

TREE MANAGEMENT CONSULTING ARBORICULTURISTS

ARBORICULTURAL IMPACT ASSESSMENT

for

Ray and Mary Trevisan C/- Gartner Trovato Architects 10 Park Street MONA VALE NSW 2103

SITE ADDRESS

337 LOWER PLATEAU ROAD BILGOLA PLATEAU

DECEMBER 2022

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1 INTRODUCTION

- 1.1 This Arboricultural Impact Assessment (AIA) prepared by Urban Forestry Australia (UFA) was commissioned by Gartner Trovato Architects, on behalf of the owners of the subject site. "The site" is identified as Lot 5 in D.P. 222134, and known as 377 Lower Plateau Road, Bilgola Plateau, New South Wales.
- **1.2** This AIA is to accompany a development application to Northern Beaches Council for a proposed subdivision of the site into three (3) lots and construction of one dwelling on each lot.
- **1.3** The purpose of this report is to assess the *vigour* and *condition* of the surveyed trees, and identify the potential impacts the proposed development may have on those trees to be retained 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 AIA 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 tree *risk* assessment; however, the report may make recommendations, where appropriate, for further assessment, treatment or testing of trees where potential structural problems have been identified, or where below ground investigation may be required.

2 METHODOLOGY

- 2.1 In preparation for this report, ground level, *visual tree assessments*¹ (VTA) of two hundred and eighty seven (287) trees or tree groups, including limited VTA's of several trees on adjoining properties, were undertaken by Chantalle Hughes and Geoff Nugent for Urban Forestry Australia on 28 February and 3 March 2022. Inspection details of these trees are provided in Appendix D—Schedule of Assessed Trees.
- 2.2 Tree heights and canopy spreads were visually estimated or measured using Nikon ForestryPro and Leica Disto X4 laser measurers. Unless otherwise noted in Appendix E, all trunk diameters were measured at approximately 1.4 metres above ground level ("the DBH"), using a Yamiyo diameter tape.
- **2.3** Field observations were written down, and photographs of the site and trees were taken using an Canon EOS DSLR camera and/or iPhone 11.
- 2.4 No *aerial inspections*, *root mapping* or woody tissue testing were undertaken as part of this tree assessment. Information contained in this tree report covers only the trees that were examined and reflects the condition of those trees at the time of inspection.
- **2.5** Plans and documents referenced for the preparation of this report include:
 - Survey Plan, Dwg No. 11342/21, prepared by Stutchbury Jaques Surveyors dated 17 January 2022.
 - Plans 01 09 prepared by Gartner Trovato Architects dated 30 August 2022.
 - o Pittwater 21 Development Control Plan
 - o Schedule 5 Environmental Heritage of the Pittwater Local Environment Plan.
 - AS4970-2009 Protection of trees on development sites, Standards Australia.
- 2.6 No hydraulic service or landscape plans have been reviewed in preparation of this report.
- **2.7** The subject trees are shown on marked-up excerpts of the survey plan. These marked-up plans are attached at Appendix E—Tree Location Plans.

¹ Visual Tree Assessment (VTA) is a ground level inspection procedure of symptom analysis developed by Mattheck and Breloer (1994) that uses the growth response and form of trees to detect existing or potential issues with structural stability of a tree or any of its parts. VTA may identify features of concern that require advanced assessment techniques such as a Level 2 or 3 Tree Risk Assessment.

Arboricultural Impact Assessment for 337 Lower Plateau Rd., Bilgola Plateau. December 2022 © Urban Forestry Australia 4 of 57

3.1 Assessed Trees

- 3.1.1 This AIA takes account of prescribed trees pursuant to Part B4.22 *Preservation of Trees and Bushland Vegetation* of the Pittwater 21 Development Control Plan (PDCP), and non-prescribed (exempt) trees as specified in Table 1, Part B4.22 of the PDCP.
- 3.1.2 287 trees (prescribed and non-prescribed) were assessed or identified and are included in this report. Details of these are included in the Schedule of Assessed Trees—Appendix D.
- 3.1.3 The assessed trees and their respective *Retention Value* (RV) are identified in Table 1, below. Note: Refer to Appendix B for the methodology used to assess the Retention Value of a tree.

	EXEMPT	LOW RV	MEDIUM RV	HIGH RV	
	(site only)	(site only)	(site only)	(site only)	ADJOINING
	1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12,	4, 15, 50, 186,	49, 55, 56A,	14, 64, 66, 67,	2A, 17, 18,
	13, 16, 20, 21, 22, 23, 24, 25,	223, 230, 263	57A, 69, 76,	68, 70, 90, 97,	19, 24A, 36,
	26, 27, 28, 29, 30, 31, 32, 33,		90A, 94, 96, 99,	116, 121, 144,	37, 44, 68A,
	34, 35, 38, 39, 40, 41, 42, 43,		101, 101A,	151, 179, 194,	79, 80, 81, 82,
	45, 46, 47, 48, 51, 52, 53, 54,		103A, 108, 111,	213, 225, 228,	83, 84, 85, 86,
	56, 57, 58, 59, 60, 61, 62, 63,		112, 113, 114,	236, 237, 238,	87, 214, 215,
	65, 71, 72, 73, 74, 75, 77, 78,		115, 117, 129,	274, 276, 279	216, 218, 219,
	88, 89, 91, 92, 93, 95, 98, 100,		131, 132, 133,		221, 222, 229
	102, 103, 104, 105, 106, 107,		138, 139, 140,		
	109, 110, 118, 119, 120, 122,		143, 152, 154,		
	123, 124, 125, 126, 127, 128,		157, 168, 169,		
Tree	130, 134, 135, 136, 137, 141,		175, 176, 177,		
No	142, 145, 146, 147, 148, 149,		178, 180, 181,		
	150, 153, 155, 156, 158, 159,		182, 183, 185,		
	160, 161, 162, 163, 164, 165,		187, 189, 190,		
	166, 167, 170, 171, 172, 173,		199, 210, 211,		
	174, 184, 188, 191, 192, 193,		217, 220, 226,		
	195, 196, 197, 198, 200, 201,		227, 231, 232,		
	202, 203, 204, 205, 206, 207,		233, 243, 257,		
	208, 209, 212, 224, 234, 235,		260, 261, 266,		
	239, 240, 241, 242, 244, 245,		270, 272, 275,		
	246, 247, 248, 249, 250, 251,		277		
	252, 253, 254, 255, 256, 258,				
	259, 262, 264, 265, 267, 268,				
	269, 271, 273, 278				
Total (287)	167	7	64	23	26

Table 1: Retention Value of Assessed Trees

- 3.1.4 Of the 287 assessed trees, 26 are on adjoining properties, leaving a total of 261 trees on the site.
- 3.1.5 One notable feature of the site trees is many are quite suppressed, growing in what could be described as an overgrown landscape comprised of many exotics and introduced native species, with fewer locally indigenous species than might be expected.
- 3.1.6 There are trees where the canopies are so narrow and tall, with other trees beneath them, that accurate identification was not possible at the time of the assessments. The weather was so poor, being very wet and with bouts of heavy rain, it compounded the issue with correct identification of half a dozen or so trees. Due to our familiarity with locally indigenous species, it is very likely these unidentified trees are introduced rainforest species from outside provenance.
- 3.1.7 No known species of assessed tree on the site is subject to threatened conservation status under Australian and/or State Government legislation (i.e. NSW *Biodiversity Conservation Act* 2016, and the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999).

3.2 Proposed Removal of Prescribed Trees

- 3.2.1 Twenty-six (26) prescribed site trees are proposed to be removed to facilitate the subdivision and construction of the proposed 3 dwellings.Of these:
 - one (1) is a High RV tree Tree 97 Angophora costata (Smooth-barked Apple);
 - twenty-three (23) are Medium RV trees mainly Cyathea cooperii (Rough tree-fern), and
 - two (2) are low RV trees a Rhododendron and a Giant White Bird of Paradise.
- 3.2.2 The majority of trees to be removed are exempt from protection under the PDCP and do not require authority approval to remove.

