

Tree Assessment

Proposed incline lift

**60 Cabarita Road
Avalon**

Report Prepared by Julia Stanton
Syncarpia Vegetation Management
24 Windsor Street Tarbuck Bay 2428
juliastanton@ozemail.com.au
Mob:04173980
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Figure 1. Tree survey / Site Plan

Figure 2 Site Photos

1.0 Introduction

This Tree Assessment & Management Plan has been prepared for Stephen Crosby & Associates on behalf of client G Smith.

This report is to accompany a development application to Northern Beaches Council for a proposed incline lift, Lot 1 DP 208499 60 Cabarita Rd Avalon.

The report includes:

- an overview of existing trees;
- a photographic record of existing trees, and site conditions
- an assessment of the health and condition of existing trees within 5m of the proposed development;
- an assessment of the likely impact of the proposed development on existing trees and vegetation;
- recommendations for the protection of existing trees to be retained in accordance with AS 4970 *Protection of Trees on Development Sites*. Standards (2009).
- details of exclusion fencing required prior to commencement of construction works if required;

The following documentation has been reviewed in preparation of this Tree Assessment Report:

- Lift plan & section incline lift prepared by Stephen Crosby and Associates March 2021;
- AS 4970 *Protection of Trees on Development Sites* Standards Australia (2009)
- Exempt species list Northern Beaches Council
<https://www.northernbeaches.nsw.gov.au/environment/trees/exempt-tree-species-list> April 2021

Seven existing trees (1a, 1b, 2, 3, 4, 5 & 6) are located on the property within 5m of the proposed incline lift. Six of the seven trees are listed on Northern Beaches Council exempt species list.

Existing trees on Northern Beaches Council Exempt Tree Species List

Trees 1a & 1b are mature specimens of (*Archontophoenix cunninghamiana*) Bangalow Palm

Tree 2 a mature specimen of *Olea europaea* (European Olive)

Tree 3 a mature specimen of *Ficus Benjamina* (Weeping Fig)

Trees 4 & 5 are semi mature specimens of *Syragrus romanzoffiana* (Cocos Palm)

Tree 6 is a mature specimen of the indigenous shrub / small tree *Rapanea howittiana* (Brush Muttonwood).

2.0 Proposed Development

The proposed development is for an incline lift at 60 Cabarita Road Clareville. Seven existing trees (Trees 1a & 1b, 2, 3, 4, 5 & 6), & numerous planted exotic garden shrubs are located on the property within 5m of the proposed development.

Incline lift

Excavation of existing soil levels is proposed to accommodate the line of the inclinor track and for pier footings. Existing vegetation to be removed to accommodate the proposed development includes Trees 1a & 1b mature specimens of Bangalow Palm and various exotic garden plants including Yucca sp.

3.0 Site Description

The property includes an existing residential dwelling and Boat Shed **Lot 1 DP 208499 60 Cabarita Rd Avalon.**

The property has a north easterly aspect and slopes down to the Pittwater waterway, with existing residential dwellings to the east and west.

Existing vegetation includes a variety of planted native & exotic trees & shrubs in established terraced garden beds.

4.0 Tree Assessment

To be read in conjunction with Figure 1 Tree Survey, Figure 2 Site Photos

Seven (7) existing trees (Trees 1a, 1b, 2, 3, 4, 5 & 6) are located on the property within 5m of the proposed incline lift.

Tree assessment is based on Visual Tree Assessment (VTA) and similar tree assessment guidelines (Dunster, Smiley, Matheny & Lilly 2013, Mattheck, 1999 and Matheny and Clark, 2004 & 1999).

Site inspection was conducted by Julia Stanton on 18th April 2021.

The assessment includes details of the health, condition and impact of the proposed development on all trees within 5m of the proposed development,

The inspection and assessment was from ground level, no aerial or subterranean inspections were carried out. The report includes the following information (Refer Table 1 Appendix):

- botanical name, common name, diameter at breast height (DBH), height, canopy spread, tree health, form, tree defects, site conditions, hazard rating, Health & Condition rating* SULE rating**;
- an assessment of the potential impact of the proposed development
- recommendations of tree protection and management prior to, during and post construction; and
- a site plan and photographic record of existing trees and site conditions.

