



EARTHSCAPE HORTICULTURAL SERVICES
Arboricultural, Horticultural and Landscape Consultants

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ARBORICULTURAL IMPACT ASSESSMENT REPORT

PROPOSED NEW DWELLING

81 PRINCE ALFRED PARADE, NEWPORT

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1 INTRODUCTION

- 1.1.1 This report was commissioned by Joshua Mulders Architects on behalf of Mr Richard Denton to assess the health and condition of thirteen (13) trees located within or immediately adjacent to 81 Prince Alfred Parade, Newport. The report has been prepared to aid in the assessment of a Development Application (DA) for the demolition of the existing dwelling and construction of a new dwelling within the property.
- 1.1.2 The purpose of this report is to assess the potential impact of the proposed development on the subject trees, together with recommendations for amendments to the design or construction methodology where necessary to minimise any adverse impact. The report also provides recommended tree protection measures to ensure the long-term preservation of the trees to be retained where appropriate.
- 1.1.3 This report has been prepared in accordance with Pittwater Council's *Guidelines for Arborists Reports* as outlined on Council's website, Section 2.4.1 & 2.4.2 of Appendix 9 of the *Pittwater 21 Development Control Plan (PDCP) 2015* and Sections 2.3.2 -2.3.5 of the *Australian Standard for Protection of Trees on Development Sites (AS 4970:2009)*.

2 THE SITE

- 2.1.1 The subject property is a residential allotment known as Lot 109 in DP 13457, being 81 Prince Alfred Parade, Newport. For the purposes of this report, the subject allotment will be referred to as "the Site". The total area of the site is 507.20 m². The site is zoned Environmental Living [E4] under the *Pittwater Local Environmental Plan (PLEP) 2014*. The site contains an existing single-storey dwelling in the central northern portion of the lot, together with a detached shed in the rear yard. The site has a steep northerly gradient with a series of lawn and garden terrace areas. The site contains dilapidated lawns and gardens with a few semi-mature and mature trees. These include a variety of non-local native, locally-indigenous and exotic (introduced) species.
- 2.1.2 Soils of this area are typical of the Watagan Soil Landscape Group (as classified in the Soil Landscapes of the Sydney 1:100,000 Sheet), consisting of "shallow to deep (300 – 2000 mm) *Lithosols/Siliceous Sands* and *Yellow Podzolic soils* on sandstone and moderately deep (1000 - 2000 mm) *Brown Podzolic soils*, *Red Podzolic soils* and *Gleyed Podzolic soils* on shales". Soil materials are derived from Narrabeen Group sediments with occasional rock outcrop. The landscape is typically rolling to very steep hills and steep colluvial side slopes with occasional sandstone boulders and benches¹
- 2.1.3 The original vegetation of this area consisted of open forest and forest typical of the Narrabeen formation² 'Shale Slopes'.³ The dominant locally-indigenous tree species found in this area include *Corymbia maculata* (Spotted Gum), *Eucalyptus paniculata* (Grey Ironbark) and *Syncarpia glomulifera* (Turpentine). Other species occurring in this vegetation community may include *Angophora floribunda* (Rough barked Apple), *Allocasuarina torulosa* (Forest Oak), *Angophora costata* (Sydney Red Gum), *Corymbia gummifera* (Red Bloodwood), *Glochidion ferdinandi* (Cheese Tree), *Elaeocarpus reticulatus* (Blueberry Ash), *Eucalyptus punctata* (Grey Gum), *Eucalyptus umbra* (Bastard Mahogany) and *Eucalyptus botryoides* (Bangalay).

3 SUBJECT TREES

- 3.1.1 The subject trees were inspected by Earthscape Horticultural Services (EHS) on the 23rd March 2016. Each tree has been provided with an identification number for reference purposes denoted on the attached Tree Location Plan (**Appendix 5**), based on the survey prepared by Geographic Solutions Surveyors, Dwg. Ref No. 2552 dated 10/12/2014. The numbers used on this plan correlate with the Tree Assessment Schedule (**Appendix 3**). Tree No. T1a was not shown on the

original survey and has been plotted on the drawing in its approximate position by taking offsets from existing features.