Table 2: Proposed Tree Removal

	EXEMPT (site only)	LOW RV (site only)	MEDIUM RV (site only)	HIGH RV (site only)
Tree No.	1, 2, 3, 5, 6, 7, 8, 16, 24, 27, 32, 33, 34, 35, 43, 45, 46, 51, 58, 71, 72, 73, 74, 75, 98, 100, 102, 103, 104, 105, 106, 107, 109, 110, 126, 127, 128, 130, 141, 146, 147, 148, 149, 150, 158, 208, 209, 241, 242, 246, 247, 248, 249, 250, 252, 253, 254, 255, 256, 258, 259, 262, 264, 265, 267, 268, 269	50, 263	49, 96, 99, 101, 101A, 103A, 108, 111, 112, 113, 129, 131, 132, 133, 138, 139, 140, 210, 211, 257, 260, 261, 266	97
Total (93)	67	2	23	1

3.3 **Proposed Tree Retention**

3.3.1 One hundred and sixty-eight (168) trees are proposed to be retained as indicated in Table3, below.

Table	3: Pro	posed	Tree	Retention
1 4 1 1 0	0.110	pooou	1100	1 10101111011

	EXEMPT	LOW RV	MEDIUM RV	HIGH RV
	(site only)	(site only)	(site only)	(site only)
Tree No.	9, 10, 11, 12, 13, 20, 21, 22, 23, 25, 26, 28, 29, 30, 31, 38, 39, 40, 41, 42, 47, 48, 52, 53, 54, 56, 57, 59, 60, 61, 62, 63, 65, 77, 78, 88, 89, 91, 92, 93, 95, 118, 119, 120, 122, 123, 124, 125, 134, 135, 136, 137, 142, 145, 153, 155, 156, 159, 160, 161, 162, 163, 164, 165, 166, 167, 170, 171, 172, 173, 174, 184, 188, 191, 192, 193, 195, 196, 197, 198, 200, 201, 202, 203, 204, 205, 206, 207, 212, 224, 234, 235, 239, 240, 244, 245, 251, 271, 273, 278	4, 15, 186, 223, 230,	55, 56A, 57A, 69, 76, 90A, 94, 114, 115, 117, 143, 152, 154, 157, 168, 169, 175, 176, 177, 178, 180, 181, 182, 183, 185, 187, 189, 190, 199, 217, 220, 226, 227, 231, 232, 233, 243, 270, 272, 275, 277	14, 64, 66, 67, 68, 70, 90, 116, 121, 144, 151, 179, 194, 213, 225, 228, 236, 237, 238, 274, 276, 279
Total (168)	100	5	41	22

3.3.2 It is my understanding that the existing driveway handle from Lower Plateau Road to the developable part of the site is to be retained as is. There are three retained trees, including adjoining trees that will require robust trunk, branch, root flare and root protection devices to be put in place pre-demolition and site clearing, but these trees should not be adversely affected by the proposed development.

3.4 Potential Impacts on Trees Proposed for Retention

- 3.4.1 Under the Australian Standard 4970-2009 Protection of trees on development sites (AS4970), encroachments less than 10% of the Tree Protection Zone (TPZ) are considered to be minor. This 10% is interpreted as a threshold figure and the trigger where arboricultural investigations into TPZ encroachments greater than this figure need to be considered. Guidelines for assessing the impacts of 10% or greater encroachments are provided at 3.3.4 of AS4970.
- 3.4.2 The exempt trees to be retained have not been assessed for development impacts. Most of these trees are outside construction areas or will not be adversely affected by the proposed works. In any case, should any exempt species be affected it can be removed.
- 3.4.3 There are several prescribed site and adjoining trees that have nil, or assessed negligible or minor (i.e. <10%) TPZ encroachments and are not considered to be impacted by the proposal. Some of these trees will require protection during works.</p>

 Table 4: Assessed prescribed site and adjoining trees where the estimated TPZ encroachment is nil, negligible or less than 10%

	LOW RV	MEDIUM RV	HIGH RV	ADJOINING
Tree No.	4, 15, 186, 223, 230,	56A, 57A, 69, 90A, 114, 115, 117, 143, 152, 154, 168, 169, 175, 176, 177, 178, 180, 181, 182, 183, 185, 187, 189, 190, 199, 217, 220, 226, 227, 231, 232, 233, 243, 270, 272, 275, 277	14, 64, 66, 67, 68, 90, 121, 144, 151, 179, 194, 213, 225, 228, 236, 238, 274, 276, 279	2A, 17, 18, 19, 24A, 36, 37, 44, 68A, 81, 82, 83, 84, 86, 87, 214, 215, 216, 218, 219, 221, 222, 229

3.4.4 The potential extent of root zone impacts to protected trees to be retained can be generally rated using the *Impact Level Rating* ("ILR") Table 5, below.

 Table 5: Guideline to the rating of impacts on trees to be retained

IMPACT	LEVEL RATING
0	0 – 0.9% of root zone impacted – no impact of significance
L	1 to 10% of root zone impacted – low (minor) level of impact
L - M	>10 to 15% of root zone impacted – low (minor) to moderate level of impact
М	>15 to 20% of root zone impacted – moderate level of impact
M – H	>20 to 25% of root zone impacted – moderate to high level of impact
Н	>25 to 35% of root zone impacted – high level of impact
S	>35% of root zone impacted – significant level of impact

Notes.

1. The above is based on discussions with executive members of the Institute of Australian Consulting Arboriculturists.

2. Any encroachment into the SRZ of a tree is technically a major encroachment. Root mapping or design modifications in this zone may be warranted.

3.4.5 Table 6 below provides the numerical TPZ encroachments estimated for potentially affected trees. The following paragraphs address each tree in detail.

Tree No.	Tree	Tree located on site	SRZ affected	TPZ area (m²)	*TPZ encroachment (approx. m ²)	TPZ encroachment (approx. %)	TPZ ILR
55	Ivory Curl tree	✓	\checkmark	41	4.6	11.2	L-M
70	Tallowwood	✓	×	191	40 (8)	21 (4)	M-H (L)
76	Willow Myrtle	✓	~	72	36.5 (15)	51 (21)	M-H (L-M)
79	Illawarra Flame tree	×	unlikely	41	0	0	L
80	Illawarra Flame tree	×	unlikely	18	0	0	L
85	Smooth-barked apple	×	possible	104	7	6.7	L
94	Sandpaper fig	~	unlikely	41	4.5	11	L-M
116	Brush Box	\checkmark	×	124	8	6.5	L
157	Rough tree fern	\checkmark	NA	38.5	6	15.5	М
237	Norfolk Island pine	✓	×	72	2.5	3.5	L

Table 6: Impact Level Rating: Estimated encroachments into the TPZ of trees proposed	for retention.
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*Overall notional encroachments are noted in Table 6 above, however actual encroachments are assessed in regard to species tolerance, tree age and vigour, site features, and context of the development (e.g. elevated structures which avoid bulk excavation will significantly reduce impacts). These estimated 'actual' encroachments and impact ratings are shown in parentheses above, and are discussed in more detail for individual trees, below.

<u>Note 1</u>: Any SRZ encroachment identified is a major encroachment and must be assessed as part of the overall TPZ encroachment. So, even a calculated minor TPZ encroachment can be raised to a major one if the SRZ is affected.

<u>Note 2</u>: These figures are based on the *notional* SRZ and TPZ's offsets of the trees as calculated under AS4970 and do not necessarily reflect the actual root zones of the trees. Existing at or below ground structures, site topography and soil hydrology will influence the presence, spread and direction of tree root growth.

3.4.6 <u>Tree 55</u>— Ivory Curl tree

Structural Root Zone:

- Demolition of existing shed.
- New pavement for driveway.

Tree Protection Zone:

- Approximately 4.6m² will be affected by the new driveway, noting the removal of a much greater area of pavement will improve the growing conditions of this small tree.
- See pavement removal recommendations at 5.3.4.

Pruning:

• Pruning of the tree is unlikely; if required, it may only be small material confined to the area closest to the proposed driveway.

Tree 70—Tallowwood

Structural Root Zone:

• The suspended ground floor footprint is just outside the SRZ notional radius. Placement of supporting piers will likely avoid any structural roots at this distance, although as a precautionary approach, an arborist should be on site to do some pre piering investigation.

Tree Protection Zone:

- Approximately 3m² will be affected by the lower floor footprint some 6.25m from the tree.
- Approximately 40m² of the ground floor and suspended driveway footprint is within the notional TPZ radius, however, this floor is above natural ground by more than 2m and the driveway is almost fully suspended except for a small area furthest from the tree.
- Piers within the TPZ will take up some area, although it is anticipated this would be less than 5m².
- The overall, theoretical extent of TPZ encroachment is estimated at around 43m2 or 22.5%, however, it is noted the majority of this area will not be built upon and the actual encroachment is significantly less than the 10% (minor) threshold under AS4970.

Pruning:

• The tree has a very high crown, mainly due to the presence of many palms and other vegetation between it and the existing dwelling. Pruning is unlikely to be required, although, if required, should be subject to assessment by an AQF5 arboriculturist post-demolition and tree removal.

3.4.6 <u>Tree 76</u>—Willow Myrtle

Structural Root Zone:

- Demolition of existing pavement (driveway). Note, the tree is approximately 750mm above the driveway level and separated by a sandstone stacked retaining wall. Structural roots are unlikely under the driveway and there is no evidence of this on the driveway surface.
- See pavement removal recommendations at 5.3.4.

Tree Protection Zone:

- About 51% of the tree's TPZ area is under existing concrete pavement.
- Approximately 10.5m² of the existing covered area will be restored back to untreated surface and presumably landscaped with groundcovers or the like.
- There will be no material difference to the encroachment levels, however it is the management of pavement removal and driveway construction that is potentially damaging. A suitably experienced arboriculturist will need to provide onsite supervision and advice to ensure root damage or removal is avoided.

Pruning:

• The tree is unlikely to require pruning.

3.4.6 Trees 79 and 80—Illawarra Flame trees

Structural Root Zone:

- Demolition of existing pavement (driveway).
 Note the trees are between 400 1m higher than the driveway surface and structural roots are most likely located on the opposing side of the driveway.
- See pavement removal recommendations at 5.3.4.

