ANNEXURE 7

TREE MANAGEMENT CONSULTING ARBORICULTURISTS

ARBORICULTURAL ASSESSMENT

and

DEVELOPMENT IMPACT REPORT

for

Design Collaborative Pty Ltd
Level 4/225 Clarence Street
SYDNEY NSW 2000

SITE ADDRESS
1112 – 1118 BARRENJOEY ROAD
PALM BEACH NSW

JUNE 2009

MEMBER OF
INSTITUTE OF AUSTRALIAN
CONSULTING ARBORICULTURISTS

URBAN FORESTRY AUSTRALIA
Consulting Arboriculturists
www.urbanforestryaustralia.com.au

PO Box 151
Newport Beach NSW 2106
Email:cat@urbanforestryaustralia.com.au

Telephone: (02) 9918 9833
Facsimile: (02) 9918 9844
Mobile: 0414 997 417

CONTENTS

1 INTRODUCTION 3

2 METHODOLOGY 4

3 OBSERVATIONS AND DISCUSSION 5
3.1 Assessed Trees 5
3.2 Proposed Tree Removal 5
3.3 Potential Impacts on Trees Proposed for Retention 6

4 CONCLUSIONS 9

5 RECOMMENDATIONS 10
5.1 Tree Removal. 10
5.2 Minimising Impacts on Trees to be Retained. 10
5.3 Tree Protection Zones 11
5.4 General 12
5.5 Post Construction Tree Care 12

6 BIBLIOGRAPHY 14

APPENDIX A Terms and Definitions
APPENDIX B ULE Categories
APPENDIX C Site Photographs
APPENDIX D Schedule of Assessed Trees
APPENDIX E Tree Location Plan

1 INTRODUCTION

1.1 This Arboricultural report was commissioned by the Anastasopoulos family, on behalf of the owners of the subject site.
The subject site is identified as Lot 21 in DP 571298, and known as 1112 – 1118 Barrenjoey Road, Palm Beach, New South Wales.

1.2 This report is to accompany a development application to Pittwater Council for the proposed demolition of existing buildings, and construction of a mixed use development of the site.

1.3 The purpose of this report is to assess the *health* and *condition* of the surveyed trees, and identify the potential impacts the proposed development may have on those trees in proximity to the works.

1.4 This report gives recommendations for tree retention or removal, and provides guidelines for tree protection and maintenance.

1.5 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.

1.6 This Arboricultural report is not intended as an assessment of any impacts on trees by any proposed future development of the site, other than the current development application.

1.7 This report is not intended to be a comprehensive *hazard* 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.

2 METHODOLOGY

2.1 In preparation for this report, a ground level, visual assessment of the subject trees was undertaken by the author of this report on Tuesday 30 June, 2009.

2.2 Generally, where trees were visually accessible and, for the most part, physically accessible, their tree height and canopy spread was estimated.
Unless otherwise noted, trunk diameter was measured at 1.4 metres above ground level (*DBH*), using a diameter tape.

2.3 Trees located within dense, overgrown and steep areas are noted on the tree plan at the end of this report. These trees were not individually assessed.

2.4 Field observations were written down, and photographs taken of the site, trees and other features, using a Sony EOS1000D SLR digital camera.

2.5 No *aerial inspections*, root mapping or woody tissue testing were undertaken as part of this tree assessment.
Information contained in this report covers only the trees that were examined and reflects the health and condition of those trees at the time of inspection.

2.6 Plans and documents referenced for the preparation of this report include:

- Details & Levels Survey, Plan No. A1-4645 D, dated 24/11/00, prepared by Byrne & Associates Pty Ltd;
- Plans. Dwg Nos, DA04 – DA13 & DA15 – DA21, Issue A, dated February 2008, prepared by Lesiuk Architects Pty Ltd;

2.7 No hydraulic or landscape plans were assessed in the preparation of this report.

2.8 Trees are shown on a marked up excerpt of the Site Survey .The plan is attached as Appendix D – Tree Location Plan.

3 OBSERVATIONS AND DISCUSSION

3.1 Assessed Trees

3.1.1 Eight (8) trees or palms were assessed and are included in this report. Details of these are included in the Schedule of Assessed Trees – Appendix C. Of these trees:

- One (1) is a locally indigenous species (Tree 10),
- One (1) is exempt from protection under Pittwater Council's Tree Preservation and Management Order (Tree 6),
- Three (3) are introduced native species (Trees 1, 3 and 7),
- Three (3) are introduced exotic species (Trees 4, 5 and 9).

