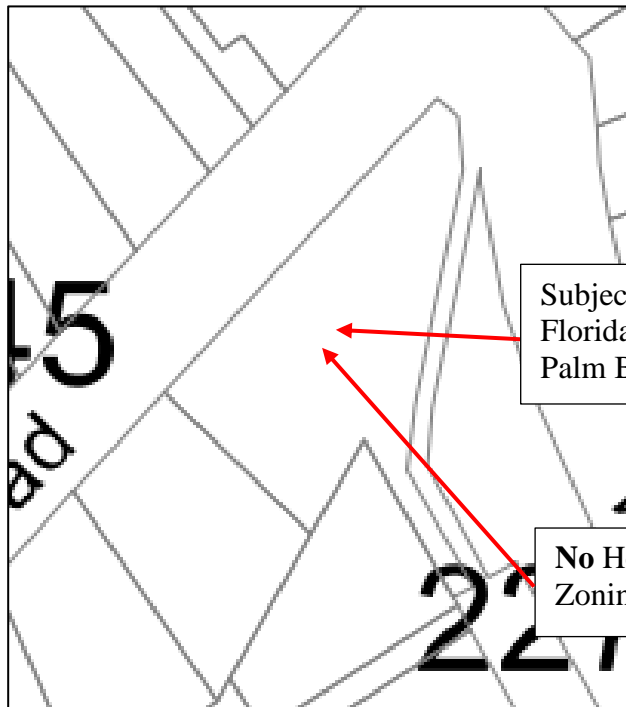
Heritage Map - Sheet HER_015

Heritage

- Conservation Area - General
- Item - General
- Item - Archaeological

Cadastre

Cadastre 7/7/2012
© Land & Property Information (LPI)



Subject Site, 1-3 Florida Road Palm Beach

No Heritage Zoning

Images, Northern Beaches Council Website Tools.

Appendix 8: Limitations for the use of the Report.

This report is to be utilized in its entirety only. Any written or verbal submission, report, or presentation that includes statements taken from the findings, discussions, conclusions, or recommendations made in this report, may only be used where the whole of the original report (or a copy) is referenced in, & directly attached to that submission, report, or presentation.

Appendix 9: Assumptions.

Care has been taken to obtain information from reliable resources. All data has been verified insofar as possible; however, Arbortech Tree and Garden Care, can neither guarantee nor be responsible for the accuracy of information provided by others.

Unless stated otherwise:

Information contained in this report covers only the trees that were examined & reflects the condition of the trees at the time of inspection.

The inspection was limited to visual examination of the subject trees without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

Appendix 10: Glossary of Arboricultural Terms.

- Age:** **I** *Immature* refers to a well-established but juvenile tree
SM *Semi-mature* refers to a tree at growth stages between immaturity & full size.
M *Mature* refers to a full-sized tree with some capacity for further growth
LM *Late Mature* refers to a full-sized tree with little capacity for growth that is not yet about to enter decline.
OM *Over-mature* refers to a tree about to enter decline or already declining.
LS *Live Stag* refers to a tree in a significant state of decline. This is the last life stage of a tree prior to death.

Hth & Vig Health & Vigour

Health refers to the tree's form & growth habit, as modified by its environment

(aspect, suppression by other tree, soils) & the state of the scaffold (ie. trunk & major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health & it is possible for a tree to be healthy but in poor condition/Vigour. **Classes are:** Excellent (E), V. Good (VG), Good (G), Fair (F), Declining (D), Poor (P), Very Poor (VP)

Vigour refers to the tree's growth rate/condition as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion & the degree of dieback. **Classes are:** Excellent (E), V. Good (VG), Good (G), Fair (F), Declining (D), Poor (P), Very Poor (VP)

Useful Life Expectancy (ULE) refers to any individual tree specimen's potential life expectancy (viability) based on VTA assessment, three groups are described, **Short = Less than Five years**

Medium = Five–Fifteen years

Long = more than Fifteen years

Significant diameter roots are defined as those being greater than 0.05m/50mm in diameter.