Tree Protection Zone:

- Approximately half of the TPZ area for each tree is covered by concrete pavement.
- The new driveway will be located outside the notional TPZ radius for each tree.

Pruning:

• The trees are unlikely to require pruning. Smooth-barked apple

3.4.6 <u>Tree 85</u>—Smooth-barked apple

Structural Root Zone:

• Demolition of existing pavement (driveway).

Tree Protection Zone:

- Approximately 26m² (25%) of the notional TPZ area is covered by concrete pavement.
- The new driveway will be located further north, affecting about 7m² (6.7%). It is the management of pavement removal that is potentially damaging. A suitably experienced arboriculturist will need to provide onsite supervision and advice to ensure root damage or removal is avoided.
- See pavement removal recommendations at 5.3.4.

Pruning:

• The tree is unlikely to require pruning.

3.4.6 <u>Tree 94</u>—Sandpaper fig

Structural Root Zone:

• New driveway and (assumed) retaining wall.

Tree Protection Zone:

- The tree is growing on top of the edge of a rock bench, with a large root growing to the ground at the visible base of the rock. It is unlikely this root would be affected.
- The estimated TPZ encroachment is approximately 4.5m (including some over excavation for a retaining wall) and comprises 11% of the notional TPZ area.

Pruning:

• The tree is unlikely to require pruning.

3.4.6 <u>Tree 116</u>—Brush Box

Structural Root Zone:

• No work or footprint within notional SRZ radius.

Tree Protection Zone:

- The lowest floor levels of proposed dwellings 2 and 3 will be between approximately 3.5 6m higher than the tree's RL.
- Isolated piers would likely involve a minor TPZ encroachment at most.
- Elevated structures are unlikely to significantly impede natural soil water movement into the tree's root zone.

Pruning:

 Although the tree has a high crown, some pruning may be required to clear the built form. This should be ascertained following demolition and tree removals to gain a better understanding of the tree's overall branch arrangement and relationship to the proposed dwellings.

3.4.6 <u>Tree 157</u>—Rough tree-fern

Structural Root Zone:

• Not applicable (see explanatory notes following the Tree Schedule at Appendix D).

Tree Protection Zone:

- The lowest floor level adjacent to and within the TPZ of this tree-fern will be approximately 800mm higher than the tree's RL.
- Minor depth excavation will occur at the southern outer edge of the TPZ.
- The overall TPZ encroachment is estimated to be in the vicinity of 6m² or 15.5%.

Pruning:

• Some frond removal may be required to the south and it's likely over time the trunk will develop a northern inclination to access more light.

3.4.6 <u>Tree 237</u>—Norfolk Island pine

Structural Root Zone:

• Not affected.

Tree Protection Zone:

- Approximately 2.5m² (of the radius is within the footprint area, howver, this area is entirely elevated and is very unlikely to have any adverse impact on the tree.
- There will be no material difference to the encroachment levels, however it is the management of pavement removal and driveway construction that is potentially damaging. A suitably experienced arboriculturist will need to provide onsite supervision and advice to ensure root damage or removal is avoided.

Pruning:

• Some pruning may be required to clear the built form. This should be ascertained following demolition and tree removals to gain a better understanding of the tree's overall branch arrangement and relationship to the proposed dwelling.



Figure 1

This example of the methodology used to determine potential TPZ encroachment figures illustrates the TPZ (dashed blue circles) of potentially affected trees. The red shaded areas depict the TPZ encroachments from the proposed dwelling and driveway footprints (Trees 85, 90, 94 and 116 depicted).

Not to scale. Site plan 01, marked up by C. Mackenzie.

4 CONCLUSIONS

- o A total of 287 trees are included in this Arboricultural Impact Assessment. Of these:
 - No assessed tree on the site or on adjoining properties is identified as an endangered species.
 - No assessed tree on the site or on adjoining properties is identified as, or associated with, a heritage item.
 - 167 are individuals of species that are exempt from protection under the PDCP.
 - 94 site trees are prescribed and protected under the PDCP.
 - 26 trees are off-site (i.e. on adjoining properties).
 - 26 prescribed site trees are proposed to be removed. Of these, only one is a high Retention Value tree (Tree 97 – Smooth-barked apple).
- All trees to be retained on the site and adjoining property have nil, low or moderate Tree Protection
 Zone encroachments, and are eminently supportable from an arboricultural perspective.
 - The majority of the retained trees are located in areas where building will not take place, i.e, in the rear of the site and within watercourses and rocky outcroppings.
 - TPZ encroachments have been assessed and calculated for 10 trees. Of these:
 - > Three (3) are on adjoining land, but all have minor (low) TPZ encroachments identified.
 - Seven (7) prescribed trees have TPZ encroachments ranging between low and moderate.
- The proposed dwellings have been designed to have the majority of driveways and lower floor slabs to be above existing ground levels, reducing the extent of bulk excavation to isolated piers, which ensure impacts on existing tree roots are avoided. The notional encroachments that are identified initially as moderate or moderate to high are of a temporary nature and roots may continue to access soil resources under the suspended structures, noting that soil water movement is generally unimpeded for the most part by the floor and levels arrangement of the proposed structures.
- Provided the recommendations of this report are adopted, and a site arboriculturist provides appropriate supervision and management of the trees during development, adverse impacts on tree vigour and structural condition of trees to be retained will be managed as practically as possible, and it is unlikely any tree decline, or additional tree removal will result.

5 **RECOMMENDATIONS**

5.1 Project Arboriculturist

- 5.1.1 A Project Arboriculturist (PA) should be engaged prior to works commencing on the site, including demolition of structures, site clearing, and the like.
- 5.1.2 The PA must have a minimum Australian Qualification Framework Level 5 (AQF5) or above in Arboriculture.
- 5.1.3 The following Project Arborist Checklist may assist in identifying the hold points where the PA is required on site.

Table 5: Urban Forestry Australia Project Arborist Checklist

(Modified from Ryder and Associates)

Project Arborist Checklist			
Project:			
Project Arborist:			
Commencement date:			
Item	Com	oleted	Date
Site Preparation	Yes	NO	
Initial Induction Meeting			
Small infrastructure within Tree Protection Zone removed by hand			
Large infrastructure within Tree Protection Zone removed under supervision of project arborist			
Pruning for clearance completed by qualified arborist to AS4373-2007			
Tree Protection Fencing (and/or other Tree Protection Devices), mulch, and signage installed to specification			
Building materials storage area identified and marked on plans			
Site excavation within TPZs completed under supervision of project arborist			
Construction			
Initial Induction Meeting			
Irrigation installed as per specification			
Project arborist to supervise fencing, (and/or other Tree Protection Devices), any specialised foundation excavation and Tree Protection Fencing realignment			
Inspections completed every 4-6 weeks			
Meeting 1			
Meeting 2			
Meeting 3			
Meeting 4			
Landscape Construction			
Initial Induction Meeting			
Tree Protection fencing to be removed			

Final Certification			
Final inspection			
Final certification report			
All Works completed			
Signed			

5.2 Tree Removal and Pruning

- 5.2.1 Removal of prescribed site trees is subject to authority review of this report and approval is to be obtained (e.g. by Development Consent) before any trees are removed.
- 5.2.2 Before removal, the project arborist should confirm that all trees approved to be removed are clearly marked (e.g. 'hi-vis' tape or paint) and correspond with those shown as trees removed in the tree assessment schedule at **Appendix D** or as amended under the Development Consent.
- 5.2.3 Tree removal should be carried out prior to erection of protection fencing. Contractors should be instructed to avoid damage to trees within protection areas when removing or pruning trees. This may include restrictions of vehicle movements.
- 5.2.4 Tree removals are to be undertaken in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998) and Safe Work Australia's Guide to managing risks of tree trimming and removal work (2016).
- 5.2.5 Post demolition of structures and approved trees, the PA is to assess trees to be retained near the proposed structures for the extent of pruning (if any) required to facilitate construction any building clearances.
- 5.2.6 Where pruning requirements will exceed 15% of the trees live crown area or removal of limbs greater than 150mm diameter at the branch collar, a separate application is to be made to Council for pruning approval. The application is to include pruning specifications in accordance with Australian Standard 4373-2007 Pruning of amenity trees.

5.3 Tree Protection

- 5.3.1 The Tree Protection is to be in accordance with the following:
 - Tree Protection Devices (TPD) may include mulching, tree guards and other devices other than fencing.
 - The TPD must be in place prior to any site works commencing, including clearing, demolition or grading.
 - The most appropriate fencing for tree protection is 1.8 2.1m high chain-link or welded mesh with, for example, 50mm diameter metal pole supports into ground or blow moulded plastic concrete filled feet.
 - Locate large primary roots that could potentially be damaged during fencing installation and within the proposed location of posts or feet. Do not drive any posts or pickets into tree roots or place feet on top of roots.
 - It is recommended that the arboriculturist provide written certification that the TPD is/are installed and will satisfy tree protection requirements.
 - Nothing should occur inside the tree protection fenced areas, so therefore all access to personnel and machinery, storage of fuel, chemicals, cement or site sheds is prohibited.
 - Signage should explain exclusion from the area defined by TPD and carry a contact name for access or advice (see Appendix C – Tree Protection Devices).
 - The TPD cannot be removed, altered, or relocated without the project arborists' prior assessment and approval.