3.1.2 Trees 2 and 8 are not present. Tree 2 was removed by Council, and Tree 8 was approved for removal under the Tree Preservation and Management Order.

3.2 Proposed Tree Removal

3.2.1 The development proposal seeks to remove the existing vegetation within the site. The majority of the vegetated southeast part of the site is overgrown with noxious weed species including Privet, Giant Reed, rhizomatous bamboo and *Convolvulus*.

3.2.2 The proposal also seeks to remove those assessed trees within the site i.e. Trees 3, 4, 5 and 9 (Tree 6 is not a protected species).

3.2.3 Tree 3 consists of three (3) *Archontophoenix cunninghamiana* (Bangalow Palm). In general most palms are suitable for transplanting, however, Bangalow Palms resent disturbance and have a low transplant success rate. The cost of lifting, storing and maintaining these palms, combined with a low prospect of them surviving the disturbance, is not supportable.

3.2.4 Trees 4 and 5 are two (2) relatively young *Washintonia robusta* (Washington Palm), which could be lifted, stored and re-used in the landscape after construction. These are not considered to be *significant* landscape features, and could be replaced with the locally indigenous *Livistona australis* (Cabbage-tree Palm) if required.

3.2.5 It is our recommendation that the street tree (Tree 1) is also removed, and replaced with a suitable species. The tree has two defective branch attachments at the main stem and should not be retained.

3.3 Potential Impacts on Trees Proposed for Retention.

3.3.1 Impacts to two (2) trees located outside of the site, but in close proximity to the site boundaries, are discussed in this report.

3.3.2 Tree 7

This is a semi-mature *Melicope elleryana* (Pink-flowered Doughwood) located in the adjoining property to the north. The tree is approximately 2 – 2.5 metres from the north boundary wall of the existing general store at 1118 Barrenjoey Road.

3.3.3 The tree has an estimated radial *Structural Root Zone* (SRZ) of 2.3 metres, indicating a possibility that structural roots may meet the wall of the existing general store. If there are any woody roots at this location they are more than likely to run parallel to the building as there would be little opportunity for woody roots to grow beyond this wall.

3.3.4 Other woody roots of this tree may also be deflected by structures within the frontage of 1120 Barrenjoey Road although this was not investigated as I did not have permission to enter the property.

3.3.5 The proposal includes an excavation for vehicle access ramp on the northwest side of the site. Provided the excavation does not extend beyond the site boundary, it is unlikely roots belonging to this tree will be affected. The face of the excavation would need to be kept moist to prevent the soil drying out prior to construction of a boundary wall or landscaping.

3.3.6 The proposed frontage of the development will not impinge upon the canopy of the tree (see Figure 1, page 7), although damage to the crown of the tree could occur during demolition.