This report is not intended as a detailed or comprehensive hazard / risk assessment.

Trees 1a & 1b are planted mature species of (*Archontophoenix cunninghamiana*) Bangalow Palm in good health & condition

Height: 16m Canopy: 4m

Health & Condition Rating: 4 SULE: 2

To be removed - In direct conflict with proposed inclinor track, **exempt species and can be removed without consent.**

Tree 2 a planted mature specimen of *Olea europaea* (European Olive) in fair health & poor to fair condition, decay through one codominant leader, previous lopped, moderate epicormics growth.

Height: 6m Canopy: 4m DBH: 300, 200 DGL: 500

Health & Condition Rating: 2 SULE: 3a

Located 0.5m from excavation to accommodate inclinor track & 1m from footing. May tolerate the impact of the proposed development - **An exempt species and can be removed without consent.**

Tree 3 a planted mature specimen of *Ficus benjamina* (Weeping Fig) in fair health & condition. Multi trunk, previous lopping of branches. Height: 12m Canopy: 10m DBH: 400, 200, 220, 450 DGL: 1.2m Health & condition rating: 3 SULE: 3C

Located 2.5m from excavation to accommodate inclinator track & 3m from track footing. If retained would require extensive pruning to prevent branch conflict with inclinator cart. **Inappropriately located large species. Exempt species, can be removed without consent. Removal recommended with replacement screen planting of an appropriate large native shrub / small tree.**

Trees 4 & 5 are semi-mature specimens of *Syragrus romanzoffiana* (Cocos Palm) in good health & condition, typical of the species. Do not require removal to accommodate the proposed development. **An exempt species and can be removed without consent.**

Tree 6 a mature specimen *Rapanea howittiana* (Brush Muttonwood) in fair health & condition, lopped codominant trunk. Height: 7m Canopy: 5m DBH: 180mm Health & Condition rating: 3 SULE: 3a Located 1m from minor excavation to accommodate inclinator track 2m from footing for inclinator track. A small tree likely to tolerate the impact of the proposed development. However could be removed and replaced with a healthy structurally sound specimen.

5.0 Discussion Development Impacts

Refer to Figure 1 Tree Survey, Figures 2 Site Photos

The most common impacts of development on existing trees include:

- significant changes to natural soil levels;
- excavation and mechanical damage to existing root system;
- mechanical damage to trunk and branches;
- soil compaction or inversion of soil profile, resulting in reduced soil water and air movement;
- changes in natural hydrology, increased nutrient levels, changes to soil pH and soil contamination.

Estimating the extent of the root system of an existing tree is often used as the basis for assessing the potential adverse impact of a development on a tree. The area of significant root system (structural & feeder) that a tree relies on for survival is often calculated by the use of formulae related to the diameter of the trunk. Various terms and formulae exist to describe the area of root system that requires protection and in which development should be limited or excluded. These terms include Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) or Primary Root Zone (PRZ) and Critical Root Zone (CRZ).

Calculating the area of a root system that requires protection is often used to predict the potential adverse impact of a proposed development on the root system of existing trees. It is noted that the definition and formulae for calculating the area of root system that requires protection is considered a guide in estimating the extent of the root system of a tree.

When assessing the potential adverse impact of a proposed development on an existing tree the following must be considered:

- the type and extent of development, including building envelope, services and landscaping.
- extent of excavation
- use of machinery or vehicles on site
- the area of a root system identified as requiring protection or management during development, and establishment of a (TPZ)
- an assessment of the subject tree including species, age, vigor, vitality, health and condition; and
- site and soil characteristics.

Development activity does not necessarily need to be excluded from within the identified SRZ & TPZ.

Some level of development activity within an identified (SRZ) & (TPZ) such as minor excavation, minor fill and changes to hydrological patterns are often within acceptable limits when specific tree management and protection recommendations and sensitive construction techniques are adopted & implemented.