5.4 Arboricultural advice

- 5.4.1 <u>Tree and Root Pruning</u>
 - Any pruning required is to be assessed and approved by the PA, prior to undertaking any of this type of work.
 - o Pruning shall not be undertaken by unqualified site personnel at any time.
 - Pruning of branches must be undertaken by a minimum AQF Level 3 arborist in accordance with the Australian Standard AS4373-2007 *Pruning of amenity trees*,
 - Unless otherwise approved by the Conditions of Development Consent, or by separate application and approval by the consent authority, pruning is to be limited to cutting of limbs less than 80mm diameters, and no more than 10% total live material removed.

5.4.2 Stockpiling and location of site sheds

- The project arboriculturist must be consulted prior to placing any items within a tree's TPZ.
- Where stockpiling must be located within the TPZ offset of trees to be retained, the existing/undisturbed natural ground must be covered with thick, coarse mulch to a minimum 75-100mm thickness.
- Large, or bulky materials (non-contaminating) can be stacked on wooden pallets or boards placed over the mulch.
- Tarpaulins (or similar) placed on boards or pallets on top of mulch shall be used to prevent loose or potentially contaminating materials from moving into the soil profile within the TPZ of trees or within 10m upslope of trees.
- Where site sheds must be located within the TPZ offset of a tree/s, the shed must be fully elevated on all sides with a minimum 300m between existing ground and the
- 0

- floor/floor bearers. Isolated pad footings must be carefully dug by hand and not damage or sever any roots greater than 20mm diameters.
- Any conflict between footing locations and larger roots (i.e. 20mm Ø plus) must be brought to the attention of the project arboriculturist who is to provide practical alternatives that do not include unnecessary tree root removal.

5.4.3 Fill Material

- Placement of fill material within the TPZ of trees to be retained should be avoided where possible. Where placement of fill cannot be avoided, the material should be a coarse, gap graded material such as 20 50mm crushed basalt or equivalent to provide some aeration to the root zone. Note that roadbase or crushed sandstone or other material containing a high percentage of fines is unacceptable for this purpose.
- The fill material should be consolidated with a non-vibrating roller to minimise compaction of the underlying soil.
- Permeable geotextile may be used beneath the sub-base to prevent migration of the stone into the sub-grade. No fill material shall be placed in direct contact with the trunk.

5.4.4 Pavements

- The following sequence for entire removal of concrete driveway within the TPZ of trees to be retained is recommended.
 - 1. Do not undertake the removal of concrete during hot, dry or windy weather.
 - 2. Under guidance from an arboriculturist, use hand tools to break up the concrete panels taking care not to de-bark or damage any woody roots.
 - 3. Work small sections only, approximately 1 square metre or panel size at a time.
 - Remove all debris and load onto trucks or stockpile in clear areas until the material is removed from the site. Avoid stockpiling upslope of or within the TPZ offset of any tree to be retained.
 - 5. Immediately water the exposed 1m x 1m/panel section thoroughly, then place mulch over the exposed areas.
 - 6. Use mulch that conforms to AS 4454-2012, that is free of deleterious material such as soils, weeds, sticks and stones. Mulch must be free of weed species such as Privet, Camphor or Coral Tree.
 - 7. The mulch or leaf litter is to be placed to a thickness of 75mm and spread evenly. Ensure that mulch is not placed in contact with tree stems.
 - 8. Locate temporary fencing at the edge of mulched areas to exclude further foot traffic or activity over the newly mulched areas.
 - 9. Continue removing all concrete in small sections as described, moving the temporary fencing out from the tree each time a new section/area is watered and mulched.
 - 10. Any areas proposed to be re-paved will require the mulch to be removed prior to driveway preparation.
- Pavements should be avoided within the TPZ of trees to be retained where possible.
- Proposed paved areas within the TPZ of trees to be retained are to be placed above grade to minimise excavations within the root zone, avoiding root severance and damage.

5.4.5 Fencing and walls within the SRZ and TPZ of retained trees.

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

5.4.6 Landscaping within tree root zones.

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

5.4.7 Other

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

Report prepared by Catriona Mackenzie

December, 2022

INSTITUTE OF AUSTRALIAN CONSULTING ARBORICULTURISTS ACCREDITED



Tree Risk Assessment Qualified 2014/2019 (TRAQ) Certificate of Horticulture Honours Diploma of Horticulture (Arboriculture) Distinction Associate Diploma of Applied Science (Landscape) Distinction Member of the International Society of Arboriculture (ISA) Founding Member of the Institute of Australian Consulting Arboriculturists (IACA) ACM0052003

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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

Young refers to a well-established but juvenile tree
Semi-mature refers to a tree at growth stages between immaturity and full size
Early-mature refers to a tree that is more or less full sized and vigourously growing.
Mature refers to a full sized tree with some capacity for further growth
Late Mature refers to a full sized tree with little capacity for growth, not yet about to enter decline
Over-mature refers to a tree about to enter decline or already declining.

Buttress A flange of adaptive wood occurring at a junction of a trunk and root or trunk and branch in response to loading.

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.

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 total amount of foliage supported by branches.

Crown raise pruning Pruning technique where lower limbs are removed, thereby lifting the overall crown above the ground.

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

Diameter at Breast Height (DBH) refers to the tree trunk diameter at breast height, i.e. measured at 1.4 m 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.

Form refers to the crown shape of the tree as influenced by the availability or restriction of space and light, or other contributing factors within its environment. Crown form may be determined by tree shape, species and habit and described as Dominant, Codominant, Intermediate, Emergent, Forest and Suppressed, as well as Forest Form or Open Grown. May also be described qualitatively as Good Form or Poor Form.

Growth crack / split Longitudinal crack/split that may develop as a rupture in the bark from normal growth. Longitudinal crack/split that may develop in the trunk of some fast growing palms.

Habit The shape of a tree when its growth is unencumbered by constraints for space and light, e.g. idealized by an isolated field grown specimen with consideration of the species and the type of environment in which it evolved e.g. rainforest, open forest, etc.

Habitat A habitat is an ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism. It is the natural environment in which an organism lives, or the physical environment that

surrounds (influences and is utilised by) a species population. In restoration ecology of native plant communities or habitats, some invasive species create monotypic stands that replace and/or prevent other species, especially indigenous ones, from growing there.

Health (syn. vigour) 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 - 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.

Indigenous Native to an area, and not introduced.

Impact Level Rating (ILR) refers to the estimated percentage of the Tree Protection Zone (TPZ) affected by development impacts. Note: This is a general guide only. These figures are based on the notional SRZ and TPZ offsets of the trees as calculated under AS4970 and do not necessarily reflect the actual root zones of each tree. The assessing arboriculturist should consider that the actual SRZ or TPZ offsets may vary due to the site-specific conditions and constraints, e.g. past and existing at or below ground structures near the tree, site topography and soil hydrology will influence the presence, spread and direction of tree root growth. The age, vigour and condition of the tree, as well as the species tolerance to impacts, will also affect a tree's ability to respond to development disturbance.

IMPACT	LEVEL RATING
0	0 – 0.9% of root zone impacted – no impact of significance
L	1 to 10% of root zone impacted – low (minor) level of impact
L - M	>10 to 15% of root zone impacted – low (minor) to moderate level of impact
М	>15 to 20% of root zone impacted – moderate level of impact
M – H	>20 to 25% of root zone impacted – moderate to high level of impact
Н	>25 to 35% of root zone impacted – high level of impact
S	>35% of root zone impacted – significant level of impact

Note: This is a general guide only. These figures may vary due to the specific conditions and constraints on a particular site, tree species tolerance to impacts, age, vigour, condition of the tree, etc.

Lopping Cutting between branch unions (not to branch collars), or at internodes on a tree, with the final cut leaving a stub. Lopping may result in dieback of the stub and can create infection courts for disease or pest attack.

Root Mapping The exploratory process of recording the location of roots usually in reference to a datum point where depth, root diameter, root orientation and distance from trunk to existing or proposed structures are measured. It may be slightly invasive (disturbs or displaces soil to locate but not damage roots, e.g. hand excavation, or use of air or water knife), or non-invasive (does not disturb soil, e.g. ground penetrating radar).

Scaffold branch/root A primary structural branch of the crown or primary structural root of the tree.

Structural Root Zone (SRZ) Refers to the radial distance in metres, measured from the centre of the tree stem, which defines 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. Note: The SRZ is calculated on the diameter measured immediately above the root/stem buttress (DAB). Where this measurement is not taken in the field, it is calculated by adding 12.5% to the stem diameter at breast height (DBH). Note: The SRZ may not be symmetrical in shape/area where there is existing obstruction or confinement to lateral root growth, e.g. structures such as walls, rocky outcrops, etc).

Snub-nosed rib Adaptive wood formed over a crack, included bark or enclosed bark and may be a round edged (snubnosed) rib where a broad convex swelling is formed over the crack by the addition of new growth increments, and the cracking is slowed or prevented from developing further (Or, may be a sharp-edged rib as an elongated protuberance where a crack continues to develop). Suppressed In crown class, trees which have been overtopped, whose crown development is restricted from above.