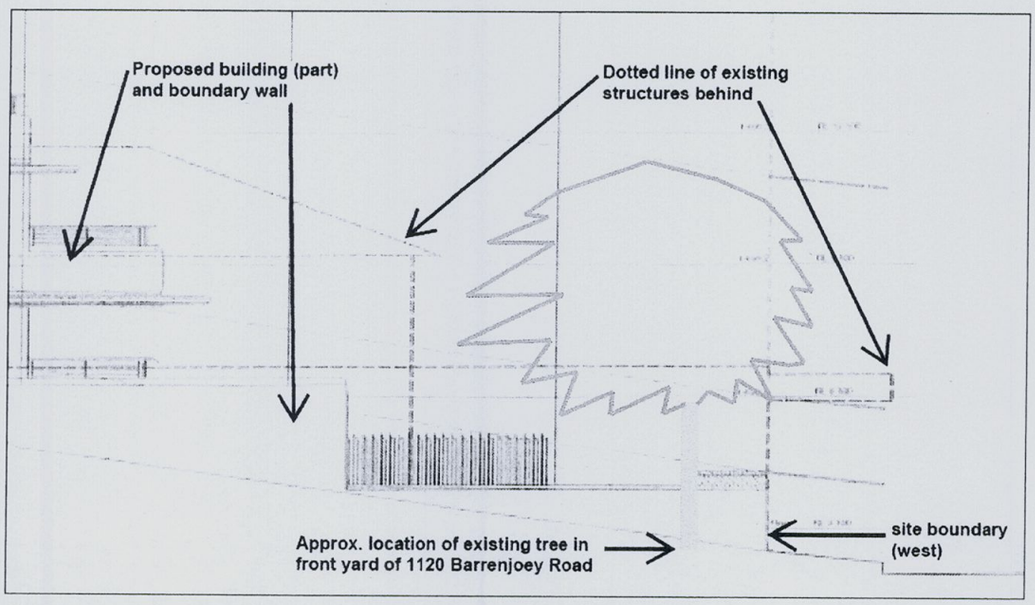


Figure 1 Mark up of north elevation showing the setback from the proposed building to the street frontage. The development will be well clear of the crown of Tree 7.

3.3.7 As long as this tree is appropriately protected during demolition of the existing general store, and soil disturbance beyond the site boundary is avoided during excavation and construction, the tree should not experience any impact from the proposal.

3.3.8 Tree 10

This is a semi-mature *Glochidion ferdinandi* (Cheese Tree) growing on a slope within the adjoining property to the south of the site. The density of undergrowth around the tree precludes any visual assessment of the stability of the trees supporting root system, particularly as I could not get close to the tree.

3.3.9 The proposed excavation is at an acceptable distance from the tree, and the south external wall would impact on less than 6% of the tree's 5 metre *Tree Protection Zone* (TPZ). However, the upper landscape terraces in the south east corner of the site include boundary walls which, at construction, may encounter woody anchor roots at the edge of the tree's 2.5 metre SRZ.

3.3.10 The changes in landscape levels may affect around 24% of the tree's estimated TPZ. As there is dense undergrowth currently occupying much of the southeast portion of the site, competition for soil resources may be discouraging roots of this tree from growing into the site. There is a relatively unrestricted area within the adjoining site, in which the tree grows, where soil resources are available for continued root growth, and there appears to be little, if any impedance to water movement from upslope and southeast of the tree.

3.3.11 Based on our current assessment of T10 an appropriate TPZ has been developed as detailed in 5.2.2 of this report. This TPZ may however need to be amended when the site vegetation is cleared and a closer inspection of the tree can be undertaken.

4 CONCLUSIONS

The majority of site is currently occupied by commercial buildings.
The undeveloped area to the south east is highly disturbed, with a dense cover of noxious and undesirable weeds. Most native vegetation has been smothered by vines and out competed by larger weed trees species.

All existing trees and vegetation are proposed for removal.
There are no significant trees, indigenous or otherwise, within the site

There are two (2) trees in neighbouring properties that are in close proximity to the site boundaries.
Tree 7 is unlikely to be affected by the development proposal; however, it will require consideration of its overhanging crown during the works to ensure it does not sustain injury, and protection of the excavated face adjacent to the tree to prevent root desiccation via drying out of the soil profile.
Tree 10 is so obscured by vegetation and weeds that is impossible at this stage to determine any extent of root growth into the site. However, based on observations of its canopy, we have prepared an appropriate TPZ. This TPZ however may be required to be amended once a more detailed investigation of the tree is made possible.

Arboricultural advice and supervision will be required at times during the project to ensure the trees are provided with the best possible protection from development impacts.

5 RECOMMENDATIONS

5.1 Tree Removal

5.1.1 Remove existing trees and weeds from the site.

5.1.2 Removal of vegetation within 5 metres of Tree 10 is to undertaken by hand.

5.2 Minimising Impacts on Trees to be Retained.

5.2.1 Tree 7

- Prior to demolition, an Australian Qualification Framework Level 5 (AQF5) arboriculturist is to meet with the demolition contractor and arrange appropriate protection measures to avoid damage to the overhanging branches of the tree.
- Demolition of footings within 5 metres of the tree is to be supervised by an AQF5 arboriculturist.
- Excavation within 5 metres of the tree is to be supervised by an AQF5 arboriculturist.
- The face of the excavation within 5 metres of the tree is to be lightly watered and covered with thick fabric, such as layers of hessian or jute, to minimise soil moisture losses from the tree's root zone.
- Plastic is NOT to be used to cover the face of excavation as it can heat up and burn exposed tree roots.

