

# Arboricultural Impact Assessment



**Prepared For**  
Gartner Trovato Architects  
Suit 13 Level 1, Pittwater Place  
10 Park Street  
MONA VALE NSW 2103

**SITE ADDRESS**  
**7 PACIFIC ROAD**  
**PALM BEACH NSW 2108**

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# 1 Introduction

## 1.1 Brief

- 1.1.1 This Arboricultural Impact Assessment (AIA) was prepared by Chantalle Hughes of Treeism Arboricultural Services. This report was commissioned by Gartner Trovato Architects on behalf of the owners of the subject site. The Site is identified as Lot 401 of D.P. 19651 and is known as 7 Pacific Road, Palm Beach, New South Wales. Construction of a new granny flat, garage including lift, and stairs is proposed.
- 1.1.2 The purpose of this report is to identify the species of each assessed tree, assess their vigour, condition, landscape prominence and ascribe a Retention Value to each tree.
- 1.1.3 This report identifies the potential impacts the proposal will have on the retention or long-term viability of each tree and aims to provide guidelines for tree protection and maintenance during development.

## 1.2 Context

- 1.2.1 Acknowledgement of the original inhabitants of the Northern Sydney area is complex. The Aboriginal Heritage Office (AHO) states... 'Clan names which can be found on most maps for the northern Sydney region of the AHO partner Councils are the following: Gayamaygal, Gamaragal, Garigal, Darramurragal and many more'.....exact clan name knowledge has been lost, or at the very least is hard to find, as traditional inhabitants of Australia were told to 'give up their language, stop practicing ceremony and hide their Aboriginality'.
- 1.2.2 The Department of Planning, Industry and Environment 'Espade' states the site geology as 'Narrabeen Group of sediments. Mostly interbedded laminite and shale with quartz to lithic quartz sandstone. Minor red claystones occur north of the Hawkesbury River. Clay pellet sandstone occurs south of the Hawkesbury River (Herbert, 1983)'.
- 1.2.3 Details of vegetation 'Mostly uncleared, tall eucalypt open-forest (wet sclerophyll) and closed-forest (rainforest). Much of the native vegetation on the Northern Beaches peninsula has been cleared. Tall eucalypt open-forests occur on drier and more exposed slopes and crests. Tree species include *Eucalyptus (sic) maculata*, *E. paniculata*, *E. saligna*, *Syncarpia glomulifera*, *E. botryoides*, *Angophora floribunda* and *Allocasuarina torulosa*. Rainforest occurs on sheltered slopes. Characteristic tree species include *Acmena smithii*, *Glochidion ferdinandi*, *Ceratopetalum apetalum* and *Livistona australis*.

## 1.3 Methodology

- 1.3.1 In preparation for this report, ground level, visual tree assessments<sup>1</sup> or limited VTA (e.g. where access was limited), of ten (10) trees was completed by Chantalle Hughes of Treeism Arboricultural Services on 13<sup>th</sup> August 2024. Inspection details of these trees are provided in Appendix 3 — Schedule of Assessed Trees.
- 1.3.2 The tree heights were visually estimated or measured using a Nikon ForestryPro, unless otherwise noted in Appendix 3, the trunk Diameter at Breast Height were measured at 1.4 metres above ground level (DBH) using a diameter tape unless indicated otherwise. Tree canopy spreads were stepped out with field observations written down, and photographs of the site and trees were taken using an iPhone 13.

<sup>1</sup>Visual Tree Assessment (VTA) is a procedure of defect analysis developed by Mattheck and Breloer (1994) that uses the growth response and form of trees to detect defects.

- 1.3.3 The Structural Root Zone (SRZ) and the Tree Protection Zone (TPZ) of each tree is calculated using the formula provided within the Australian Standard 4970-2009 Protection of trees on development sites (AS4970).
- 1.3.4 Tree data and field observations were entered into a data dictionary on a Trimble TDC600. Data was managed through Terraflex Trimble Connect.
- 1.3.5 Tree Retention Values (RV) were calculated utilising STARS – Significance of a Tree Assessment Rating System (IACA 2010) ©.

## 1.4 Plans and Documents Referenced

- 1.4.1 Survey Plan authored by C.M.S Surveyors Pty Ltd, drawing no. 6424Bdetail, Issue 3, dated 31/08/2015 – 01/05/2024.
- 1.4.2 AS4970-2009 Protection of trees on development sites, Standards Australia.
- 1.4.3 AS4373-2007 Pruning of amenity trees, Standards Australia.
- 1.4.4 Architectural Plans, Project no. 2412, Drawing no's. DA-00 to DA-12, Revision A, dated 29 August 2024, by Gartner and Trovato Architects.
- 1.4.5 This AIA takes account Chapter 2 *Vegetation in Non-Rural Areas* of the State Environmental Planning Policy (Biodiversity and Conservation) 2021 'The SEPP' and Section B4 Controls relating to the Natural Environment, Pittwater 21 Development Control Plan (P21DCP).

## 1.5 Limitations

- 1.5.1 Care has been taken to obtain all information from reliable sources. All data has been verified as far as possible; however, I can neither guarantee nor be responsible for the accuracy of information provided by others.
- 1.5.2 This report is not intended to be a comprehensive tree risk assessment; however, the report may make recommendations, where appropriate, for further assessment, treatment or testing of trees where potential structural problems have been identified, or where below ground investigation may be required.
- 1.5.3 No aerial inspections, root mapping or woody tissue testing were undertaken as part of this tree assessment.
- 1.5.4 Information contained in this report only reflects the condition of the trees at the time of inspection. Trees are dynamic, living things which can be subject to change without notice in certain circumstances.
- 1.5.5 No Hydraulic or Landscape Plans were viewed as part of this assessment.
- 1.5.6 This AIA is not intended as an assessment of any impacts on the trees by any proposed future development of the site.

## 2 Observations and Discussion

### 2.1 Threatened Species

- 2.1.1 No species of assessed tree is subject to threatened conservation status under Australian and/or State Government legislation (i.e. NSW Threatened Species Conservation Act 1995 and the Commonwealth Environment Protection and Biodiversity Conservation Act 1999).
- 2.1.2 The site is not identified on the Department of Planning and Environments Biodiversity Values Map (BV).

### 2.2 Assessed Trees

2.2.1 Ten (10) trees were assessed or identified and are included in this report. Details of these are included in the Schedule of Assessed Trees—Appendix 3.

2.2.2 **Tree numbers**—of the ten (10) trees, the following is noted:

- Two (2) trees are prescribed and located within the subject site—Tree 4 and 5.
- Five (5) are non-prescribed/exempt under P21DCP and located within the subject site — Tree 6-10.
- Two (2) trees are located on adjacent neighbouring properties—Tree 2 and 3.
- One (1) tree is located on Council managed property adjacent to the subject site—Tree 1.

2.2.3 **Species origin** — Of the ten (10) subject site and the neighbouring trees, the following is noted:

- Five (5) trees are locally native species —Tree 1-5.
- Three (3) are introduced native species —Tree 6-10.

