

# **TREE WISE MEN® AUSTRALIA PTY LTD**

ACN 002 982 247 ABN 15 002 982 247

**tree care and consultancy**

**Arboricultural Impact Assessment  
For  
Proposed Private Hospital Development  
at  
35 Water Street  
(Lot 1 DP 375262)  
Wahroonga NSW**

Prepared for:

**Waterbrook at Wahroonga Pty Ltd  
C/o Murlan Consulting  
Suite 110, Jones Bay Wharf  
PYRMONT NSW 2099**

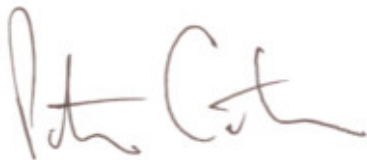
**Ref: 1622DAHosp2Final**

**March, 2009**

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Peter Castor  
**Director**

BSc (For.)  
Member: AIH, NAAA, ISAAC, IACA  
5 March 2009

## TABLE OF CONTENTS

|    |                               |    |
|----|-------------------------------|----|
| 1. | BACKGROUND .....              | 4  |
| 2. | METHODOLOGY.....              | 7  |
| 3. | SUMMARY AND CONCLUSIONS ..... | 10 |
| 4. | RECOMMENDATIONS.....          | 14 |

## ATTACHMENTS

- A. TREE SCHEDULE
- B. DEFINITIONS OF TERMS
- C. TREE PROTECTION REQUIREMENTS (GENERIC)
- D. CRZ/PRZ RULING
- E. SCAFFOLDING WITHIN A CONSTRUCTION ZONE
- F. TREE PLAN (SITE STRATEGY PLAN, LS.DA.05, REV. G, TAYLOR BRAMMER)

## **1. BACKGROUND**

- 1.1** This Arboricultural Impact Assessment (AIA) was prepared for Waterbrook at Wahroonga Pty Ltd in relation to a proposed private hospital development at 35 Water Street, Wahroonga (Lot 1 DP 375262 the subject site). The subject site originally consisted of a private two story dwelling with an associated building known as 'Rippon Grange'. After the early 1950s the land was donated to the State government for use as a hospital. It existed as the John Williams Respite Care Centre until 2002. Previous Development Applications were lodged in July, 2006 and December 2007 for different uses and different layouts. This current Application takes into consideration the need to protect and minimise the impact on the area of the site defined as Blue Gum High Forest (BGHF).
- 1.2** The Project Manager for this project is Murlan Consulting, the Architect is Tanner Architects, the Landscape Architect is Taylor Brammer, the Vegetation Management Consultant is UBM Ecological Consultants Pty Ltd, the Ecological Consultant is Cumberland Ecology, the Stormwater and Erosion Control Engineer is LHO Group and the Geotechnical Engineer is Douglas Partners.
- 1.3** The subject site fronts Water and Young Streets and adjoins residential properties at 33 Water Street and 1, 3 and 5 Plymouth Place and 44, 46, 50, 52, 62 and 64 Billyard Avenue. The subject site had a slight south easterly aspect falling from the northwest corner to the southeastern corner.



**Figure 1:** Indicative location of subject site (red lines)<sup>1</sup>.

- 1.4** The Soil Landscape<sup>2</sup> grouping for the site is Glenorie (*gn*) which is a moderately fertile, clay based soil formed from weathering of underlying Wianamatta Shales (Ashfield Shale formation). The indigenous upper canopy tree species on and adjacent to the subject site are typical of those found on this Soil Landscape. Soils are deep and have high clay content. The major portion of both structural and feeder roots will be in the upper 1 metre of the soil profile. Geotechnical reporting will be required to confirm soil profile characteristics prior to construction. Refer to the Douglas Partners Geotechnical Investigation, June, 2006 for detail of the subsurface conditions and recommendations in relation to proposed excavation.
- 1.5** The subject site contained a mix of planted exotic and Australian native tree species and remnant bushland tree species. The remnant canopy trees are typical of those found in Blue Gum High Forest (BGHF), a critically endangered ecological community under the Threatened Species Conservation Act. The boundaries of this community were defined in the Ecological Report prepared by P and J Smith Ecological Consultants, 2007. Refer to the Species Impact Statement (SIS) by Cumberland Ecology for further detail of the flora and fauna located within the area defined as BGHF. Refer to the Vegetation Management Plan by UBM Ecological Consultants for details regarding proposed management and remediation of vegetation across the site.

<sup>1</sup> © Department of Lands SIX Portal [www.lands.nsw.gov.au](http://www.lands.nsw.gov.au)

<sup>2</sup> Chapman, G.A. and Murphy, C.L. (1989). Soil Landscapes of the Sydney 1:100000 Sheet. Soil Conservation Service of NSW, Sydney.

- 1.6** Those trees within and adjoining the proposed development that met the criteria of Ku-ring-gai Council's Tree Preservation Order<sup>3</sup> (the TPO) are the subject of this Report. Some trees less than 5 metres in height and with a canopy spread less than 4 metres were assessed as they may have had landscape Heritage significance and were surveyed and numbered on the supplied Survey. The TPO is contained at 4.2.1 of DCP38.
- 1.7** This AIA satisfies Appendix C of DCP38, *"Guidelines in preparing an Arborist Report"*.
- 1.8** The proposed development will involve the demolition of the existing structures with the exception of the Rippon Grange building, pool and attached lawn terraces and the construction of a main hospital building, east wing and west wing buildings and associated basement car parking. Reference should be made to **2.7** for the drawings relied upon in the preparation of this AIA.
- 1.9** The purpose of this AIA was to assess the impact of the development proposal on the existing site trees as part of the new Development Application. The recommendations and comments in this Report assume the following:
- Retention and protection Blue Gum High Forest within the site is to be considered a major priority.
  - A high quality, shady, outdoor environment is desired.
  - The amenity of the adjoining neighbours needs to be considered.
  - Existing landscape character and integrity of the BGHF area should be retained where possible through the retention of trees.

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<sup>3</sup> Ku-ring-gai Council Tree Preservation Order defines a tree as having a height exceeding 5 metres, or a canopy spread of 4.0 metres.

## 2. METHODOLOGY

- 2.1** In preparation of this Report ground level, visual tree assessments (VTA)<sup>4</sup> were undertaken on 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup> September, 2005, 22<sup>nd</sup> June, 6<sup>th</sup> July 2006 and 17<sup>th</sup> May, 2007. No aerial (climbing) inspections or tree root mapping were undertaken as part of these assessments. Trunk drilling of four (4) trees (Trees 80, 89, 323 and 329) was undertaken at the 17<sup>th</sup> May, 2007 site inspection, to establish strength loss associated with observed trunk hollows. Commentary on this detailed strength loss assessment (trunk drilling) is included in the “Comments” column of the Tree Schedule (Attachment A).
- 2.2** The terms, Diameter at Breast Height (DBH), Primary Root Zone (PRZ), Critical Root Zone (CRZ), ©Significance Rating and Safe Useful Life Expectancy (SULE) have been used throughout this Report. Attachment C provides a detailed explanation of each.
- 2.3** Tree heights were estimated. Trunk diameter at breast height (DBH) was estimated at 1.4 metres above ground level and rounded to the nearest 0.1 metre. Critical Root Zones (CRZ) and Primary Root Zones (PRZ) were also rounded to the nearest 0.5 metre. The vigour of the trees was rated Good, Fair or Poor and a Safe Useful Life Expectancy (SULE) estimated. Using the Tree Wise Men® Australia Pty Ltd system of ©Significance Rating all subject trees were also allocated a Significance Rating (see **3.2.1** Table 1).
- 2.4** All tree offsets mentioned in this Report are to centre of trunk unless otherwise stated. Many of the trees had heavily skewed canopies due to the presence of adjacent trees. Canopy skew and trunk lean are not reflected on the Survey. The “Comments” column of the Tree Schedule identifies major canopy spread anomalies. Tree protection zones reflect a radius around the centre of trunk rather than “dripline” which is often skewed.
- 2.5** The three hundred and ten (310) subject trees are those indicated on the Tree Plan (adapted Site Strategy Plan, LS.DA.05 Rev. G, prepared by Taylor Brammer).

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<sup>4</sup> VTA-Visual Tree Assessment undertaken by tree professionals, is a recognised (International Society of Arboriculture) systematic method of identifying tree characteristics and hazard potential. Journal of Arboriculture, Vol. 22, No. 6, Nov. 1996. VTA is also an assessment method described by Claus Mattheck in the *Body Language of Trees – a handbook for failure analysis*. The Stationery Office, London (1994).

- 2.6** The subject trees were numbered and labelled on site with aluminium foil tags installed by Surveyors Dunlop Thorpe & Co as per the Tree Schedule (Attachment A) and Tree Plan (Attachment F). The non-consecutive tree numbering system has been adopted.
- 2.7** The Comments and Recommendations in this Report are based on the findings from the site inspections, discussions with Tanner Architects, Taylor Brammer Landscape Architects, Cumberland Ecology, UBM Ecological Consultants and LHO Civil Services Engineers representatives and analysis of the following Plans:
- Set of architectural drawings Job No. 05 0832, AR.DA00 – DA12, Rev. B, 26.02.09 prepared by Tanner Architects.
  - Site Strategy Plan LS.DA.05, Rev. G, Taylor Brammer.
  - Stormwater Concept Plans, 0608-0008, C00 – C05, Issue B February, 2009, LHO Group.
  - Detail Survey, Ref: 15600/2 sheet 1 of 1, 29.8.05, Dunlop Thorpe & Co.
- The Site Strategy Plan, LS.DA.05, Rev. G has been used as a base map for the Tree Plan (Attachment F).
- 2.8** Tree removal/retention/transplantation recommendations have been based on tree ©Significance, vigour, condition, SULE, and construction offsets<sup>5</sup>. Tree species exempt under the TPO and species listed as *Noxious*, *Environmental Weeds* or *Nuisance Plants* at Appendix E of Draft Ku-ring-gai Bushland Reserves Plan of Management have been recommended for removal unless they were significant specimens, clear of proposed construction. Additionally, tree removal recommendations provided by Taylor Brammer in relation to inconsistencies with proposed landscape usage, have been adopted.
- 2.9** Recommendations regarding retention of non-indigenous tree species located within the BGHF area (as defined by P and J Smith Ecological Consultants) have been based on recommendations made within the Vegetation Management Plan produced by UBM Ecological Consultants Pty Ltd.
- 2.10** Trees within construction footprints are recommended for removal (**Rm**). Trees located within likely construction access ways that were unable to be worked around due to location, lean or canopy form are recommended for removal (**Rm**).

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<sup>5</sup> "Construction" for the purpose of this Report means excavation, compacted fill or machine trenching.

Where construction is proposed within Critical Root Zone (CRZ) offsets (Attachment C), those trees have also been recommended for removal unless the works are of a minor nature (e.g. footpaths, roads at grade) in which case design modifications have been recommended or described. Fully elevated, pier and beam type construction is possible within CRZ.

Trees to be retained with construction within CRZ offsets are rated as Retain Plus (**R+**). Where construction was proposed within the Primary Root Zone (PRZ), but outside the CRZ, those trees are also rated as Retain Plus (**R+**). Specific construction design and monitoring will be required for the (**R+**) trees. Retain Plus (**R+**) trees will be retained in the longterm given that less than 20% of the PRZ is likely to be impacted. In all instances, an additional 20% of root breakout area is available on other sides resulting in no net loss of PRZ area.

Where construction is proposed outside the PRZ, trees are rated as Retain (**R**) with no specific design or tree protection monitoring required.

- 2.11** Some trees have proposed stormwater services (C03, B and C04, B) located within PRZ or CRZ offsets. This follows a major review of the original stormwater layout by LHO, reducing significantly the number of conflicts with retained trees. Services have been rerouted inside the Basement to avoid unnecessary rootzone disturbance to adjacent to trees (e.g. T45A and T66). The assumption has been made (following discussions with LHO) that these trees will be retained either by means of hand digging or horizontal (trenchless) boring and specific arboricultural monitoring during construction. These trees are also identified as (**R+**) in the Tree Schedule.

### 3. SUMMARY AND CONCLUSIONS

#### 3.1 The Subject Site (Lot 1 DP 375262)

**3.1.1** Of the three hundred and ten (310) assessed trees on the subject site, 237 trees (76%) are to be retained on site. Of these 237 trees, 214 trees (69%) are to be retained in situ and a further 23 trees (7%) are to be transplanted to new locations on site. The remaining 73 trees (24%) are to be removed.

**Table 1: Tree Retention, Removal, Transplantation on the Subject Site (Lot 1 DP 375262)**

|                                    | No.        | %          |
|------------------------------------|------------|------------|
| Retained (in situ)                 | 214        | 69%        |
| Retained (transplanted on site)    | 23         | 7%         |
| Removed                            | 73         | 24%        |
| <b>Total trees on subject site</b> | <b>310</b> | <b>100</b> |

#### 3.2 The Blue Gum High Forest (BGHF) Mapped Area of the Site

**3.2.1** The Blue Gum High Forest (BGHF) mapped area of the site will, in the main be retained and rehabilitated as indicated on Site Strategy Plan LS.DA.05, Rev. G.

**Table 2: Tree Retention and Removal Within BGHF Mapped Areas**

|                                                                                                                                                                                 | No.        | %          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|
| Trees retained within BGHF                                                                                                                                                      | 111        | 88%        |
| Trees removed as weeds* or dead/dangerous**                                                                                                                                     | 11         | 9%         |
| Trees removed for driveway, building or other construction***                                                                                                                   | 4          | 3%         |
| <b>Total existing trees within BGHF mapped areas</b>                                                                                                                            | <b>126</b> | <b>100</b> |
| <b>Reasons for Removal</b>                                                                                                                                                      |            |            |
| <b>*Weeds:</b> T113, T151, T152, T153, T154, T194. All Jacarandas with ©Significance Rating of "4".                                                                             |            |            |
| <b>**Dead/dangerous:</b> T105 (Sydney Blue Gum), T176 (unknown species), T323 (Sydney Blue Gum), T328 (Coral Tree), T371 (Sydney Blue Gum)                                      |            |            |
| <b>***Trees within Construction:</b> T115 (Willow Bottlebrush), T116 (Sydney Blue Gum), T130 (Pittosporum), T203 (Blueberry Ash). All four trees had ©Significance Rating of 4. |            |            |

- 3.2.2** Of the one hundred and twenty six (126) trees located within the BGHF, one hundred and eleven (111) are to be retained. Fifteen (15) trees within the BGHF mapped area are to be removed: of these only five (5) were BGHF listed species and ten (10) were exotics.
- 3.2.3** Of the fifteen (15) BGHF mapped trees to be removed, five (5) are ©Significance Rating 5 (Trees 105, 176, 323, 328 and 371), six (6) are 'Target Weeds' (Trees 113, 151, 152, 153, 154 and 194) and four (4) are within or adjacent to construction (Trees 115, 116, 130 and 203). The loss of only four trees from the BGHF area for the construction works represents a high degree of layout responsiveness to the site constraints. Only three of the four trees were listed on the assemblage of BGHF species.
- 3.2.4** Before and after photomontages have not been reviewed at this stage however we consider that the existing landscape character of the site will be retained through the sympathetic positioning of the buildings, appropriate boundary offsets, proposed landscape plantings and BGHF rehabilitation works. The four trees proposed to be removed being within construction zones were 10 metres or less in height and contributed little to the biomass of the site.
- 3.2.5** The landscape cultural heritage of the site will be acknowledged through the retention of the significant non-indigenous specimens in all areas of the site.

### **3.3 The Significance of Subject Trees**

- 3.3.1** The proposed retention of all twenty nine (29) trees with ©Significance Ratings of 1 or 2 confirms a development layout that responds to the location of the most significant site trees. Additionally, 81% (86 of the 105 trees) of ©Significance Rating 3 trees and 73% (122 of the 167 trees) of ©Significance Rating 4 trees are to be retained (including transplants). From an arboricultural perspective, this is a good outcome for such a heavily vegetated site.

**3.3.2** Using the Tree Wise Men® Australia Pty Ltd system of ©Significance Rating the subject trees were rated as follows.

**Table 3: ©Significance Rating of Subject Trees**

| DETAILS                         | ©Significance Rating                |                                                                                                   |                   |                   |                                             |
|---------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------|-------------------|-------------------|---------------------------------------------|
|                                 | 1                                   | 2                                                                                                 | 3                 | 4                 | 5                                           |
| Tree Numbers                    | 17, 31, 45A, 78, 123, 137, 167, 326 | 66, 80, 89, 92, 94, 99, 101, 110, 114, 126, 149, 155, 156, 161, 173, 183, 193, 195, 309, 344, 345 | See Tree Schedule | See Tree Schedule | 105, 131, 159, 160, 176, 188, 323, 328, 371 |
| Total Existing Trees            | 8                                   | 21                                                                                                | 105               | 167               | 9                                           |
| Total Trees to be Removed       | 0                                   | 0                                                                                                 | 19                | 45                | 9**                                         |
| Total Trees to be Retained      | 8                                   | 21                                                                                                | 86                | 122               | 0                                           |
| % of Total Trees to be Retained | 100%                                | 100%                                                                                              | 82%               | 73%               | 0%                                          |

**\*\*All ©Sig. Rating 5 trees to be removed irrespective of proposed development as dead or dangerous.**

### 3.4 Tree Retention

**3.4.1** Two hundred and thirty seven (237) trees are to be retained on site. Of these 237 trees, 214 trees (69%) are to be retained in situ and a further 23 trees (7%) are to be transplanted to new locations on site.

