

# Arboricultural Impact Assessment Report

103 Paterson St, Byron Bay

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## **1. Introduction**

Peter Gray has compiled this report on request from Planit Consulting who are managing the development of the land at 103 Paterson St, Byron Bay Lot 101 in DP 839601. The land is in a residential area of Byron Bay. The property owners propose to demolish the existing dwelling on the land and construct 14 new dwelling spaces.

There are a number of trees growing on and adjacent to the property that will be affected by the proposed development.

A development application has been made to Byron Shire Council and Council has issued a Request for Further Information that raised some concerns regarding the extent of tree removal from the site. Following the RFI, some changes have been made to the proposal that would increase the number of trees proposed to be retained in the development.

## **2. Scope**

This report describes the trees growing on the land and adjacent properties that have the potential to be affected by the proposed development. The health, condition and retention value of the trees is assessed. The potential impact of the proposed development on the trees is considered and recommendations for the management of the trees in the development are made. Where trees are retained in the development, recommendations for their protection during development are made.

## **3. Method**

The trees were assessed visually from the ground. The diameter at breast Height (DBH) was measured at 1.4 m above the ground. The height of the trees was measured using a hypsometer. The methods recommended in the Australian Standard *AS 4970-2009 Protection of trees on development sites* were used to assess the trees.

The health and condition of the trees was assessed using the Visual Tree Assessment method (Mattheck & Breloer 2003). This is a method of assessing trees using the body language or shape and features of the tree to indicate its condition. These tree shapes or body language are a reliable indicator of the underlying condition of that part of the tree. The trees were identified using the signs and features present at the time of inspection.

The information in this report is derived from a site visit carried out on 16<sup>th</sup> March, 2020 by Peter Gray of Northern Tree Care and from plans supplied by Planit Consulting. The plans are:

- *Paterson St.* Chris Clout Design. Revision 4. 21/2/21.
- *2020.03.05 Tree Section.* Chris Clout Design.

## 4. Description

The subject property is located in a residential area of Byron Bay (see Attachment 1. Location Plan). The land is zoned R2 Medium Density Residential. The land fronts Paterson St to the west and slopes down to a lower section. There is a block of residential units on the southern side of the property and residences and a public reserve on the northern and eastern side. There is an existing residence on the higher area near Paterson St. A concrete driveway runs down the northern side of the site to access the lower area (see Attachment 2. Aerial Photo).

The soil on the elevated section is clay loam and the soil in the lower section is clay subject to waterlogging. There are a number of planted and naturally grown trees on the site. The garden around the existing residence has a number of planted trees including Palm trees as well as naturally grown mature aged Swamp Mahogany.

The vegetation of the lower section is mainly Broad Leaf Paperbark with some Cheese trees and Alexander Palms. One of the trees subject of this report is growing on a Council reserve to the north.

The trees are described in detail in **Table 1. Tree Data** below.

**Table 1. Tree Data**

| Tree # | Name                                                   | Condition | Height<br>m | DBH<br>mm | DLT<br>mm | Crown<br>m | TPZ<br>m | Comments                                        |
|--------|--------------------------------------------------------|-----------|-------------|-----------|-----------|------------|----------|-------------------------------------------------|
| 1      | Coastal Cypress<br><i>Callitris columellaris</i>       | Good      | 9           | 600       | 630       | 4          | 7.2      | Growing on the adjoining property               |
| 2      | Swamp Mahogany<br><i>Eucalyptus robusta</i>            | Good      | 16          | 440       | 500       | 5          | 5.3      | Dead sticks in the crown                        |
| 3      | Swamp Mahogany<br><i>Eucalyptus robusta</i>            | Good      | 16          | 440       | 500       | 6          | 5.3      | Dead stick in the crown                         |
| 4      | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i> | Good      | 9           | 330       | 400       | 6          | 4.0      | Small tree growing beside the existing driveway |
| 5      | Tuckeroo<br><i>Cupaniopsis anacardioides</i>           | Good      | 9           | 130       | 150       | 2          | 2.0      | Small tree                                      |
| 6      | Swamp Mahogany<br><i>Eucalyptus robusta</i>            | Good      | 12          | 250       | 320       | 4          | 3.0      | Small tree                                      |
| 7      | Swamp Mahogany<br><i>Eucalyptus robusta</i>            | Good      | 19          | 550       | 650       | 8          | 6.6      | Large mature tree                               |
| 8      | Sweet Viburnum<br><i>Viburnum odorissimum</i>          | Fair      | 7           | 300       | 330       | 5          | 3.6      | Planted exotic species                          |
| 9      | Paperbark<br><i>Melaleuca</i> sp                       | Fair      | 4           | 210       | 250       | 4          | 2.5      | Planted tree                                    |

| Tree # | Name                                                       | Condition | Height<br>m | DBH<br>mm | DLT<br>mm | Crown<br>m | TPZ<br>m | Comments                                    |
|--------|------------------------------------------------------------|-----------|-------------|-----------|-----------|------------|----------|---------------------------------------------|
| 10     | Silky Oak<br><i>Grevillea robusta</i>                      | Poor      | 16          | 280       | 330       | 4          | 3.4      | Planted tree                                |
| 11     | Alexander Palm<br><i>Archontophoenix alexandrae</i>        | Good      | 8           | 250       | -         | 4          | 3.0      | Group of palms                              |
| 12     | Bangalow Palm<br><i>Archontophoenix<br/>cunninghamiana</i> | Good      | 7           | 200       | -         | 4          | 3.0      | 3 stemmed tree                              |
| 13     | Swamp Mahogany<br><i>Eucalyptus robusta</i>                | Good      | 23          | 660       | 750       | 8          | 7.9      | Mature tree<br>beside the<br>existing drive |
| 14     | Swamp Mahogany<br><i>Eucalyptus robusta</i>                | Good      | 16          | 480       | 520       | 5          | 5.8      | Close to the<br>northern<br>boundary        |
| 15     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i>     | Good      | 11          | 630       | 700       | 8          | 7.6      | Decurrent form                              |
| 16     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i>     | Good      | 10          | 730       | 800       | 12         | 8.8      | Decurrent form                              |
| 17     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i>     | Good      | 8           | 550       | 600       | 14         | 6.6      | Medium sized<br>tree                        |
| 18     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i>     | Fair      | 6           | 200       | 250       | 5          | 2.4      | Small<br>suppressed tree<br>with vine       |
| 19     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i>     | Fair      | 12          | 500       | 550       | 6          | 6.0      | Leaning vine in<br>crown                    |
| 20     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i>     | Good      | 9           | 680       | -         | 14         | 8.2      | Large spreading<br>tree                     |
| 21     | Cheese Tree<br><i>Glochideon sumatranum</i>                | Fair      | 5           | 280       | -         | 5          | 3.4      | Leaning,<br>suppressed                      |
| 22     | Alexander Palm<br><i>Archontophoenix alexandrae</i>        | Good      | 7           | 280       | -         | 3          | 2.5      | Undesirable<br>species                      |
| 23     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i>     | Good      | 9           | 410       | 420       | 6          | 4.9      | Water vine in<br>crown                      |
| 24     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i>     | Good      | 9           | 340       | +         | 6          | 4.1      | Medium sized<br>tree in a group             |
| 25     | Cheese Tree<br><i>Glochideon sumatranum</i>                | Good      | 8           | 380       | -         | 3          | 4.6      | Small tree                                  |
| 26     | Pink Euodia<br><i>Melicope elleryana</i>                   | Good      | 6           | 140       | -         | 4          | 2.0      | Small tree                                  |
| 27     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i>     | Fair      | 7           | 560       | -         | 10         | 6.7      | Growing on the<br>adjacent reserve.         |