2.2.4 The five (5) prescribed subject site/neighbouring trees and their respective **Retention Value (RV)** are identified in Table 1, below. Note: Refer to Appendix 2 for the methodology used to assess the Retention Value of a tree.

**Table 1**—Tree ID and RV, where **L** = Low, **M** = Medium, **H** = High, **R** = proposed removal.

Tree No.	Genus & species Common Name	RV	Tree No.	Genus & species Common Name	RV
1	<i>Pittosporum undulatum</i> Sweet <b>Pittosporum</b>	L	4	<i>Syzygium australe</i> Brush Cherry	M
2	<i>Eucalyptus robusta</i> Swamp <b>Mahogany</b>	H	5	<i>Syzygium australe</i> Brush Cherry	M
3	<i>Angophora costata</i> Smooth- <b>barked Apple</b>	H			

### 3 Impact of the Proposed Development

#### 3.1 Prescribed Trees Proposed for Removal

3.1.1 The following two (2) prescribed trees will be required for removal to accommodate the proposal.

- Tree 4 & 5 – Brush Cherry: These two (2) medium RV trees are located within the footprint of the proposed Granny Flat stairs and could not be safely retained.

#### 3.2 Potential Impacts on Prescribed Trees Proposed for Retention

3.2.1 Under the Australian Standard 4970-2009 Protection of trees on development sites (AS4970), encroachments less than 10% of the Tree Protection Zone (TPZ) are considered to be minor. No specifications are provided in AS4970 for potential impacts of 10% or greater. This 10% is interpreted as the threshold figure, if the proposed encroachment is greater than 10% of the TPZ or inside the SRZ, the project arborist must demonstrate that the tree(s) would remain viable.

3.2.2 When determining the potential impacts of encroachment into the TPZ, the project arborist should consider the following items listed under Clause 3.3.4 of AS4970-2009:

- Location and distribution of the roots to be determined through non-destructive investigation methods (pneumatic, hydraulic, hand digging or ground penetrating radar). Photographs should be taken, and a root zone map prepared.
- The potential loss of root mass resulting from the encroachment: number and size of roots.
- Tree species and tolerance to root disturbance.
- Age, vigour and size of the tree.
- Lean and stability of the tree. NOTE: Roots on the tension side are likely to be most important for supporting the tree and are likely to extend for a greater distance.
- Soil characteristics and volume, topography and drainage.
- The presence of existing or past structures or obstacles affecting root growth.
- Design factors.

3.2.3 Disturbance within the Structural Root Zone (SRZ), and extent of encroachments into the TPZ's of prescribed trees to be retained are summarised in Table 2 below.

**Table 2:** Estimated encroachments of permanent structures into the SRZ and TPZ of trees proposed for retention. Note 1: These figures are based on the SRZ and TPZ's offsets of the trees as calculated under AS4970 and do not necessarily reflect the actual root zones of the trees. Existing at or below ground structures, site topography and soil hydrology will influence the presence, spread and direction of tree root growth.

Tree No.	Tree	Tree located on site	SRZ affected	TPZ area (m <sup>2</sup> )	TPZ encroachment (approx. m <sup>2</sup> )	TPZ encroachment (approx. %)
1	Sweet Pittosporum	x	x	28	0.2	0.7
2	Swamp Mahogany	x	x	65	4.2	6.5
3	Smooth-barked Apple	x	*✓	41	6.9	*16.9

\* This symbol denotes that construction methods will reduce encroachments detailed within Table 2.

3.2.4 **Tree 1** Sweet Pittosporum – located within Council managed nature strip.

Structural Root Zone impacts:

- All works are outside the SRZ of this specimen.

Tree Protection Zone impacts:

- The proposed suspended driveway crosses the calculated TPZ of this specimen. The roadside section will encroach the TPZ an estimated 0.7% (see Figure 1 below), *minor* encroachment under AS4970.
- No impact on tree health or condition is expected.

Pruning impacts:

- No pruning will be required to accommodate the proposal.