**3.4.2** Of the two hundred and thirty seven (237) trees to be retained (indicated as “**R**”), one hundred and seventy three (173) are clear of construction (beyond PRZ) and do not require any specific tree protection during construction. Twenty four (24) are rated as “**R+**” having some form of construction or services installation either within their PRZs or CRZs. These twenty four (24) trees will require specific consideration and sympathetic construction methods as they had incursions within their PRZs. Specific tree retention recommendations are provided at **4.2** to ensure adequate protection. In all cases less than 20% loss of PRZ is likely, with an additional 20% being available on the opposite side resulting in no net loss of PRZ.

### **3.5 Transplantation**

Twenty three (23) shrubs, palms or tree ferns are to be transplanted to suitable locations within the proposed landscape. Only those species tolerant of transplantation have been considered for this. Only those specimens in locations clear of existing structures, enabling capture of a complete rootball, have been recommended for transplantation. For proposed locations (existing and proposed) refer to LS.DA.06 and LS.DA.07.

### **3.6 Tree Removal**

**3.6.1** Seventy three (73) trees are to be removed. Refer to the Tree Schedule and Tree Plan for species and location. The reasons for these removals were as follows:

- Thirty seven (37) trees require removal as they stood within a proposed construction footprint.
- Five (5) trees require removal as they had construction activities (cut or fill) proposed within their CRZs
- Nine (9) trees were dead, dying or dangerous and rated as ©Significance 5 requiring removal irrespective of the development.
- Nine (9) trees were TPO Exempt, environmental weeds or nuisance species under Ku-ring-gai Council's Bushland Reserves Plan of Management.
- Six (6) trees require removal as they were semi-mature specimens of species identified as "Target Weeds" within the Blue Gum High Forest area (see Vegetation Management Plan, Urban Bushland Management Consultants, December 2007).
- Four (4) trees require removal as they were inappropriately located in relation to proposed landscape development or land usage.
- Three (3) trees require removal as they were located within an area likely to restrict construction access and establishment of safe work zones given their proximity to proposed footprints and dense or low canopies.

## 4. RECOMMENDATIONS

### 4.1 Arborist Involvement

An Arborist experienced in tree protection on building sites should be engaged prior to the commencement of work on the site. The Site Arborist's tasks will be to monitor and report regularly to the Principal Certifying Authority and the Applicant on the condition of the retained trees. The Site Arborist is to monitor any excavation, trenching or soil fill within the PRZ of any retained trees.

The schedule of works for the development must acknowledge the role of the Site Arborist and the need to protect the retained trees. Sufficient notice must be given to the Arborist where his/her attendance is required. Should the proposed design change from that reviewed (2.7), additional arboricultural assessment will be required.

### 4.2 Tree Retention

**4.2.1** Of the three hundred and ten (310) assessed trees for the subject site, 237 trees (76%) are to be retained on site. Of these 237 trees, 214 trees (69%) are to be retained in situ and a further 23 trees (7%) are to be transplanted to new locations on site.

**4.2.2** Of the two hundred and thirty seven (237) trees to be retained (indicated as “**R**”), one hundred and ninety (190) are clear of construction (beyond PRZ) and do not require any specific tree protection during construction.

**4.2.3** Twenty four (24) are rated as “**R+**” having some form of construction or services installation either within their PRZs or CRZs. These twenty four (24) trees will require specific consideration and sympathetic construction methods as they had incursions within their PRZs. These incursions are considered acceptable in context of our PRZ/CRZ analysis: a tree generally may sustain a loss of up to 18% of its PRZ (Attachment D) with no long-term affect on its existing vigour or stability. In all instances a similar area of open ground is available for new root development to compensate for the proposed root loss. These trees require special consideration and sympathetic construction methods to facilitate their retention. In addition to the Tree Protection Requirements (Generic) outlined in Attachment C, the following specific advice should be adopted.

#### **4.2.4 CRZ Construction: Trees 17, 45A, 66 and 143**

- Tree 17 was causing uplift of the existing driveway which is proposed to be upgraded and widened. All resealing works are to be conducted above existing grade. Allowance is to be made for preservation of surface roots within CRZ offsets. Roots greater than 50mm diameter within CRZ must not be cut during driveway upgrade works.
- Issues relating to Trees 45A and 66 were as follows:
  - These trees were causing uplift of the existing pathway located within CRZ to the north. All pathway upgrade works must be conducted above existing grade. Roots greater than 50mm in diameter must not be cut during upgrade works.
  - The new deck area is proposed within the CRZs of the Trees 45A and 66. This is to be constructed on isolated piers clear of tree roots greater than 50mm in diameter.
  - Trees 45A and 66 have proposed building excavation within their PRZ offsets. Machinery excavation is unlikely to have a significant impact ensuring no benching or soil battering occurs within CRZ offsets.
- Tree 143 has the proposed carpark and OSD within its CRZ. All excavation should be undertaken by hand to a depth of 800mm with all roots encountered to be cut cleanly by hand with a sharp saw.

#### **4.2.5 PRZ Construction: Trees 35, 36, 55, 60, 78, 80, 83, 89, 95, 95A, 96, 97, 110, 120A, 139, 143, 161, 309, 319 and 329**

- Trees 35 and 36 have existing path restoration proposed within their PRZs. All works to be by hand and above existing grade.
- Trees 55, 60, 78, 80, 83, 95, 95A, 96, 97, 120A, 139, 161 and 309 have stormwater piping within their PRZ offsets. Where no other construction activity is proposed within their PRZs, the stormwater works can proceed without boring or hand digging. All roots >50mmØ should be left uncut.
- New deck area is proposed within the PRZ of Tree 89. This is to be constructed on isolated piers clear of tree roots >50mmØ. Piers are to be hand dug to a depth of 800mm to avoid roots >50mmØ.
- Trees 78, 83 and 110 have building excavation within PRZ offsets. Machinery excavation is unlikely to have a significant impact as no benching or soil battering is proposed.

#### **4.2.6 Canopy Pruning: All retained trees**

- Many of the canopy trees retained, particularly within the BGHF areas, contain hollows and deadwood. Depending upon the future use and likely people movements beneath the canopies of these trees, deadwood and canopy thinning will be required to maintain an acceptable level of safety for the occupiers and passers-by of the site. Many of the site trees, adjacent to the eastern boundary, overhang public land. We recommend that as part of the approved tree removal, retained trees with clearly observable hazards (e.g. Tree 325A) be inspected and pruned accordingly. Consideration is to be given to the fauna habitat values of hollow trunk and limb sections during hazard reduction pruning. Tree hazard management will be ongoing post-development.
- Retained Bunya-Bunya Pines, *Araucaria bidwillii* (T78, T79, and T81) will need ongoing monitoring of cone production. Fixed ropes may need to be installed to assist the harvesting of cones. Cone should be harvested prior to maturity. Mature cones can weigh in excess of 10 kilograms and can land some distance from the trunk as a result of being propelled from the lower limbs.
- There should be no canopy pruning undertaken unless approved by the DA Consent or with Council and tree owner consent.
- All pruning must be performed as per Australian Standards AS4373 – 2007 “Pruning of Amenity Trees” and WorkCover NSW Code of Practice for Amenity Tree Industry, 1998.

**4.2.7** Scaffolding, if required, should be installed as per Attachment E. Wherever possible, scaffolding should be avoided or reduced in width to minimise pruning of overhanging canopy. Ground protection must be provided within the PRZ of retained trees wherever works are proposed. The nominal 3 metres wide construction zone around the building footprints will provide reasonable construction access. At all times the ground is to be covered and maintained with a 100mm deep layer of wood chip or more substantial boarding as required.

#### **4.3 Transplantation**

Trees 15, 39, 40, 61, 62, 63, 64, 65, 204, 205, 355, 364, 365, 368, 369, 377, 404, 406, 407, 408, 409, 410 and 500 are able to be transplanted as detailed on the LS.DA.06 and LS.DA.07. This is a favourable option as these trees were either located within proposed construction footprints or had construction proposed within their CRZ and would otherwise require removal. The transplantation should be undertaken by a company specialising in tree transplanting, not the demolition contractor.

A Transplant Method Statement should be prepared prior to commencement of works by a tree transplant company and acknowledging the proposed new locations on the Landscape Plan. The transplantation should precede the demolition of existing buildings.

#### **4.4 Tree Removal**

A total of seventy three (73) trees require removal. These trees should be removed as per the method outlined in Attachment C, TP2. The Site Arborist is to monitor the approved tree removal process to ensure the trees are accurately tagged and mapped and disturbance or damage does not result to trees to be retained.

#### **4.5 Hydraulics Plans**

Stormwater Concept Plans C03-C04, Issue B were reviewed as part of this assessment. Services trenching where possible has been routed outside PRZ offsets following consultation with LHO and Tanner Architects representatives. Stormwater routing is within the proposed driveway footprint. Services have been located within the basement rather than beyond it to reduce impacts on trees. Where services are required within CRZ offsets, horizontal boring or hand digging will be required with Site Arborist monitoring within CRZ offsets. For the purposes of this Report, machine trenching is regarded as “construction” and has similar tree impacts as slab or basement excavation or compacted soil fill.

No sewer services layout has been reviewed. Wherever possible, shared trenches should be used to reduce rootzone impacts. Sewer trenching where possible is to be routed outside PRZ offsets. Where this is not possible horizontal boring or hand digging will be required within CRZ offsets with Arborist monitoring.

#### **4.6 Shadows**

Shadow diagrams have been prepared by Tanner Architects. The shadows resulting from the proposed buildings are not likely to have a significant impact on the existing BGHF tree species. The shadows are seasonably variable and constantly changing footprint. Most the more significant specimens have their crowns above the line of the shadows and so will not be impacted. Shadows are not cast on cloudy days which account for a considerable portion of the year.

The Indicative Species List on LS.DA.05, G contains a variety of BGHF species including shade tolerant species which can be used where shadowing is expected to be constant. The existing vegetation to the north of the Area 2 BGHF is currently very dense. The existing understorey is already heavily shadowed by the closed canopy above and the surrounding dense plantings.

#### **4.7 Impacts on Critical Root Zones**

Remote impacts on the BGHF are not expected beyond the immediate 3 metres wide construction zone. The soil water impacts associated with the basement excavation will be minimised through use of vertical piling and shotcreting (or insertion of precast panels). This will reduce the duration of exposure of the cut face to the elements and avoid the need for benching or over-excavation towards the adjacent trees. Strip drains will be placed on the outside of the walling, collecting free water and draining to an internal dish drain within the basement carpark. During prolonged periods of rain water may need to be pumped to the surface for disposal into the stormwater mains.

This method of basement construction has been used in Sydney for some time. In our experience there has not been a resultant incidence of tree death on adjoining properties. Once backfilled the soil moisture soon returns to the pre-development levels.

The PRZ areas of retained trees coinciding with the 3 metres construction zone are to be mulch and irrigated during the construction period. The BGHF areas are to be rehabilitated or regenerated as detailed in the Vegetation Management Plan (VMP).

Increased storm wind exposure is not expected to be significant given that the proposed buildings are within existing forest openings. Very few large dense canopy trees are being removed as part of the proposal. Windthrow and limb failure can result on the margins of recently cleared, intensive plantations, where upright tree form (low live crown ratios) has been created through dense stocking.

The VMP will ensure the BGHF within the site will be enhanced and protected against influences from adjoining "exotic" landscapes.

The Primary Root Zone (10 times DBH) and Critical Root Zone (5 times DBH) has been widely used as a guide to preserving existing trees on development sites. It is inline with the Draft Australia Standard (AS4970) "*Guideline for the planning and protection of trees on development site*" which has recently completed the public review period. This PRZ/CRZ method has been widely accepted in Class 1 Appeals in the Land and Environment Court of NSW as a method of determining tree retention adjacent construction.

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**ATTACHMENT A: TREE SCHEDULE**

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## Tree Schedule - 35 Water St, Wahroonga Private Hospital Development (V2)

| TREE No. | COMMON NAME/<br>GENUS SPECIES                  | DBH (m)     | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                            |
|----------|------------------------------------------------|-------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|---------------------------------------------------------------------|
|          |                                                |             |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                     |
| 7        | Jacaranda,<br><i>Jacaranda mimosifolia</i>     | 0.2         | 7          | 3                           | SM        | F      | F         | 1.5            | 2.0            | S    |                                      |             |   |   | 4 |   | R                     |    |   |    | Canopy skewed to west                                               |
| 8        | Jacaranda,<br><i>Jacaranda mimosifolia</i>     | 0.3,<br>0.3 | 8          | 5                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                     |
| 9        | Chinese Elm,<br><i>Ulmus parvifolia</i>        | 0.3,<br>0.1 | 12         | 6                           | M         | G      | F         | 2.0            | 4.0            | M    |                                      |             |   | 3 |   |   | R                     |    |   |    | North east trunk arising from<br>ground level should be<br>removed. |
| 10       | Spruce,<br><i>Picea sp.</i>                    | 0.2         | 7          | 3                           | SM        | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                     |
| 11       | Spruce,<br><i>Picea sp.</i>                    | 0.3         | 13         | 3                           | M         | G      | G         | 1.5            | 3.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                     |
| 12       | Chinese Elm,<br><i>Ulmus parvifolia</i>        | 0.1,<br>0.1 | 10         | 3                           | SM        | F      | F         | 1.5            | 3.0            | S    |                                      |             |   |   | 4 |   | R                     |    |   |    | Self seeded. On fence line.<br>Canopy skewed to north.              |
| 13       | Rhododendron,<br><i>Rhododendron sp.</i>       | Multi       | 5          | 3                           | M         | G      | G         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                     |
| 14       | Camellia,<br><i>Camellia sasanqua</i>          | 0.1         | 4          | 2                           | M         | G      | F         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                     |
| 15       | Giant Strelitzia,<br><i>Strelitzia nicolai</i> | Multi       | 9          | 6                           | M         | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Clump of 10 stems.<br>Driveway to be widened.                       |
| 16       | Native Daphne,<br><i>Pittosporum undulatum</i> | Multi       | 10         | 5                           | M         | F      | F         | 2.0            | 4.0            | M    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Driveway to be widened.                                             |

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|----------|---------------------------------------------------|-------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|-----------------------------------------------------------------------------------------------------------------|
|          |                                                   |             |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                                 |
| 17       | Pecan,<br><i>Carya illinoensis</i>                | 1.1         | 26         | 8                           | M         | G      | G         | 5.5            | 11.0           | M    |                                      | 1           |   |   |   |   |                       | R+ |   |    | Root heave within existing drive. Proposed driveway works within CRZ to allow for surface roots to be retained. |
| 18       | Rough Tree Fern,<br><i>Cyathea australis</i> .    | 0.2         | 4          | 2                           | M         | G      | G         | 1.0            | 2.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                 |
| 19       | Phoenix Palm,<br><i>Phoenix canariensis</i>       | 0.7         | 12         | 4                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                 |
| 20       | Giant Strelitzia,<br><i>Strelitzia nicolai</i>    | Multi       | 10         | 4                           | M         | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    | Clump of 6 stems.                                                                                               |
| 21       | Native Daphne,<br><i>Pittosporum undulatum</i>    | 0.3,<br>0.3 | 10         | 4                           | M         | F      | F         | 2.0            | 4.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                 |
| 22       | Native Daphne,<br><i>Pittosporum undulatum</i>    | 0.4         | 12         | 4                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                 |
| 23       | Bull Bay Magnolia,<br><i>Magnolia grandiflora</i> | Multi       | 13         | 3                           | M         | G      | F         | 2.5            | 5.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                 |
| 24       | Giant Strelitzia,<br><i>Strelitzia nicolai</i>    | Multi       | 8          | 3                           | M         | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                 |
| 25       | Rhododendron,<br><i>Rhododendron sp.</i>          | Multi       | 6          | 3                           | M         | G      | F         | 1.5            | 3.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to the south east.                                                                                |
| 26       | Rhododendron,<br><i>Rhododendron sp.</i>          | 0.3         | 5          | 2                           | M         | G      | F         | 1.5            | 3.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                 |
| 27       | Bull Bay Magnolia,<br><i>Magnolia grandiflora</i> | Multi       | 11         | 4                           | M         | G      | F         | 2.5            | 5.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                 |
| 28       | Rhododendron,<br><i>Rhododendron sp.</i>          | Multi       | 5          | 4                           | M         | G      | F         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to the east.                                                                                      |
| 29       | Rhododendron,<br><i>Rhododendron sp.</i>          | 0.1         | 3          | 2                           | M         | F      | P         | 1.5            | 2.0            | S    |                                      |             |   |   | 4 |   | R                     |    |   |    | Canopy heavily skewed to the north east.                                                                        |