4 HEALTH AND CONDITION ASSESSMENT

4.1 Methodology

4.1.1 An assessment of each tree was made using the Visual Tree Assessment (VTA) procedure.⁴ All of the trees were assessed in view from the ground. No aerial inspection or diagnostic testing has been undertaken as part of this assessment.

4.1.2 The following information was collected for each tree:-

- Tree Species (Botanical & Common Name);
- Approximate height;
- Canopy spread; measured using a metric tape and an average taken.
- Trunk diameter (measured at 1.4 metres from ground level);
- Live Crown Size; (measured by subtracting the total height of the tree from the lowest point of the crown and multiplying by the average crown spread to give a value in square metres).
- Health & vigour; using foliage size, colour, extension growth, presence of disease or pest infestation, canopy density, presence of deadwood, dieback and epicormic growth as indicators,
- Condition; using visible evidence of structural defects, instability, evidence of previous pruning and physical damage as indicators.
- Suitability of the tree to the site and its existing location; in consideration of damage or potential damage to services or structures, available space for future development and nuisance issues.

4.1.3 This information is presented in a tabulated form in **Appendix 3**.

4.2 Safe Useful Life Expectancy (SULE)

4.2.1 The remaining Safe Useful Life Expectancy⁵ of the tree is an estimate of the sustainability of the tree in the landscape, calculated based on an estimate of the average age of the species in an urban area, less its estimated current age. The life expectancy of the tree has been further modified where necessary in consideration of its current health and vigour, condition and suitability to the site. The estimated SULE of each tree is shown in **Appendix 3**.

4.2.2 The following ranges have been allocated to each tree:-

- Greater than 40 years (Long)
- Between 15 and 40 years (Medium)
- Between 5 and 15 years (Short)
- Less than 5 years (Transient)
- Dead or immediately hazardous (defective or unstable)

5 LANDSCAPE SIGNIFICANCE

5.1 Methodology for Determining Landscape Significance

5.1.1 The significance of a tree in the landscape is a combination of its amenity, environmental and heritage values. Whilst these values may be fairly subjective and difficult to assess consistently, some measure is necessary to assist in determining the retention value of each tree. To ensure in a consistent approach, the assessment criterion shown in **Appendix 1** have been used in this assessment.

- 5.1.2 A rating has been applied to each tree to give an understanding of the relative significance of each tree in the landscape and to assist in determining priorities for retention, in accordance with the following categories:-

1. **Significant**
2. **Very High**
3. **High**
4. **Moderate**
5. **Low**
6. **Very Low**
7. **Insignificant**

5.2 Environmental Significance

5.2.1 Tree Management Controls

Prescribed trees within the Pittwater Local Government Area are protected under Volume 2, Section B4.22 (Preservation of Trees and Bushland Vegetation) of the *Pittwater 21 Development Control Plan* (PDCP) 2014 (as amended 26th May 2015), made pursuant to Clause 5.9 of the *Pittwater Local Environmental Plan* (PLEP) 2014. The PDCP generally protects all trees with a height of three (3) metres or greater or with a trunk girth (circumference) exceeding 500 mm (i.e. 160 mm diameter) or a canopy spread of five (5) metres or greater and all Bushland Vegetation. Some exemptions apply. The following trees are exempt (not protected) under the provisions of the PDCP 2014:-

Tree No.	Species	Exemption
T7	<i>Dyopsis lutescens</i> (Golden Cane Palm)	Exempt species

The remainder of the trees are protected under the PDCP 2014.

5.2.2 Wildlife Habitat

Corymbia maculata (Spotted Gum) [T1] is a locally-indigenous species, representative of the original vegetation of the area and would be of benefit to native wildlife. However, none of the trees contain cavities that would be suitable as nesting hollows for arboreal mammals or birds or other visible signs of wildlife habitation.

The site is within an area is classified by Pittwater Council as a 'Co1' habitat area as indicated on Council's 'Wildlife Corridor Map' forming part of the PDCP (refer Volume 2, Section B4.6). Whilst disturbed due to urban development, these areas are likely to be of some habitat value due to good crown cover and understorey vegetation. It should be noted that there is no remaining native understorey vegetation within the site.

5.2.3 Noxious Plants & Environmental Weeds

None of the trees assessed are scheduled as Noxious Weeds under the meaning of *Noxious Weeds Act* (NSW) 1993. None of the subject trees are considered to be Environmental Weed Species with the Pittwater Local Government Area (LGA).