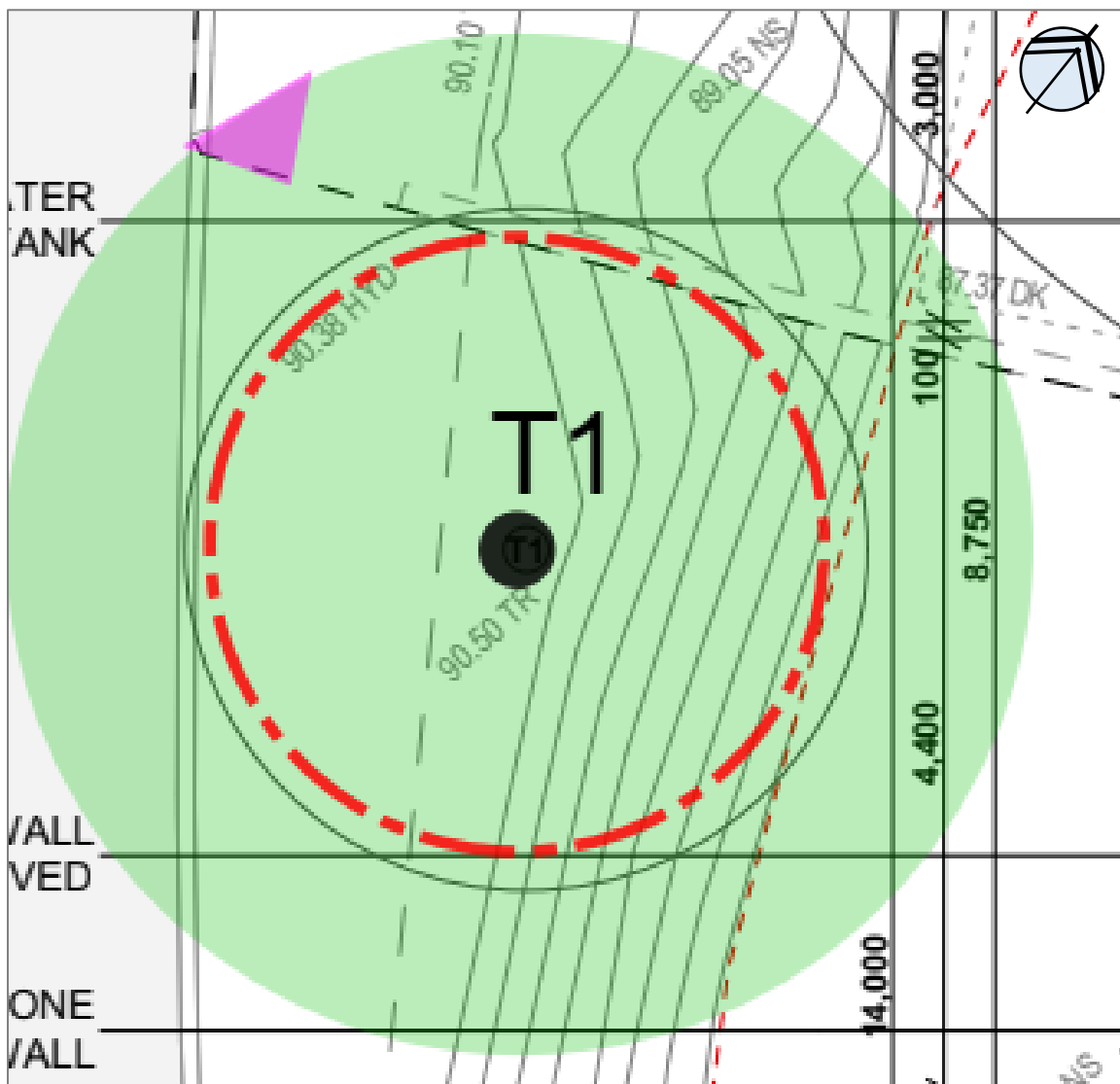


Figure 1 – Tree 1 encroachment – Excerpt of Granny Flat Plan, dwg no. DA.03, Rev A, 29/8/24 authored by Gartner Trovato Architects. Red hashed circle indicates SRZ, green circle denotes the TPZ. Pink shading notes encroachment. Marked up by C Hughes. NOT TO SCALE.

3.2.5 **Tree 2** Swamp Mahogany – located on adjoining neighbouring property.

Structural Root Zone impacts:

- All works are outside the SRZ of this specimen.

Tree Protection Zone impacts:

- The new boundary retaining wall and a small area of fill is proposed within the TPZ of this tree (see Figure 2 below), equating to a 6.5% encroachment, minor encroachment under AS4970.
- No impact on tree health or condition is foreseen.

Pruning impacts:

- No pruning will be required to accommodate the proposal.

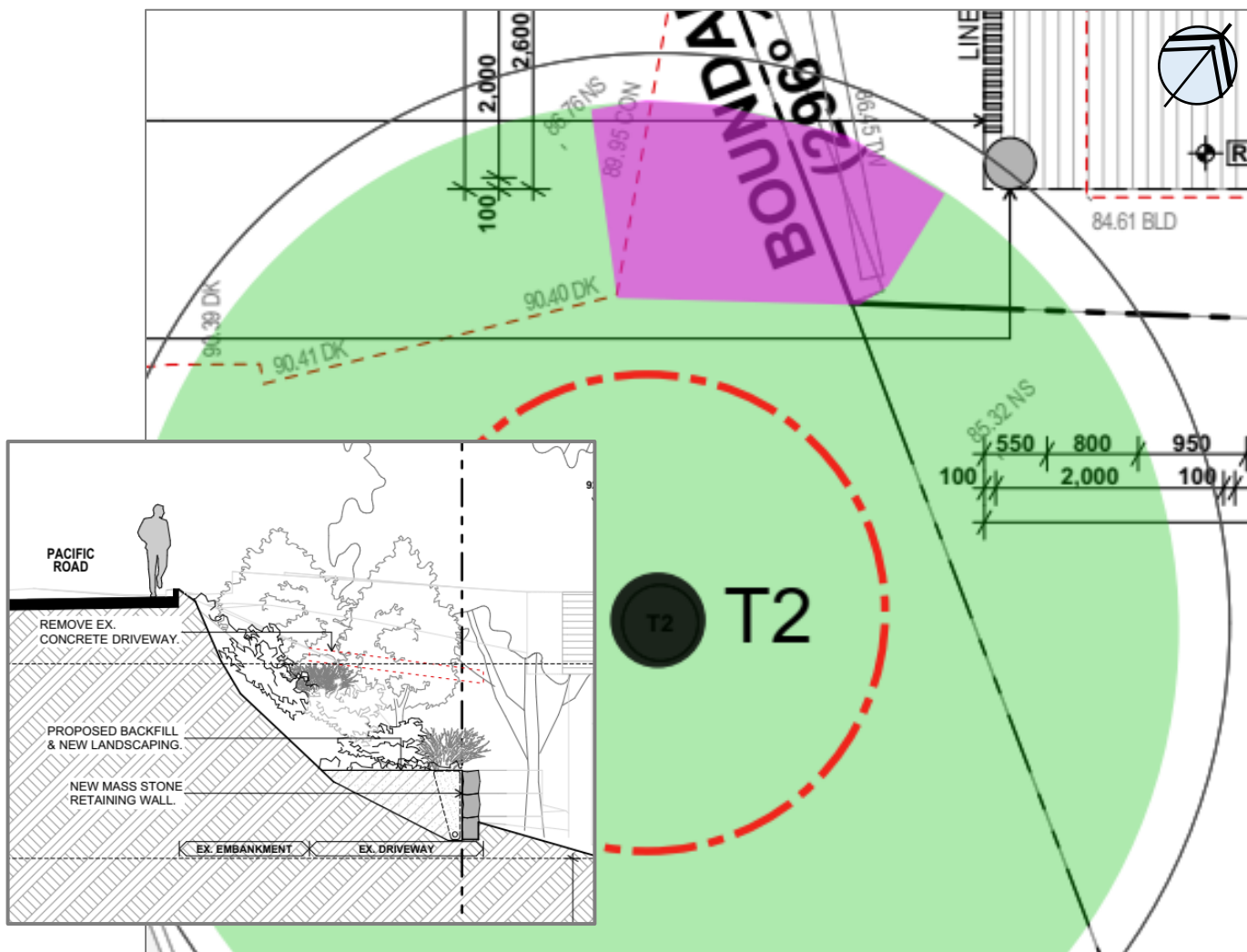


Figure 2 – Tree 2 encroachment – Excerpt of Granny Flat Plan, dwg no. DA.03, Rev A, 29/8/24 authored by Gartner Trovato Architects. Red hashed circle indicates SRZ, green circle denotes the TPZ. Pink shading notes encroachment. Marked up by C Hughes. INSET – Dwg no. DA-08, Sections Plan. NOT TO SCALE.



3.2.6 **Tree 3** Smooth-barked Apple – located within adjoining neighbouring property.

Structural Root Zone impacts:

- The proposed Recreation Room area of the Granny Flat and pier for the suspended driveway fall within the SRZ. See further discussion below.

Tree Protection Zone impacts:

- The proposed recreation room area, entry stairs for the Granny Flat and one (1) pier for the suspended driveway fall within the TPZ of this specimen (see Figure 3 below/next page). This equates to a 16.9% encroachment and falls within the SRZ, considered *major* encroachment under AS4970 and triggers Clause 3.3.4 of AS4970-2009.
- The relevant points under Clause 3.3.4 are, (b) *The potential loss of root mass resulting from the encroachment: number and size of roots*, (g) *The presence of existing or past structures or obstacles affecting root growth* and (h) *Design factors*.
- In relation to point (b) and (g), there is an existing driveway located in the areas of the proposed recreation room and pier for driveway, whilst the existing concrete driveway is noted to be suspended on the survey plan, it appears to be near ground level in this section (see Plate 1 below/next page), additionally it appears to be sat on fill rather than a pier design, however only an Engineer could confirm this. The Granny Flat design also sits just on the existing driveway grade, the potential of root loss is likely to be minimal.
- The stairs fall just outside the existing driveway footprint, however they have a RL of 85.92 and existing ground level is a maximum of RL 85 in this area, minimal excavation is likely.
- Impacts on tree health and condition are not foreseen provided excavation within the SRZ is undertaken with Project Arborist involvement.