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|----------|---------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|-----------------------------------------------------------------------|
|          |                                                   |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                       |
| 30       | Giant Strelitzia,<br><i>Strelitzia nicolai</i>    | Multi               | 9          | 4                           | M         | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    | Clump of 7 stems.                                                     |
| 31       | Himalayan Cedar,<br><i>Cedrus deodara</i>         | 0.8,<br>0.3         | 16         | 6                           | M         | G      | G         | 5.0            | 10.0           | L    |                                      | 1           |   |   |   |   | R                     |    |   |    | Stem on south side with<br>bark wound.                                |
| 31 A     | Tulip Tree,<br><i>Liriodendron tulipifera</i>     | 0.3                 | 12         | 3                           | SM        | G      | G         | 1.5            | 3.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    | On adjacent property.                                                 |
| 32       | Giant Strelitzia,<br><i>Strelitzia nicolai</i>    | Multi               | 6          | 3                           | SM        | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    | Clump of 4 stems.                                                     |
| 33       | Wattle,<br><i>Acacia sp.</i>                      | 0.2                 | 8          | 2                           | M         | F      | F         | 1.5            | 2.0            | S    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                       |
| 34       | Evergreen Alder,<br><i>Alnus jorullensis</i>      | 0.3                 | 10         | 4                           | SM        | G      | G         | 1.5            | 3.0            | M    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                       |
| 35       | <i>Unknown sp.</i>                                | Multi               | 6          | 5                           | M         | G      | G         | 2.5            | 5.0            | L    |                                      |             |   | 3 |   |   |                       | R+ |   |    | Restoration of existing path<br>within PRZ.                           |
| 36       | Bull Bay Magnolia,<br><i>Magnolia grandiflora</i> | Multi               | 8          | 6                           | M         | F      | G         | 3.0            | 6.0            | L    |                                      |             |   | 3 |   |   |                       | R+ |   |    | Restoration of existing<br>path within PRZ.                           |
| 37       | <i>Unknown sp.</i>                                | 0.1,<br>0.1,<br>0.1 | 5          | 2                           | SM        | G      | F         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                       |
| 38       | Giant Strelitzia,<br><i>Strelitzia nicolai</i>    | Multi               | 5          | 2                           | SM        | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    | Clump of 3 stems.                                                     |
| 39       | Camellia,<br><i>Camellia sasanqua</i>             | Multi               | 5          | 3                           | M         | G      | F         | 2.0            | 4.0            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Canopy skewed to the<br>south west. Within<br>proposed Ambulance Bay. |
| 40       | Camellia,<br><i>Camellia japonica</i>             | Multi               | 3          | 2                           | M         | G      | F         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Within proposed road<br>upgrade works.                                |
| 41       | Giant Strelitzia,<br><i>Strelitzia nicolai</i>    | Multi               | 7          | 4                           | M         | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    | Clump of 12 stems                                                     |
| 42       | Jacaranda,<br><i>Jacaranda mimosifolia</i>        | 0.4,<br>0.3         | 11         | 5                           | M         | G      | G         | 3.0            | 6.0            | L    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed driveway.                                             |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                            | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                                                                                   |
|----------|----------------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                                          |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                                                                            |
| 43       | Jacaranda,<br><i>Jacaranda mimosifolia</i>               | 0.2,<br>0.3,<br>0.4 | 11         | 3                           | M         | G      | F         | 3.0            | 6.0            | M    |                                      |             |   |   | 4 |   |                       |    |   | Rm | CRZ within proposed building footprint. Canopy skewed to the south.                                                                                        |
| 44       | Illawarra Flame Tree,<br><i>Brachychiton acerifolius</i> | 0.3                 | 8          | 2                           | SM        | G      | F         | 1.5            | 3.0            | M    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Ku-ring-gai Council nuisance species                                                                                                                       |
| 45       | Liquidambar,<br><i>Liquidambar styraciflua</i>           | 0.2                 | 7          | 2                           | SM        | G      | F         | 1.5            | 2.0            | M    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Heavily invaded by Wisteria. Within proposed Ambulance Bay.                                                                                                |
| 45 A     | Brush Box,<br><i>Lophostemon confertus</i>               | 1.3                 | 26         | 8                           | M         | G      | G         | 6.5            | 13.0           | L    |                                      | 1           |   |   |   |   |                       | R+ |   |    | Existing path retained to north. Proposed 225mm diameter stormwater rerouted inside basement carpark. Proposed deck within CRZ. To be elevated within PRZ. |
| 46       | Wattle,<br><i>Acacia sp.</i>                             | 0.4                 | 12         | 5                           | M         | G      | F         | 2.0            | 4.0            | M    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed construction footprint.                                                                                                                    |
| 47       | Native Daphne,<br><i>Pittosporum undulatum</i>           | Multi               | 5          | 3                           | M         | F      | F         | 2.0            | 4.0            | M    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed construction footprint.                                                                                                                    |
| 48       | Rhododendron,<br><i>Rhododendron sp.</i>                 | 0.1,<br>0.1         | 5          | 2                           | M         | G      | F         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed construction footprint. Canopy skewed to the south.                                                                                        |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                 | DBH (m)     | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                  |
|----------|-----------------------------------------------|-------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|-------------------------------------------------------------------------------------------|
|          |                                               |             |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                           |
| 49       | Rhododendron,<br><i>Rhododendron sp.</i>      | 0.1         | 4          | 2                           | M         | P      | F         | 1.5            | 2.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed construction footprint. Dieback.                                          |
| 50       | Jacaranda,<br><i>Jacaranda mimosifolia</i>    | 0.2,<br>0.2 | 8          | 4                           | SM        | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed construction footprint.                                                   |
| 51       | Camellia,<br><i>Camellia japonica</i>         | Multi       | 4          | 2                           | M         | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Roots confined within raised stone garden edging. Within proposed construction footprint. |
| 52       | Camellia,<br><i>Camellia japonica</i>         | Multi       | 4          | 2                           | M         | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Roots confined within raised stone garden edging. Within proposed construction footprint. |
| 53       | Camellia,<br><i>Camellia japonica</i>         | Multi       | 3          | 2                           | M         | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Roots confined within raised stone garden edging. Within proposed construction footprint. |
| 54       | Camphor Laurel,<br><i>Cinnamomum camphora</i> | Multi       | 4          | 3                           | SM        | G      | F         | 2.0            | 4.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | TPO exempt species. Heavily lopped.                                                       |
| 55       | Photinia,<br><i>Photinia robusta</i>          | Multi       | 5          | 4                           | M         | F      | F         | 2.0            | 4.0            | M    |                                      |             |   |   | 4 |   |                       | R+ |   |    | Proposed courtyard and Stormwater within PRZ.                                             |
| 56       | Photinia,<br><i>Photinia robusta</i>          | Multi       | 5          | 3                           | M         | F      | F         | 2.0            | 4.0            | M    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                           |
| 57       | Photinia,<br><i>Photinia robusta</i>          | Multi       | 5          | 3                           | M         | F      | F         | 2.0            | 4.0            | M    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                           |
| 58       | Photinia,<br><i>Photinia robusta</i>          | Multi       | 4          | 2                           | M         | F      | F         | 2.0            | 4.0            | M    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                           |
| 59       | Photinia,<br><i>Photinia robusta</i>          | Multi       | 5          | 2                           | M         | F      | F         | 2.0            | 4.0            | M    |                                      |             |   |   | 4 |   | R                     |    |   |    | Heavily invaded by ivy                                                                    |

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|----------|--------------------------------------------------|-------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                                  |             |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                                                                                                        |
| 60       | Photinia,<br><i>Photinia robusta</i>             | Multi       | 6          | 2                           | M         | F      | F         | 2.0            | 4.0            | M    |                                      |             |   |   | 4 |   |                       | R+ |   |    | Proposed courtyard and<br>stormwater within PRZ.                                                                                                                                       |
| 61       | Camellia,<br><i>Camellia japonica</i>            | Multi       | 3          | 2                           | M         | F      | F         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Proposed courtyard within<br>CRZ.                                                                                                                                                      |
| 62       | Rough Tree Fern,<br><i>Cyathea australis</i> .   | 0.2,<br>0.2 | 4          | 2                           | M         | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Two ferns. Within proposed<br>Ambulance Bay.                                                                                                                                           |
| 63       | Giant Strelitzia,<br><i>Strelitzia nicolai</i>   | 0.2         | 5          | 2                           | SM        | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Within proposed Ambulance<br>Bay.                                                                                                                                                      |
| 64       | Phoenix Palm,<br><i>Phoenix canariensis</i>      | 0.3         | 4          | 3                           | SM        | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Within proposed forecourt.                                                                                                                                                             |
| 65       | Rough Tree Fern,<br><i>Cyathea australis</i> .   | 0.2         | 3          | 2                           | M         | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Within proposed driveway.                                                                                                                                                              |
| 66       | Brush Box,<br><i>Lophostemon confertus</i>       | 0.8         | 25         | 5                           | SM        | G      | G         | 4.0            | 8.0            | L    |                                      |             | 2 |   |   |   |                       | R+ |   |    | Proposed 225mm diameter<br>stormwater rerouted inside<br>basement carpark. Deck<br>proposed within CRZ. Deck<br>to be elevated within PRZ.<br>Canopy skewed to east<br>away from T45A. |
| 67       | Large-leaved Privet,<br><i>Ligustrum lucidum</i> | 0.2         | 6          | 2                           | SM        | G      | G         | 1.5            | 2.0            | R    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Weed species. TPO<br>exempt species. On<br>adjoining property.                                                                                                                         |
| 68       | Jacaranda,<br><i>Jacaranda mimosifolia</i>       | 0.3,<br>0.3 | 13         | 5                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed<br>construction footprint                                                                                                                                              |