Diameter at Breast Height (DBH) refers to the tree trunk diameter at breast height (1.4 metres above ground level)

Structural Root Zone (SRZ) refers to a radial offset which relates to tree stability. This zone is presumed to be the main location of the tree's structural support roots. It is calculated using the formula $SRZ\ radius = (D \times 50)^{0.42} \times 0.64$.

Primary Root Zone (PRZ) refers to a radial offset of ten (10) times the trunk DBH measured from the center of the trunk. This zone often contains a significant amount of (but by no means all of a tree's) fine, non-woody roots required for uptake of nutrients, oxygen & water.

Tree Protection Zone (TPZ) is ideally a "No Go Zone" surrounding a tree to aid in its ability to cope with disturbances associated with construction works. **TPZ = DBH x 12**. Tree protection involves minimizing root damage that is caused by activities such as construction. Tree protection also reduces the chance of a tree's decline in health or death & the possibly damage to the structural stability of the tree from root damage.

To limit damage to the tree, protection within a specified distance of the tree's trunk must be maintained throughout the proposed development works. No excavation, stockpiling of building materials, or the use of machinery is permitted within the TPZ.

A TPZ is required for each tree or group of trees within five metres (unless otherwise specified) of building envelopes.

Stem/bark inclusion refers to a genetic fault in the tree's structure. This fault is located at the point where the stems/branches meet. In the case of an inclusion, this point of attachment is potentially weak due to bark obstructing healthy tissue from joining together to strengthen the joint.

Decay refers to the breakdown of tissues within the tree. There are numerous types of decay that affect different types of tissues, spread at different rates & have a different effect on both the tree's health & structural integrity.

Point of Attachment refers to the point at which a stem/branch etc. joins.

Deadwood refers to any whole limb that no longer contains living tissues (eg live leaves &/or bark). Some deadwood is common in a number of tree species.

Dieback refers to the death of growth tips/shoots & partial limbs. Dieback is often an indicator of stress & tree health.

One dimensional crown refers to branching habits & leaves that extend/grow in One direction only. There are many causes for this growth habit such as competition & pruning.

Crown Foliage Density of Potential (CFDP) refers to the density of a tree's crown to the expected density of a healthy specimen of the same species. CFDP is measured as a percentage.

Epicormic growth/shoots refer to growth/shoots that are/have sprouted from axillary buds within the bark. Epicormic growth/shoots are a survival mechanism that

often indicates the presence of current or past stress even such as fire, pruning, drought, etc.

Over Head Powerlines (OHP) Overhead electricity wiring.

LVOHP Low Voltage Overhead Powerlines

HVOHP High Voltage Overhead Powerlines

ABC Aerial Bundled Cable

Arborist Mulch, Mulch product produced by Arborists containing wood and leaf chip.

Moribund, In terminal decline, lacking vitality or vigour.

References.

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- [Google Maps](#)
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- AS 4970-2009 Protection of trees on development sites.
- AS 4373-2007 Pruning of amenity trees.
- AS 4687—2007 Temporary fencing and hoardings.
- AS 2303-2015 Tree stock for landscape use.
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 under the Environmental Planning and Assessment Act 1979.
- https://proofsafe.com.au/tpz_incursion_calculator.html
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- Shigo Alex L, 1991. Modern Arboriculture. Forth printing 2008. Copyright 1991, by Shigo Trees and Associates, LLC. Snohomish, WA 98291 USA.
- [Exempt Tree Species List | Northern Beaches Council \(nsw.gov.au\)](#)
- [Tree Guide | Northern Beaches Council \(nsw.gov.au\)](#)

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- [6370 COM LZN 015 010 20140623 \(windows.net\)](#)
- [6370 COM HER 015 010 20150924 \(windows.net\)](#)
- [Pittwater Local Environmental Plan 2014 - NSW Legislation](#)
- [Planning Controls | Northern Beaches Council \(nsw.gov.au\)](#)