5.2.2 Tree 10

- Rigid, immovable fencing is to be placed as shown in Figure 2, page 11.
- Fencing is to be in accordance with section 5.3 of this report.
- Sediment control devices are to be installed upslope of the tree to avoid any movement of loose material over the root zone.
- Fencing and other protection devices are to be inspected and certified as satisfactory by a qualified arboriculturist, prior to works commencing.

- An AQF5 arboriculturist is to supervise works within 5 metres of this tree, including construction of boundary walls.

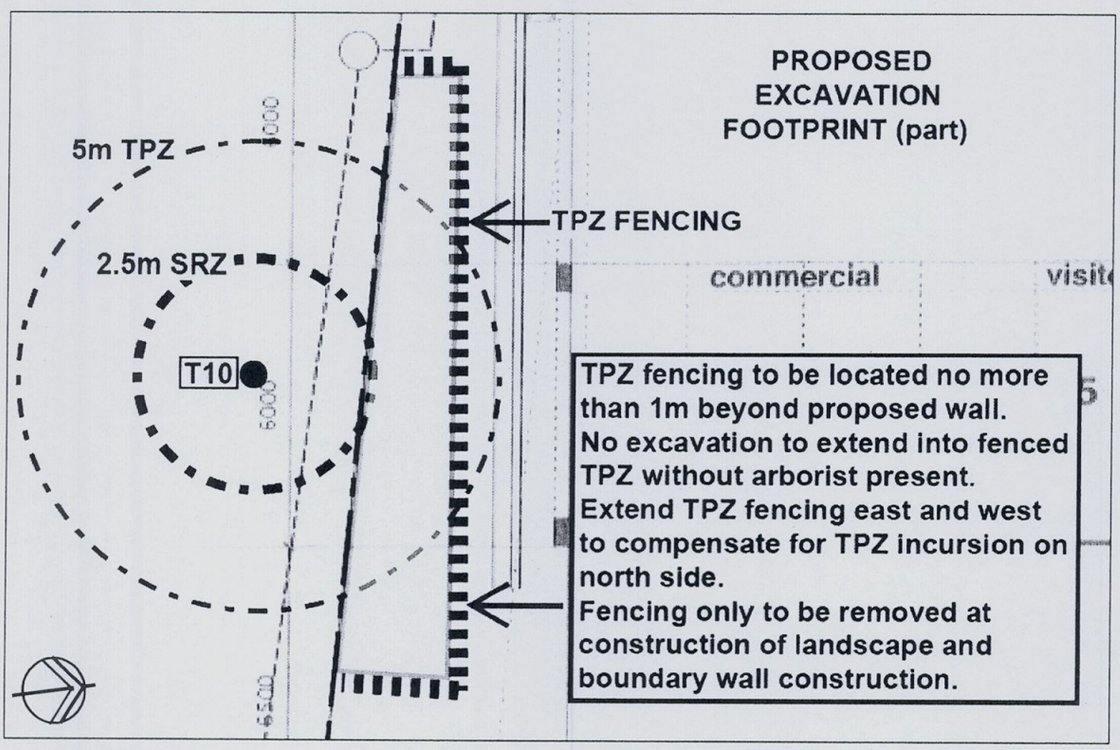


Figure 2 Protection fencing is required as shown during excavation of the development footprint. The project arboriculturist is to supervise works for landscape and boundary walls within the TPZ. Fencing may only be removed or relocated at the discretion of the arboriculturist.

5.3 Tree Protection Zones

5.3.1 The Tree Protection Zone (TPZ) is to be in accordance with the following:

- Prior to any site works commencing, the project arboriculturist and the principal site contractor must meet on site to discuss appropriate tree protection devices, and the location of Tree Protection Zones (TPZ)'s
- The most appropriate fencing for TPZ is 1.8m chainlink with 50mm metal pole supports. During installation care must be taken to avoid damage to significant roots. The practicality of providing this fencing on this site must be addressed by the arboriculturist.
- Locate large primary roots by careful removal of soil within the fencing area. ***Do not drive any posts or pickets into tree roots.*** Replace soil back over tree roots.
- Protection devices may include mulching, tree guards and other devices other than fencing.