Harden et al 2009: Brooker and Kleinig 1999.

## 5. Tree Significance

When considering the retention value of trees, two major issues were considered. They are the significance of the tree and its estimated life expectancy.

When assigning a value to the significance of the tree, a number of factors should be considered (Moreton 2003). The significant outcomes have been determined in 6. Tree Retention Values.

**Table 2. Significance of Tree in the Landscape.**

| Tree # | Name                                                   | Condition | Vigour | Protected | Environmental value | Amenity value | Significance |
|--------|--------------------------------------------------------|-----------|--------|-----------|---------------------|---------------|--------------|
| 1      | Coastal Cypress<br><i>Callitris columellaris</i>       | Good      | Good   | Yes       | Very High           | High          | Significant  |
| 2      | Swamp Mahogany<br><i>Eucalyptus robusta</i>            | Good      | Good   | Yes       | High                | High          | Very High    |
| 3      | Swamp Mahogany<br><i>Eucalyptus robusta</i>            | Good      | Good   | Yes       | High                | High          | Very High    |
| 4      | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i> | Good      | Good   | Yes       | High                | Medium        | High         |
| 5      | Tuckeroo<br><i>Cupaniopsis anacardioides</i>           | Good      | Good   | Yes       | High                | Medium        | High         |
| 6      | Swamp Mahogany<br><i>Eucalyptus robusta</i>            | Good      | Poor   | Yes       | High                | Medium        | High         |
| 7      | Swamp Mahogany<br><i>Eucalyptus robusta</i>            | Good      | Good   | Yes       | High                | High          | Very High    |
| 8      | Sweet Viburnum<br><i>Viburnum oderissimum</i>          | Fair      | Poor   | No        | Low                 | Low           | Low          |
| 9      | Paperbark<br><i>Melaleuca</i> sp                       | Fair      | Poor   | Yes       | Medium              | Low           | Low          |
| 10     | Silky Oak<br><i>Grevillea robusta</i>                  | Poor      | Poor   | No        | Medium              | Medium        | Low          |
| 11     | Alexander Palm<br><i>Archontophoenix alexandrae</i>    | Good      | Good   | No        | Low                 | Medium        | Low          |
| 12     | Bangalow Palm<br><i>Archontophoenix cunninghamiana</i> | Good      | Good   | Yes       | High                | Medium        | Moderate     |
| 13     | Swamp Mahogany<br><i>Eucalyptus robusta</i>            | Good      | Good   | Yes       | High                | High          | Very High    |
| 14     | Swamp Mahogany<br><i>Eucalyptus robusta</i>            | Good      | Good   | Yes       | High                | Medium        | Very High    |
| 15     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i> | Good      | Good   | Yes       | High                | Medium        | High         |
| 16     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i> | Good      | Good   | Yes       | High                | Medium        | High         |

**Significance (continued).**

| Tree # | Name                                                   | Condition | Vigour | Protected | Environmental value | Amenity value | Significance |
|--------|--------------------------------------------------------|-----------|--------|-----------|---------------------|---------------|--------------|
| 17     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i> | Good      | Good   | Yes       | High                | Medium        | High         |
| 18     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i> | Fair      | Good   | Yes       | High                | Medium        | High         |
| 19     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i> | Fair      | Good   | Yes       | High                | Medium        | High         |
| 20     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i> | Good      | Fair   | Yes       | High                | Low           | Moderate     |
| 21     | Cheese Tree<br><i>Glochideon sumatranum</i>            | Fair      | Good   | No        | Low                 | Low           | Very Low     |
| 22     | Alexander Palm<br><i>Archontophoenix alexandrae</i>    | Good      | Good   | Yes       | High                | Medium        | High         |
| 23     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i> | Good      | Good   | Yes       | High                | Medium        | High         |
| 24     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i> | Good      | Good   | Yes       | High                | Low           | Moderate     |
| 25     | Cheese Tree<br><i>Glochideon sumatranum</i>            | Good      | Good   | Yes       | High                | Low           | Moderate     |
| 26     | Pink Euodia<br><i>Melicope elleryana</i>               | Good      | Good   | Yes       | High                | Low           | Moderate     |
| 27     | Broad Leaf Paperbark<br><i>Melaleuca quinquenervia</i> | Fair      | Good   | Yes       | High                | High          | High         |

## 6. Tree Retention Value

|                                 |           | Landscape Significance Rating |                   |                                           |                          |                |                     |                    |
|---------------------------------|-----------|-------------------------------|-------------------|-------------------------------------------|--------------------------|----------------|---------------------|--------------------|
|                                 |           | 1<br>Significant              | 2<br>Very High    | 3<br>High                                 | 4<br>Moderate            | 5<br>Low       | 6<br>Very Low       | 7<br>Insignificant |
| Estimated<br>Life<br>Expectancy | > 40 yrs  | High Retention Value          |                   |                                           | Moderate Retention Value |                | Low Retention Value |                    |
|                                 | 15-40 yrs | # 1                           | # 2, 3, 7, 13, 14 | # 4, 5, 6, 15, 16, 17, 18, 19, 22, 23, 27 | # 12, 20, 24, 25, 26     | # 8, 9, 10, 11 | # 21                |                    |
|                                 | 5-15 yrs  |                               |                   |                                           |                          |                |                     |                    |
|                                 | < 5 yrs   |                               |                   |                                           | Very Low Retention Value |                |                     |                    |
|                                 | Dead      |                               |                   |                                           |                          |                |                     |                    |

Ref: Modified from Couston, Howden (2001).