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|----------|------------------------------------------------------------------------|---------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|----------------------------------------------------------------------------------------|
|          |                                                                        |         |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                        |
| 69       | Silky Oak,<br><i>Grevillea robusta</i>                                 | 0.7     | 19         | 4                           | M         | G      | G         | 3.5            | 7.0            | M    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Proposed building footprint<br>within CRZ.                                             |
| 70       | Himalayan Cedar,<br><i>Cedrus deodara</i>                              | 0.4     | 19         | 4                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                                        |
| 71       | Leighton's Green<br>Cypress,<br><i>Cupressocyparis x<br/>leylandii</i> | 0.1     | 5          | 2                           | IM        | G      | G         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                        |
| 72       | Leighton's Green<br>Cypress,<br><i>Cupressocyparis x<br/>leylandii</i> | 0.1     | 5          | 2                           | IM        | G      | G         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                        |
| 73       | Leighton's Green<br>Cypress,<br><i>Cupressocyparis x<br/>leylandii</i> | 0.1     | 6          | 2                           | IM        | G      | G         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                        |
| 74       | Leighton's Green<br>Cypress,<br><i>Cupressocyparis x<br/>leylandii</i> | 0.1     | 6          | 2                           | IM        | G      | G         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                        |
| 75       | Kaffir Plum,<br><i>Harpephyllum caffrum</i>                            | 0.7     | 12         | 4                           | M         | G      | F         | 3.5            | 7.0            | M    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Basal defect on west side.<br>Termite workings. Within<br>proposed building footprint. |
| 76       | Monterey Pine,<br><i>Pinus radiata</i>                                 | 0.7     | 20         | 5                           | M         | G      | G         | 3.5            | 7.0            | M    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed building<br>footprint.                                                 |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                            | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                                                    |
|----------|----------------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|-----------------------------------------------------------------------------------------------------------------------------|
|          |                                                          |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                                             |
| 77       | Jacaranda,<br><i>Jacaranda mimosifolia</i>               | 0.2,<br>0.1,<br>0.1 | 8          | 3                           | SM        | G      | F         | 1.5            | 3.0            | M    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Proposed building footprint within PRZ. Inappropriate location / construction zone.                                         |
| 78       | Bunya Pine,<br><i>Araucaria bidwillii</i>                | 1.4                 | 26         | 5                           | M         | G      | G         | 7.0            | 14.0           | L    |                                      | 1           |   |   |   |   |                       | R+ |   |    | Proposed stormwater incursion within PRZ. Proposed building within PRZ. Cone drop to be managed.                            |
| 79       | Bunya Pine,<br><i>Araucaria bidwillii</i>                | 0.2                 | 6          | 3                           | IM        | G      | G         | 1.5            | 2.0            | M    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Seedling from T78. Inappropriate location.                                                                                  |
| 80       | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>            | 1.2                 | 25         | 10                          | M         | G      | F         | 6.0            | 12.0           | M    | 0                                    |             | 2 |   |   |   |                       | R+ |   |    | Proposed stormwater incursion within PRZ. Termite workings on stub south side. Trunk drilled-Non critical hollow at 2m a.g. |
| 81       | Bunya Pine,<br><i>Araucaria bidwillii</i>                | 0.1                 | 4          | 3                           | IM        | G      | G         | 1.5            | 2.0            | M    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Seedling from T78. Inappropriate location beneath canopy of Tree 83.                                                        |
| 82       | Illawarra Flame Tree,<br><i>Brachychiton acerifolius</i> | 0.3                 | 10         | 3                           | SM        | G      | G         | 1.5            | 3.0            | L    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Ku-ring-gai Council nuisance species                                                                                        |
| 83       | Monterey Pine,<br><i>Pinus radiata</i>                   | 0.7                 | 13         | 4                           | M         | G      | F         | 3.5            | 7.0            | M    |                                      |             |   | 3 |   |   |                       | R+ |   |    | Proposed building within PRZ. Proposed stormwater incursion within PRZ.                                                     |
| 84       | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>            | 0.3                 | 13         | 3                           | SM        | G      | F         | 1.5            | 3.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Canopy skewed to the east.                                                                                                  |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                             | DBH (m) | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                                                       |
|----------|-----------------------------------------------------------|---------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|--------------------------------------------------------------------------------------------------------------------------------|
|          |                                                           |         |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                                                |
| 85       | Jacaranda,<br><i>Jacaranda mimosifolia</i>                | 0.3     | 7          | 3                           | SM        | G      | F         | 1.5            | 3.0            | M    |                                      |             |   |   | 4 |   | R                     |    |   |    | Canopy skewed to the north                                                                                                     |
| 86       | Rough Barked<br>Angophora,<br><i>Angophora floribunda</i> | 0.3     | 14         | 3                           | M         | F      | F         | 1.5            | 3.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to the south                                                                                                     |
| 87       | Liquidambar,<br><i>Liquidambar styraciflua</i>            | 0.4     | 15         | 5                           | M         | G      | G         | 2.0            | 4.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                                |
| 88       | Native Daphne,<br><i>Pittosporum undulatum</i>            | 0.3     | 6          | 4                           | M         | G      | F         | 1.5            | 3.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Canopy skewed to the south                                                                                                     |
| 89       | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.8     | 27         | 5                           | M         | G      | G         | 4.0            | 8.0            | L    | 0                                    |             | 2 |   |   |   |                       | R+ |   |    | Proposed deck to be elevated within CRZ. Dead wood to 150 Ø. Proposed stormwater within PRZ. Trunk drilled-No hollow detected. |
| 90       | Blackbutt,<br><i>Eucalyptus pilularis</i>                 | 0.2     | 10         | 3                           | IM        | G      | G         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                                |
| 91       | Rough Barked<br>Angophora,<br><i>Angophora floribunda</i> | 0.5     | 13         | 4                           | M         | G      | F         | 2.5            | 5.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Hollows in lower trunk and branches.                                                                                           |
| 92       | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 1.0     | 28         | 8                           | M         | G      | F         | 5.0            | 10.0           | L    | 0                                    |             | 2 |   |   |   | R                     |    |   |    | Bark wound on east side; Dead wood to 150 Ø; Hollows at base.                                                                  |
| 93       | Rough Barked<br>Angophora,<br><i>Angophora floribunda</i> | 0.3     | 12         | 3                           | M         | G      | F         | 1.5            | 3.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to south.                                                                                                        |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                          | DBH (m)  | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                      |
|----------|--------------------------------------------------------|----------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|-------------------------------------------------------------------------------|
|          |                                                        |          |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                               |
| 94       | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>          | 0.9      | 28         | 7                           | M         | F      | F         | 4.5            | 9.0            | M    | 0                                    |             | 2 |   |   |   | R                     |    |   |    | Cockatoo damage at 6m on S side. Dead wood to 300Ø; Trunk hollow at 9 metres. |
| 95       | Lemon-scented Gum,<br><i>Corymbia citriodora</i>       | 0.3      | 10         | 3                           | SM        | G      | G         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   |                       | R+ |   |    | Proposed stormwater incursion within PRZ.                                     |
| 95 A     | Rough Barked Angophora,<br><i>Angophora floribunda</i> | 0.3, 0.4 | 13         | 5                           | M         | G      | G         | 2.5            | 5.0            | L    | 0                                    |             |   | 3 |   |   |                       | R+ |   |    | On adjacent property. Proposed stormwater incursion within PRZ.               |
| 96       | Lemon-scented Gum,<br><i>Corymbia citriodora</i>       | 0.3      | 12         | 3                           | SM        | G      | G         | 1.5            | 3.0            | L    |                                      |             |   | 3 |   |   |                       | R+ |   |    | Proposed stormwater incursion within PRZ.                                     |
| 97       | Lemon-scented Gum,<br><i>Corymbia citriodora</i>       | 0.3      | 12         | 3                           | SM        | G      | G         | 1.5            | 3.0            | L    |                                      |             |   | 3 |   |   |                       | R+ |   |    | Proposed stormwater incursion within PRZ. Canopy skewed to the south east     |
| 98       | Flooded Gum,<br><i>Eucalyptus grandis</i>              | 0.4      | 25         | 4                           | SM        | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                               |
| 99       | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>          | 1.3      | 28         | 8                           | M         | F      | F         | 6.5            | 13.0           | L    | 0                                    |             | 2 |   |   |   | R                     |    |   |    | Dead wood to 200 Ø.                                                           |
| 100      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>          | 0.4      | 27         | 4                           | M         | G      | F         | 2.0            | 4.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to the south east                                               |
| 101      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>          | 0.6      | 30         | 5                           | M         | G      | G         | 3.0            | 6.0            | L    | 0                                    |             | 2 |   |   |   | R                     |    |   |    | Upright form, Dead wood to 150 Ø.                                             |
| 102      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>          | 0.3      | 18         | 3                           | SM        | G      | F         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Suppressed, upright form.                                                     |
| 103      | Spotted Gum,<br><i>Corymbia maculata</i>               | 0.3      | 14         | 2                           | SM        | G      | G         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                               |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                    | DBH (m)     | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                           |
|----------|--------------------------------------------------|-------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|------------------------------------------------------------------------------------|
|          |                                                  |             |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                    |
| 104      | Spotted Gum,<br><i>Corymbia maculata</i>         | 0.2         | 12         | 2                           | SM        | G      | G         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                    |
| 105      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>    | 0.8         | 29         | 5                           | M         | G      | P         | 4.0            | 8.0            | S    | 0                                    |             |   |   |   | 5 |                       |    |   | Rm | Power line attached. Major bark wound from 5 metres, almost completely ringbarked. |
| 106      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>    | 0.4         | 27         | 3                           | M         | F      | F         | 2.0            | 4.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Suppressed upright form.                                                           |
| 107      | Celerywood,<br><i>Polyscias elegans</i>          | 0.1,<br>0.1 | 7          | 3                           | SM        | G      | F         | 1.5            | 2.0            | S    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Co dominant included, stems from ground.                                           |
| 108      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>    | 0.5         | 27         | 4                           | SM        | G      | F         | 2.5            | 5.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to the north                                                         |
| 109      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>    | 0.5         | 18         | 3                           | SM        | F      | F         | 2.5            | 5.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy suppressed by T108 and skewed to the east; Dead wood to 150 Ø               |
| 110      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>    | 0.7         | 30         | 5                           | M         | G      | F         | 3.5            | 7.0            | L    | 0                                    |             | 2 |   |   |   |                       | R+ |   |    | Minor basement excavation within PRZ. Dead wood to 150 Ø                           |
| 111      | Blueberry Ash,<br><i>Elaeocarpus reticulatus</i> | 0.3         | 8          | 3                           | M         | F      | F         | 1.5            | 3.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Suckers at base; Dieback                                                           |
| 112      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>    | 0.5         | 25         | 5                           | M         | G      | F         | 2.5            | 5.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to the south east. Redundant powerline attached to trunk.            |
| 113      | Jacaranda,<br><i>Jacaranda mimosifolia</i>       | 0.2         | 7          | 3                           | SM        | F      | F         | 1.5            | 2.0            | M    | 0                                    |             |   |   | 4 |   |                       |    |   | Rm | Dead wood to 150Ø. Semi-mature target weed within BGHF-Remove as per VMP.          |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                                      | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                                       |
|----------|--------------------------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|----------------------------------------------------------------------------------------------------------------|
|          |                                                                    |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                                |
| 114      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>                      | 0.7                 | 28         | 5                           | M         | F      | F         | 3.5            | 7.0            | L    | 0                                    |             | 2 |   |   |   | R                     |    |   |    |                                                                                                                |
| 115      | Willow Bottlebrush,<br><i>Callistemon salignus</i>                 | Multi               | 10         | 4                           | M         | F      | F         | 2.0            | 4.0            | M    | 0                                    |             |   |   | 4 |   |                       |    |   | Rm | Within proposed new driveway.                                                                                  |
| 116      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>                      | 0.1                 | 10         | 2                           | IM        | G      | G         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   |                       |    |   | Rm | Within proposed new driveway.                                                                                  |
| 117      | Jacaranda,<br><i>Jacaranda mimosifolia</i>                         | 0.3,<br>0.1,<br>0.1 | 7          | 4                           | M         | G      | F         | 2.0            | 4.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                |
| 118      | Jacaranda,<br><i>Jacaranda mimosifolia</i>                         | 0.3                 | 8          | 4                           | M         | G      | F         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Existing bitumen path within CRZ. Lean to the south east.                                                      |
| 119      | New South Wales Christmas Bush,<br><i>Ceratopetalum gummiferum</i> | 0.2                 | 6          | 2                           | M         | F      | P         | 1.5            | 2.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                |
| 120      | Jacaranda,<br><i>Jacaranda mimosifolia</i>                         | 0.3                 | 8          | 4                           | M         | F      | F         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to the south. Twin trunks from 1 meter.                                                          |
| 120 A    | Liquidambar,<br><i>Liquidambar styraciflua</i>                     | 0.4                 | 12         | 5                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   |                       | R+ |   |    | Proposed at grade path within PRZ. On adjacent property to the south. Adjacent existing storm water inlet pit. |
| 121      | Native Daphne,<br><i>Pittosporum undulatum</i>                     | 0.1,<br>0.2         | 5          | 3                           | SM        | G      | G         | 1.5            | 3.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                |
| 122      | Port Jackson Fig,<br><i>Ficus rubiginosa</i>                       | 0.2                 | 6          | 2                           | M         | F      | P         | 1.5            | 2.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                     | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                        |
|----------|---------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|-------------------------------------------------------------------------------------------------|
|          |                                                   |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                 |
| 123      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>     | 1.1                 | 30         | 8                           | M         | G      | G         | 5.5            | 11.0           | L    | 0                                    | 1           |   |   |   |   |                       | R+ |   |    | Proposed bush pathway<br>within PRZ. Hollows in<br>branch stubs; Dead wood to<br>300 Ø.         |
| 124      | Italian Cypress,<br><i>Cupressus sempervirens</i> | 0.3                 | 12         | 2                           | M         | G      | G         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                                 |
| 125      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>     | 0.3                 | 12         | 2                           | SM        | F      | P         | 1.5            | 3.0            | S    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                 |
| 126      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>     | 0.9                 | 29         | 7                           | M         | G      | F         | 4.5            | 9.0            | L    | 0                                    |             | 2 |   |   |   | R                     |    |   |    | Canopy skewed to the<br>north; Hangers at 10 and<br>25 metres                                   |
| 127      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>     | 0.5                 | 23         | 6                           | M         | G      | F         | 2.5            | 5.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy and trunk lean to<br>the north east.                                                     |
| 128      | Native Daphne,<br><i>Pittosporum undulatum</i>    | 0.2,<br>0.1,<br>0.1 | 6          | 2                           | M         | F      | F         | 1.5            | 3.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                 |
| 129      | Rhododendron,<br><i>Rhododendron sp.</i>          | 0.1                 | 4          | 3                           | M         | G      | G         | 1.5            | 2.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                                 |
| 130      | Native Daphne,<br><i>Pittosporum undulatum</i>    | Multi               | 5          | 3                           | M         | G      | G         | 1.5            | 3.0            | L    | 0                                    |             |   |   | 4 |   |                       |    |   | Rm | Inappropriate location /<br>construction zone. Canopy<br>form prohibits construction<br>access. |
| 131      | Unknown sp.                                       | 0.1,<br>0.1         | 5          | 2                           | M         | P      | P         | 1.5            | 2.0            | S    |                                      |             |   |   |   | 5 |                       |    |   | Rm | Dieback; Almost dead. CRZ<br>within construction footprint.                                     |
| 132      | Liquidambar,<br><i>Liquidambar styraciflua</i>    | 0.3                 | 11         | 4                           | SM        | G      | G         | 1.5            | 3.0            | L    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed building<br>footprint.                                                          |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                            | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                                                           |
|----------|----------------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|------------------------------------------------------------------------------------------------------------------------------------|
|          |                                                          |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                                                    |
| 133      | Illawarra Flame Tree,<br><i>Brachychiton acerifolius</i> | 0.4                 | 13         | 3                           | M         | P      | P         | 2.0            | 4.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed building footprint. Ku-Ring Gai Council nuisance species.                                                          |
| 134      | Brown Pine,<br><i>Podocarpus elatus</i>                  | 0.2,<br>0.2         | 11         | 4                           | M         | G      | G         | 2.0            | 4.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                                    |
| 135      | Liquidambar,<br><i>Liquidambar styraciflua</i>           | 0.4                 | 13         | 4                           | M         | G      | F         | 2.0            | 4.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to the north.                                                                                                        |
| 136      | Illawarra Flame Tree,<br><i>Brachychiton acerifolius</i> | 0.2                 | 9          | 1                           | SM        | F      | F         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                                    |
| 137      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>            | 1.1                 | 32         | 10                          | M         | G      | G         | 5.5            | 11.0           | L    | 0                                    | 1           |   |   |   |   | R                     |    |   |    | Redundant power line to the south. Dead wood to 200 Ø.                                                                             |
| 138      | Native Daphne,<br><i>Pittosporum undulatum</i>           | 0.4                 | 11         | 5                           | M         | G      | G         | 2.0            | 4.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                                    |
| 139      | Liquidambar,<br><i>Liquidambar styraciflua</i>           | 0.3,<br>0.4         | 14         | 5                           | M         | G      | F         | 2.5            | 5.0            | L    |                                      |             |   | 3 |   |   |                       | R+ |   |    | Proposed at grade driveway within PRZ. Stormwater to be rerouted beyond PRZ. Canopy skewed to the south. Twin trunks from 1 metre. |
| 140      | Native Daphne,<br><i>Pittosporum undulatum</i>           | 0.3,<br>0.2,<br>0.1 | 11         | 5                           | M         | G      | F         | 2.0            | 4.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                                    |
| 141      | Juniper,<br><i>Juniperus sp.</i>                         | 0.4                 | 13         | 3                           | M         | G      | G         | 2.0            | 4.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                                    |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                        | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                |
|----------|------------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|-----------------------------------------------------------------------------------------|
|          |                                                      |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                         |
| 142      | Weeping Lillypilly,<br><i>Waterhousea floribunda</i> | 0.4                 | 10         | 4                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed carpark.<br>Power line through the canopy.                              |
| 143      | Juniper,<br><i>Juniperus sp.</i>                     | 0.5                 | 14         | 4                           | M         | G      | G         | 2.5            | 5.0            | L    |                                      |             |   | 3 |   |   |                       | R+ |   |    | Proposed at grade carpark within CRZ.                                                   |
| 144      | Cypress Pine,<br><i>Callitris sp.</i>                | 0.5                 | 17         | 2                           | M         | G      | G         | 2.5            | 5.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                         |
| 145      | Juniper,<br><i>Juniperus sp.</i>                     | 0.3                 | 15         | 4                           | M         | F      | G         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                         |
| 146      | Juniper,<br><i>Juniperus sp.</i>                     | 0.3                 | 15         | 2                           | M         | G      | G         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                         |
| 147      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>        | 0.6                 | 21         | 5                           | M         | F      | F         | 3.0            | 6.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                         |
| 148      | Hoop Pine,<br><i>Araucaria cunninghamii</i>          | 0.8                 | 12         | 5                           | M         | G      | F         | 4.0            | 8.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Top previously removed.                                                                 |
| 149      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>        | 0.7                 | 23         | 6                           | M         | G      | F         | 3.5            | 7.0            | L    | 0                                    |             | 2 |   |   |   | R                     |    |   |    | Canopy skewed to the south east                                                         |
| 151      | Jacaranda,<br><i>Jacaranda mimosifolia</i>           | 0.1,<br>0.1,<br>0.1 | 4          | 1                           | SM        | P      | P         | 1.5            | 3.0            | S    | 0                                    |             |   |   | 4 |   |                       |    |   | Rm | Poor condition. Semi-mature target weed within BGHF-Remove as per VMP.                  |
| 152      | Jacaranda,<br><i>Jacaranda mimosifolia</i>           | 0.1                 | 5          | 2                           | SM        | F      | P         | 1.5            | 2.0            | S    | 0                                    |             |   |   | 4 |   |                       |    |   | Rm | Canopy skewed to the south east. Semi-mature target weed within BGHF-Remove as per VMP. |
| 153      | Jacaranda,<br><i>Jacaranda mimosifolia</i>           | 0.1,<br>0.2         | 5          | 2                           | SM        | F      | F         | 1.5            | 3.0            | S    | 0                                    |             |   |   | 4 |   |                       |    |   | Rm | Fair condition. Semi-mature target weed within BGHF-Remove as per VMP.                  |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                         | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                                                                  |
|----------|-------------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|-------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                                       |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                                                           |
| 154      | Jacaranda,<br><i>Jacaranda mimosifolia</i>            | 0.2                 | 6          | 2                           | SM        | F      | F         | 1.5            | 2.0            | S    | 0                                    |             |   |   | 4 |   |                       |    |   | Rm | Semi-mature target weed<br>within BGHF -Remove as<br>per VMP.                                                                             |
| 155      | Washington Palm,<br><i>Washingtonia robusta</i>       | 0.4                 | 23         | 2                           | M         | G      | G         | 2.0            | 3.0            | L    |                                      |             | 2 |   |   |   | R                     |    |   |    |                                                                                                                                           |
| 156      | Fan Palm,<br><i>Washingtonia filifera</i>             | 0.4                 | 17         | 3                           | M         | G      | G         | 2.0            | 3.0            | L    |                                      |             | 2 |   |   |   | R                     |    |   |    |                                                                                                                                           |
| 157      | Norfolk Island Pine,<br><i>Araucaria heterophylla</i> | 0.4                 | 15         | 5                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Clear of construction.<br>Remove for recreation<br>space. Main leader<br>damaged.                                                         |
| 158      | Liquidambar,<br><i>Liquidambar styraciflua</i>        | 0.4,<br>0.4         | 21         | 6                           | M         | G      | F         | 3.0            | 6.0            | M    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Co dominant from ground<br>level. Included trunk. Unsafe<br>for recreation area.                                                          |
| 159      | Dead                                                  |                     | 5          |                             |           |        |           |                |                | R    |                                      |             |   |   |   | 5 |                       |    |   | Rm |                                                                                                                                           |
| 160      | Dead                                                  |                     | 5          |                             |           |        |           |                |                | R    |                                      |             |   |   |   | 5 |                       |    |   | Rm |                                                                                                                                           |
| 161      | Irish Strawberry,<br><i>Arbutus unedo</i>             | 1.3 @<br>0.5        | 10         | 6                           | M         | G      | G         | 6.5            | 13.0           | L    |                                      |             | 2 |   |   |   |                       | R+ |   |    | Proposed stormwater within<br>PRZ to be rerouted or hand<br>dug. Centricon Termite Bait<br>at base. Bark wound on<br>west and north sides |
| 162      | Bull Bay Magnolia,<br><i>Magnolia grandiflora</i>     | Multi               | 10         | 5                           | SM        | G      | F         | 2.5            | 5.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                                           |
| 163      | Jacaranda,<br><i>Jacaranda mimosifolia</i>            | 0.4,<br>0.2,<br>0.1 | 12         | 5                           | M         | G      | F         | 3.0            | 6.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                                           |
| 164      | Variegated Privet,<br><i>Ligustrum lucidum</i>        | Multi               | 4          | 2                           | M         | G      | F         | 1.5            | 2.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | TPO exempt species                                                                                                                        |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                             | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                          |
|----------|-----------------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|---------------------------------------------------|
|          |                                                           |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                   |
| 165      | Indian Hawthorn<br><i>Rhaphiolepis indica</i>             | Multi               | 4          | 4                           | M         | G      | F         | 1.5            | 2.0            | S    |                                      |             |   |   | 4 |   | R                     |    |   |    | Canopy skewed to north                            |
| 166      | Liquidambar,<br><i>Liquidambar styraciflua</i>            | 1.1                 | 22         | 8                           | M         | G      | F         | 5.5            | 11.0           | S    |                                      |             |   | 3 |   |   | R                     |    |   |    | Several previous limb failures and trunk hollows. |
| 167      | Lillypilly,<br><i>Syzygium paniculatum</i>                | 0.8                 | 13         | 5                           | M         | G      | G         | 4.0            | 8.0            | L    |                                      | 1           |   |   |   |   | R                     |    |   |    |                                                   |
| 168      | Camellia,<br><i>Camellia japonica</i>                     | Multi               | 4          | 3                           | M         | G      | G         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                   |
| 169      | Chinese Elm,<br><i>Ulmus parvifolia</i>                   | 0.1,<br>0.1         | 4          | 3                           | IM        | G      | F         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed emergency access road.            |
| 170      | Jacaranda,<br><i>Jacaranda mimosifolia</i>                | 0.2,<br>0.1,<br>0.1 | 10         | 3                           | SM        | F      | P         | 2.0            | 4.0            | M    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                   |
| 171      | Jacaranda,<br><i>Jacaranda mimosifolia</i>                | 0.2,<br>0.2         | 11         | 3                           | SM        | F      | F         | 2.0            | 4.0            | M    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                   |
| 172      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.3                 | 15         | 3                           | SM        | F      | F         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Suppressed form                                   |
| 173      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 1.0                 | 32         | 7                           | M         | G      | F         | 5.0            | 10.0           | L    | 0                                    |             | 2 |   |   |   | R                     |    |   |    | Dead wood to 150 Ø                                |
| 174      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.4                 | 21         | 4                           | SM        | G      | F         | 2.0            | 4.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Suppressed form                                   |
| 175      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.5                 | 16         | 3                           | M         | P      | P         | 2.5            | 5.0            | S    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Suppressed form. Dead leader                      |
| 176      | Dead                                                      |                     | 10         |                             |           |        |           |                |                | R    | 0                                    |             |   |   |   | 5 |                       |    |   | Rm |                                                   |
| 177      | Rough Barked<br>Angophora,<br><i>Angophora floribunda</i> | 0.4                 | 12         | 3                           | M         | F      | P         | 2.0            | 4.0            | S    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Top missing.                                      |
| 178      | Cedar Wattle,<br><i>Acacia elata</i>                      | 0.3                 | 9          | 3                           | SM        | G      | G         | 1.5            | 3.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                   |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                             | DBH (m)     | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                                |
|----------|-----------------------------------------------------------|-------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|---------------------------------------------------------------------------------------------------------|
|          |                                                           |             |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                         |
| 179      | Rough Barked<br>Angophora,<br><i>Angophora floribunda</i> | 0.1         | 11         | 1                           | IM        | F      | F         | 1.5            | 2.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Suppressed form                                                                                         |
| 180      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.7         | 23         | 3                           | M         | F      | P         | 3.5            | 7.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Southern leader missing<br>(lopped). Co dominant<br>stems from 2 metres.<br>Suppressed form.            |
| 181      | Turpentine,<br><i>Syncarpia glomulifera</i>               | 0.2         | 7          | 2                           | IM        | G      | G         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                         |
| 182      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.6         | 18         | 3                           | M         | F      | P         | 3.0            | 6.0            | S    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Top missing. Dead wood to<br>200 Ø                                                                      |
| 183      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.9         | 30         | 6                           | M         | G      | F         | 4.5            | 9.0            | L    | 0                                    |             | 2 |   |   |   | R                     |    |   |    | Two trunks from 3 metres.<br>Dead wood to 200Ø. Six<br>metre tall Turpentine 3<br>metres to south west. |