5.1 Potential adverse impacts of the proposed development on existing trees. Refer to detailed assessment in Table 1.

The proposed development is for an - incline lift,
Seven (7) existing trees are located on the property within 5m of the proposed development. Two existing trees are in direct conflict with the inclinator track proposed for removal, Trees 1a & 1b

Trees proposed for removal to accommodate the proposed development.

Trees 1a & 1b mature specimens of (*Archontophoenix cunninghamiana*)
Bangalow Palm in good health & condition are proposed for removal to accommodate the proposed development.
Bangalow Palm is listed as an except species and can be removed without consent.

There is no significant vegetation proposed for removal. The proposed inclined lift track runs through existing garden area which include planted exotic & native tree & shrub species.

6.0 Tree Management Recommendations.

Recommendations have been included for the management of existing trees.

Recommendations:

- Materials to be stored in designated storage areas, suitable storage areas include existing deck & lawn areas.
- There is to be no storage of materials or disposal of excavated soil, or building waste, within 5m of existing trees to be retained or designated Tree Protection Zones.
- Excavated soil is not to be disposed of or stored within 5m of existing trees, and is to be removed from site if required.
- To re-establish boundary screening suitable replacement screening shrubs to be planted along north western boundary suitable species include *Syzygium* sp (Lilly Pilly).

7.0 Conclusions

The proposed development for - incline lift.

Seven existing trees (1a, 1b, 2, 3, 4, 5 & 6) are located on the property within 5m of the proposed incline lift. **Six of the existing trees are listed on Northern Beaches Council exempt species list and can be removed without consent.**

Existing trees on Northern Beaches Council Exempt Tree Species List

Trees 1a & 1b are mature specimens of (*Archontophoenix cunninghamiana*) Bangalow Palm

Tree 2 is a mature specimen of *Olea europaea* (European Olive)

Tree 3 is a mature specimen of *Ficus Benjamina* (Weeping Fig)

Trees 4 & 5 are semi mature specimens of *Syagrus romanzoffiana* (Cocos Palm)

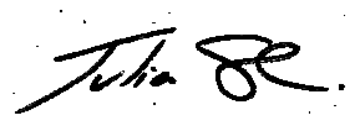
Tree 6 is a mature specimen of the indigenous shrub / small tree *Rapanea howittiana* (Brush Muttonwood).

Existing vegetation to be removed to accommodate the proposed development includes Trees 1a & 1b mature specimens of Bangalow Palm and numerous exotic shrubs including *Yucca* sp.

Tree 3 is a mature specimen of *Ficus benjamina* (Weeping Fig) and would require extensive pruning to accommodate the inclinor cart. In addition this tree is considered inappropriate in its current location given its size and invasive nature and is recommended for removal and replacement with appropriate screen planting.

There is no significant vegetation proposed for removal. The proposed inclined lift track runs through an existing terraced garden area which includes planted exotic tree & shrub species.

The proposed development will not have a negative impact on significant trees & vegetation.



Julia Stanton B.Sc. (Environmental and Urban Horticulture)

21st April 2021

Arborist/Bushland Management Consultant

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NOTES

Hgt = Height in metres, Age = Age Class, Av Can = Average Canopy Spread in metres DBH = Diameter @ breast height (1.5m) in millimetres

Age classess (I) *immature* refers to a well established but juvenile tree. (S) Semi-mature refers to a tree at growth stages between immaturity and full size. (M) *Mature* refers to a full sized tree with some capacity for further growth. (O) *Overmature* refers to a tree about to enter decline or already declining.

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.

Condition refers to the tree's form & growth habit, as modified by its environment. And includes the state of the scaffold (ie trunk and major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions (inclusions) and condition of the root system . These are not directly connected with health and it is possible for a tree to be healthy but in poor condition.

Adapted from Matheny and Clark (1999) Conducting a Resource Evaluation, from *Care and Management of Trees on Development Sites Proceedings of the 2nd NAAA Tree Management Seminar and Workshop*.

*** H & C (Heath & Condition) rating** - summary of the health and structure of the tree on a scale of 0 - 5

5 A healthy vigorous tree, little if any signs / symptoms of disease or stress with good structure and form typical of the species

4 Trees with some evidence of decline in vigour, minor twig die back, small amount of dead wood, good form and structure.