Where trees have a high retention value they should be retained if possible. Where the development is considered to be more important than the trees they may be removed (Barrell 2006).

## 7. Appraisal

The proposal is to demolish the existing buildings on the site and four new homes and seven units on the site (see Attachment 3. Strata Layout). There were 27 trees identified on the site of which 16 are proposed to be removed. The location of the proposed buildings on the elevated western side of the site may be adjusted to reduce the impact of the development on the trees. This report assesses the potential impact on the trees as the development is currently planned.

### Tree # 1

Coastal Cypress *Callitris columellaris*.

This is a mature aged tree growing on the adjoining property. The proposed encroachment into the TPZ of this tree is 7% (Rasbund 2020). This is a minor encroachment according to the Australian Standard AS 4970-2009 *Protection of trees on development sites Sect 3.3.2 Minor encroachment*.

### Tree # 2

Swamp Mahogany *Eucalyptus robusta*.

This is a mature aged tree growing close to a recently made driveway. The proposed buildings including the electricity transformer will encroach into the TPZ of this tree. The theoretical encroachment is 19% which is a major encroachment according to the Australian Standard AS 4970-2009 *Protection of trees on development sites Sect. 3.3.3 Major encroachment*. It is proposed to construct the transformer on top of the existing soil grade. There will be some excavation to connect the power services but the actual encroachment into the TPZ of this tree will not cause it to become unviable.

### Tree # 3

Swamp Mahogany *Eucalyptus robusta*.

This is a mature aged tree growing close to a recently made driveway. The theoretical encroachment into the TPZ of this tree is 37%. This is a major encroachment. The majority of the encroachment activity will be to construct the driveway. This will require excavation for the driveway. The tree is growing on top of a bank and there is already a drop of around 1 m down to where the new driveway will be built. Consequently the tree root activity in this area is much less than would be normally expected. The actual loss of roots and area available to the tree is therefore much less than the 37% encroachment would signify.

It is proposed to construct a walkway near this tree. The walkway will be built above the ground with minimal pier footings used for the foundations. There will be minimal impact on the tree from the proposed walkway.

The construction of the driveway as proposed will not cause this tree to become unviable.

### Tree # 4

Broad Leaf Paperbark *Melaleuca quinquenervia*.

Small tree growing close to the proposed new driveway. There is an existing driveway close

to the tree. The proposed theoretical encroachment into the TPZ of this tree is 35%. Since there is already a driveway in this location the impact on the tree is likely to be minimal.

**Tree # 5**

Tuckeroo *Cupaniopsis anacardioides*.

This is a small tree that has established under the larger Swamp Mahogany (tree # 7). It is tall and has a small canopy. The proposed new driveway will not encroach into the TPZ of this tree.

**Tree # 6.**

Swamp Mahogany *Eucalyptus robusta*.

This is a young mature aged tree that has established under the larger Swamp Mahogany (tree # 7). It is tall with a small canopy. The driveway is currently proposed to be constructed close to this tree. The theoretical encroachment into the TPZ of this tree is 10% which is a minor encroachment.

**Tree # 7**

Swamp Mahogany *Eucalyptus robusta*.

This is a large mature aged tree. The design for the new residence H1 has been extensively modified to reduce the impact on this tree. There is an retaining wall proposed to be built to the east of the tree that will encroach into the TPZ of the tree. The encroachment is 21%. There is also a theoretical encroachment of the new driveway. The excavation to construct the road is minimal however. The total encroachment into the tree is a major encroachment according to the Australian Standard AS 4970-2009 Protection of trees on development sites. There is an area available to the tree to grow roots to compensate for roots lost during construction. There is no encroachment into the SRZ. The construction of the development as proposed will not cause this tree to become unviable.

**Tree # 8**

Sweet Viburnum *Viburnum odoratissimum*

This is an exotic species growing close to the southern boundary. It is a planted exotic specimen in poor condition.

**Tree # 9**

Paperbark *Melaleuca* sp.

This is a small planted tree. It is growing in the footprint of the proposed driveway.

**Tree # 10**

Silky Oak *Grevillea robusta*

This is a planted specimen. It is in poor condition. It is growing in the footprint of one of the proposed houses.

**Tree # 11**

Alexander Palm *Archontophoenix alexandrae*.

This is a group of planted palm trees. This is listed as an undesirable species in Byron Shire Council's DCP 2014 Chapter B2 Protection of Trees and Other Vegetation. The trees are growing in the footprint of one of the proposed houses.

**Tree # 12**

Bangalow Palm *Archontophoenix cunninghamiana*

This is a tree that has grown three stems. It is considered to be a single tree as the three stems have arisen from a single seed. This tree is likely to have been planted. It is growing in the footprint of the proposed H1 residence.

**Tree # 13**

Swamp Mahogany *Eucalyptus robusta*.

This is a mature aged tree growing close to a recently made driveway. The proposed development will encroach into the TPZ of this tree by 21%. This is a major encroachment. There is an area available to the tree to grow new roots to compensate for the loss of roots during construction. The construction of the development as proposed will not cause this tree to become unviable.

**Tree # 14**

Swamp Mahogany *Eucalyptus robusta*.

This is a mature aged tree growing close the northern boundary. The proposed development will encroach into the TPZ of this tree by 21%. This is a major encroachment. There is an area available to the tree to grow new roots to compensate for the loss of roots during construction. The construction of the development as proposed will not cause this tree to become unviable.

**Tree # 15**

Broad Leaf Paperbark *Melaleuca quinquenervia*.

This is a mature aged tree growing on the lower section of the property. It is growing close to the proposed houses. It is proposed to retain this tree. There is a requirement to fill the area around the tree. The fill depth near the tree will be approximately 800 mm. The SRZ will not be filled. A pump system will be installed to pump out water that may accumulate during heavy rain.