| 184      | Unknown sp.                                               | 0.3,<br>0.2 | 9          | 4                           | M         | G      | F         | 2.0            | 4.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Trunk wound on south east<br>side to 2 metres.                                                          |
| 185      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.5         | 22         | 6                           | M         | G      | F         | 2.5            | 5.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to the west.                                                                              |
| 186      | Giant Strelitzia,<br><i>Strelitzia nicolai</i>            | Multi       | 6          | 3                           | M         | G      | G         | 1.0            | 1.5            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                         |
| 187      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.1         | 7          | 2                           | IM        | G      | G         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                         |
| 188      | Rhododendron,<br><i>Rhododendron sp.</i>                  | Multi       | 4          | 2                           | M         | P      | P         | 2.0            | 4.0            | S    |                                      |             |   |   |   | 5 |                       |    |   | Rm | Dead                                                                                                    |
| 189      | Rhododendron,<br><i>Rhododendron sp.</i>                  | Multi       | 4          | 2                           | M         | F      | P         | 2.0            | 4.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    | Skewed canopy.                                                                                          |
| 190      | Rhododendron,<br><i>Rhododendron sp.</i>                  | Multi       | 4          | 3                           | M         | F      | P         | 2.0            | 4.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    | Skewed canopy.                                                                                          |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                             | DBH (m)     | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |    |    | COMMENTS                                                                           |
|----------|-----------------------------------------------------------|-------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|----|----|------------------------------------------------------------------------------------|
|          |                                                           |             |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T  | Rm |                                                                                    |
| 191      | Native Daphne,<br><i>Pittosporum undulatum</i>            | 0.2         | 5          | 3                           | SM        | G      | F         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   | R                     |    |    |    | Skewed canopy.                                                                     |
| 192      | Italian Cypress,<br><i>Cupressus sempervirens</i>         | 0.3         | 12         | 2                           | M         | G      | G         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |    |    | Stenocarpus, 6 metres tall,<br>5 metres south.                                     |
| 193      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.9,<br>0.5 | 30         | 6                           | M         | G      | F         | 6.0            | 12.0           | M    | 0                                    |             | 2 |   |   |   | R                     |    |    |    | Canopy skewed to the<br>north. Trunk hollow. Dead<br>wood to 300 Ø                 |
| 194      | Jacaranda,<br><i>Jacaranda mimosifolia</i>                | 0.2         | 9          | 3                           | SM        | G      | F         | 1.5            | 2.0            | M    | 0                                    |             |   |   | 4 |   |                       |    | Rm |    | Canopy skewed to the north<br>east. Semi-mature target<br>weed -Remove as per VMP. |
| 195      | Rough Barked<br>Angophora,<br><i>Angophora floribunda</i> | 0.6         | 20         | 5                           | M         | G      | F         | 3.0            | 6.0            | L    | 0                                    |             | 2 |   |   |   | R                     |    |    |    |                                                                                    |
| 196      | Native Daphne,<br><i>Pittosporum undulatum</i>            | 0.3         | 11         | 4                           | M         | G      | F         | 1.5            | 3.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |    |    |                                                                                    |
| 197      | Jacaranda,<br><i>Jacaranda mimosifolia</i>                | 0.4         | 5          | 3                           | M         | G      | F         | 2.0            | 4.0            | L    |                                      |             |   |   | 4 |   | R                     |    |    |    |                                                                                    |
| 198      | Jacaranda,<br><i>Jacaranda mimosifolia</i>                | Multi       | 10         | 5                           | M         | F      | F         | 2.5            | 5.0            | M    |                                      |             |   |   | 4 |   | R                     |    |    |    | Canopy skewed to the<br>south and north                                            |
| 199      | Bull Bay Magnolia,<br><i>Magnolia grandiflora</i>         | Multi       | 9          | 5                           | M         | F      | F         | 2.5            | 5.0            | L    |                                      |             |   | 3 |   |   | R                     |    |    |    |                                                                                    |
| 200      | Camellia,<br><i>Camellia sasanqua</i>                     | Multi       | 4          | 4                           | M         | G      | G         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   | R                     |    |    |    |                                                                                    |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                    | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                              |
|----------|--------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|-------------------------------------------------------------------------------------------------------|
|          |                                                  |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                       |
| 201      | Unknown sp.                                      | 0.2,<br>0.1,<br>0.1 | 6          | 3                           | M         | G      | F         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    | Previous cut at 0.7 metres.                                                                           |
| 203      | Blueberry Ash,<br><i>Elaeocarpus reticulatus</i> | Multi               | 7          | 3                           | M         | G      | P         | 1.5            | 3.0            | L    | 0                                    |             |   |   | 4 |   |                       |    |   | Rm | Made up of suckers growing around previously removed centre stem. Within proposed building footprint. |
| 204      | Rhododendron,<br><i>Rhododendron sp.</i>         | 0.3,<br>0.2         | 6          | 3                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   |                       |    | T |    | Within proposed building footprint. Good specimen                                                     |
| 205      | Rough Tree Fern,<br><i>Cyathea australis</i> .   | 0.1,<br>0.1         | 4          | 2                           | M         | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Within proposed building footprint.                                                                   |
| 206      | Cherry,<br><i>Prunus sp.</i>                     | 0.3,<br>0.2         | 3          | 3                           | OM        | F      | P         | 2.0            | 4.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed construction footprint.                                                               |
| 301      | Japanese Cedar,<br><i>Cryptomeria japonica</i>   | 0.2                 | 8          | 2                           | SM        | G      | G         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                       |
| 302      | Rhododendron,<br><i>Rhododendron sp.</i>         | Multi               | 5          | 3                           | M         | F      | F         | 2.0            | 4.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                                       |
| 303      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>    | 0.3                 | 16         | 5                           | SM        | G      | G         | 1.5            | 3.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                                                       |
| 304      | Native Daphne,<br><i>Pittosporum undulatum</i>   | 0.2                 | 6          | 3                           | M         | F      | F         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    | Recent limb failure.                                                                                  |
| 305      | Rough Tree Fern,<br><i>Cyathea australis</i>     | 0.1,<br>0.1         | 2          | 2                           | SM        | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                                       |
| 306      | Giant Strelitzia,<br><i>Strelitzia nicolai</i>   | Multi               | 5          | 2                           | SM        | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                                       |
| 307      | Rough Tree Fern,<br><i>Cyathea australis</i>     | 0.1                 | 4          | 2                           | M         | G      | G         | 0.5            | 1.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                                       |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                             | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                     |
|----------|-----------------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|------------------------------------------------------------------------------|
|          |                                                           |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                              |
| 308      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.4                 | 20         | 5                           | SM        | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                                              |
| 309      | Lillypilly,<br><i>Syzygium sp.</i>                        | 1.0                 | 19         | 7                           | M         | G      | G         | 5.0            | 10.0           | L    |                                      |             | 2 |   |   |   |                       | R+ |   |    | Proposed stormwater pipe<br>within PRZ to be hand dug.<br>Previously lopped. |
| 310      | Rough Tree Fern,<br><i>Cyathea australis</i>              | 0.1,<br>0.1,<br>0.1 | 3          | 2                           | SM        | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                              |
| 311      | Cherry,<br><i>Prunus sp.</i>                              | Multi               | 4          | 3                           | M         | G      | F         | 1.5            | 2.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within area of proposed<br>road restoration works.                           |
| 312      | White Cedar,<br><i>Melia azedarach</i>                    | 0.2                 | 5          | 3                           | SM        | F      | P         | 1.5            | 2.0            | M    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                              |
| 313      | Rough Barked<br>Angophora,<br><i>Angophora floribunda</i> | 0.1                 | 5          | 1                           | IM        | F      | P         | 1.5            | 2.0            | S    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | 2m south of T314.                                                            |
| 314      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 1.0                 | 26         | 8                           | M         | F      | F         | 5.0            | 10.0           | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Dead wood to 200 Ø. Trunk<br>hollows likely.                                 |
| 315      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.5                 | 24         | 3                           | M         | G      | F         | 2.5            | 5.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Upright form. Canopy<br>skewed to the north.                                 |
| 316      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.4                 | 22         | 3                           | M         | G      | F         | 2.0            | 4.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Upright form. Canopy<br>skewed to the north.                                 |
| 317      | Swamp Sheoak,<br><i>Casuarina glauca</i>                  | 0.2                 | 10         | 2                           | IM        | G      | F         | 1.5            | 2.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Upright form.                                                                |
| 318      | Cypress,<br><i>Cupressus sp.</i>                          | 0.7                 | 19         | 5                           | M         | G      | F         | 3.5            | 7.0            | M    |                                      |             |   | 3 |   |   | R                     |    |   |    | Trunk lean to the north                                                      |
| 319      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.5                 | 15         | 2                           | M         | F      | P         | 2.5            | 5.0            | S    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Top storm damaged.                                                           |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                             | DBH (m) | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                                        |
|----------|-----------------------------------------------------------|---------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|-----------------------------------------------------------------------------------------------------------------|
|          |                                                           |         |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                                 |
| 320      | Irish Strawberry,<br><i>Arbutus unedo</i>                 | Multi   | 9          | 5                           | M         | F      | F         | 3.0            | 6.0            | M    |                                      |             |   | 3 |   |   |                       | R+ |   |    | Proposed building footprint within PRZ. Under pruning may be required within 3m construction access zone.       |
| 321      | Elderberry Panax,<br><i>Polyscias sambucifolia</i>        | 0.3     | 7          | 4                           | M         | G      | G         | 1.5            | 3.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                 |
| 322      | Native Daphne,<br><i>Pittosporum undulatum</i>            | 0.3     | 7          | 4                           | M         | G      | G         | 1.5            | 3.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                 |
| 323      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.8     | 24         | 6                           | M         | G      | P         | 4.0            | 8.0            | R    | 0                                    |             |   |   |   | 5 |                       |    |   | Rm | Major trunk hollow. Bracket fungus on north east side at 3 metres. Critical hollow detected using sound mallet. |
| 324      | Lemon-scented Gum,<br><i>Corymbia citriodora</i>          | 0.3     | 11         | 3                           | SM        | G      | G         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                 |
| 325      | Rough Barked<br>Angophora,<br><i>Angophora floribunda</i> | 0.3     | 7          | 2                           | SM        | F      | P         | 1.5            | 3.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                 |
| 325 A    | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.4     | 24         | 3                           | M         | F      | P         | 2.0            | 4.0            | S    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Bracket fungus at 5 metres on south side. Suppressed form. Dead wood to 150Ø. Remedial pruning required.        |
| 326      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.9     | 28         | 8                           | M         | G      | G         | 4.5            | 9.0            | L    | 0                                    | 1           |   |   |   |   | R                     |    |   |    | Dead wood to 150Ø. Good specimen                                                                                |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                  | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                                                                                                                                                                   |
|----------|------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                                |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                                                                                                                                                            |
| 327      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>  | 0.3                 | 14         | 3                           | M         | F      | P         | 1.5            | 3.0            | S    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Heavy trunk lean to the east.                                                                                                                                                                                                              |
| 328      | Coral Tree,<br><i>Erythrina x sykesii</i>      | Multi               | 9          | 8                           | OM        | F      | P         | 3.0            | 6.0            | R    | 0                                    |             |   |   |   | 5 |                       |    |   | Rm | Major hollows. Previous collapse                                                                                                                                                                                                           |
| 329      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>  | 0.1,<br>0.3,<br>0.8 | 30         | 8                           | M         | G      | F         | 5.5            | 11.0           | M    | 0                                    |             |   | 3 |   |   | R+                    |    |   |    | Repairs to pond and retaining wall within PRZ. Dead wood to 200Ø. Previous storm damage at 14 metres. Previous leader removed at 1.5 metres. Trunk drilled -Non-critical hollow detected. Reduction pruning required for hazard reduction. |
| 330      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>  | 0.4                 | 19         | 5                           | M         | F      | F         | 2.0            | 4.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Trunk lean to the south. Suppressed form. Dead wood to 150 Ø.                                                                                                                                                                              |
| 331      | Unknown sp.                                    | Multi               | 9          | 4                           | M         | G      | G         | 2.5            | 5.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                                                                                                                                            |
| 332      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>  | 0.2                 | 11         | 3                           | SM        | G      | P         | 1.5            | 2.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Suppressed form.                                                                                                                                                                                                                           |
| 333      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>  | 0.2                 | 9          | 3                           | SM        | F      | P         | 1.5            | 2.0            | S    | 0                                    |             |   |   | 4 |   | R                     |    |   |    | Suppressed form.                                                                                                                                                                                                                           |
| 334      | Lillypilly,<br><i>Acmena smithii</i>           | Multi               | 12         | 5                           | SM        | G      | F         | 2.0            | 5.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                                                                                                                                                                                            |
| 335      | Native Daphne,<br><i>Pittosporum undulatum</i> | 0.1,<br>0.1         | 6          | 3                           | SM        | G      | F         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                                                                                                                                            |
| 335 A    | Port Jackson Fig,<br><i>Ficus rubiginosa</i>   | 0.3                 | 3          | 6                           | SM        | G      | F         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    | Growing over sandstone wall.                                                                                                                                                                                                               |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                      | DBH (m) | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                               |
|----------|----------------------------------------------------|---------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|------------------------------------------------------------------------|
|          |                                                    |         |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                        |
| 336      | Turpentine,<br><i>Syncarpia glomulifera</i>        | 0.2     | 6          | 2                           | IM        | G      | G         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                        |
| 337      | Turpentine,<br><i>Syncarpia glomulifera</i>        | 0.2     | 8          | 2                           | IM        | G      | G         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                        |
| 338      | Blackbutt,<br><i>Eucalyptus pilularis</i>          | 0.3     | 13         | 3                           | SM        | G      | G         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                        |
| 339      | Native Daphne,<br><i>Pittosporum undulatum</i>     | 0.3     | 9          | 4                           | M         | G      | F         | 1.5            | 3.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                        |
| 340      | Palm<br><i>Livistona sp.</i>                       | 0.3     | 5          | 1                           | M         | F      | F         | 1.5            | 3.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                        |
| 341      | Cabbage Tree Palm,<br><i>Livistona australis</i>   | 0.3     | 10         | 2                           | M         | G      | G         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Turpentine 6 metres tall, 4 metres to the north.                       |
| 342      | Blackbutt,<br><i>Eucalyptus pilularis</i>          | 0.2     | 12         | 3                           | IM        | G      | F         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                        |
| 343      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>      | 0.6     | 15         | 5                           | M         | F      | P         | 3.0            | 6.0            | M    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Trunk lean to the south. Suppressed form.                              |
| 344      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>      | 0.7     | 27         | 6                           | M         | G      | F         | 3.5            | 7.0            | L    | 0                                    |             | 2 |   |   |   | R                     |    |   |    | Dead wood to 200 Ø                                                     |
| 345      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>      | 0.8     | 28         | 6                           | M         | G      | F         | 4.0            | 8.0            | M    | 0                                    |             | 2 |   |   |   | R                     |    |   |    | Dead wood to 200Ø. Trunk wound. Hollow at 5 metres on north east side. |
| 346      | Willow Bottlebrush,<br><i>Callistemon salignus</i> | 0.3     | 9          | 2                           | M         | F      | F         | 1.5            | 3.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                        |
| 347      | Willow Bottlebrush,<br><i>Callistemon salignus</i> | 0.3     | 9          | 3                           | M         | G      | F         | 1.5            | 3.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                        |
| 348      | Cotoneaster,<br><i>Cotoneaster sp.</i>             | Multi   | 6          | 8                           | M         | F      | P         | 2.0            | 4.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Proposed stormwater incursion within PRZ. Environmental weed species.  |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                     | DBH (m)     | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                           |
|----------|---------------------------------------------------|-------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|----------------------------------------------------|
|          |                                                   |             |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                    |
| 349      | Native Daphne,<br><i>Pittosporum undulatum</i>    | 0.1         | 5          | 2                           | SM        | G      | F         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                    |
| 350      | Palm<br><i>Livistona sp.</i>                      | 0.2,<br>0.2 | 4          | 1                           | M         | G      | G         | 1.0            | 1.5            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                    |
| 351      | Palm<br><i>Livistona sp.</i>                      | Multi       | 3          | 1                           | M         | G      | G         | 1.0            | 1.5            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    | Clump of several stems.                            |
| 352      | Palm,<br><i>Livistona sp.</i>                     | Multi       | 3          | 1                           | M         | G      | G         | 1.0            | 1.5            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    |                                                    |
| 353      | Native Daphne,<br><i>Pittosporum undulatum</i>    | 0.2         | 5          | 2                           | SM        | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                    |
| 354      | Native Daphne,<br><i>Pittosporum undulatum</i>    | Multi       | 6          | 3                           | M         | G      | G         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed building footprint.                |
| 355      | Giant Strelitzia,<br><i>Strelitzia nicolai</i>    | Multi       | 2          | 2                           | SM        | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Within proposed building footprint.                |
| 356      | Wattle,<br><i>Acacia sp.</i>                      | 0.2         | 6          | 3                           | M         | G      | F         | 1.5            | 2.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed building footprint.                |
| 357      | Unknown sp.                                       | Multi       | 4          | 3                           | M         | F      | P         | 1.5            | 3.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed building footprint.                |
| 358      | Unknown sp.                                       | Multi       | 5          | 3                           | M         | F      | F         | 1.5            | 2.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed building footprint.                |
| 362      | Wattle,<br><i>Acacia sp.</i>                      | 0.3         | 10         | 3                           | OM        | P      | P         | 1.5            | 3.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed building footprint.                |
| 363      | Bull Bay Magnolia,<br><i>Magnolia grandiflora</i> | Multi       | 11         | 5                           | M         | F      | F         | 3.0            | 6.0            | M    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed building footprint. Sparse canopy. |
| 364      | Giant Strelitzia,<br><i>Strelitzia nicolai</i>    | Multi       | 13         | 4                           | M         | G      | G         | 1.0            | 1.5            | M    |                                      |             |   |   | 4 |   |                       |    | T |    | Within proposed building footprint.                |
| 365      | Giant Strelitzia,<br><i>Strelitzia nicolai</i>    | Multi       | 7          | 3                           | M         | G      | G         | 1.0            | 1.5            | M    |                                      |             |   |   | 4 |   |                       |    | T |    | Within proposed building footprint.                |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                  | DBH (m) | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                                                                             |
|----------|------------------------------------------------|---------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|--------------------------------------------------------------------------------------------------------------------------------------|
|          |                                                |         |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                                                                      |
| 366      | Giant Strelitzia,<br><i>Strelitzia nicolai</i> | Multi   | 5          | 3                           | M         | G      | G         | 1.0            | 1.5            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Too close to existing building to transplant. Within proposed building footprint.                                                    |
| 367      | Crepe Myrtle,<br><i>Lagerstroemia indica</i>   | Multi   | 10         | 4                           | M         | G      | G         | 2.5            | 5.0            | L    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Proposed building courtyard within CRZ.                                                                                              |
| 368      | Rough Tree Fern,<br><i>Cyathea australis</i>   | 0.2     | 3          | 2                           | M         | G      | G         | 1.0            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Within proposed building footprint.                                                                                                  |
| 369      | Rough Tree Fern,<br><i>Cyathea australis</i>   | 0.2     | 4          | 2                           | M         | G      | G         | 1.0            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | Within proposed building footprint.                                                                                                  |
| 370      | Rough Tree Fern,<br><i>Cyathea australis</i>   | 0.2     | 5          | 2                           | M         | G      | G         | 1.0            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Too close to existing building to transplant. Within proposed building footprint.                                                    |
| 371      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>  | 0.7     | 23         | 5                           | M         | G      | F         | 3.5            | 7.0            | L    | 0                                    |             |   |   |   | 5 |                       |    |   | Rm | Trunk wound on north west side at 3 metres with bracket fungus. Canopy skewed to west. 7 meter tall Gum, 2 metres to the north east. |
| 372      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>  | 0.3     | 24         | 3                           | SM        | G      | F         | 1.5            | 3.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    | Upright form. Dead wood to 100 Ø.                                                                                                    |
| 373      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>  | 0.6     | 23         | 5                           | M         | G      | F         | 3.0            | 6.0            | M    |                                      |             |   | 3 |   |   | R                     |    |   |    | Southern leader cut at 9 metres. Adjacent existing sewer riser.                                                                      |
| 374      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>  | 0.2     | 10         | 2                           | IM        | G      | F         | 1.5            | 2.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                                      |
| 375      | Wattle,<br><i>Acacia sp.</i>                   | 0.3     | 11         | 3                           | OM        | F      | F         | 1.5            | 3.0            | S    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                                                                      |
| 377      | Phoenix Palm,<br><i>Phoenix canariensis</i>    | 0.8     | 4          | 3                           | IM        | G      | G         | 2.0            | 4.0            | L    |                                      |             |   |   | 4 |   |                       |    | T |    | CRZ within proposed building footprint.                                                                                              |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                         | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                                               |
|----------|-------------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|----------------------------------------------------------------------------------------|
|          |                                                       |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                                        |
| 378      | Camellia,<br><i>Camellia sasanqua</i>                 | Multi               | 4          | 3                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | CRZ within proposed accessway.                                                         |
| 379      | Rhododendron,<br><i>Rhododendron sp.</i>              | 0.2,<br>0.1         | 4          | 3                           | M         | G      | F         | 1.5            | 3.0            | M    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed building footprint. Eight metre tall Kentia Palm 2 metres to the east. |
| 380      | Hoop Pine,<br><i>Araucaria cunninghamii</i>           | 0.2                 | 7          | 2                           | SM        | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Inappropriate location / construction zone. Canopy form prohibits construction access. |
| 381      | Cotoneaster,<br><i>Cotoneaster sp.</i>                | Multi               | 5          | 5                           | M         | F      | F         | 1.5            | 3.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Environmental weed species.                                                            |
| 382      | Native Daphne,<br><i>Pittosporum undulatum</i>        | 0.2                 | 6          | 2                           | SM        | G      | G         | 1.5            | 2.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed building footprint.                                                    |
| 383      | Maidenhair Tree,<br><i>Ginkgo biloba</i>              | 0.5                 | 12         | 4                           | M         | F      | F         | 2.5            | 5.0            | M    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed building footprint. Various trunk and limb wounds.                     |
| 384      | Native Daphne,<br><i>Pittosporum undulatum</i>        | 0.3                 | 7          | 3                           | M         | G      | G         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed building footprint.                                                    |
| 385      | African Olive,<br><i>Olea eurofea subsp. Africana</i> | 0.2,<br>0.1,<br>0.1 | 5          | 4                           | M         | G      | G         | 1.5            | 3.0            | S    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Environmental weed species.                                                            |
| 388      | White Cedar,<br><i>Melia azedarach</i>                | 0.3                 | 6          | 3                           | M         | F      | F         | 1.5            | 3.0            | M    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                        |
| 389      | Native Daphne,<br><i>Pittosporum undulatum</i>        | Multi               | 7          | 5                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                                        |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                             | DBH (m)     | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |   |   |   |   | TWM<br>RECOMMENDATION |    |   |    | COMMENTS                                                          |
|----------|-----------------------------------------------------------|-------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|---|---|---|---|-----------------------|----|---|----|-------------------------------------------------------------------|
|          |                                                           |             |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2 | 3 | 4 | 5 | R                     | R+ | T | Rm |                                                                   |
| 394      | Blackbutt,<br><i>Eucalyptus pilularis</i>                 | 0.9         | 26         | 7                           | M         | G      | F         | 4.5            | 9.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to the north east. Storm damaged limbs at 5 metres. |
| 395      | Rough Barked<br>Angophora,<br><i>Angophora floribunda</i> | 0.1         | 5          | 2                           | SM        | F      | P         | 1.5            | 2.0            | M    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                   |
| 396      | Pine<br><i>Pinus sp.</i>                                  | 0.3         | 9          | 3                           | SM        | G      | F         | 1.5            | 3.0            | L    | 0                                    |             |   |   | 4 |   | R                     |    |   |    |                                                                   |
| 397      | Celerywood,<br><i>Polyscias elegans</i>                   | 0.3         | 6          | 3                           | M         | G      | F         | 1.5            | 3.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    |                                                                   |
| 398      | Sydney Blue Gum,<br><i>Eucalyptus saligna</i>             | 0.8         | 24         | 7                           | M         | F      | F         | 1.5            | 8.0            | L    | 0                                    |             |   | 3 |   |   | R                     |    |   |    | Canopy skewed to the north                                        |
| 399      | Jacaranda,<br><i>Jacaranda mimosifolia</i>                | Multi       | 9          | 5                           | M         | G      | F         | 2.5            | 5.0            | L    |                                      |             |   | 3 |   |   | R                     |    |   |    | 4 trunks emerging at ground level.                                |
| 400      | Camellia,<br><i>Camellia sasanqua</i>                     | Multi       | 4          | 3                           | M         | G      | G         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   | R                     |    |   |    |                                                                   |
| 401      | Crepe Myrtle,<br><i>Lagerstroemia indica</i>              | Multi       | 5          | 3                           | M         | G      | G         | 2.0            | 4.0            | L    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed courtyard footprint.                              |
| 402      | Crepe Myrtle,<br><i>Lagerstroemia indica</i>              | Multi       | 7          | 4                           | M         | G      | G         | 2.5            | 5.0            | L    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed courtyard footprint.                              |
| 403      | Camellia,<br><i>Camellia sasanqua</i>                     | Multi       | 4          | 2                           | M         | G      | F         | 1.5            | 3.0            | L    |                                      |             |   |   | 4 |   |                       |    |   | Rm | Within proposed courtyard footprint.                              |
| 404      | Giant Strelitzia,<br><i>Strelitzia nicolai</i>            | Multi       | 9          | 2                           | M         | G      | G         | 1.0            | 1.5            | M    |                                      |             |   |   | 4 |   |                       |    | T |    | Clump of 4 stems. Within proposed courtyard footprint.            |
| 405      | Camellia,<br><i>Camellia sasanqua</i>                     | Multi       | 5          | 5                           | M         | G      | G         | 1.5            | 3.0            | L    |                                      |             |   | 3 |   |   |                       |    |   | Rm | Within proposed building footprint.                               |
| 406      | Rhododendron,<br><i>Rhododendron sp.</i>                  | 0.1,<br>0.1 | 4          | 2                           | M         | G      | G         | 1.5            | 3.0            | M    |                                      |             |   |   | 4 |   |                       |    | T |    | Within proposed building footprint.                               |