Sweep A curve in the trunk, generally near the ground. This usually occurs when a tree is partially wind thrown when young, but then stabilises itself and straightens due to reaction wood. Stem sweep can also be a naturally developed feature of some tree species. e.g. *Araucaria columnaris* (Cook Pine), that has no relationship to a defect or partial windthrow.

Tree Protection Zone (TPZ). Refers to the radial distance in metres, measured from the centre of the tree stem which defines the *tree protection zone* for a tree to be retained. This is 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. Note: In many circumstances the tree root zone does not occupy a symmetrically radial area from the trunk, but may be an irregular area due to the presence of obstructions to root spread or inhospitable growing conditions.

Tree Risk Assessment is the systematic process to identify, analyze, and evaluate tree risk. A tree risk rating of Low, Moderate, High or Extreme is derived by categorising or quantifying both the *likelihood* (probability) of tree or tree part(s) failure and impact on a target(s) and the severity of consequences of the impact on the target(s).

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 the 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.

Vigour (syn. health) refers to the tree's health as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion, and the degree of dieback.

Woody roots usually used in reference to the first order roots i.e. structural (anchor) roots and woody lateral roots within the Structural Root Zone. Damage, disturbance to, or severing of these roots can compromise the stability of the tree.

APPENDIX B

TREE RETENTION VALUE ASSESSMENT

APPENDIX B—TREE RETENTION VALUE ASSESSMENT

Part 1 of 3—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 the 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.

ULE categories (modified from Barrell 2001) 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

Part 2 of 3—IACA Significance of a Tree, Assessment Rating System (STARS)©

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria* and *Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined.

Tree Significance - Assessment Criteria



1. HIGH SIGNIFICANCE IN LANDSCAPE

The tree is in good condition and good vigour

The tree has a form typical for the species

The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age

The tree is listed as a Heritage Item, Threatened Species or part of an Endangered Ecological Community, or listed on Councils Significant Tree Register

The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity

The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values

The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions

2. MEDIUM SIGNIFICANCE IN LANDSCAPE

The tree is in fair-good condition and good or low vigour

The tree has a form typical or atypical for the species

The tree is a planted locally indigenous or a common species with its taxa commonly planted in the area

The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street.

The tree provides a fair contribution to the visual character and amenity of the local area.

The tree's growth is moderately restricted by above and/or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ.

3. LOW SIGNIFICANCE IN LANDSCAPE

The tree is in fair-poor condition and good or low vigour

The tree has a form atypical for the species

The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings

The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area.

The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen

The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions

The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms

The tree has a wound or defect that has potential to become structurally unsound.

Environmental Pest / Noxious Weed Species

-The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties

-The tree is a declared noxious weed by legislation

Hazardous/Irreversible Decline

-The tree is structurally unsound and/or unstable and is considered potentially dangerous

-The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term

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

The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge. In the development of this document IACA acknowledges the contribution and original concept of the Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd and Andrew Morton in June 2001.



Part 3 of 3—Tree Retention Value Priority Matrix

IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

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Australia ICOMOS Inc. 1999, The Burra Charter – The Australian ICOMOS Charter for Places of Cultural Significance, International Council of Monuments and Sites, www.icomos.org/australia

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Footprint Green Pty Ltd 2001, Footprint Green Tree Significance & Retention Value Matrix, Avalon, NSW Australia, www.footprintgreen.com.au

APPENDIX C

TREE PROTECTION DEVICES



Figure 1

A method of reducing risk of root damage and soil compaction within the tree's Structural Root Zone.



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Figure 2 Example of tree trunk and tree branch protection.









Include the Project Arboriculturist's details in the 'Contact' panel.

TREE GUARD EXAMPLES



Agricultural pipe with sock to provide cushioning before placing timber battens. Photo Brad Davies



Finished trunk guard with hessian or carpet over buttress/base of tree. Poly plastic strapping. Photo Brad Davies



Timber tree guard with thick carpet beneath to cushion trunk from direct contact with battens or external impacts. Galvanised hoop strapping. Photo C Mackenzie.

APPENDIX D

SCHEDULE OF ASSESSED TREES

Schedule of Assessed Trees—337 Lower Plateau Road, Bilgola Plateau. 28 February and 3 March 2022

Tree No.	Genus and species Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	v	С	Observations	ULE	LSR	RV	SRZ	TPZ	TPZ (m2)
1	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
2	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
2A	Liquidambar styraciflua Liquidambar	12	10	*400	EM	G	G	Introduced exotic species. Neighbour's tree. Limited inspection.	2B	М	Н	2.4	4.8	72.0
3	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
4	Acacia sp. Wattle	8	6	200	LM	F	F	Locally indigenous species. Lopped over neighbour's dwelling. Hanger.	3A	М	L	1.8	2.4	18.0
5	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
6	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
7	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
8	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
9	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
10	Archontophoenix alexandrae Alexandra palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
11	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
12	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
13	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-

Tree No.	<i>Genus</i> and <i>species</i> Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	v	C	Observations	ULE	LSR	RV	SRZ	TPZ	TPZ (m2)
14	Angophora costata Smooth-barked Apple	14	14	875	М	F-G	F	Locally indigenous species. Large Ø deadwood. Growing over existing drive. Broad dome, no central leader. Previous pruning of lower scaffold over drive.	2A	М	н	3.4	10.6	350.0
15	Macadamia integrifolia Macadamia	8	6	100	М	G	G	Introduced native species. Suppressed by Tree 14.	2C	М	L	1.6	2.0	12.5
16	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
17	Melaleuca quinquenervia Broad-leaved Paperbark	18	8	675	М	G	F-G	Introduced native species. On adjoining land. Previously lopped. Bark inclusions.	2D	Н	М	2.9	8.1	206.0
18	Melaleuca quinquenervia Broad-leaved Paperbark	18	8	650	М	G	F-G	Introduced native species. On adjoining land. Main co-dominants included.	2D	Н	М	2.9	7.8	191.0
19	Livistona australis Cabbage-tree palm	12	6	350	EM	G	G	Locally indigenous species. On adjoining land. Hard against T18.	1A	М	н	3.0	NA	28.3
20	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
21	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
22	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
23	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
24	Dypsis decaryi Triangle Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
24A	Pittosporum undulatum Sweet Pittosporum	12	6	150	М	G	F	Locally indigenous species. Located on neighbouring property.	2C	L	М	1.6	2.0	12.5
25	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
26	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
27	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-

Tree No.	Genus and species Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	v	С	Observations	ULE	LSR	RV	SRZ	TPZ	TPZ (m2)
28	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
29	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
30	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
31	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
32	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
33	Grevillea robusta Silky Oak	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
34	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
35	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
36	Erythrina x sykesii Common Coral Tree	8	8	*200	F?	SM	G	On adjoining land. Introduced exotic species. Limited inspection. Considered an undesirable species in LGA.	2B?	М	L?	1.8	2.4	18.0
37	Jacaranda mimosifolia Jacaranda	10	10	*300	F?	EM	G	On adjoining land. Introduced exotic species. Limited inspection. Considered an undesirable species in LGA.	2B?	М	L?	2.2	3.6	41.0
38	Phoenix canariensis Canary Island Date palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
39	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
40	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
41	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
42	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
43	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-

Arboricultural Impact Assessment for 337 Lower Plateau Rd., Bilgola Plateau. December 2022 © Urban Forestry Australia

Tree No.	<i>Genus</i> and <i>species</i> Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	۷	С	Observations	ULE	LSR	RV	SRZ	TPZ	TPZ (m2)
44	Archontophoenix cunninghamiana Bangalow palm	15	8	*275	G?	М	G	On adjoining land. Introduced native species. Limited inspection.	2A	М	М	NA	5.0	78.55
45	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	I	-	-	-
46	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
47	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
48	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
49	Stenocarpus sinuatus Fire Wheel Tree	16	7	275	М	G	F-G	Introduced native species. Inclusion at 2.2m.	2D	Н	М	2.1	3.3	34.2
50	Rhododendron sp. Rhododendron	7	5	100	EM	G	G	Introduced exotic species. Multiple stems from ground level.	2A	М	L	1.6	2.0	12.5
51	Jacaranda mimosifolia Jacaranda	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
52	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
53	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
54	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
55	Buckinghamia celsissima Ivory Curl Tree	16	10	300	М	G	G	Introduced native species. Tall and lanky.	2A	Н	М	2.2	3.6	41.0
56	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
56A	Ceratopetalum gummiferum NSW Xmas Bush	8	6	100	М	G	G	Locally indigenous species. No special problems observed at time of inspection.	2A	L	М	1.6	2.0	12.5
57	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-