- TPZ must be in place prior to any site works commencing, including clearing, demolition or grading.
- Any areas of the root zone, particularly the SRZ, outside the TPZ must, where practicable, be covered in thick, coarse mulch to a depth of 100mm to reduce soil compaction and soil moisture losses.
- It is recommended that the arboriculturist provide written certification that the TPZ is installed and will satisfy tree protection requirements.
- Nothing should occur inside the TPZ, so therefore all access to personnel and machinery, storage of fuel, chemicals, cement or site sheds is prohibited.
- No washing or rinsing of tools is to be carried out upslope of any trees, or within 8 metres of the trees.
- Signage should explain exclusion from the area defined by TPZ and carry a contact name for access or advice.
- ***The TPZ cannot be removed, altered, or relocated without the project arborists' prior assessment and approval.***

5.4 General

5.4.1 The following general comments apply to trees nominated for retention.

- Service trenches should not pass through a fenced area, although if this cannot be avoided, a qualified arboriculturist should be present to supervise excavation, cut torn roots cleanly or redesign around roots.
- Any roots that must be severed must be cut cleanly with a sharp handsaw. Tearing of roots is not acceptable.
- No stockpiling can take place around the root zone.
- A qualified arboriculturist must be retained to carry out and/or supervise works within the optimal TPZ of the trees (Refer to Appendix C for TPZ setbacks).
- Providing a regular supply of water to the tree during the period of works is recommended.
- During this period it also recommended that the trees be given fortnightly applications of a rooting hormone, such as Hormone 20® to encourage the development of new roots.
- Removal of mulch is advised after construction to remove any contaminants.
- Regular monitoring of the trees during development works for unforeseen changes or decline will help maintain the trees in a healthy state.

5.5 Post Construction Tree Care

5.5.1 Tree preservation requires a long-term commitment to monitoring and rectifying problems associated with trees.

- Mulching – removal of mulch after construction to remove any contaminants. Replacement with a good quality mulch and addition of 10% organic matter will improve beneficial soil micro-organisms, retain moisture and improve aeration and water infiltration.

- Pruning - Removal of any deadwood from the trees is recommended prior to project commencement.
- A minimum amount of live material should be removed from trees so they have maximum photosynthetic ability to develop new roots to adapt to new conditions.
- All pruning work must be carried out by a qualified arborist and be to Australian Standard 4373-2007 Pruning of Amenity Trees.
- Irrigation – An arboriculturist should determine whether irrigation should be carried out during extended periods of drought.
- Pest management – Monitoring is required as trees under stress are more prone to insect attack.
- Hazard Management – monitoring and management of the trees and routine re-assessment by a qualified arboriculturist is required for adequate long-term safety of residents.

Should you require further assistance with this matter, or require my liaison with Council officers, please do not hesitate to contact me.

Yours faithfully,

MEMBER ISA

MEMBER OF INSTITUTE OF AUSTRALIAN CONSULTING ARBORICULTURISTS

Australian Institute of Horticulture

Catriona Mackenzie
Consulting arboriculturist, horticulturist and landscape designer.
Certificate of Horticulture *Honours*
Diploma of Horticulture (Arboriculture) *Distinction*
Associate Diploma of Applied Science (Landscape) *Distinction*
Member of the Australian Institute of Horticulture
Member of the International Society of Arboriculture Australian Chapter
Founding Member of the Institute of Australian Consulting Arboriculturists

6 BIBLIOGRAPHY

Barrell, J (1995) *Pre-development Tree Assessment* from *Trees and Building Sites*, Eds. Watson & Neely, International Society of Arboriculture, Illinois.

British Standards Institute, *BS 5837:2005 British Standard Guide for Trees in Relation to Construction*, British Standard Institute, London.

Mattheck, C. & Breloer, H.(1999) *The Body Language of Trees.* Research for Amenity Trees No.4, The Stationary Office, London.

APPENDIX A

TERMS AND DEFINITIONS

TERMS AND DEFINITIONS

The following relates to terms or abbreviations that may have been used in this report and provides the reader with a detailed explanation of those terms.

Aerial inspection Where the subject tree is climbed by a professional tree worker or arborist specifically to inspect and assess the upper stem and crown of the tree for signs or symptoms of defects, disease, etc.

Age classes

- **Y** *Young* refers to a well-established but juvenile tree
- **SM** *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
- **LM** *Late Mature* refers to a full sized tree with little capacity for growth that is not yet about to enter decline
- **OM** *Over-mature* refers to a tree about to enter decline or already declining
- **LS** *Live Stag* refers to a tree in a significant state of decline. This is the last life stage of a tree prior to death

Condition 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.