| TREE No. | COMMON NAME/<br>GENUS SPECIES                  | DBH (m)             | HEIGHT (m) | CANOPY SPREAD<br>RADIUS (m) | AGE CLASS | VIGOUR | CONDITION | CRZ RADIUS (m) | PRZ RADIUS (m) | SULE | TREES LOCATED<br>WITHIN BGHF (Smith) | ©SIG RATING |    |     |     |   | TWM<br>RECOMMENDATION |    |    |    | COMMENTS                                                                 |
|----------|------------------------------------------------|---------------------|------------|-----------------------------|-----------|--------|-----------|----------------|----------------|------|--------------------------------------|-------------|----|-----|-----|---|-----------------------|----|----|----|--------------------------------------------------------------------------|
|          |                                                |                     |            |                             |           |        |           |                |                |      | 0                                    | 1           | 2  | 3   | 4   | 5 | R                     | R+ | T  | Rm |                                                                          |
| 407      | Rhododendron,<br><i>Rhododendron sp.</i>       | Multi               | 4          | 3                           | M         | P      | F         | 2.5            | 5.0            | S    |                                      |             |    |     | 4   |   |                       |    | T  |    | Within proposed building footprint.                                      |
| 408      | Rhododendron,<br><i>Rhododendron sp.</i>       | 0.2,<br>0.1         | 5          | 3                           | M         | F      | F         | 2.5            | 5.0            | S    |                                      |             |    |     | 4   |   |                       |    | T  |    | Within proposed building footprint. Canopy skewed to the north east.     |
| 409      | Rhododendron,<br><i>Rhododendron sp.</i>       | 0.2,<br>0.2,<br>0.1 | 6          | 4                           | M         | G      | F         | 2.5            | 5.0            | M    |                                      |             |    |     | 4   |   |                       |    | T  |    | Proposed building footprint within CRZ. Canopy skewed to the south east. |
| 410      | Rhododendron,<br><i>Rhododendron sp.</i>       | 0.2,<br>0.2,<br>0.1 | 6          | 4                           | M         | G      | F         | 2.5            | 5.0            | M    |                                      |             |    |     | 4   |   |                       |    | T  |    | Within proposed building footprint.                                      |
| 411      | Golden Dewdrop,<br><i>Duranta erecta</i>       | Multi               | 5          | 5                           | M         | G      | F         | 1.5            | 3.0            | M    |                                      |             |    |     | 4   |   | R                     |    |    |    |                                                                          |
| 412      | Rough Tree Fern,<br><i>Cyathea australis</i>   | 0.2                 | 4          | 2                           | M         | G      | G         | 1.0            | 2.0            | L    |                                      |             |    |     | 4   |   | R                     |    |    |    |                                                                          |
| 413      | Golden Dewdrop,<br><i>Duranta erecta</i>       | Multi               | 4          | 5                           | M         | G      | F         | 1.5            | 3.0            | M    |                                      |             |    |     | 4   |   | R                     |    |    |    |                                                                          |
| 414      | Chinese Elm,<br><i>Ulmus parvifolia</i>        | 0.4                 | 10         | 6                           | M         | G      | F         | 2.0            | 4.0            | L    |                                      |             |    | 3   |     |   | R                     |    |    |    | Major limb failure on SE scaffold. Canopy skewed to the east.            |
| 424      | Grey Ironbark,<br><i>Eucalyptus paniculata</i> | 1.0                 | 25         | 7                           | M         | G      | P         | 5.0            | 10.0           | M    |                                      |             |    | 3   |     |   | R                     |    |    |    | On Waters St verge. Recently removed western leader.                     |
| 500      | Rhododendron,<br><i>Rhododendron sp.</i>       | 0.1,<br>0.1         | 5          | 3                           | M         | G      | F         | 1.5            | 2.0            | M    |                                      |             |    |     | 4   |   |                       |    | T  |    | Within footprint B carpark.                                              |
| 310      |                                                |                     |            |                             |           |        |           |                |                |      | 126                                  | 8           | 21 | 105 | 167 | 9 | 190                   | 24 | 23 | 73 |                                                                          |