The foundations of the adjacent buildings will be constructed in the fill material and will not be in the natural ground. It is proposed to use blue metal cracker dust to fill the area in the TPZ of this tree. This material will allow the movement of air and water through the material, will not form a soil interface and will not expand and contract with changes to moisture content.

The theoretical encroachment into the TPZ of this tree is 85%. It is estimated that the chances of survival for this tree over the next 5 years is around 70%. If the tree fails it will not cause damage to the surrounding properties and the location of the landscaping makes it extremely unlikely to cause harm to any resident or visitor.

**Tree # 16**

Broad Leaf Paperbark *Melaleuca quinquenervia*.

This is a mature aged tree growing on the lower section of the property. It is growing close to the proposed houses.

**Tree # 17**

Broad Leaf Paperbark *Melaleuca quinquenervia*.

This is a mature aged tree growing on the lower section of the property. It is growing close to the proposed houses.

**Tree # 18**

Broad Leaf Paperbark *Melaleuca quinquenervia*.

This is a small suppressed tree growing on the lower section of the property. It is growing in the footprint of the proposed driveway.

**Tree # 19**

Broad Leaf Paperbark *Melaleuca quinquenervia*.

This is a mature aged tree growing on the lower section of the property. It is growing in the footprint of the proposed driveway.

**Tree # 20**

Broad Leaf Paperbark *Melaleuca quinquenervia*.

This is a mature aged tree growing on the lower section of the property. It is growing close to a proposed house.

**Tree # 21**

Cheese Tree *Glochideon sumatramum*.

This is a small tree in poor condition. It is growing in the footprint of the proposed driveway.

**Tree # 22**

Alexander Palm *Archontophoenix alexandrae*.

This is listed as an undesirable species. It is growing in the footprint of a proposed residence.

**Tree # 23**

Broad Leaf Paperbark *Melaleuca quinquenervia*.

This is a mature aged tree growing on the lower section of the property. It is growing in the footprint of the proposed residence.

**Tree # 24**

Broad Leaf Paperbark *Melaleuca quinquenervia*.

This is a mature aged tree growing on the lower section of the property. It is growing in the footprint of the proposed residence.

**Tree # 25**

Cheese Tree *Glochideon sumatranum*.

This is a small tree. It is growing in the footprint of a proposed house.

**Tree # 26**

Pink Euodia *Melicope elleryana*.

Small tree growing in the footprint of a proposed house.

**Tree # 27**

Broad Leaf Paperbark *Melaleuca quinquenervia*.

This tree is growing on the adjoining reserve. The branches encroach over the boundary into the subject property. There is no encroachment into the TPZ of this tree.

## 8. Recommendations

It is recommended that the development be constructed as proposed. Trees # 8, 9, 10, 11, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, and 26 should be removed to allow construction of the development. Trees # 1, 2, 3, 4, 5, 6, 7, 13, 14 and 15 should be retained in the development and protected during construction. The details of the recommended protection measures are given in **9. Tree Protection**.

Byron Shire Council has a 'No Net Vegetation Loss' Policy. Where trees are removed, replacement trees are required to be replaced. Guidelines for the replacement ratios are given in Byron Shire Council's DCP 2014 Chapter B2 Preservation of Trees and Other Vegetation Sect. B2.2.2 Note. A table with the recommended replacement ratios is shown in Table 4 below

**Table 4. Replacement Tree Ratios**

| Tree #                                   | Name                          | Replacement Ratio |
|------------------------------------------|-------------------------------|-------------------|
| 8                                        | Sweet Viburnum                | 1:1               |
| 9                                        | Paperbark (planted non local) | 1:5               |
| 10                                       | Silky Oak                     | 1:1               |
| 11                                       | Alexander Palm                | 0                 |
| 12                                       | Bangalow Palm                 | 1:5               |
| 16                                       | Broad Leaf Paperbark          | 1:5               |
| 17                                       | Broad Leaf Paperbark          | 1:5               |
| 18                                       | Broad Leaf Paperbark          | 1:5               |
| 19                                       | Broad Leaf Paperbark          | 1:5               |
| 20                                       | Broad Leaf Paperbark          | 1:5               |
| 21                                       | Cheese Tree                   | 1:5               |
| 22                                       | Alexander Palm                | 0                 |
| 23                                       | Broad Leaf Paperbark          | 1:5               |
| 24                                       | Broad Leaf Paperbark          | 1:5               |
| 25                                       | Cheese Tree                   | 1:5               |
| 26                                       | Pink Euodia                   | 1:5               |
| <b>Total Number of replacement trees</b> |                               | <b>62</b>         |

**Table 4. Replacement Tree Species.**

|                                                     |                                                      |
|-----------------------------------------------------|------------------------------------------------------|
| Coastal Wattle <i>Acacia longifolia</i>             | Cheese Tree <i>Glochideon ferdinandi</i>             |
| Lilli Pilli <i>Acmena smithii</i>                   | Bleeding Heart <i>Homalanthus populifolius</i>       |
| Red Ash <i>Alphitonia excelsa</i>                   | Ribbon Grass <i>Lomandra longifolia</i>              |
| Bangalow Palm <i>Archontophoenix cunninghamiana</i> | Swamp Terpentine <i>Lophostemon suaveolens</i>       |
| Swamp Banksia <i>Banksia robur</i>                  | Cabbage Palm Tree <i>Livistona australis</i>         |
| Tuckeroo <i>Cupaniopsis anacardioides</i>           | Willow Bottlebrush <i>Melaleuca salicina</i>         |
| Blue Flax Lilli <i>Dianella caerulea</i>            | Prickly Leaf Tea Tree <i>Melaleuca styphelioides</i> |
| Large Leaf Hop Bush <i>Dodanea triquetra</i>        | Brown Pine <i>Podocarpus elatus</i>                  |
| Blueberry Ash <i>Elaeocarpus reticulatus</i>        | Scentless Rosewood <i>Synoum glandulaosum</i>        |
| Tall Saw Sedge <i>Gahnia clarkei</i>                | Lilli Pilli <i>Syzygium</i> sp.                      |

The list of trees is not exhaustive and other suitable species may be utilized. Not all of the species shown in the list must be planted. It is recommended that a mix of species be used. The location of a suitable planting zone will be determined by the Landscape Architect.