Pruning impacts:

- Minor to moderate pruning will be required to allow vehicular access along suspended driveway and driveway cross over.



Plate 1 – Driveway appears to be close to grade in this location. Tree 3 noted with arrow.

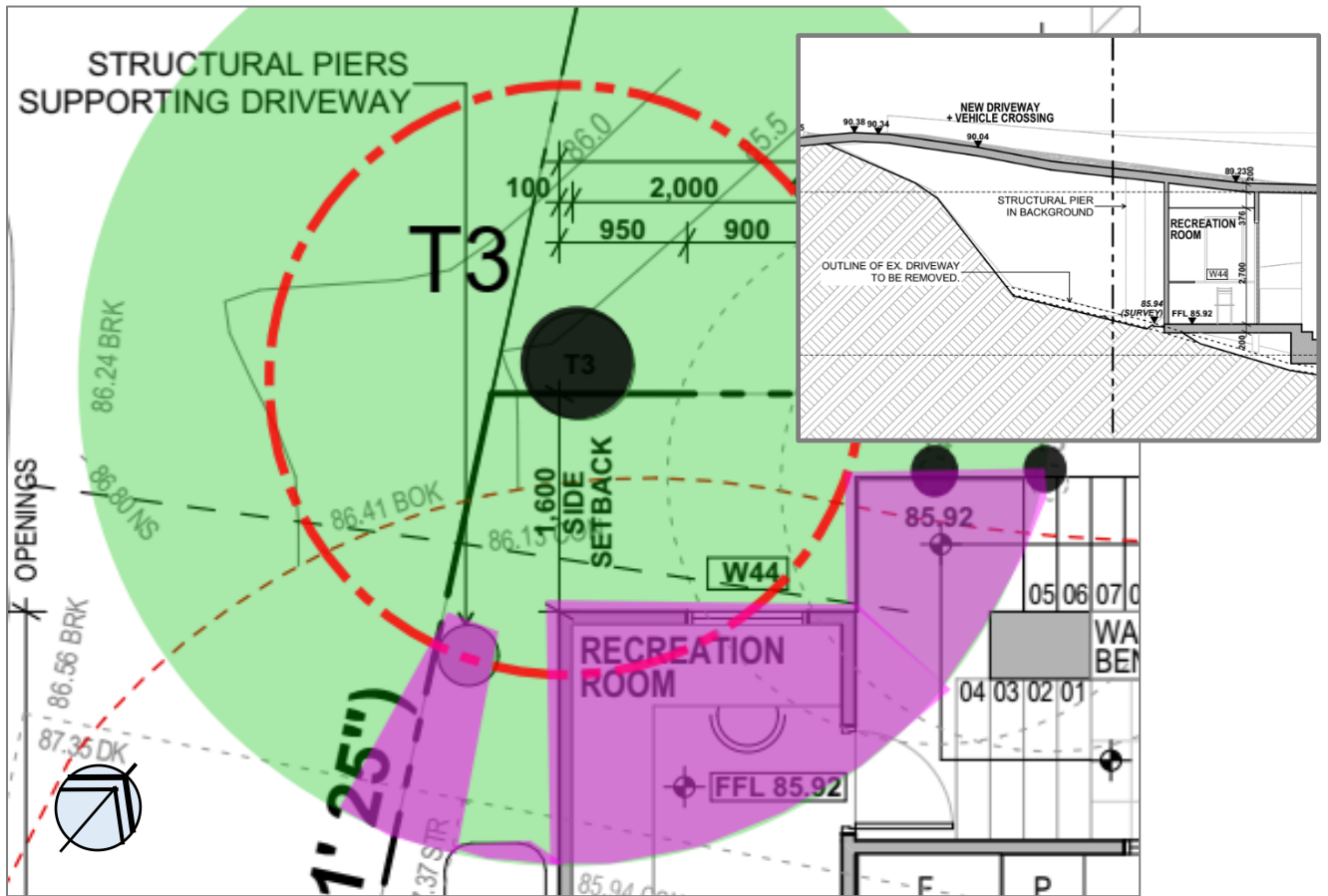


Figure 3 – Tree 3 encroachment calculation – Excerpt of Granny Flat Plan, dwg no. DA.03, Rev A, 29/8/24 by Gartner Trovato. Red hashed circle SRZ, green circle TPZ. Pink shading notes encroachment. Marked up by C Hughes. INSET – Dwg no. DA-08, Sections Plan. NOT TO SCALE.

## 4 Conclusions

- 4.1.1 A total of ten (10) trees are included in this Arboricultural Impact Assessment.
- 4.1.2 No assessed tree has been identified as endangered or threatened under State or Federal Government legislation nor is the site identified on the Department of Planning and Environments Biodiversity Values Map (BV).
- 4.1.3 Five (5) trees are non-prescribed under the Pittwater21 Development Control Plan (P21DCP) and thus impacts not discussed – Tree 6-10.
- 4.1.4 Two (2) assessed subject site trees are located within the footprint and would require removal to facilitate the proposal – Tree 4 and 5.
- 4.1.5 Two (2) assessed trees located on neighbouring/Council property (Tree 1 and 2) will incur ‘minor’ encroachment as per AS4970 and negative impact on tree health is considered unlikely.
- 4.1.6 One (1) assessed tree (Tree 3) will incur ‘major’ encroachment under AS4970, however existing site structures, the potential of root loss and design methods have been considered and tree retention and viability has been deemed possible.

## 5 Recommendations

### 5.1 Trees Proposed for removal

- 5.1.1 Tree removal is to be undertaken in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998) and Safe Work Guide to Managing Risks of Tree Trimming and Removal Work 2016. Tree pruning shall be in accordance with the Work Health and Safety Act 2011, the Work Health and Safety (WHS) Regulations 2017 and AS4373 Pruning of Amenity Trees.
- 5.1.2 Tree removal is subject to permit approval from the relevant consent authority.

### 5.2 Project Arboriculturist

- 5.2.1 A Project Arboriculturist (PA) shall be engaged prior to works commencing on the site.
- 5.2.2 A **tree specific Tree Protection Plan**, once Councils Conditions of Consent are issued, shall be established to ensure compliance with the relevant Notice of Determination and in line with Construction Plans/Drawings prior to the issue of the Construction Certificate.
- 5.2.3 The PA must have a minimum Australian Qualification Framework Level 5 (AQF5) or above in Arboriculture.
- 5.2.4 Duties of the PA shall include, but not be limited to:
  - Liaising with the Project Manager/Head Contractor/Site Manager to confirm the tree protection and other specific tree protection requirements prior to site works commencing.
  - Inspection of Tree Protection Devices and supervision of works as recommended in this report or as specified in any Conditions of Consent associated with an approved development application.
  - Provision of Compliance/Occupation Certification if, and when required.