**COMMON NAME/GENUS SPECIES CULTIVAR** - Common names can vary with selected texts. Where species is unknown, "sp." indicated after genus. Where cultivar is unknown "cv" indicated after species. The number in brackets e.g. (x9) after the species indicates the number of trees in this tree group.

**DBH - Diameter at Breast Height.** Tree trunk diameter measured at breast height (1.4 metres above ground level). Fabric diameter is tape used which assumes a circular cross section.

Multiple measurements indicate multiple trunks. More than three trunks are indicated as "multi". Where DBH measurement cannot be taken at 1.4m the height at which it has been taken is indicated.

**CANOPY SPREAD RADIUS** – Average canopy diameter (widest and narrowest ÷ 2). Circular canopy depictions on Tree Plan / Survey are indicative only. Refer to Comments column for detail of heavily skewed canopy spread.

**AGE CLASS -Immature (IM), Semi-mature (SM), Mature (M), Over-mature (OM).** Assessment of the tree's current Age. A **Mature (M)** tree has reached a near stable size (biomass) above and below ground. Trees can have a Mature Age Class for >90% of life span. **Over-mature (OM)** trees show symptoms of irreversible decline and decreasing biomass.

**VIGOUR - Good (G), Fair (F) or Poor (P).** The general appearance of the canopy/foilage of the tree at the time of inspection. Vigour can vary with the season and rainfall frequency. A tree can have Good Vigour but be hazardous due to Poor Condition.

**CONDITION - Good (G), Fair (F) or Poor (P).** The general form and structure of the trunk/s and branching. Trunk lean, trunk/branch structural defects, canopy skewness or other hazard features are considered.

**SULE - Safe Useful Life Expectancy.** A systematic pre-development tree assessment procedure developed by Jeremy Barrell, Hampshire, England. It gives a length of time that the Arborist feels a particular tree can be retained with an acceptable level of risk based on the information available at the time of the inspection. SULE ratings are **Long** (retainable for 40 years or more with an acceptable level of risk), **Medium** (retainable for 16-39 years), **Short** (retainable for 5-15 years) and **Removal** (tree requiring immediate removal due to imminent hazard or absolute unsuitability).

**TREES LOCATED WITHIN BGHF (Smith) - 0.** The trees located within the Blue Gum High Forest polygon as determined by Smith are indicated in this column by the figure "0".

**CRZ Radius - Critical Root Zone.** Radial offset (m) of five times (5X) trunk DBH measured from centre of trunk (for trees less than 0.3 metre DBH a minimum CRZ of 1.5 metres). Within this offset woody roots are usually encountered, disturbance to which can cause tree instability. CRZ offsets rounded to nearest 0.5 metre. Fully elevated construction is possible within CRZ with specific rootzone assessment. Existing constraints to root spread can vary CRZ. For multi-trunked trees CRZ is calculated by adding the CRZ for the largest trunk plus half of the CRZ for the next largest trunk.

**PRZ Radius - Primary Root Zone.** Radial offset (m) of ten times (10X) trunk DBH measured from centre of trunk (for trees less than 0.3 metre DBH a minimum PRZ of 2.0 metres). To satisfactorily retain the tree construction activity (both soil cut and fill) must be restricted within these offsets. Rounded to the nearest 0.5 metre. An incursion (cut, fill or trenching) on one side (one tangent) only to five times (5X) stem DBH is possible with specific root zone assessment. Existing constraints to root spread can vary PRZ. PRZ radial offsets are twice that of CRZ offsets.

#### **SIG. RATING - ©Significance Rating Scale**

A site qualitative, specific evaluation of a tree relative to the existing landuse developed by Tree Wise Men Australia Pty Ltd. The ©Significance Ratings used in this Report are:

- 1. Most Significant.** Warrants retention and major design changes to ensure this (e.g. movement of building footprint, realignment of roadway).
- 2. Highly Significant.** Warrants retention and minor design changes to ensure this (e.g. level changes, pavement detail).
- 3. Less Significant.** Can be a good specimen, however if otherwise complying development is to be confined because of its retention it can be considered for removal.
- 4. Least Significant.** Removal would not result in any significant loss of site amenity. Can include weed species.
- 5. Hazardous.** Should be removed irrespective of any development.

**RECOMMENDATIONS - Retain (R), Retain Plus (R+), Transplant (T) or Remove (Rm).**

**COMMENTS.** Comments relating to the condition and hazard potential of the trees at the time of inspection and where applicable the reason for removal.

## **ATTACHMENT B: DEFINITION OF TERMS**

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**D1: Diameter at Breast Height (DBH)**

Tree trunk diameter measured at breast height (1.4 metre above grade).

**D2: Age Class**

Immature (**IM**), Semi-mature (**SM**), Mature (**M**) or Over-mature (**OM**). Assessment of the tree's current Age. A **Mature (M)** tree has reached a near stable size (biomass) above and below ground. Trees can have a Mature Age Class for >90% of life span. **Over-mature (OM)** trees show symptoms of irreversible decline and decreasing biomass.

**D3: Vigour**

Good (G), Fair (F) or Poor (P). The general appearance of the canopy/foilage of the tree at the time of inspection. Vigour can vary with the season and rainfall frequency.

**D4: Condition**

Good (G), Fair (F) or Poor (P). The general form and structure of the trunk/s and branching. Trunk lean, trunk/branch structural defects, canopy skewness or other hazard features.

**D5: Primary Root Zone (PRZ)**

Radial offset (m) of ten times (10X) trunk DBH (minimum 2.0 metres) measured from centre of trunk. To satisfactorily retain the tree, construction activity (both soil cut and fill) should be restricted within these offsets. Rounded to nearest 0.5 metre (Attachment E). An incursion (cut, fill or trenching) on one side (one tangent) only to five times (5X) stem DBH is possible with specific rootzone assessment. Existing constraints to root spread can vary PRZ.

**D6: Critical Root Zone (CRZ)**

Radial offset (m) of five times (5X) trunk DBH (minimum 1.5 metres) measured from centre of trunk. Within this offset woody roots are usually encountered, disturbance to which can cause tree instability. Rounded to nearest 0.5 metre. Fully elevated construction is possible within CRZ with specific rootzone assessment (Attachment E). Existing constraints to root spread can vary CRZ.

**D7: Safe Useful Life Expectancy (SULE)**

A systematic pre-development tree assessment procedure developed by Jeremy Barrell, Hampshire, England. It gives a length of time that the Arborist feels a particular tree can be retained with an acceptable level of risk based on the information available at the time of the inspection. SULE ratings are Long (retainable for 40 years or more with an acceptable level of risk), Medium (retainable for 16-39 years), Short (retainable for 5-15 years) and Removal (tree requiring immediate removal due to imminent hazard or absolute unsuitability). To have a SULE rating of Long in this context with high use areas beneath the trees, we have assumed a high level of tree maintenance to achieve the acceptable risk level.

**D8: ©Significance Rating Scale**

Tree Wise Men Australia Pty Ltd have developed a qualitative, five (5) point, site specific tree evaluation whereby individual trees are assessed relative to the existing landuse. The variables used in determining Significance include the following:

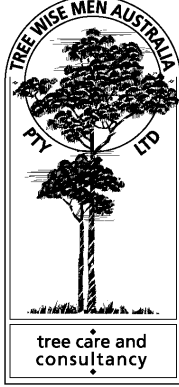
- Species (indigenous or exotic, rare or threatened)
- Location (on or off site)
- Vigour (Good, Fair, Poor)
- Form (suppressed or regular)
- Prominence in the landscape (prominent/not prominent from the public domain)
- Safe Useful Life Expectancy (SULE: Short, Medium, Long, Remove)
- Amenity value (high or low)
- Structural soundness (sound or unsound)
- Classification by Council Tree Preservation Order

The five (5) points of significance used in this Report are as follows:

- 1 Most Significant.** Warrants retention and major design changes to ensure this (e.g. movement of building footprint, realignment of roadway).
- 2 Highly Significant.** Warrants retention and minor design changes to ensure this (e.g. level changes, pavement detail).
- 3 Less Significant.** Can be a good specimen, however if otherwise complying development is to be confined because of its retention it can be considered for removal.
- 4 Least Significant.** Removal would not result in any loss of site amenity. Can include weed species.
- 5 Hazardous.** Must be removed irrespective of any development.

**ATTACHMENT C:**  
**TREE PROTECTION REQUIREMENTS (GENERIC)**

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# TREE WISE MEN® AUSTRALIA PTY LTD

ACN 002 982 247 ABN 15 002 982 247

tree care and consultancy

## Tree Protection Requirements Generic

The following generic tree protection requirements (**TWMP1-TWMP10**) should be implemented to minimise the impact of the proposed redevelopment on the retained trees. These requirements shall be implemented **during the construction period** in the event that no tree-specific requirements are detailed.

### **TWMP1: Arborist Involvement**

An Arborist experienced in tree protection on construction sites shall be engaged prior to the commencement of work on the site. The Arborist's tasks will be to monitor and report regularly to the PCA and the Applicant on the condition of the retained trees. The site Arborist shall be present to supervise any excavation, trenching or tunnelling within the PRZ of any retained trees.

The schedule of works for the development shall acknowledge the role of the site Arborist and the need to protect the retained trees. Sufficient notice shall be given to the Arborist where his/her attendance is required.

Should the proposed design change from that reviewed, additional arboricultural assessment will be required.

### **TWMP2: Tree Pruning and Removal**

All tree pruning (including root pruning) and tree removal shall be carried out by a qualified and experienced Arborist to Australian Standard AS 4373-1996, "Pruning of Amenity Trees" and the WorkCover Code of Practice for the Amenity Tree Industry, 1998.

Stump grinding (rather than complete "grubbing") of rootballs shall be performed when those stumps are within the PRZ of retained trees. This will minimise unnecessary root damage. Unnecessary damage often occurs to retained trees when undertaken by earthmoving machinery.

### **TWMP3: Tree Protection Fencing**

The retained trees shall be protected by means of fencing prior to commencement of demolition (including tree removal) or bulk earthworks.

It should be constructed from 1.8 metre high chain link wire or welded mesh suspended by galvanised steel pipe or equivalent and enclose the PRZ or the equivalent area allowing for building alignments.

The location of the fence should be determined at a site meeting between the Civil Contractor and the site Arborist to prevent the need to move the fencing during construction. The area enclosed shall be mulched (TWMP5) and irrigated (TWMP6) and kept free from all building materials, contaminants and other debris and shall not be used for storage of any building materials. If scaffolding is required within a tree protection zone the ground is to be mulched

**TWMP4: Mulching**

If construction is proposed within PRZ offsets mulching is required. Mulch to a depth of 100 millimetres using composted green waste mulch. The mulch should be free of weed seeds and other contaminants. Should constant access be required within the trees' PRZs, outside the protective fencing, heavier mulch should be spread to a depth no greater than 100 millimetres to reduce soil compaction.

**TWMP5: Temporary Irrigation**

Where construction related activity or root cutting is proposed within the PRZ of retained trees, temporary irrigation or water cart access shall be provided to the remaining unimpacted PRZ areas to maintain adequate soil moisture levels. Delivery volumes are to allow for mulch layer and recent rainfall.

**TWMP6: Bulk Earthworks**

To prevent unnecessary root damage walk machinery within defined haul routes beyond PRZs wherever possible. The excavation shall be carried out under the supervision of the site Arborist. All roots within PRZ of retained trees are to be hand cut prior to machine cutting.

Immediately following excavation the face of the cut within the PRZ shall be draped and maintained moist until backfilled. This should be done using a 10mm thick jute matting pinned at ground level and allowed to cover the full depth of the rootzone excavation.

There is to be no soil battering or unnecessary over excavation within PRZ offsets.

**TWMP7: Prevention of Soil Compaction**

During the construction period there may be considerable traffic movement associated with general building activities. The resultant soil compaction and possible contamination of the soil can have an equally detrimental impact on the tree as does the severing and exposing of the roots during excavation. Specific access tracks for machinery should be determined through consultation between the Civil Contractor and the site Arborist. Should heavy vehicle movement be required within a retained tree's PRZ, a track should be formed at grade using large diameter (up to 100mm) recycled railway ballast (true basalt) over a geofabric or a corduroy of heavy timbers.

**TWMP8: Trunk Protection**

Lengths of timber (75mm x 50mm x 2000mm) shall be used to protect a tree's trunk if construction or traffic is proposed within its CRZ and the tree cannot be fenced. The lengths of timber should be fastened around the trunk at 200 millimetre centres with hoop iron strapping or similar

**TWMP9: Prevention of Soil Inversion**

Care shall be taken to avoid inversion of the soil layers on the site and particularly within PRZs, as clays placed over coarse textured soils will reduce water infiltration, creating a perched water table. Decline and/or death of underlying tree roots are expected due to moisture stress.

**TWMP10: Services**

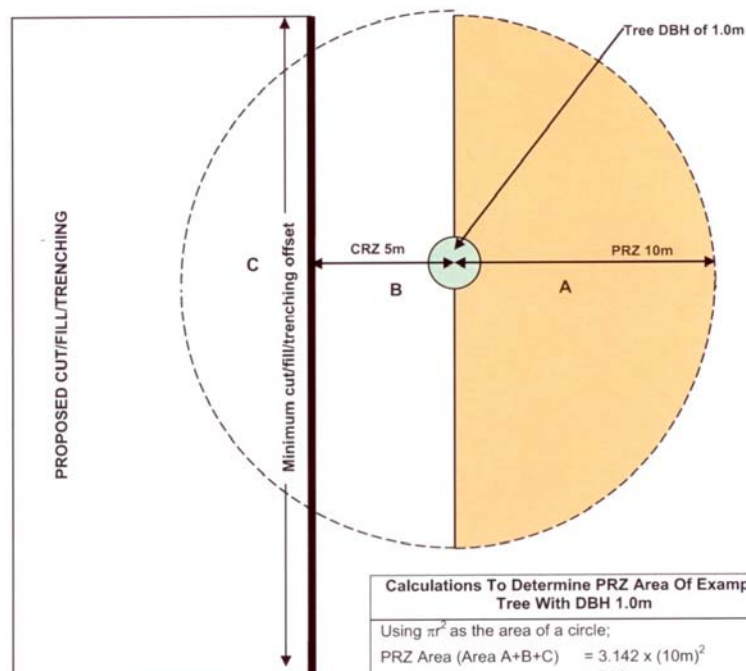
Trenching for services is to be regarded as “construction”. Trenching within PRZ offsets should be avoided wherever possible to ensure <18% root loss (of PRZ) occurs on retained trees. Directional (“trenchless”) boring or suspension of services should be used wherever possible. Where trenching is to occur within PRZ offsets, it is to be undertaken by hand to rock with no roots >50mm to be cut, under supervision of the Site Arborist.

**ATTACHMENT D: CRZ/PRZ RULING**

---

### Application of CRZ/PRZ Rule To Maintain Existing Tree Stability, Longevity and Biomass (Not to scale)

| Assumption:                                                                                                                                                                                                                                                                                                                                                                                                                        | Some Basic Facts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>All PRZ/CRZ measured from centre of trunk</li> <li>A circular root spread with no existing constraints</li> <li>Feeder roots can occur beyond the PRZ</li> <li>Cut or fill or trenching proposed <b>on one side only</b></li> <li>Average species tolerance to construction activity</li> <li>Average soil depth greater than 300 millimetres</li> <li>DBH 1.0m for this example</li> </ul> | <p>In most urban landscapes with most tree species PRZ equates to "dripline"</p> <p>Area B is comprised of approximately two (2) equal rectangles (5m x 10m) for ease of calculation</p> <p>There is a significant amount of sharing of PRZ soil volume in many mature landscapes &amp; vegetation communities which needs to be considered when determining long term tree survival.</p> <p>It is generally accepted that 18-20% root loss can be tolerated by most species and that windthrow is unlikely with excavation beyond CRZ offsets.</p> |