Tree No.	Genus and species Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	v	С	Observations	ULE	LSR	RV	SRZ	TPZ	TPZ (m2)
57A	Dicksonia antarctica x 3 Soft Tree-fern	6	3	*225	М	G	G	Introduced native species. No special problems observed at time of inspection.	2A	М	М	NA	2.5	19.65
58	Dypsis decaryi Triangle Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
59	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
60	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	_	-
61	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
62	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
63	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
64	Cyathea cooperii Rough Tree Fern	16	6	250	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	Н	4.0	NA	50.0
65	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
66	Tristaniopsis laurina Kanooka/Water Gum	10	8	300	EM	F-G	F-G	Locally indigenous species. Suppressed by neighbouring trees	2A	М	н	2.2	3.6	41.0
67	Melaleuca quinquenervia Broad-leaved Paperbark	20	14	650	М	F-G	F-G	Introduced native species. Co-dominant at 2.2m	2A	Н	н	2.9	7.8	191.0
68	Lophostemon confertus Queensland Brush Box	18	8	450	EM	G	G	Introduced native species. No special problems observed at time of inspection.	1A	М	н	2.5	5.4	92.0
68A	<i>Eucalyptu</i> s sp. Eucalypt	*20	*15	*600	М	G	F?	On adjoining land.	2A?	Н	H?	2.8	7.2	163.0
69	Cyathea cooperii Rough Tree Fern	12	5	125	М	F	F-G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	3.5	NA	38.5
70	Eucalyptus microcorys Tallowwood	22	18	650	М	G	F-G	Introduced native species. Large Ø deadwood.	1A	Н	Н	2.9	7.8	191.0

Tree No.	Genus and species	Ht (m)	Sp (m)	DBH (mm)	Age	v	С	Observations	ULE	LSR	RV	SRZ	TPZ	TPZ (m2)
71	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
72	Howea forsteriana Kentia palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
73	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
74	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
75	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
76	Agonis flexuosa Willow Myrtle/Peppermint	20	8	*400	М	F-G	F?	Introduced native species. Limited inspection.	2B?	М	М	2.4	4.8	72.0
77	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
78	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
79	Brachychiton acerifolius Illawarra Flame Tree	8	8	300	SM	G	F?	On adjoining land. Introduced native species. Limited inspection. Considered an undesirable species in LGA.	2A	L	М	2.2	3.6	41.0
80	Brachychiton acerifolius Illawarra Flame Tree	8	8	200	SM	G	F?	On adjoining land. Introduced native species. Limited inspection. Considered an undesirable species in LGA.	2A	L	М	1.8	2.4	18.0
81	Syagrus romanzoffiana Cocos Palm	15	8	350	М	G	G?	On adjoining land. Introduced exotic species. Limited inspection. Considered an undesirable species in LGA.	2B	М	L	NA	5.0	78.55
82	Archontophoenix cunninghamiana Bangalow palm	10	4	200	EM	G	G?	On adjoining land. Introduced native species. Limited inspection.	2A	М	М	NA	3.0	28.3
83	Archontophoenix cunninghamiana Bangalow palm	10	4	300	М	G	G?	On adjoining land. Introduced native species. Limited inspection.	2A	М	М	NA	3.0	28.3
84	Syagrus romanzoffiana Cocos Palm	10	6	300	М	G	G?	On adjoining land. Introduced exotic species. Limited inspection. Considered an undesirable species in LGA.	2B	М	L	NA	4.0	50.3
85	Angophora costata Smooth-barked Apple	17	12	475	EM	F-G	F-G	Locally indigenous species. On adjoining land. Large Ø deadwood.	2D	Н	Н	2.6	5.7	104.0
86	Archontophoenix cunninghamiana Bangalow palm	8	6	200	G?	EM	G	On adjoining land. Introduced native species. Limited inspection.	2A	М	М	NA	4.0	50.3

Arboricultural Impact Assessment for 337 Lower Plateau Rd., Bilgola Plateau. December 2022 © Urban Forestry Australia

Tree	Genus and species	Ht	Sp	DBH	٩n	v	C	Observations	IIIE	I SR	RV	SR7	TP7	TPZ
No.	Common Name	(m)	(m)	(mm)	лус	•	•		ULL	LOIN		OIL		(m2)
87	Hymenosporum flavum Native Frangipani	12	8	125	EM	F-G	F-G	Introduced native species. On adjoining land.	2A	М	Н	1.6	2.0	12.5
88	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
89	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
90	Glochidion ferdinandi Cheese Tree	18	18	400	М	F-G	F-G	Locally indigenous species. Large Ø deadwood.	2D	Н	Н	2.4	4.8	72.0
90A	Cyathea cooperii Rough Tree Fern	12	6	100	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0
91	Howea forsteriana Kentia palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
92	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
93	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
94	Ficus coronata Sandpaper Fig	8	8	*300	М	G	G	Locally indigenous species. Growing at base of rock shelf. In contact with rock.	2D	L	М	2.2	3.6	41.0
95	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
96	Glochidion ferdinandi Cheese Tree	12	8	200	EM	F-G	F-G	Locally indigenous species. Vine competing with canopy.	2D	М	М	1.8	2.4	18.0
97	Angophora costata Smooth-barked Apple	20	12	550	EM	F-G	F-G	Locally indigenous species. Large Ø deadwood. Canopy held high and limited vision through lower canopies.	2A	Н	Н	2.8	6.6	137.0
98	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	I	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
99	Cyathea cooperii Rough Tree Fern	10	5	100	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	L	М	3.5	NA	38.5
100	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
101	Cyathea cooperii	12	6	200	М	G	G	Next to a 6m <i>Livistona</i> (not plotted on survey)	2A	М	М	4.0	NA	50.0

	Rough Tree Fern													
101A	Livistona australis Cabbage-tree palm	6	6	350	EM	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	L	М	4.0	NA	50.0
102	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
103	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
103A	Cyathea cooperii Rough Tree Fern	5	6	50	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	L	М	4.0	NA	50.0
104	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
105	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
106	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
107	Ficus microcarpa var. hillii Hills Weeping Fig	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
108	Agonis flexuosa Willow Myrtle/Peppermint	17	12	*400	М	F-G	F	Introduced native species. Inclusion at 3m and 5m AGL on main stem.	2D	Н	М	2.4	4.8	72.0
109	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
110	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
111	Cyathea cooperii Rough Tree Fern	12	5	100	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	NA	3.5	38.5
112	Cyathea cooperii Rough Tree Fern	8	5	100	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	L	М	NA	3.5	38.5
113	Pittosporum undulatum Sweet Pittosporum	14	12	225	М	G	G	Locally indigenous species. No special problems observed at time of inspection.	2A	М	М	1.9	2.7	23.0
114	Cyathea cooperii Rough Tree Fern	12	5	275	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	NA	3.5	38.5
115	Cyathea cooperii Rough Tree Fern	8	5	100	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	L	М	NA	3.5	38.5

Tree No.	<i>Genus</i> and <i>species</i> Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	۷	С	Observations	ULE	LSR	RV	SRZ	TPZ	TPZ (m2)
116	Lophostemon confertus Queensland Brush Box	18	12	525	EM	G	G	Introduced native species. No special problems observed at time of inspection.	1A	М	н	2.7	6.3	124. 0
117	Cyathea cooperii Rough Tree Fern	12	6	225	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	NA	4.0	50.0
118	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
119	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
120	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
121	Glochidion ferdinandi Cheese Tree	18	18	650	М	F	F-G	Locally indigenous species. Large Ø deadwood and epicormic growth.	2A	Н	Н	2.9	7.8	191. 0
122	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
123	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
124	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
125	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
126	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
127	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
128	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
129	Cyathea cooperii Rough Tree Fern	10	5	225	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	L	М	3.5	NA	38.5
130	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
131	Cyathea cooperii Rough Tree Fern	16	6	200	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0

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132	Cyathea cooperii Rough Tree Fern	10	6	125	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	L	М	4.0	NA	50.0
133	Cyathea cooperii Rough Tree Fern	12	6	125	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0
134	Archontophoenix cunninghamiana Bangalow palm							Species exempt from preservation under B4.22 of Pittwater 21 DCP.						
135	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
136	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
137	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
138	Cyathea cooperii Rough Tree Fern	12	5	300	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	3.5	NA	38.5
139	Cyathea cooperii Rough Tree Fern	9	6	125	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	L	М	4.0	NA	50.0
140	Cyathea cooperii Rough Tree Fern	12	6	200	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0
141	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
142	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
143	Agonis flexuosa Willow Myrtle/Peppermint	20	12	550	М	F-G	F-G	Introduced native species. Limited access and view of upper canopy.	2D	Н	М	2.6	6.6	137. 0
144	Ficus rubiginosa Port Jackson Fig	16	0	600	EM	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	Н	2.8	7.2	163. 0
145	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
146	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
147	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
148	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-

Tree	Genus and species	Ht (m)	Sp (m)	DBH (mm)	Age	v	С	Observations	ULE	LSR	RV	SRZ	TPZ	TPZ
NO.	Common Name Archontophoenix cunninghamiana	(111)	(11)	(11111)				Species exampt from preservation under P4 22 of Bittwater 21						(1112)
149	Bangalow palm	-	-	-	-	-	-	DCP.	-	-	-	-	-	-
150	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
151	Livistona australis Cabbage-tree palm	10	6	425	М	G	G	Locally indigenous species. No special problems observed at time of inspection.	1A	М	н	4.0	NA	50.0
152	Melaleuca quinquenervia Broad-leaved Paperbark	22	5	375	М	G	F-G	Introduced native species. Minor inclusion at 2m. No lower branches, tall and narrow.	2D	Н	М	2.4	4.5	64.0
153	Ficus microcarpa var. hillii Hills Weeping Fig	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
154	Melaleuca quinquenervia Broad-leaved Paperbark	22	9	550	М	G	F-G	Introduced native species. Suppressed by neighbouring fig.	2D	Н	М	2.8	6.6	137. 0
155	Schefflera actinophylla Umbrella Tree	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
156	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
157	Cyathea cooperii Rough Tree Fern	7	5	175	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	L	М	3.5	NA	38.5
158	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
159	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
160	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
161	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
162	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
163	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
164	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-