The planting stock should be sourced from a local reputable nursery and in 1 litre pots. The new plantings should be protected with tree guards and mulched.

#### **Further Recommendations**

Where trees are required to be pruned to give clearance to the new buildings, the pruning should be done in accordance with the recommendations of the Australian Standard AS 4373-2007 Pruning of amenity trees and carried out by an Arborist qualified to a minimum of AQF 3 in Arboriculture.

The fill material used in the TPZ of tree # 15 must be blue metal cracker dust. This material will allow for best chance of survival of this tree in the development as proposed. A pump system should be installed to allow excess water to be removed from around the tree during times of heavy rainfall.

## 9. Tree Protection

The trees retained on the site should be protected during construction in accordance with the recommendations of the Australian Standard *AS 4970-2009 Protection of trees on development sites*. The Standard sets out a Tree Protection Zone that is calculated to be an area around the tree with a radius of 12 x diameter at breast height (DBH). The TPZ has a minimum of 2 m and maximum of 15 m. The TPZ should be protected during construction as effectively as is practicable.

The Standard lists activities that are prohibited in the TPZ. They are:

- a. Machine excavation
- b. excavation for silt trenching
- c. cultivation
- d. storage
- e. preparation of chemicals, including preparation of cement products
- f. parking of vehicles and plant
- g. refuelling
- h. dumping of waste
- i. wash down and cleaning of equipment
- j. placement of fill
- k. lighting of fires
- l. soil level changes
- m. temporary or permanent installation of utilities and signs and
- n. physical damage to the tree.

The proposed construction of the development is proposed to be undertaken within the TPZ of some of the trees on the site. In order to ensure that the trees remain viable it is important to protect them during construction. The Standard provides for a temporary fence to be installed around the TPZ of trees on development sites. In this development it is recommended that a 1 m high visibility plastic mesh fence be installed so as to protect as much of the TPZ as is practicable. The location of the protective fencing is shown in Attachment 7. Protective Fencing. An example of a suitable temporary fence is shown in Figure 1. below.



Figure 1. Example of protective fencing

## 10. Disclaimer

The information contained in the report is true and accurate to the best knowledge of the author. Best professional judgement was used to make recommendations. However the author of this report is not responsible for any action taken or not taken in reliance on it.

This report remains the property of the author and Planit Consulting. It may not be used or reprinted without their express permission.

## 11. References

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## 12. About the Author

This report was compiled by Peter Gray of Northern Tree Care. The author is an arborist who has been providing Arboricultural Reports for Local Government, State Government and private clients for over 20 years. His qualifications include:

Graduate Certificate of Arboriculture (AQF 8)

Diploma of Arboriculture (AQF 5)

Diploma of Horticulture (Arboriculture)

Quantified Tree Risk Assessment (QTRA)

Tree Risk Assessment Qualification (ISA)

VALID Tree Risk-Benefit Validator.

Peter Gray is an AQF level 8 Consulting Arborist general member No. 2344 with Arboriculture Australia. He is a trained and registered practitioner of Quantified Tree Risk Assessment (QTRA) Registered User number 980. In 2020 he was appointed as a director to the board of Arboriculture Australia.

I declare that I have compiled this report impartially using best professional judgement. I have no financial interest in the outcome of the report.

Signed Peter Gray, Northern Tree Care



19 Mar 2021

### 13. Attachment 1. Location Plan



103 Paterson St, Byron Bay

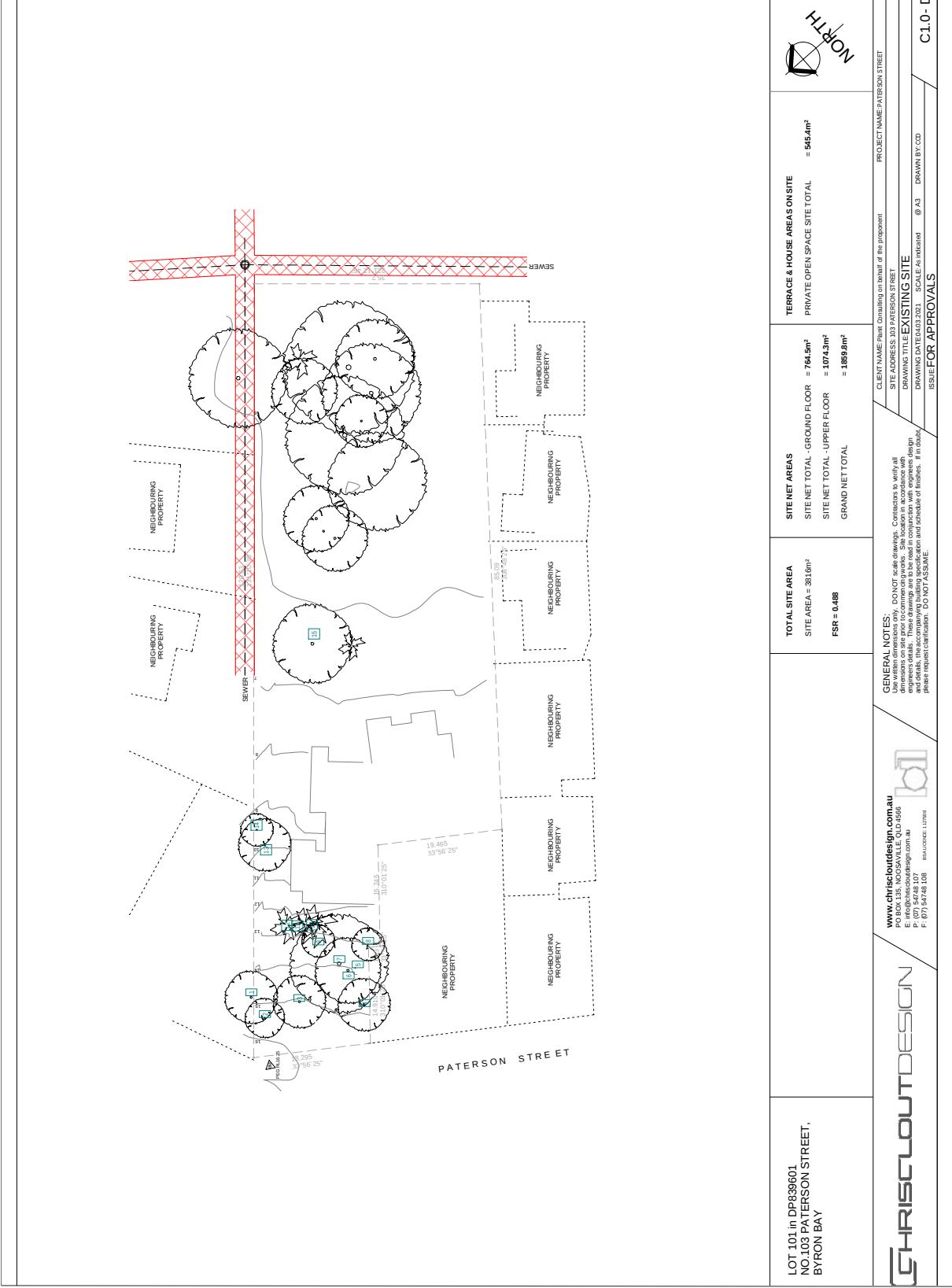
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## 14. Attachment 2. Aerial Photo