3 A tree with only moderate vigour, presence of moderate amounts of twig die back and dead wood, crown may be thinning, moderate form, or a tree with some branch or trunk damage but canopy/ foliage cover good, or a tree with good overall condition, but poor form.

2 A tree in a state of decline, large amount of twig die back or epicormic growth, dieback of medium to large branches, cause of decline cannot be rectified or alleviated. Or a tree with significant structural defects (inclusions, root girdling, and cavities) which cannot be rectified or satisfactorily remediated.

1 A tree in serve decline, die back of dominant branches or trunk, large amounts of twig die back or the majority of foliage epicormic. Cause of decline cannot be rectified or alleviated. Or a tree with significant structural defects (inclusions, root girdling, and cavities) which cannot be rectified or remediated.

0 Dead tree

****SULE categories (Barrell.**

Safe Useful Life Expectancy Categories (Updated 01/04/01) Barrell (2001)

1: Long SULE: Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.

- (a) Structurally sound trees located in positions that can accommodate future growth.
- (b) Trees that could be made suitable for retention in the long term by remedial care.
- (c) Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long-term retention.

2: Medium SULE: Trees that appeared to be retainable at the time of assessment for 15-40 years with an acceptable level of risk.

- (a) Trees that may only live between 15 and 40 more years.
- (b) Trees that could live for more than 40 years but may be removed for safety or nuisance reasons.
- (c) Trees that could live for more than 40 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.
- (d) Trees that could be made suitable for retention in the medium term by remedial tree care.

3: Short SULE: Trees that appeared to be retainable at the time of assessment for 5-15 years with an acceptable level of risk.

- (a) Trees that may only live between 5 and 15 more years.
- (b) Trees that could live for more than 15 years but may be removed for safety or nuisance reasons.
- (c) Trees that could live for more than 15 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.
- (d) Trees that require substantial remedial tree care and are only suitable for retention in the short term.

4: Remove: Trees that should be removed within the next 5 years.

- (a) Dead, dying, suppressed or declining trees because of disease or inhospitable conditions.
- (b) Dangerous trees because of 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 that could live for more than 5 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.
- (f) Trees that are damaging or may cause damage to existing structures within 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.

DEFINITIONS (From Tree Risk Assessment Manual ISA (2013), Australian Standard *Protection of Trees on Development Sites* 2009 Australian Standards AS 4373 – 2007 Pruning of Amenity Trees, Matheny and Clark, 1994 and 2004)

Co-dominant stems – stems or trunks of about the same size originating from the same position from the main stem. When the stem bark ridge is turned upwards the union is strong, when the ridge turns inwards the union is weak.

Critical Root Zone (CRZ) – an offset 5 x the trunk diameter of a tree. Within this area significant structural roots are usually encountered. Elevated construction may be possible within this area, subject to an assessment of the subject tree including age, vigor, health and condition and root zone assessment. Specific tree management and protection recommendations and construction techniques required.

C & PRZ – Critical and Primary root zone - The definition and formulae for calculating the C & PRZ of a tree is to be considered only a guide to determine the extent of a trees root system. The C & PRZ calculation should be used in conjunction with an assessment of the subject tree including age, vigor, health and condition, site and soil characteristics and root zone assessment, when assessing the potential adverse impact of a proposed development on a tree.

Crown lifting – the removal of the lowest branches.

Crown Thinning – General pruning with the additional removal of secondary branches whilst retaining the main structural branches of the tree.

Crown Maintenance General – pruning which consists of removal of dead, diseased, dying, defective and conflicting branches.

Deadwooding – removal of deadwood

DGL- Trunk diameter at ground level

Endemic – having a natural distribution confined to a particular geographic region.

Hazard- situation or condition that is likely to lead to a loss, personal injury property damage, a likely source of harm.

Hazard abatement- Reduction in the likelihood that failure of a tree or a part will result in injury to people or damage to property.