### 5.3 Minimising Impacts on Trees to be Retained

- A specific Tree Protection Plan, once Councils Conditions of Consent are issued, shall be established to ensure compliance with the relevant Notice of Determination.
- This Tree Protection Plan requires referral to Construction Plans/Drawings.
- This Tree Protection Plan needs to be established prior to demolition works.

### 5.4 General Tree Protection Measures

- 5.4.1 Works within TPZs of trees to be retained shall be done under direct supervision of an AQF Level 5 Consulting Arborist and shall comply with the Tree Protection Plan.
- 5.4.2 Non-destructive excavation is to be used when working within the TPZ of trees to be retained and must be supervised by an AQF level 5 consulting arborist.
- 5.4.3 Encroachment within the TPZ must be offset with a range of mitigation measures to ensure that impacts to trees to be retained are reduced or restricted wherever possible. Mitigation must be increased relative to the level of encroachment within the TPZ to ensure trees to be retained remain viable. This can mean (but is not limited to) specific watering over warmer months, carbohydrate/mycorrhizal treatments and regular monitoring of tree condition.
- 5.4.4 Activities such as replacing or installing footpaths/driveways/retaining walls shall be done with minimal ground and root disturbance within the TPZs of trees that are proposed to be retained.
- 5.4.5 Any pruning required (including clearances for vehicle movements or other construction impacts) will need to be assessed and supervised by an AQF level 5 consulting arborist and is subject to consent authority approval. This shall be specified in the Tree Protection Plan.
- 5.4.6 If temporary access for machinery is required within the TPZ of trees to be retained, ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Ground protection may include a permeable membrane such as geotextile fabric beneath a layer of mulch (minimum 75-100mm thickness), crushed rock or rumble boards. This is to be directed within the Tree Protection Plan.
- 5.4.7 Any additional construction activities within the TPZ of trees to be retained must be assessed and written in the Tree Protection Plan. All activities require approval by the Project Arborist and must comply with AS 4970-2009 - Protection of trees on development sites.

### 5.5 General arboricultural advice

#### 5.5.1 Tree and Root Pruning

- Any pruning required is to be assessed and approved by the Council/PA, prior to undertaking any of this type of work.
- Pruning shall not be undertaken by unqualified site personnel at any time.
- Pruning of branches must be undertaken by a minimum AQF Level 3 arborist in accordance with the Australian Standard AS4373-2007 *Pruning of amenity trees*,

- Unless otherwise approved by the Conditions of Development Consent, or by separate application and approval by the consent authority, pruning is to be limited to cutting of limbs less than 80mm diameters, and no more than 10% total live material removed.

#### 5.5.2 Stockpiling and location of site sheds

- The project arboriculturist must be consulted prior to placing any items within a tree's TPZ.
- Where stockpiling must be located within the TPZ offset of trees to be retained, the existing/undisturbed natural ground must be covered with thick, coarse mulch to a minimum 75-100mm thickness.
- Large, or bulky materials (non-contaminating) can be stacked on wooden pallets or boards placed over the mulch.
- Tarpaulins (or similar) placed on boards or pallets on top of mulch shall be used to prevent loose or potentially contaminating materials from moving into the soil profile within the TPZ of trees or within 10m upslope of trees.
- Where site sheds must be located within the TPZ offset of a tree/s, the shed must be fully elevated on all sides with a minimum 300mm between existing ground and the floor/floor bearers. Isolated pad footings must be carefully dug by hand and not damage or sever any roots greater than 20mm diameters.
- Any conflict between footing locations and larger roots (i.e. 20mm  $\emptyset$  plus) must be brought to the attention of the project arboriculturist who is to provide practical alternatives that do not include unnecessary tree root removal.

#### 5.5.3 Fill Material

- Placement of fill material within the TPZ of trees to be retained should be avoided where possible. Where placement of fill cannot be avoided, the material should be in accordance with specification set out within Appendix 6.
- The fill material should be consolidated by hand to minimise compaction of the underlying soil.
- Permeable geotextile may be used beneath the sub-base to prevent migration of the stone into the sub-grade. No fill material shall be placed in direct contact with the trunk.

#### 5.5.4 Pavements

- Pavements should be avoided within the TPZ of trees to be retained where possible.
- Proposed paved areas within the TPZ of trees to be retained is to be placed above grade to minimise excavations within the root zone, avoiding root severance and damage.

#### 5.5.5 Fencing and walls within the SRZ and TPZ of retained trees.

- Where fencing and/or masonry walls are to be constructed along site boundaries, they must provide for the presence of any living woody tree roots greater than 50mm diameter.
- Hand digging must occur within the SRZ of trees to be retained.
- For masonry walls/fences it may be acceptable to delete continuous concrete strip footings and replace with suspended in-fill panels (e.g. steel or timber pickets, lattice etc) fixed to pillars.

#### 5.5.6 Landscaping within tree root zones.

- The level of introduced planting media into any proposed landscaped areas within the TPZ is not to be greater than 75mm depth, and be of a coarse, sandy material to avoid development of soil layers that may impede water infiltration.
- Appropriate container size of proposed plants within the SRZ of trees should be determined prior to purchase of plants. Otherwise, any proposed landscaping within the SRZ must consist of tubestock only. This is required to ensure that damage to tree roots is avoided.
- Mattocks and similar digging instruments must not be used within the TPZ of the trees. Planting holes should be dug carefully by hand with a garden trowel, or similar small tool.
- Where possible, do not plant canopy trees beneath, or within 6 - 8m of overhead lines.

#### 5.5.7 Other

- No washing or rinsing of tools or other equipment, preparation of any mortars, cement mixing, or brick cutting is to occur within 8m upslope of any palms or trees to be retained.
- Regular monitoring of the trees during development works for unforeseen changes or decline will help maintain the trees in a healthy state.

## 6 References

- 6.1.1 Barrell, J (1995) Pre-development Tree Assessment from Trees and Building Sites, Eds. Watson & Neely, International Society of Arboriculture, Illinois.
- 6.1.2 Hadlington, P. & Johnston, J. (1988) Australian Trees: Their Care & Repair. University of NSW Press, Kensington.
- 6.1.3 Mattheck, C. & Breloer, H. (1994) The Body Language of Trees: A handbook for failure analysis. Research for Amenity Trees No. 4, The Stationery Office, London.
- 6.1.4 Standards Australia AS4373-2007: Pruning of Amenity Trees, Standards Australia, Sydney.
- 6.1.5 Standards Australia AS4970-2009 Protection of trees on development sites, Standards Australia, Sydney.
- 6.1.6 <https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap> – Biodiversity Values Mapping Portal accessed 22/8/2024.
- 6.1.7 [www.treetec.net.au/tpz\\_srz\\_dbh\\_calculator](http://www.treetec.net.au/tpz_srz_dbh_calculator) - accessed 22/8/2024.