Syagrus romanzoffiana Species exempt from preservation under B4.22 of Pittwater 21 165 -_ Cocos Palm DCP. Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 166 -Bangalow palm DCP. Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 167 _ **Bangalow** palm DCP. Ficus coronata Locally indigenous species 168 8 4 100 EΜ G F-G 1A Μ 1.6 2.0 12.5 Sandpaper Fig Cyathea cooperii Locally indigenous species No special problems observed at time 169 16 6 225 Μ G G 2A Μ Μ 4.0 NA 50.0 **Rough Tree Fern** of inspection. Syagrus romanzoffiana Species exempt from preservation under B4.22 of Pittwater 21 170 --Cocos Palm DCP Syagrus romanzoffiana Species exempt from preservation under B4.22 of Pittwater 21 171 -_ Cocos Palm DCP. Syagrus romanzoffiana Species exempt from preservation under B4.22 of Pittwater 21 172 Cocos Palm DCP. Syagrus romanzoffiana Species exempt from preservation under B4.22 of Pittwater 21 173 . . -_ -_ --Cocos Palm DCP Syagrus romanzoffiana Species exempt from preservation under B4.22 of Pittwater 21 174 -. Cocos Palm DCP. Cyathea cooperii Locally indigenous species No special problems observed at time 175 18 6 175 G G 2A 4.0 50.0 Μ Μ Μ NA **Rough Tree Fern** of inspection. Cyathea cooperii Locally indigenous species No special problems observed at time 176 18 5 200 Μ G G 2A Μ Μ 3.5 NA 38.5 **Rough Tree Fern** of inspection. Cyathea cooperii Locally indigenous species No special problems observed at time 177 16 6 200 Μ G G 2A Μ Μ 4.0 NA 50.0 Rough Tree Fern of inspection. Cyathea cooperii Locally indigenous species No special problems observed at time G 2A 178 6 Μ G 15 175 М Μ 4.0 NA 50.0 **Rough Tree Fern** of inspection. 179 Toona ciliata? G G Canopy hard to identify. Toona? Rainforest sp. Н 2.2 20 15 300 Μ 2A Н 3.6 41.0 Hymenosporum flavum 180 F-G G Introduced native species. Suppressed understory. 2A 10 6 100 EΜ L Μ 1.6 2.0 12.5 Native Frangipani Cyathea cooperii Locally indigenous species No special problems observed at time G 181 14 6 350 Μ G 2A Μ 4.0 NA 50.0 Μ of inspection. **Rough Tree Fern**

Tree No.	<i>Genus</i> and <i>species</i> Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	۷	C	Observations		LSR	RV	SRZ	TPZ	TPZ (m2)
182	Cyathea cooperii Rough Tree Fern	8	5	125	М	G	G	Locally indigenous species. Leaning, self-corrected.	2A	L	М	3.5	NA	38.5
183	Davidsonia pruriens Davidson plum	8	4	<100	М	G	G	Introduced native species. No special problems observed at time of inspection.	1A	L	М			
184	Phoenix dactylifera Date palm							Species exempt from preservation under B4.22 of Pittwater 21 DCP.						
185	Cyathea cooperii Rough Tree Fern	14	6	125	М	G	G	Locally indigenous species No special problems observed at time of inspection. On edge of watercourse.	2A	L	М	4.0	NA	50.0
186	Cyathea cooperii Rough Tree Fern	5	6	100	SM	G	G	Locally indigenous species No special problems observed at time of inspection. On edge of watercourse.	2A	L	L	4.0	NA	50.0
187	Cyathea cooperii Rough Tree Fern	14	6	100	М	G	G	Locally indigenous species No special problems observed at time of inspection. On edge of watercourse.	2A	М	М	4.0	NA	50.0
188	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
189	Cyathea cooperii Rough Tree Fern	14	6	100	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0
190	Cyathea cooperii Rough Tree Fern	14	8	125	М	G	G	Locally indigenous species. Twin leaders.	2A	М	М	5.0	NA	78.5
191	Archontophoenix cunninghamiana Bangalow palm	-	I	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
192	Syagrus romanzoffiana Cocos Palm	-	I	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
193	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
194	Unknown - ID to be confirmed	18	14	400	М	F	F	Obscured crown. Possibly local rainforest species.	2A	Н	н	2.4	4.8	72.0
195	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
196	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-

Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 197 DCP. Bangalow palm Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 198 Bangalow palm DCP. Cyathea cooperii Locally indigenous species No special problems observed at time G 199 14 6 100 Μ G 2A 4.0 Μ Μ NA 50.0 **Rough Tree Fern** of inspection. Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 200 -Bangalow palm DCP. Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 201 -Bangalow palm DCP. Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 202 --_ . ---Bangalow palm DCP. Cyathea cooperii Species exempt from preservation under B4.22 of Pittwater 21 203 _ Rough Tree Fern DCP. Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 204 Bangalow palm DCP. Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 205 . -_ -_ -Bangalow palm DCP Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 206 . Bangalow palm DCP. Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 207 -. --Bangalow palm DCP. Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 208 . _ -Bangalow palm DCP. Archontophoenix cunninghamiana Species exempt from preservation under B4.22 of Pittwater 21 209 Bangalow palm DCP. Cyathea cooperii Locally indigenous species No special problems observed at time 210 8 6 125 Μ G G 2A Т Μ 4.0 NA 50.0 **Rough Tree Fern** of inspection. Cyathea cooperii Locally indigenous species No special problems observed at time G 211 8 Μ G 2A 4.0 NA 6 100 Т Μ 50.0 **Rough Tree Fern** of inspection. Carvota rumphiana Species exempt from preservation under B4.22 of Pittwater 21 212 Fish Tail Palm DCP. Ficus rubiginosa 300 G G Locally indigenous species. Poor access, appears sound. 213 10 12 Μ 1A? М Н 2.2 3.6 41.0 Port Jackson Fig

Tree No.	Genus and species Common Name	Ht (m)	Sp (m)	DBH (mm)	Age	v	С	Observations	ULE	LSR	RV	SRZ	TPZ	TPZ (m2)
214	Ficus coronata Sandpaper Fig	8	10	300	М	G	G	Locally indigenous species. Growing between rock and stormwater. On adjoining land.		L	М	2.2	3.6	41.0
215	Toona ciliata Red Cedar	12	10	300	М	F	F	Introduced native species. On adjoining land. Central leader dead, crown hard to see; unsure of species.	2D	М	М	2.2	3.6	41.0
216	Ficus rubiginosa Port Jackson Fig	8	6	100	Y	G	G	Locally indigenous species. On adjoining land. Leaning.	1A	L	Н	1.6	2.0	12.5
217	Cyathea cooperii Rough Tree Fern	8	4	100	М	G	G	Locally indigenous species. No special problems observed at time of inspection.	2A	L	М	3.0	NA	28.3
218	Cyathea cooperii Rough Tree Fern	14	6	200	М	G	G	Locally indigenous species. No special problems observed at time of inspection. On adjoining land.	2A	М	М	4.0	NA	50.0
219	Cyathea cooperii Rough Tree Fern	14	6	125	М	G	G	Locally indigenous species No special problems observed at time of inspection. On adjoining land.	2A	М	М	4.0	NA	50.0
220	Cyathea cooperii Rough Tree Fern	14	6	125	М	G	G	Locally indigenous species. Another tree fern close not plotted on survey.	2A	М	М	4.0	NA	50.0
221	Ficus rubiginosa Port Jackson Fig	18	24	475	М	G	G	Locally indigenous species. On adjoining land. Typical form and habit for crowded area.	1A	Н	н	2.6	5.7	104. 0
222	Citharexylum spinosum Fiddlewood	18	14	500	М	G	G	Introduced exotic species. On adjoining land.	2A	М	Н	2.6	6.0	113. 0
223	<i>Melaleuca</i> sp. Paperbark	10	4	200	Μ	F	Ρ	Almost dead.	4A	М	L	1.8	2.4	18.0
224	Acacia baileyana 'Purpurea' Purple Cootamundra Wattle	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
225	Hymenosporum flavum Native Frangipani	16	8	200	М	F-G	G	Introduced native species. Insect browsing, rope engulfed in stem.	2A	М	Н	1.8	2.4	18.0
226	Cyathea cooperii Rough Tree Fern	14	6	100	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0
227	Unknown - ID to be confirmed	12	5	100	М	G	G	Tall skinny tree, large compound leaf. Possibly introduced rainforest species.	2A	М	М	1.6	2.0	12.5
228	Araucaria heterophylla Norfolk Island pine	18	9	400	М	G	G	Introduced native species. No special problems observed at time of inspection.	1A	М	Н	2.4	4.8	72.0