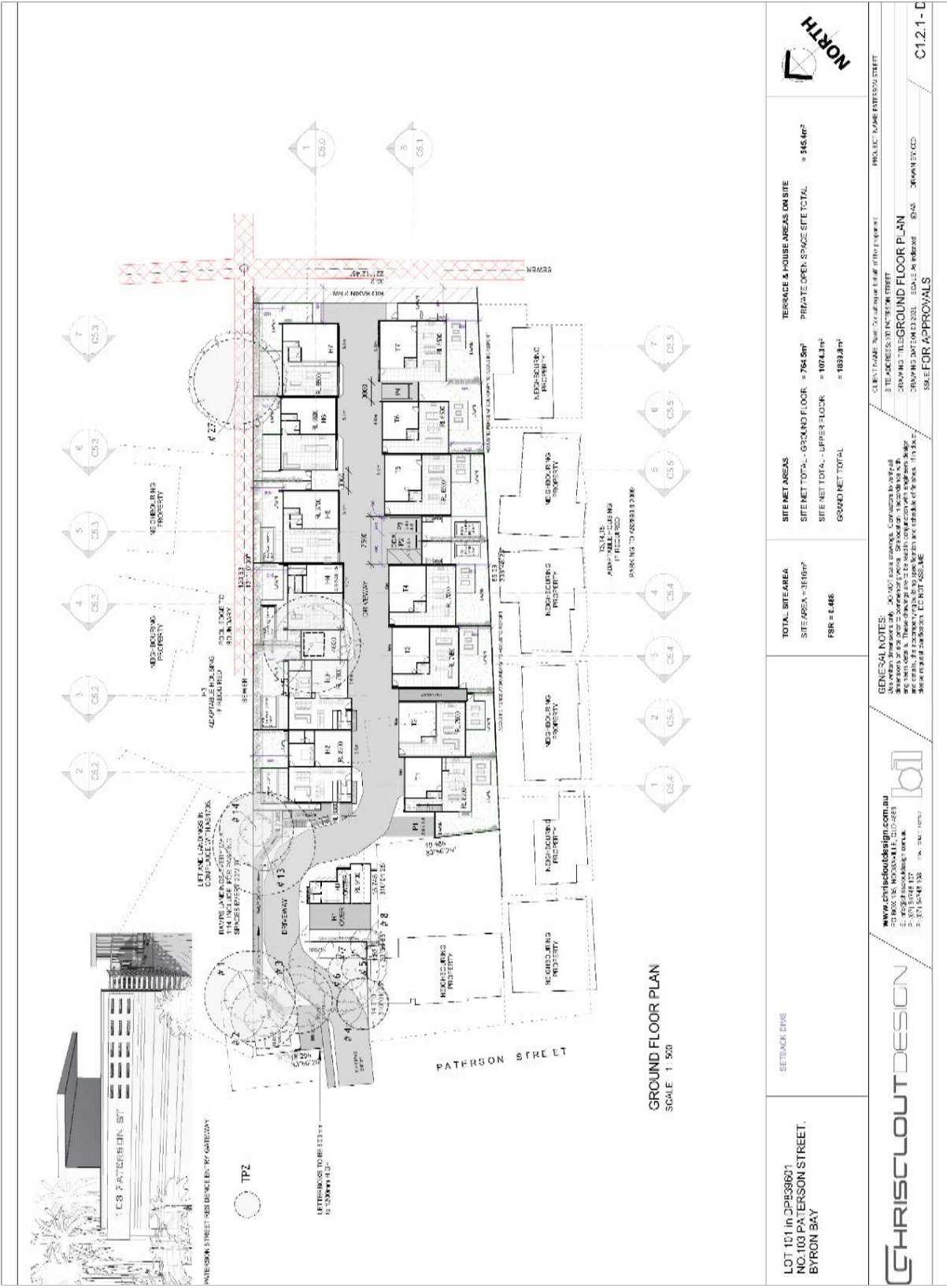
103 Paterson St, Byron Bay

15. Attachment 3. Site Plan



103 Paterson St, Byron Bay

16. Attachment 4. Proposed Buildings and TPZ



103 Paterson St, Byron Bay

**GROUND FLOOR PLAN**  
SCALE 1:500

**LOT 101 IN DP639601**  
**NO. 103 PATERSON STREET,**  
**BYRON BAY**

**SETBACK DIMS**

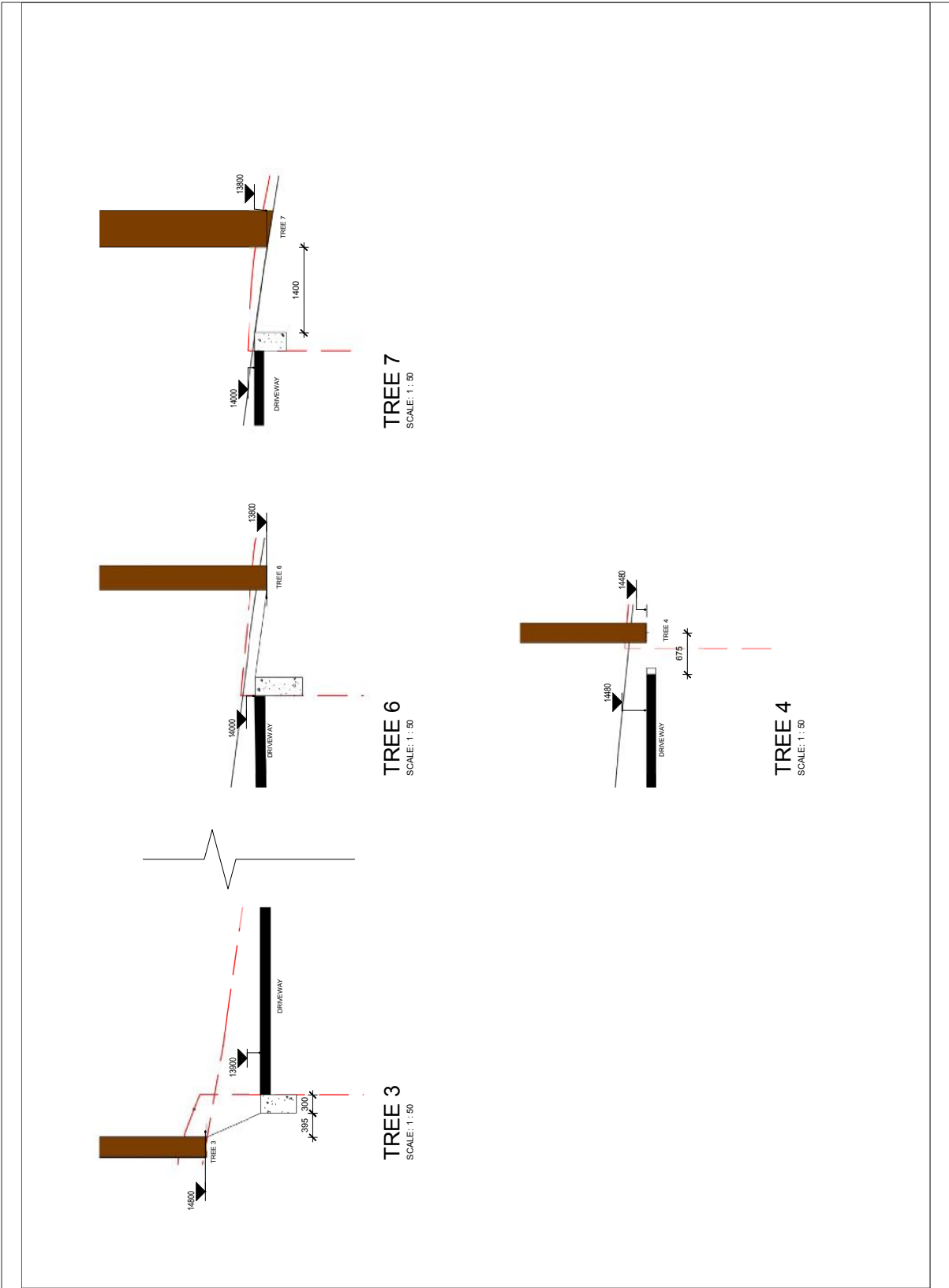
**TERACE & HOUSE AREAS ON SITE**  
PRIVATE OPEN SPACE SITE TOTAL = 545.0m<sup>2</sup>

**SITE NET AREAS**  
SITE NET TOTAL - GROUND FLOOR = 764.5m<sup>2</sup>  
SITE NET TOTAL - UPPER FLOOR = 1074.3m<sup>2</sup>  
GROUND NET TOTAL = 1838.8m<sup>2</sup>

**TOTAL SITE AREA**  
SITE AREA = 3180m<sup>2</sup>  
FSR = 4.486

**GENERAL NOTES:**  
1. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
3. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
4. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
5. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
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8. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
9. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
10. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

18. Attachment 6. Tree Soil Levels



**GROUND FLOOR PLAN**  
SCALE 1:500

**SETBACKS:**  
1. 1.0m  
2. 1.0m  
3. 1.0m  
4. 1.0m  
5. 1.0m  
6. 1.0m  
7. 1.0m

**PROTECTIVE FENCE:**  
1. 1.0m  
2. 1.0m  
3. 1.0m  
4. 1.0m  
5. 1.0m  
6. 1.0m  
7. 1.0m

**Carport:**  
1. 1.0m  
2. 1.0m  
3. 1.0m  
4. 1.0m  
5. 1.0m  
6. 1.0m  
7. 1.0m

**Units:**  
1. 1.0m  
2. 1.0m  
3. 1.0m  
4. 1.0m  
5. 1.0m  
6. 1.0m  
7. 1.0m

**Other Features:**  
1. 1.0m  