Cluster describes a group of branches or stems arising from the same point on a larger branch or stem.

Crown All the parts of a tree arising above the trunk where it terminates by its division forming branches, e.g. the branches, leaves, flowers and fruit: or the toal amount of foliage supported by branches.

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

Dieback Death of growth tips/shoots and partial limbs, generally from tip to base. Dieback is often an indicator of stress and tree health.

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.

Inclusion - stem/bark, the pattern of development at branch or stem junctions where bark is turned inward rather than pushed out. This fault is located at the point where the stems/branches meet. This is normally a genetic fault and potentially a weak point of attachment as the bark obstructs healthy tissue from joining together to strengthen the joint.

Significant tree
1. Significant trees are trees that:
   i. are listed as Heritage Items in *Pittwater LEP 1993*; and/or
   ii. contribute substantially, either individually or as a component of a tree group, to the landscape character, amenity, cultural values or biodiversity of their locality. (Generally trees with a girth greater than 500mm and a canopy spread of 6m radius would be considered significant however this should be confirmed by an independent arborist.) Pittwater Council DCP – *Pittwater 21*, Section A, p.31.

Structural Root Zone (SRZ) refers to the critical area required to maintain stability of the tree. Only thorough investigation into the location of structural roots within this area can identify whether any minor incursions into this protection zone are feasible.

Topping or heading is a pruning practice that results in removal of terminal growth leaving a cut stub end. Topping causes serious damage to the tree.

Tree Protection Zone (TPZ), generally the minimum distance from the center of the tree trunk where protective fencing or barriers are to be installed to create an exclusion zone. The **TPZ** surrounding a tree aids the tree's ability to cope with disturbances associated with construction works. Tree protection involves minimising root damage that is caused by activities such as construction. Tree protection also reduces the chance of a tree's decline in health or death and the possibly damage to structural stability of the tree from root damage.
To limit damage to the tree, protection within a specified distance of the tree's trunk must be maintained throughout the proposed development works. No excavation, stockpiling of building materials or the use of machinery is permitted within the TPZ.

USEFUL LIFE EXPECTANCY (ULE)
In a planning context, the time a tree can expect to be usefully retained is the most important long-term consideration. ULE i.e. a system designed to classify trees into a number of categories so that information regarding tree retention can be concisely communicated in a non-technical manner.
ULE categories are easily verifiable by experienced personnel without great disparity.
A tree's ULE category is the life expectancy of the tree modified first by its age, health, condition, safety and location (to give safe life expectancy); then by economics (i.e. cost of maintenance - retaining trees at an excessive management cost is not normally acceptable); and finally, effects on better trees, and sustained amenity (i.e. establishing a range of age classes in a local population).
ULE assessments are not static but may be modified as dictated by changes in tree health and environment. Trees with a short ULE may at present be making a contribution to the landscape, but their value to the local amenity will decrease rapidly towards the end of this period, prior to them being removed for safety or aesthetic reasons.
For details of ULE categories see Appendix B, modified from Barrell 2001.

APPENDIX B

ULE CATEGORIES

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.

APPENDIX C

SITE PHOTOGRAPHS

Plate 1 (above)
Tree 7, located in the front yard of 1120 Barrenjoey Road. The crown of the tree slightly overhangs the existing general store on the site.

Plate 2 (left)
Tree 10, located in1110 Barrenjoey Road, and close to the site's south boundary.

Plate 3 Looking south/southeast from roofline of 1118 Barrenjoey Road. Dense, weedy trees and undergrowth occupy the southeast part of the site. Note native trees have been killed by competing vegetation.

Plate 4 Looking southeast from Barrenjoey Road. Introduced palms and a Weeping Fig divide the café seating area from the car park (just visible behind vegetation).