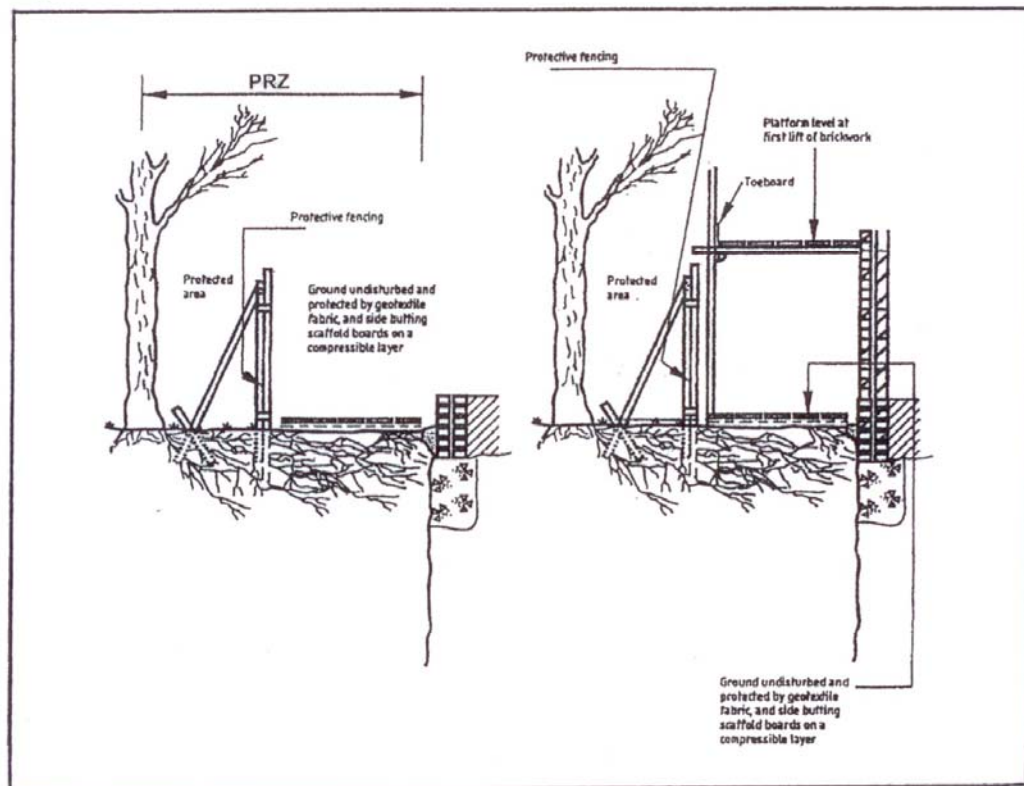
#### Definitions

- Diameter at Breast height (DBH) = diameter of trunk measured at 1.4 metres above ground level.
- Critical Root Zone (CRZ) = 5 x DBH (one side only)
- Primary Root Zone (PRZ) = 10 x DBH

| Calculations To Determine PRZ Area Of Example Tree With DBH 1.0m |                                                                               |
|------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Using $\pi r^2$ as the area of a circle;                         |                                                                               |
| PRZ Area (Area A+B+C) = $3.142 \times (10m)^2$                   |                                                                               |
| = 314sqm                                                         |                                                                               |
| Area A                                                           | = half of PRZ<br>= 157sqm                                                     |
| Area B (approx.)                                                 | = 2 x (5mx10m)<br>= 100sqm                                                    |
| Area A+B                                                         | = 157sqm + 100 sqm<br>= 257sqm<br>= 82% of total PRZ                          |
| Area C                                                           | = 314sqm - (Area A + B)<br>= 314sqm - 257sqm<br>= 57sqm<br>= 18% of total PRZ |

## **ATTACHMENT E: SCAFFOLDING WITHIN A PROTECTED AREA**

Adapted from BS5837:2005

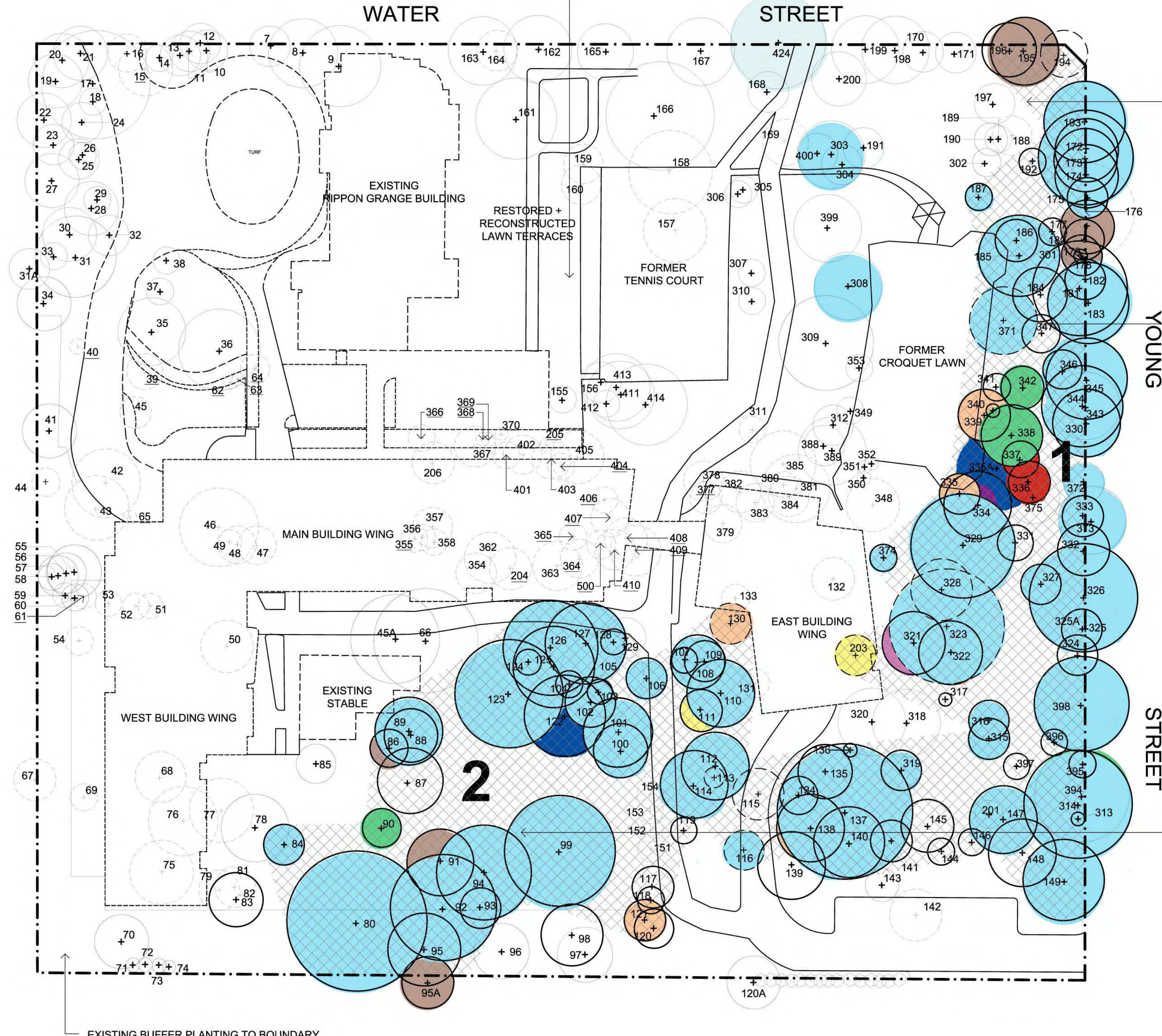


### Scaffolding within the PRZ

Tree Wise Men® Australia Pty Ltd

Scaffolding 2007

**ATTACHMENT F: TREE PLAN (SITE STRATEGY PLAN, LS.DA.05, REV. G)**



EXTENTS OF EXISTING BLUE GUM HIGH FOREST AREA SHOWN HATCHED

## CORE BGHF AREA 1

TO BE REHABILITATED & REGENERATED AS BGHF Bushland (canopy, understorey & groundcovers etc.)

| INDICATIVE SPECIES LIST        |                       |
|--------------------------------|-----------------------|
| SPECIES                        | COMMON NAME           |
| TREES                          |                       |
| <i>Eucalyptus saligna</i>      | Sydney Blue Gum       |
| <i>Syncarpia glomulifera</i>   | Turpentine            |
| SHRUBS                         |                       |
| <i>Clerodendron tomentosum</i> | Hairy Clerodendron    |
| <i>Indigofera australis</i>    | Native Indigo         |
| <i>Leucopogon juniperinus</i>  | Prickly Beard-heath   |
| <i>Pittosporum revolutum</i>   | Yellow Pittosporum    |
| <i>Polyscias sambucifolia</i>  | Elderly Panax         |
| GROUNDCOVERS                   |                       |
| <i>Clematis aristata</i>       | Old Man's Beard       |
| <i>Dianella caerulea</i>       | Blue Flax Lilly       |
| <i>Hardenbergia violacea</i>   | False Sasparrilla     |
| <i>Kennedia rubicunda</i>      | Red Kennedy Pea       |
| <i>Lomandra longifolia</i>     | Spiny-headed Mat-rush |
| <i>Microlaena stipoides</i>    | Weeping Grass         |
| <i>Pandorea pandorana</i>      | Wonga Wonga Vine      |
| <i>Pratia purpurascens</i>     | Whiteroot             |

**NOTE:**  
FOR FULL LIST OF BGHF SPECIES REFER TO VEGETATION MANAGEMENT PLAN AS PREPARED BY UBM Ecological Consultants, DATED NOVEMBER 2008 FOR DETAILS

**GENERAL NOTES FOR BLUE GUM HIGH FOREST:**

**BLUE GUM HIGH FOREST**  
Existing Area = approximately 6,350 square metres.  
(Note: existing condition of this area is to some degree disturbed and neglected and invaded by exotic weed species).  
Approximate percentage of BGHF affected (removed) by the proposed building development = 6%  
(Note: The 7 existing BGHF trees to be removed in the proposed development area generally have a low SIG rating and have trees defects such as trunk hollows, bracket fungus, and dead wood. With consideration of these factors as well as the low SULE ratings (Arboricultural Impact Assessment, [ref. 1622dahosp] as prepared by Tree Wise Men Australia Pty Ltd, dated: October 2008) this area has been identified as an appropriate location for development.

**AREA 1:**  
\* Selective removal of identified weed species.

\* No physical disturbance to soil profiles, existing endemic vegetation and habitats.  
\* Conditions retained that encourage the natural regeneration of endemic flora species.  
\* All non-endemic flora species shall be removed (Trees noted on plan).  
\* The area is to be maintained periodically so as to achieve less than 5 % exotic flora & weed biomass at all times.  
\* All trees identified for retention shall be retained so as to display good health & vigour or in a condition equivalent to their pre-development condition.  
\* There must be no signs of active erosion & sediment deposition at all times.  
\* Where there are no signs of the natural regeneration of endemic species or the limited potential for natural recruitment of endemic species, supplementary planting of Blue Gum High Forest species may be necessary.

**AREA 2:**  
\* Removal of grasses by non injurious methods.

**NOTES:**  
\* BGHF = BLUE GUM HIGH FOREST AREA  
\* FOR REFERENCE TO TREE NUMBERS AND REMOVAL COMMENTS REFER TO: Arboricultural Impact Assessment, [ref. 1622dahosp] as prepared by Tree Wise Men Australia Pty Ltd, dated: October 2008  
\* FOR LOCATIONS OF TRANSPLANTED SPECIES REFER TO DETAILED PLANTING PLANS LS.DA.06 AND LS.DA.07  
\* TREE SCHEDULE TO BE READ IN CONJUNCTION WITH TREE WISE MEN TREE IMPACT REPORT  
\* REFER TO VEGETATION MANAGEMENT PLAN AS PREPARED BY UBM Ecological Consultants, DATED NOVEMBER 2008 FOR BGHF REVEGETATION DETAILS

## CORE BGHF AREA 2

TO BE REHABILITATED & REGENERATED AS BGHF Bushland (canopy, understorey & groundcovers etc.)

| INDICATIVE SPECIES LIST        |                       |
|--------------------------------|-----------------------|
| SPECIES                        | COMMON NAME           |
| TREES                          |                       |
| <i>Eucalyptus saligna</i>      | Sydney Blue Gum       |
| <i>Syncarpia glomulifera</i>   | Turpentine            |
| SHRUBS                         |                       |
| <i>Clerodendron tomentosum</i> | Hairy Clerodendron    |
| <i>Indigofera australis</i>    | Native Indigo         |
| <i>Leucopogon juniperinus</i>  | Prickly Beard-heath   |
| <i>Pittosporum revolutum</i>   | Yellow Pittosporum    |
| <i>Polyscias sambucifolia</i>  | Elderly Panax         |
| GROUNDCOVERS                   |                       |
| <i>Clematis aristata</i>       | Old Man's Beard       |
| <i>Dianella caerulea</i>       | Blue Flax Lilly       |
| <i>Hardenbergia violacea</i>   | False Sasparrilla     |
| <i>Kennedia rubicunda</i>      | Red Kennedy Pea       |
| <i>Lomandra longifolia</i>     | Spiny-headed Mat-rush |
| <i>Microlaena stipoides</i>    | Weeping Grass         |
| <i>Pandorea pandorana</i>      | Wonga Wonga Vine      |
| <i>Pratia purpurascens</i>     | Whiteroot             |

**NOTE:**  
FOR FULL LIST OF BGHF SPECIES REFER TO VEGETATION MANAGEMENT PLAN AS PREPARED BY UBM Ecological Consultants, DATED NOVEMBER 2008 FOR DETAILS

**TREE WISE MEN® AUSTRALIA PTY LTD**  
ACN 002 982 247 ABN 15 002 982 247  
tree care and consultancy

**Tree Plan**  
Tree Wise Men® Job No.: 1622DAHosp2  
Date: March, 2009  
Site: 35 Water Street (Lot 1DP 375262) Wahroonga (Private Hospital)

84 Fuller Street, Collaroy Plateau NSW 2097  
Phone: (02) 9981 5219 Fax: (02) 9971 0881  
Email: treewise@treewisemen.com.au

**TREE PLAN NOTES**

- This Plan is to be read in conjunction with the Tree Schedule as prepared by @The Tree Wise Men® Australia Pty Ltd, March, 2009 (1622DAHosp2).
- Refer to the Report for all tree measurements and dimensions. Canopy depictions are indicative averages only. Do not scale off this drawing.
- This document has been prepared for the exclusive use of the Client and Tree Wise Men Australia® Pty Ltd (TWM) accepts no responsibility for its use by other persons.
- The client acknowledges that this document, and any opinions, advice or recommendations expressed or given in it, are based on the information supplied by the Client and on the data, inspections, measurements and analysis carried out or obtained by @Tree Wise Men® Australia Pty Ltd (TWM) and referred to in the Report. The Client should rely on the documentation, and on its content, only to that extent.

|       |                                   |            |
|-------|-----------------------------------|------------|
| G     | TREE 130 REMOVED                  | 10.02.2009 |
| F     | TREE 130 RETAINED                 | 22.01.2009 |
| E     | REVISED EAST BUILDING WING        | 16.01.2009 |
| D     | REVISED DA                        | 10.11.2008 |
| C     | TREES REMOVED/RETAINED            | 11.08.2008 |
| B     | REVISED DA SUBMISSION -82a APPEAL | 05.08.2008 |
| A     | REVISED DA SUBMISSION             | 17.12.2007 |
| Issue | Description                       | Date       |

### LANDSCAPE STRATEGY PLAN NOT TO SCALE

THE LANDSCAPE STRATEGY IS TO INCREASE THE AREA OF BLUE GUM HIGH FOREST (BGHF), REHABILITATE AND REGENERATE EXISTING AREAS OF BGHF, AND RESTORE THE LANDSCAPE CULTURAL VALUES OF THE GARDEN AROUND 'RIPPON GRANGE'.

### BGHF RENDERING KEY

Rendering as per BGHF Mapped area 2007, Dr. Smith.

| SPECIES                      |                                |
|------------------------------|--------------------------------|
| <i>Eucalyptus saligna</i>    | <i>Elaeocarpus reticulatus</i> |
| <i>Eucalyptus pilularis</i>  | <i>Acmena smithii</i>          |
| <i>Eucalyptus paniculata</i> | <i>Polyscias sambucifolia</i>  |
| <i>Angophora floribunda</i>  | <i>Pittosporum undulatum</i>   |
| <i>Syncarpia glomulifera</i> | <i>Ficus rubiginosa</i>        |

### LEGEND

|  |                                                                                        |  |                                                                                                                            |
|--|----------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------|
|  | SITE BOUNDARY                                                                          |  | BLUE GUM HIGH FOREST TREE SPECIES RETAINED OUTSIDE NOMINATED BGHF AREA                                                     |
|  | EXISTING TREE RETAINED                                                                 |  | BLUE GUM HIGH FOREST TREE SPECIES REMOVED                                                                                  |
|  | EXISTING TREE REMOVED                                                                  |  | LANDSCAPE MANAGEMENT AREA BLUE GUM HIGH FOREST REFER TO VMP AS PREPARED BY UBM Ecological Consultants, DATED NOVEMBER 2008 |
|  | EXISTING TREES TO BE TRANSPLANTED (LOCATIONS IDENTIFIED ON SHEETS LS.DA.06, LS.DA.07). |  | LINE OF PROPOSED BUILDING                                                                                                  |

taylor brammer landscape architects pty td  
abn 61 098 724 988  
Sydney  
218 Oxford Street, Woollahra, NSW, Australia, 2025  
t: +61 2 9387 8855 f: +61 2 9387 8155  
e: sydney@taylorbrammer.com.au  
South Coast  
26 Moore Street, PO Box 64,  
Austinmer, NSW, 2515  
t: +61 4267 5088 f: +61 2 4267 4826  
e: southcoast@taylorbrammer.com.au  
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project:  
**PROPOSED PRIVATE HOSPITAL  
35 WATER STREET (LOT 1 DP 375262)**

drawing title:  
**SITE STRATEGY PLAN**

client:  
**WATERBROOK AT WAHROONGA**

|                  |                 |                   |           |
|------------------|-----------------|-------------------|-----------|
| scale: 1:500@A1  | checked DMT     | drawing no:       | revision: |
| date: 10.02.2009 | job no: 05-167S | <b>LS.DA.05 G</b> |           |
| drawn: AL        | designed: DMT   |                   |           |