Report prepared by Chantalle Hughes – August 2024




### Chantalle Brackenridge Hughes

#### Consulting arboriculturist and horticulturist

Tree Surgery Certificate

Advanced Certificate Urban Horticulture

Diploma of Horticulture (Arboriculture) *Credit*

ISA Tree Risk Assessment Qualification (TRAQ) updated 2022

Accredited Member of Institute of Australian Consulting Arboriculturists (IACA)

Affiliate Member of the Local Government Tree Resources of Australia (LGTRA)

Member of the International Society of Arboriculture (ISA)

## 7 Appendices

### Appendix 1 – Terms and Definitions

#### Age classes

- Y** Young refers to an established but juvenile tree.
- SM** Semi-mature refers to a tree at growth stages between immaturity and full size.
- EM** Early-mature refers to a tree close to full sized still actively growing.
- 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 full sized tree with little capacity for growth that is entering or has entered decline.

**Co-dominant:** refers to stems or branches equal in size and relative importance.

**Condition/Structure:** refers to the tree’s form and growth habit, as modified by its environment (aspect, suppression by other trees, soils) and the state of the scaffold (i.e. trunk and major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition/structure.

**Deadwood:** refers to any whole limb that no longer contains living tissues (e.g. live leaves and/or bark). Some dead wood is common in a number of tree species.

**Diameter at Breast Height (DBH):** Refers to the tree trunk diameter at breast height (1.4 metres above ground level).

**Epicormic growth:** adventitious branches that are considered to be a weak attachment in the short term due to minimal wood formation. There are generally formed following storm-related branch breakage or poor pruning practices. Should sufficient holding wood form in the long-term this growth is less of an issue.

**Hazard:** refers to anything with the potential to harm health, life or property.

**Health:** Refers to the tree’s vigour as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion, and the degree of dieback.

**Secondary Stem:** refers to stems or branches with one of unequal size and relative importance.

**SRZ:** refers to the Structural Root Zone of the tree, this is the area required for tree stability.

**TPZ:** refers to the Tree Protection Zone of the tree, this is the primary method of protecting trees, it is a combination of the root area and the canopy and the SRZ is located within it.

**Visual Tree Assessment (VTA):** a procedure of defect analysis developed by Mattheck and Breloer (1994) that uses the growth response and form of trees to detect defects.



## Appendix 2 – STARS – Significance of a Tree Assessment Rating System (IACA 2010)©

### Estimated Life Expectancy

STARS refers to an estimated life expectancy of a tree, Treeism utilises the ULE categories to clarify how this was obtained/decided.

ULE categories (after Barrell 1996, Updated 01/04/01)

The five categories and their sub-groups are as follows:

1. Long ULE - tree appeared retainable at the time of assessment for over 40 years with an acceptable degree of risk, assuming reasonable maintenance:
  - a) Structurally sound trees located in positions that can accommodate future growth
  - b) Trees which could be made suitable for long term retention by remedial care
  - c) Trees of special significance which would warrant extraordinary efforts to secure their long term retention
2. Medium ULE - tree appeared to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk, assuming reasonable maintenance:
  - a) Trees which may only live from 15 to 40 years
  - b) Trees which may live for more than 40 years but would be removed for safety or nuisance reasons
  - c) Trees which may live for more than 15 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
  - d) Trees which could be made suitable for retention in the medium term by remedial care
3. Short ULE - tree appeared to be retainable at the time of assessment for 5 to 15 years with an acceptable degree of risk, assuming reasonable maintenance:
  - a) Trees which may only live from 5 to 15 years
  - b) Trees which may live for more than 15 years but would be removed for safety or nuisance reasons
  - c) Trees which may live for more than 15 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
  - d) Trees which require substantial remediation and are only suitable for retention in the short term.
4. Removal - trees which should be removed within the next 5 years:
  - a) Dead, dying, suppressed or declining trees because of disease or inhospitable conditions
  - b) dangerous trees through instability or recent loss of adjacent trees
  - c) Dangerous trees because of structural defects including cavities, decay, included bark, wounds or poor form
  - d) Damaged trees that are clearly not safe to retain
  - e) Trees which may live for more than 5 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
  - f) Trees which are damaging or may cause damage to existing structures within the next 5 years
  - g) Trees that will become dangerous after removal of other trees for the reasons given in (a) to (f)
  - h) Trees in categories (a) to (g) that have a high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review
5. Small, young or regularly pruned - Trees that can be reliably moved or replaced:
  - a) small trees less than 5m in height
  - b) young trees less than 15 years old but over 5m in height
  - c) formal hedges and trees intended for regular pruning to artificially control growth

## Landscape Significance

The landscape significance of a tree is an essential criterion for establishing the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance and estimated life expectancy (*utilising Useful Life Expectancy*) of an individual tree has been defined, the retention value can be determined.

### Tree Significance - Assessment Criteria

#### 1. High Significance in landscape.

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

#### 2. Medium Significance in landscape.

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area;
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street;
- The tree provides a fair contribution to the visual character and amenity of the local area;
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

#### 3. Low Significance in landscape.

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings;
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area;
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen;
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions;
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms;
- The tree has a wound or defect that has potential to become structurally unsound.

- Environmental Pest / Noxious Weed Species:
- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties;
  - The tree is a declared noxious weed by legislation.
- Hazardous/Irreversible Decline:
- The tree is structurally unsound and/or unstable and is considered potentially dangerous;
  - The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are designed for individual trees only but can be applied to a monocultural stand in its entirety e.g. hedge.

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd and Andrew Morton in June 2001.


		Significance				
		1. High	2. Medium	3. Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	Dead					
Legend for Matrix Assessment						
						
		<b>Priority for Retention (High)</b> -These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 <i>Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone.				
		<b>Consider for Retention (Medium)</b> -These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.				
		<b>Consider for Removal (Low)</b> -These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.				
		<b>Priority for Removal</b> -These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.				

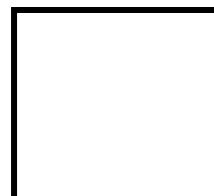
Table 1 - Tree Retention Value - Priority Matrix.

IACA, 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, Australia, [www.iaca.org.au](http://www.iaca.org.au)

Appendix 3 – Schedule of Assessed Trees – Site inspection 13/8/2024, 7 Pacific Road, Palm Beach.