2. 1.0m  
3. 1.0m  
4. 1.0m  
5. 1.0m  
6. 1.0m  
7. 1.0m

|                                                                                        |                                                                                        |                                                                                                    |                                                                                        |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <p>LOT 101 in DP639601<br/>NO. 103 PATERSON STREET,<br/>BYRON BAY</p>                  | <p>SETBACKS</p>                                                                        | <p>TERACE &amp; HOUSE AREAS ON SITE<br/>PRIVATE OPEN SPACE SITE TOTAL<br/>= 545.0m<sup>2</sup></p> | <p>1. 1.0m<br/>2. 1.0m<br/>3. 1.0m<br/>4. 1.0m<br/>5. 1.0m<br/>6. 1.0m<br/>7. 1.0m</p> |
| <p>1. 1.0m<br/>2. 1.0m<br/>3. 1.0m<br/>4. 1.0m<br/>5. 1.0m<br/>6. 1.0m<br/>7. 1.0m</p> | <p>1. 1.0m<br/>2. 1.0m<br/>3. 1.0m<br/>4. 1.0m<br/>5. 1.0m<br/>6. 1.0m<br/>7. 1.0m</p> | <p>1. 1.0m<br/>2. 1.0m<br/>3. 1.0m<br/>4. 1.0m<br/>5. 1.0m<br/>6. 1.0m<br/>7. 1.0m</p>             | <p>1. 1.0m<br/>2. 1.0m<br/>3. 1.0m<br/>4. 1.0m<br/>5. 1.0m<br/>6. 1.0m<br/>7. 1.0m</p> |

**GENERAL NOTES:**  
1. ALL DIMENSIONS ARE IN METERS.  
2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
3. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
4. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
5. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
6. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.  
7. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