Indigenous – native to the area not introduced

Locally native flora and fauna – plants and animals that are native in Pittwater at any stage of life cycle

Lopping- random cutting of branches or stems between branch union or internodes. This is an unacceptable practice.

Primary Root Zone (PRZ) – an offset 10 x the trunk diameter of a tree. Within this area significant feeder roots are usually encountered. Excavation and fill may be possible within this area, subject to an assessment of the subject tree including age, vigor, health and condition and root zone assessment. Specific tree management and protection recommendations and construction techniques required.

Risk – The combination of the likelihood of tree failure and severity of the potential consequences. The likelihood of tree failure occurring and affecting a target and severity of the consequences.

Selective pruning – The removal of identified branches that are causing a specific problem. These branches shall be specified.

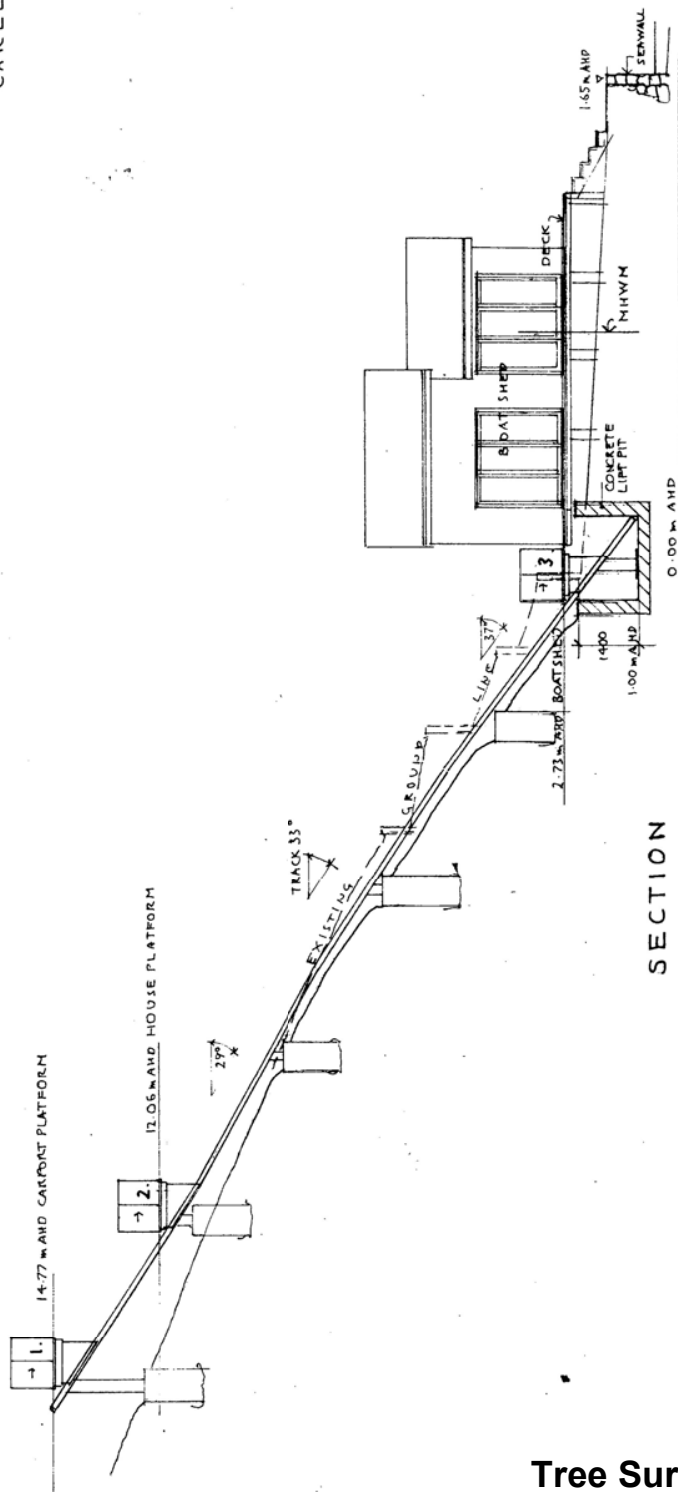
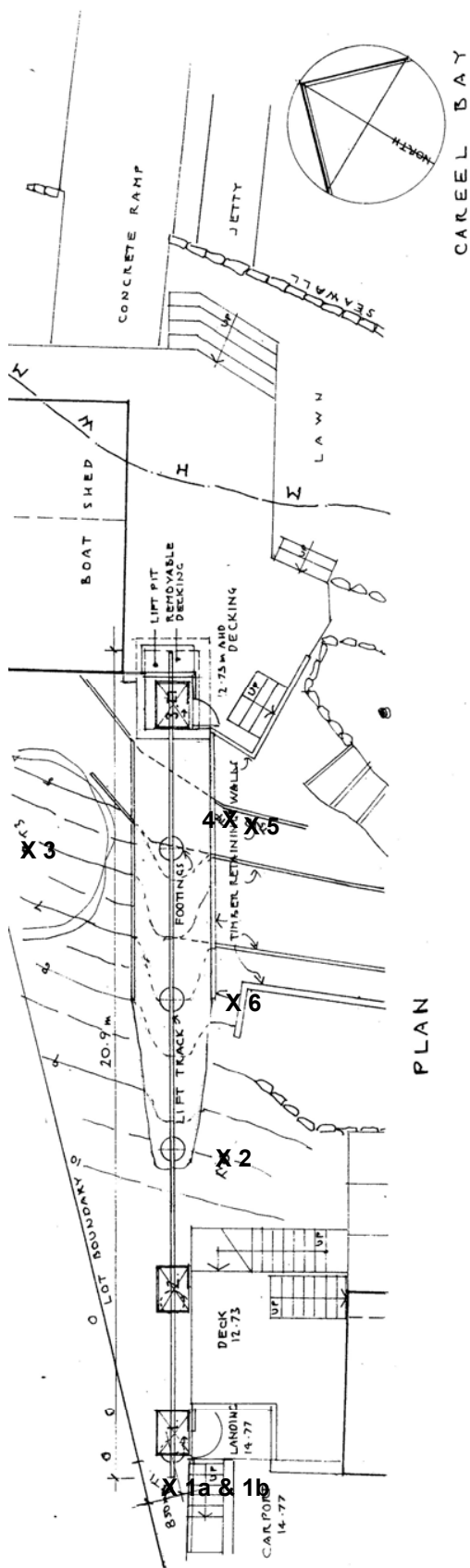
Senescence – The process of aging and death.