Tree No.	Genus & species Common Name	Ht (m)	Sp (m)	DBH (mm)	AB (mm)	Age	V	C	Comments	ULE	TSR	RV	SRZ (m)	TPZ (m)	TPZ (area)	TPZ encroachment (area %)
1	<i>Pittosporum undulatum</i>   Sweet Pittosporum	2	3	-	250	Y	G	P	Located on Council managed land. Locally native species. Regrowth from stump.	5A	M	L	1.8	3.0	28	0
2	<i>Eucalyptus robusta</i>   Swamp Mahogany	14	18	*380	*450	M	G	G-F	Located on Neighbouring property. Locally native species. Canopy held high over subject site. High percentage of epicormic growth.	2A	H	H	2.1	4.6	65	6.5
3	<i>Angophora costata</i>   Smooth-barked Apple	16	16	*300	*380	M	G	G-F	Located on Neighbouring property. Locally native species. Works in this section on existing driveway.	2A	H	H	2.2	3.6	41	16.9
4	<i>Syzygium australe</i>   Brush Cherry	9	7	140/130 (191)	200	M	G-F	F	Located on subject site. Locally native species. Included union, sharp 'ear'. Sooty mould and psyllid infected.	2A	M	M	1.7	2.3	17	100
5	<i>Syzygium australe</i>   Brush Cherry	9	7	180	220	M	G-F	G-F	Located on subject site. Locally native species. Sooty mould and psyllid infected.	2A	M	M	1.8	2.2	15	100
6	<i>Archontophoenix cunninghamiana</i>   Bangalow Palm	12	3	100	N/A	M	G	G	Located on subject site. Introduced native species. Exempt under P21 DCP.	2A	L	L	N/A	4.0	49	N/A
7	<i>Archontophoenix cunninghamiana</i>   Bangalow Palm	8	2	100	N/A	M	G	G	Located on subject site. Introduced native species. Exempt under P21 DCP	2A	L	L	N/A	3.0	28	N/A
8	<i>Archontophoenix cunninghamiana</i>   Bangalow Palm	8	2	100	N/A	M	G	G	Located on subject site. Introduced native species. Exempt under P21 DCP	2A	L	L	N/A	3.0	28	N/A
9	<i>Archontophoenix cunninghamiana</i>   Bangalow Palm	8	2	100	N/A	M	G	G	Located on subject site. Introduced native species. Exempt under P21 DCP	2A	L	L	N/A	3.0	28	N/A
10	<i>Archontophoenix cunninghamiana</i>   Bangalow Palm	8	2	100	N/A	M	G	G	Located on subject site. Introduced native species. Exempt under P21 DCP	2A	L	L	N/A	3.0	28	N/A

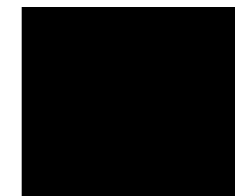
KEY



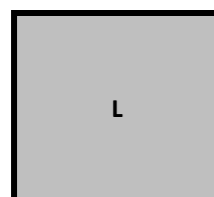
Trees to be retained.



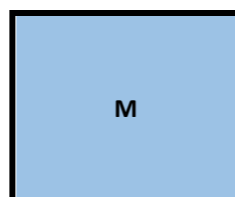
Dead/non-prescribed tree or palm on site that may be removed or retained without Development Consent or Tree Management Permit.



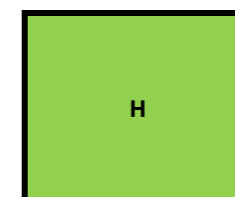
Trees proposed for removal.



Low Retention Value-These trees are not considered important for retention.



Medium Retention Value-These trees may be retained & protected.



High Retention Value -These trees are considered important for retention and should be retained and protected.

\* DBH is visually estimated (usually adjoining trees or those that are hard to access). AB – above *buttress roots*. AGL - above ground level.

Figures in brackets indicates the determined DBH and TPZ for a multi-stemmed tree based on the formula shown in Appendix A of AS4970-2009.

**NOTE:** According to AS4970, the TPZ of palms, other monocots, cycads, and tree ferns should not be less than 1m outside the crown projection. The AS4970 formula for calculating the SRZ of a tree does not apply to palms, other monocots, cycads, and tree ferns.

**H** refers to the approximate height of a tree in metres, from base of stem to top of tree crown.

**Sp** refers to the approximate and average spread in metres of branches/canopy (the 'crown') of a tree.

**DBH** refers to the approximate diameter of tree stem at breast height i.e. 1.4 metres above ground (unless otherwise noted) and expressed in metres.

**Age** refer to Appendix 1 -Terms and Definitions for more detail.

**V** refers to the tree's vigour (health) Refer to Appendix 1 -Terms and Definitions for more detail.

**C** refers to the tree's structural condition. Refer to Appendix 1 -Terms and Definitions for more detail.

**ULE** refers to the estimated *Useful Life Expectancy* of a tree. Refer to Appendix 2.

**TSR** The *Tree Significance Rating* considers the importance of the tree because of its prominence in the landscape and its amenity value, from the point of view of public benefit. Refer to Appendix 2 – Significance of a Tree Assessment Rating for more detail.

**RV** Refers to the retention value of a tree, based on the tree's ULE *and* Tree Significance. Refer to Appendix 2 – Significance of a Tree Assessment Rating for more detail.

**SRZ** Structural Root Zone (SRZ) refers to the critical area required to maintain stability of the tree. Refer to Appendix 1 -Terms and Definitions for more detail. This is not calculated/does not apply for palms, cycads, tree ferns or monocot species.

**TPZ** Tree Protection Zone (TPZ) refers to the *tree protection zones* for trees to be retained. Refer to Appendix 1 -Terms and Definitions for more detail. For palms, cycads, tree ferns or monocot species it is calculated to be no less than 1m outside the crown projection.

## Appendix 4 – Photographs



Plate 1 – Tree 1 – Tree is located on Council managed land, it is regrowth from stump only.



Plate 2 – Tree 2 – Ascribed a high RV, located on neighbouring property. Inset – Arrow notes tree stem.



Plate 3 – Tree 3 – Arrow notes tree and inset. Located on neighbouring property. Whilst driveway noted as ‘suspended’ on Survey Plan, it appears to be close to grade near this tree.





**Plate 4** – Trees 4 and 5. Tree 4 noted with arrow and inset of stem inclusion. Both trees proposed for removal.



Plate 5 – Trees 6-10. All exempt species.