## 20. Attachment 8. Photos



Photo 1. Tree # 1  
Coastal Cypress



Photo 2. Tree # 3  
Swamp Mahogany



Photo 3. Tree # 4  
Paperbark



Photo 4. Tree # 5, 6 & 7

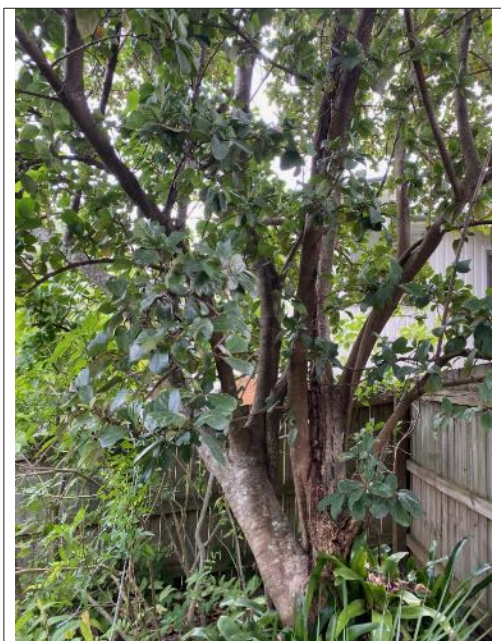


Photo 5. Tree # 8  
Sweet Viburnum



Photo 6. Tree # 10 & 11



Photo 7. Tree # 12  
Bangalow Palm



Photo 8. Tree # 5, 6 & 7

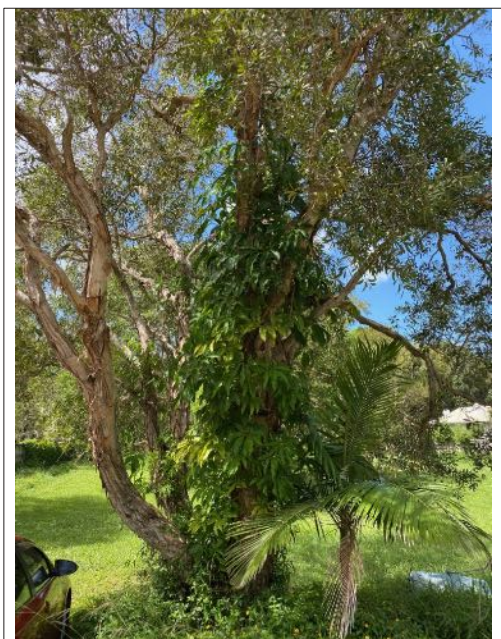


Photo 9. Tree # 15  
Paperbark



Photo 10. Tree # 16  
Paperbark



Photo 11. Tree # 17  
Paperbark

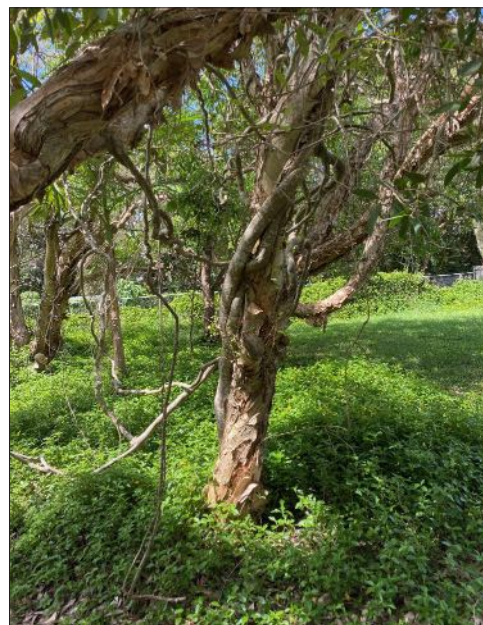


Photo 12. Tree # 18  
Paperbark

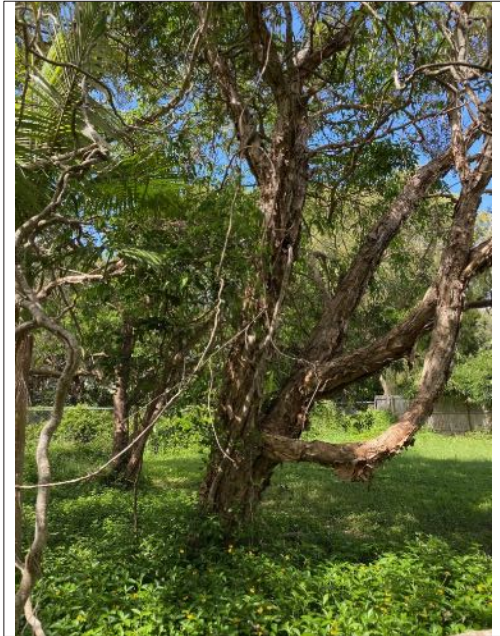


Photo 13. Tree # 19  
Paperbark

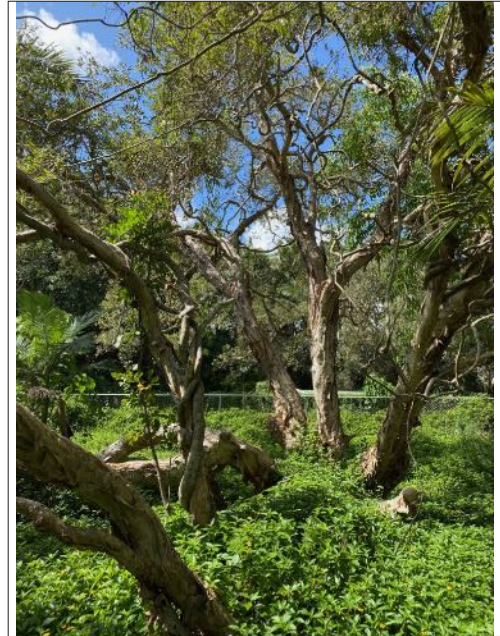


Photo 14. Tree # 20  
Paperbark



Photo 15. Tree # 21  
Cheese Tree



Photo 16. Tree # 23  
Paperbark



Photo 17. Tree # 24  
Paperbark



Photo 18. Tree # 25 & 26  
Paperbark



Photo 19. Tree # 27  
Paperbark



Photo 20. Tree # 27  
Paperbark