Significant Trees - trees that contribute substantially, either individually or as a component of a tree group to the landscape character, amenity, cultural values or biodiversity of their locality.

Structural Root Zone (SRZ) The portion of the root plate comprised primarily of structural woody roots (integral with the soil profile) providing the main mechanical support and anchorage of a tree, calculated in accordance with AS 4970:2009, expressed as a radial dimension in metres from the centre of the trunk.

Target – People or property potentially affected by tree failure

Tree Protection Zone (TPZ) - A specified area at a given distance from the trunk set aside for the protection of a tree's root system and canopy during land development works to ensure the long term viability and stability of a tree, calculated in accordance with AS 4970:2009.



Stephen Crosby & Assoc.
 Pty. Ltd.
 SCOTLAND ISLAND
 PO Box 204 Church Pt. NSW 2105
 M: 009 007 513 E: scrosby@interdoc.com.au
 2051 - DA 02

INCLINE LIFT
 60 CABARITA RD.
 AVALON
 Lot 1 DP 208499
 Date: 11/05/21
 Drawn: G. SMITH
 Checked: G. SMITH
 2051 - DA 02

Tree Survey
 60 Cabarita Rd
 Avalon

Figure 1



**Photo 1 view from Pittwater location
Of incline lift**



Photo 4 Trees 1a & 1b Bangalow Palms



**Photo 2 location of incline lift adjacent
to boat shed Yucca & Trees 4 & 5**



Photo 5 Tree 2 European Olive



Photo 3 Tree 3 *Ficus benjamina*

**Site Photos
60 Cabarita Rd
Avalon
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Figure 2