URBAN FORESTRY AUSTRALIA - TREE MANAGEMENT & CONSULTING ARBORICULTURIS	STS
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229	Angophora costata Smooth-barked Apple	22	22	1250	М	G	F-G	Locally indigenous species. On adjoining land. Large Ø deadwood.	2D	Н	Н	3.9	15.0	707. 0
230	Eucalyptus sp. Eucalypt	14	6	425	М	F-P	F	Termite mound at base, large diameter deadwood. Possibly E. punctata.	3D	М	L	2.5	5.1	84.0
231	Cyathea cooperii Rough Tree Fern	14	6	100	М	G	G	Locally indigenous species. Tall, high crown. No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0
232	Cyathea cooperii Rough Tree Fern	14	6	100	М	G	G	Locally indigenous species. Tall, high crown. No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0
233	Cyathea cooperii Rough Tree Fern	14	6	100	М	G	G	Locally indigenous species. Tall, high crown. No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0
234	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
235	Syagrus romanzoffiana Cocos Palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
236	Ficus rubiginosa Port Jackson Fig	16	16	*500	М	G	F-G	Locally indigenous species. Growing on rock ledge, poor/dangerous access.	2A	M/H	н	2.6	6.0	113. 0
237	Araucaria heterophylla Norfolk Island Pine	14	10	400	М	G	F-G	Introduced native species.	2A	М	н	2.4	4.8	72.0
238	Unknown - ID to be confirmed	18	14	350	М	G	G	Rainforest tree but canopy obscured by neighbouring fig so difficult to see.	2A	M/H	Н	2.3	4.2	55.4
239	Ficus microcarpa var. hillii Hills Weeping Fig	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
240	Ficus microcarpa var. hillii Hills Weeping Fig	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
241	Araucaria bidwillii Bunya pine	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
242	Ficus microcarpa var. hillii Hills Weeping Fig	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
243	Cyathea cooperii Rough Tree Fern	14	6	175	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0
244	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-

Tree No.	Genus and species	Ht (m)	Sp (m)	DBH (mm)	Age	v	С	Observations		LSR	RV	SRZ	TPZ	TPZ (m2)
245	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.		-	-	-	-	-
246	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
247	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
248	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
249	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
250	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
251	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
252	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
253	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
254	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
255	Schefflera actinophylla Umbrella Tree	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
256	Schefflera actinophylla Umbrella Tree	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
257	Cyathea cooperii Rough Tree Fern	14	6	125	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0
258	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
259	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
260	Melaleuca quinquenervia Broad-leaved Paperbark	12	6	200	SM	G	F-G	Introduced native species. Tall, high crown, lower limbs gone.	2A	М	М	1.8	2.4	18.0

261	Melaleuca quinquenervia Broad-leaved Paperbark	12	6	200	SM	G	F-G	Introduced native species. Leaning.		М	М	1.8	2.4	18.0
262	Jacaranda mimosifolia Jacaranda	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.		-	-	-	-	-
263	Strelitzia nicolai Giant White Bird of Paradise	7	8	-	SM	G	G	Introduced exotic species. Clump form.	2B	L	L	5.0	NA	78.5
264	Phoenix canariensis Canary Island Date palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
265	Jacaranda mimosifolia Jacaranda	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
266	Unknown - ID to be confirmed	7	8	150	М	F-G	F-G	Co-dominant @ 500mm. Rainforest species, heavy insect browsing and vine through canopy	2A	L	М	1.6	2.0	12.5
267	Jacaranda mimosifolia Jacaranda	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
268	Ficus microcarpa var. hillii Hills Weeping Fig	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
269	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
270	Unknown - ID to be confirmed	10	7	275	М	F-G	F-G	Rainforest species; heavy insect browsing.	2A	М	М	2.1	3.3	34.2
271	Castanospermum australe Black Bean	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
272	Cyathea cooperii Rough Tree Fern	8	5	100	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	L	М	3.5	NA	38.5
273	Grevillea robusta Silky Oak	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
274	Araucaria heterophylla Norfolk Island Pine	18	9	400	М	G	G	Introduced native species. No special problems observed at time of inspection.	1A	М	н	2.4	4.8	72.0
275	Cyathea cooperii Rough Tree Fern	7	6	100	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	L	М	4.0	NA	50.0
276	Toona ciliata Red Cedar	18	12	425	М	G	G	Unsure of species, difficult slippery access, water shed area.	1A	М	н	2.5	5.1	84.0
277	Cyathea cooperii	14	6	225	М	G	G	Locally indigenous species No special problems observed at time of inspection.	2A	М	М	4.0	NA	50.0

	Rough Tree Fern													
278	Archontophoenix cunninghamiana Bangalow palm	-	-	-	-	-	-	Species exempt from preservation under B4.22 of Pittwater 21 DCP.	-	-	-	-	-	-
279	Ficus rubiginosa Port Jackson Fig	9	6	300	М	G	G	Locally indigenous species No special problems observed at time of inspection.	1A	L	Н	2.2	3.6	41.0

KEY

	Prescribed and adjoining trees to be retained.		Prescribed Trees proposed to be removed.		Non-prescribed trees exempt from preservation controls under P21DCP.	Non-prescribed trees exempt from preservation controls under P21DCP – to be removed.
L	LOW Retention Value-These trees are not considered important for retention.	М	MEDIUM Retention Value-These trees may be retained and protected.	Н	HIGH Retention Value -These trees are considered important for retention and should be retained and protected.	

DETAILS FOR HEADINGS AND SYMBOLS USED IN TREE SCHEDULE

DAB-The trunk/stem diameter measured above the buttress (i.e. at root and trunk confluence), using a diameter tape

- DGL—The trunk/stem diameter measured at ground level, using a diameter tape.
- AGL—above ground level.
- GL-at ground level.

? —a provisional result due to inspection and/or assessment limitations, e.g. limited visual 'in-the-round' access to an adjoining tree, or very dense vegetation obscuring tree parts or preventing visual access, or a tree that requires more detailed assessment, such as an aerial inspection, decay diagnostic tests, pathology tests, etc. **sp. indet**. = species indeterminate (not determined).

On-site = \checkmark the tree is within the site boundaries. X – the tree is not inside the site boundaries, usually a street tree or tree on adjoining land.

- Ht refers to the approximate height of a tree in metres, from base of stem to top of tree crown.
- **Sp** refers to the approximate and/or average diameter spread in metres of branches/canopy (the 'crown') of a tree.

- DBH refers to the 'Diameter at Breast Height', being the diameter of the tree stem measured at 1.4 metres above ground (unless otherwise noted) and is expressed in millimetres.
 - * Denotes those situations where the tree's DBH has been visually estimated (usually adjoining trees or those that are hard to access and/or physically measure).
 - ** Denotes when the tree's DBH is the measurement provided by the surveyors on the survey plan (usually adjoining trees where access limits visual estimation).
- () The numerical figure in parentheses is the calculated DBH for a multiple stemmed tree, using the AS4970 formula, *or*, is the calculated DBH where the measurement cannot be made at the standard 1.4m above ground level, e.g. where the diameter of the stem is measured at ground level (GL) or above the buttress (DAB). All calculated figures are rounded up to the nearest 25mm to determine the tree's TPZ offsets.
- 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 structural condition. Refer to Appendix A -Terms and Definitions for more detail.
- RL Reduced Level derived from survey. A reduced level is the vertical distance between a survey point and the adopted level datum (usually AHD-Australian Height Datum).
- ULE refers to the estimated Useful Life Expectancy of a tree. Refer to Appendices A and B for details.
- **TSR** The *Tree Significance Rating* considers 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 B Significance of a Tree Assessment Rating for more detail.
- RV Refers to the retention value of a tree, based on the tree's ULE and Tree Significance. Refer to Appendix B Significance of a Tree Assessment Rating for more detail.
- SRZ Structural Root Zone (SRZ) refers to the critical area required to maintain stability of the tree. Refer to Appendix A -Terms and Definitions for more detail.
- **TPZ** Tree Protection Zone (TPZ) refers to the radial distance in metres, measured from the centre of the tree stem which defines the tree protection zone for a tree to be retained. The TPZ of an individual tree is estimated at 12 times the stem diameter or may be the outer extent of the canopy dripline (whichever measurement is the greater). Refer to Appendix A -Terms and Definitions for more detail.

TPZ area the calculated area within the TPZ radius.

NOTES:

- At 3.2 of AS4970 the advice is a TPZ should not be less than 2m nor greater than 15m (except where crown protection is required) and the TPZ of palms, other monocots, cycads and tree ferns should not be less than 1m outside the crown projection.
- At Note 3 of 3.3.5 of AS 4970 it is advised the SRZ for trees less than 0.15m diameter is 1.5m.
- At Note 4 of 3.3.5 of AS4970 the advice is the AS4970 formula for calculating the SRZ of a tree does not apply to palms, other monocots, cycads and tree ferns.

APPENDIX E

TREE LOCATION PLANS

URBAN FORESTRY AUSTRALIA - TREE MANAGEMENT & CONSULTING ARBORICULTURISTS