APPENDIX D

SCHEDULE OF ASSESSED TREES

SCHEDULE OF ASSESSED TREES

1112 – 1118 Barrenjoey Road, Palm Beach. 30 June, 2009

Tree No.	Species and Common Name	H (m)	Sp (m)	DBH (mm)	Age	V	C	Comments	ULE	LSR	RV	SRZ (m)	TPZ (m)
1	*Cupaniopsis anacardioides* Tuckeroo	4 – 4.5	5	160 @ 1m AGL	SM	Good	Fair to Poor	Introduced native species. Street tree. Stem **cluster** @ 1.3m AGL with tight **inclusions** between stems. Planted directly beneath power lines – will be subjected to routine **topping** and disfigurement.	5A	L	L		
2	Not present							Old street tree removed by Council.					
3	*Archontophoenix cunninghamiana* Bangalow Palm (3)	7 – 8	4	200	SM	Good	Good	Introduced native palm species. Planted in raised garden bed less than 1m wide. No other special problems visibly apparent at time of inspection.	2C	M	M		
4	*Washingtonia robusta* Washington Palm	7	3	500	SM	Good	Good	Introduced exotic palm species. Growing in raised bed with notable restriction of base of palm.	2B	M	L		
5	*Washingtonia robusta* Washington Palm	11	4	500	SM	Good	Good	Introduced exotic palm species. Some restriction to root mass @ base of palm.	2A	M	M		
6	*Ficus benjamina* 'Exotica' Weeping Fig							Introduced exotic species. Exempt from protection under Tree Preservation and Management Order.					
7	*Melicope elleryana* syn. *Euodia elleryana* Pink-flowered Doughwood	8	7	*300	SM	Good	-	Introduced native species. Outside property boundary. Estimated to be about 2 – 2.5m from wall of existing general store. Crown overhand site by about 2 -3m. No access to property – structural condition of tree unknown.	-	M	-	2.3	5
8	Not present							Tree previously removed with approval under Tree Preservation and Management Order.					
9	*Jacaranda mimosifolia* Jacaranda	7	5	*150	SM	Good	Fair	Introduced exotic species. Growing at base of building. Generally of fair condition due to minor branch tear out. Some minor **dieback** of upper crown noted.	2B	L	L		
10	*Glochidion ferdinandi* Cheese Tree	8	8	*350	SM	Good	-	Locally indigenous species. Outside property boundary. No access for assessment of tree condition. Appears crown of tree extends approximately 3 metres into subject site.	-	M	-	2.5	5

KEY

Trees to be retained. Individual trees may benefit from Crown Maintenance pruning as defined in Australian Standard 4373-2007 Pruning of Amenity Trees.

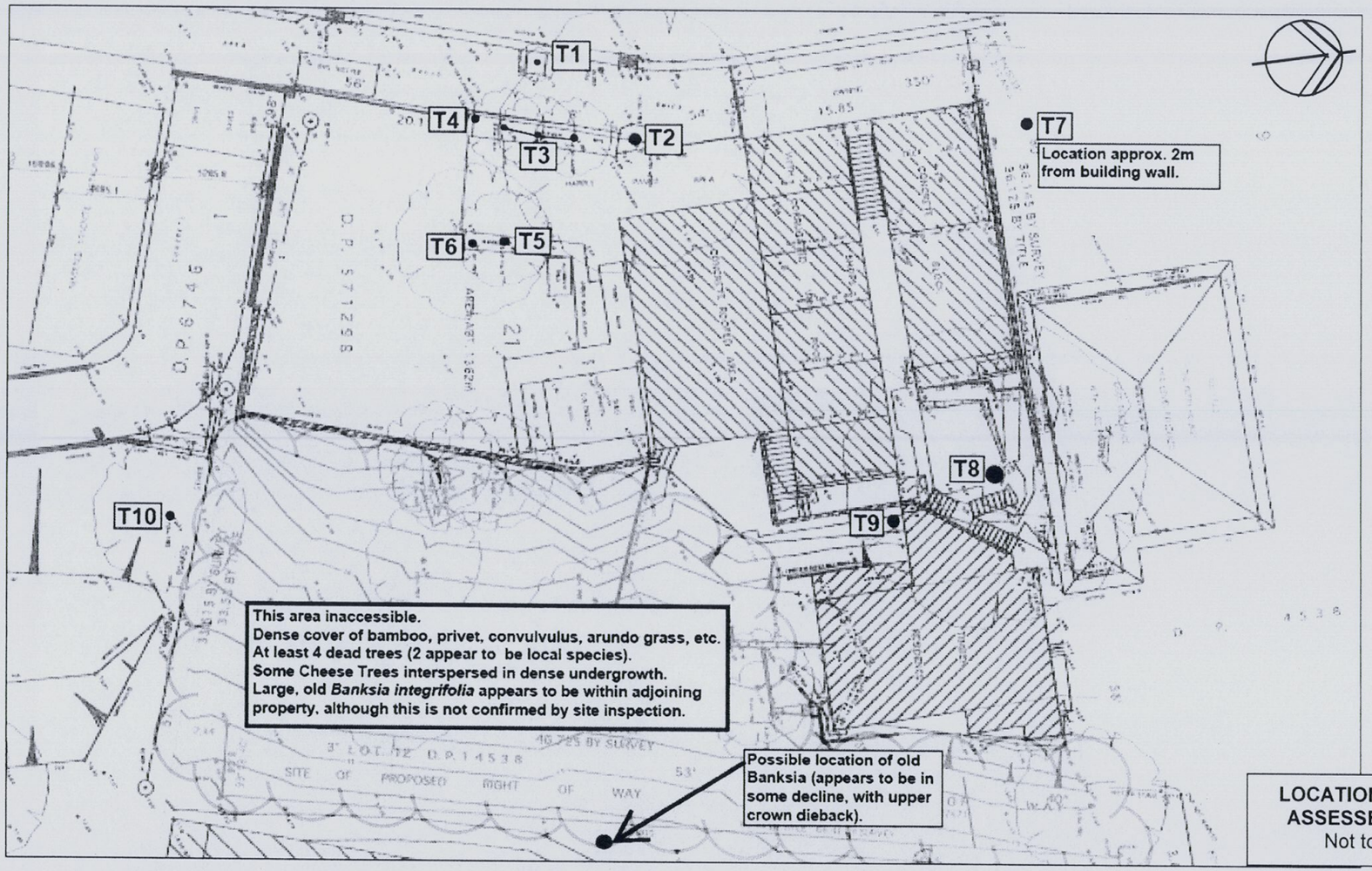
Trees recommended for removal due to poor health and/or condition and/or within development footprint.