# Appendix 5 – Tree Location Plan

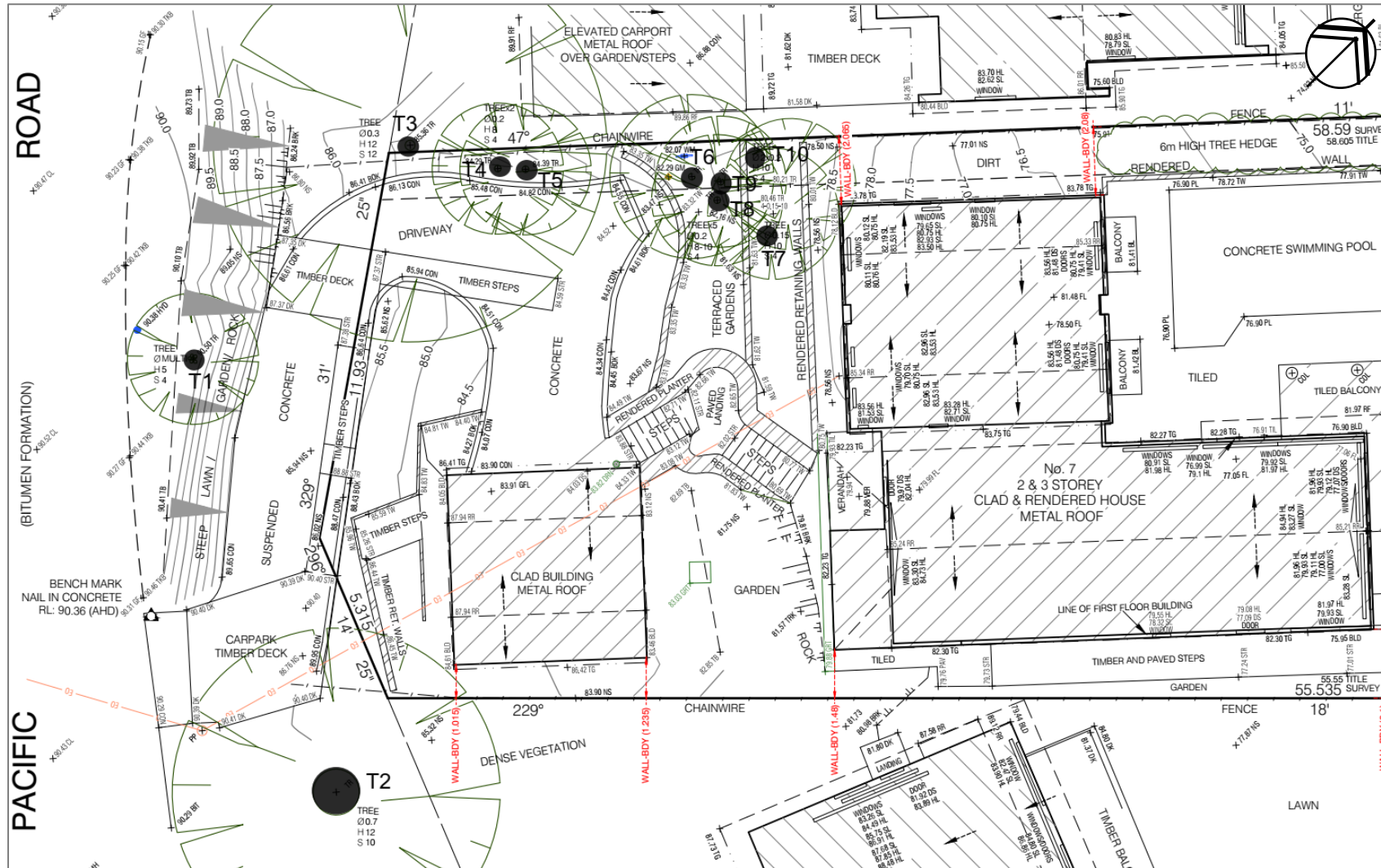


Figure 1 –Excerpt of Survey Plan, by C.M.S Surveyors Pty Ltd, dwg no. 6424Bdetail, Issue 3, dated 31/08/2015 – 01/05/2024. Marked up by C Hughes (NOT TO SCALE).

Appendix 6 – Encroachment calculations - Visual

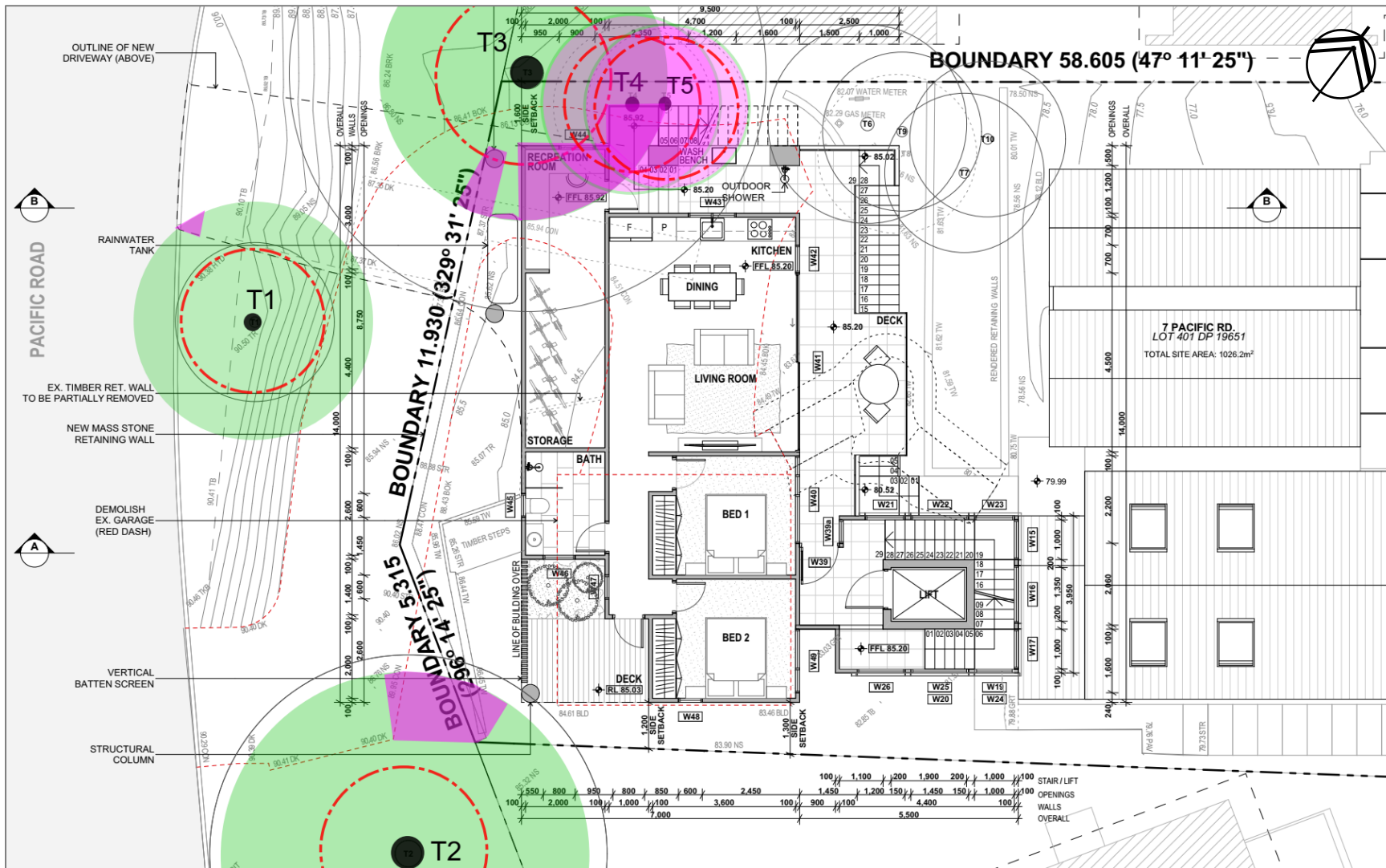


Figure 2 –Excerpt of Granny Flat Plan, dwg no. DA-03, dated 9/8/2024 by Gartner Trovato Architects. Red hashed circle SRZ, green shaded circle TPZ and pink shading estimated encroachment. Marked up by C Hughes (NOT TO SCALE).