*DBH - visually estimated.
AGL - above ground level.

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 spread in metres, of branches/canopy 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 millimetres.
Age refer to Appendix A -Terms and Definitions for more detail.
V refers to the tree's vigour (health). Refer to Appendix A -Terms and Definitions for more detail.
C refers to the tree's form and growth habit, as modified by its environment and the state of the scaffold i.e. trunk and major branches. Refer to Appendix A -Terms and Definitions for more detail. Note: Where further investigation or testing of trees to be retained is required, a Condition rating cannot be provided for those trees until these investigations have taken place.
ULE refers to the estimated Useful Life Expectancy of a tree. Refer to Appendix A -Terms and Definitions for more detail.
Note: Where further investigation or testing of trees is required, a ULE cannot be accorded to those trees until these investigations have taken place.
LSR refers to the Landscape Significance Rating of a tree, considering the importance of the tree as a result of its prominence in the landscape and its amenity value, from the point of public benefit. Refer to Appendix A -Terms and Definitions for more detail.
RV refers to the retention value of a tree, based on the tree's ULE *and* LSR. Refer to Appendix A -Terms and Definitions for more detail.
SRZ Structural Root Zone (SRZ) refers to the critical area required to maintain stability of the tree. Refer to Appendix A -Terms and Definitions for more detail.
TPZ refers to the *tree protection zones* for trees to be retained. It is based on the combination of the Crown Protection Zone (CPZ) and the Root Protection Zone (RPZ), to ensure appropriate protection of below and above ground tree parts. See table below. Note: TPZ will not be less than 2 metres for any tree.

Tree Age	Tree vigour (health)	RPZ	CPZ	TPZ
Young trees (age less than 20% of life expectancy in situ)	Good vigour Poor vigour	5 x DBH 9 x DBH	As determined by crown area to be protected	As determined by combining RPZ and CPZ.
Mature trees (age between 20% and 80% of life expectancy in situ)	Good vigour Poor vigour	9 x DBH 12 x DBH	As determined by crown area to be protected	As determined by combining RPZ and CPZ.
Over mature trees (age greater than 80% of life expectancy in situ)	Good vigour Poor vigour	12 x DBH 15 x DBH	As determined by crown area to be protected	As determined by combining RPZ and CPZ.

APPENDIX E
TREE LOCATION PLAN



LOCATION PLAN OF ASSESSED TREES
Not to scale