5.2.4 Threatened Species & Ecological Communities

None of the subject trees are listed as Threatened or Vulnerable Species under the provisions of the *Threatened Species Conservation Act* 1995 (NSW) or the *Environmental Protection and Biodiversity Conservation Act* 1999.

Corymbia maculata (Spotted Gum) [T1] is typical of the species assemblage of Coastal Dry Spotted Gum Forest (a sub-group of Pittwater Spotted Gum Forest), which is known to occur in this area.⁶ Pittwater Spotted Gum Forest (PSGF) is listed as an Endangered Ecological Community (EEC) under Part 3, Schedule 1 of the *Threatened Species Conservation Act* 1995 (NSW). T1 is

therefore considered to be a constituent of this EEC. Section B4.7 of the PDCP 2014 details the controls applicable to sites containing PSGF. Note that this tree is located within the adjoining property to the south.

5.2.5 Biodiversity

The whole of the site is indicated as containing an area of Biodiversity Significance as indicated on Council's Biodiversity Map forming part of the PDCP 2014 (presumably due to the known presence of PSGF in this area).

5.3 Heritage Significance

5.3.1 Heritage Items

The subject property is *not* listed as a Heritage Item under Schedule 5, Part 1 of the *Pittwater Local Environmental Plan (PLEP) 2014*. There is no known or suspected heritage significance of any of the subject trees.

5.3.2 Heritage Conservation Area

The site is *not* located within a Heritage Conservation Area under Schedule 5, Part 2 of the PLEP 2014.

5.3.3 Significant Tree Register

Pittwater Council does not currently maintain a Register of Significant Trees.

5.4 Amenity Value

5.4.1 Criteria for the assessment of amenity values are incorporated into **Appendix 1**. The amenity value of a tree is a measure of its live crown size, visual appearance (form, habit, crown density), visibility and position in the landscape and contribution to the visual character of an area. Generally the larger and more prominently located the tree, and the better its form and habit, the higher its amenity value.

6 TREE RETENTION VALUES

6.1.1 The Retention Values shown in **Appendix 3** and **Appendix 5** have been determined on the basis of the estimated longevity of the trees and their landscape significance rating, in accordance with **Table One**. Together with guidelines contained in **Section 7** (Tree Protection Zones) this information should be used to determine the most appropriate position of building footprints and other infrastructure within the site, with due consideration to other site constraints, to minimise the impact on trees considered worthy of preservation.

TABLE 1 – TREE RETENTION VALUES – ASSESSMENT METHODOLOGY

		Landscape Significance Rating						
Estimated Life Expectancy	Life	1	2	3	4	5	6	7
Long - Greater than 40 Years		High Retention Value						
Medium- 15 to 40 Years				Moderate Retention Value				
Short - 5 to 15 years					Low Ret. Value			
Transient - Less than 5 Years					Very Low Retention Value			
Dead or Potentially Hazardous								

7 TREE PROTECTION ZONES

- 7.1.1 The Tree Protection Zone (TPZ) is a radial distance measured from the centre of the trunk of the tree as specified in **Appendix 4**. These have been calculated in accordance with AS 4970-2009 (Protection of Trees on Development Sites).⁷
- 7.1.2 The intention of the TPZ is to ensure protection of the root system and canopy from the potential damage from construction works and ensure the long-term health and stability of each tree to be retained. Incursions to the root zone may occur due to excavations, changes in ground levels, (either lowering or raising the grade), trenching or other forms of soil disturbance such as ripping, grading or inverting the soil profile. Such works may cause damage or loss of part of the root system, leading to an adverse impact on the tree.

7.2 Structural Root Zone (SRZ)

- 7.2.1 The Structural Root Zone (SRZ) provides the bulk of mechanical support and anchorage for a tree. This is also a radial distance measured from the centre of the trunk as specified in **Appendix 4**. The SRZ has been calculated in accordance with AS 4970-2009 (Protection of Trees on Development Sites).
- 7.2.2 Incursions within the SRZ are not recommended as they are likely to result in the severance of woody roots which may compromise the stability of the tree or lead to its decline and demise.

7.3 Acceptable Encroachments to the Tree Protection Zone.

- 7.3.1 Where encroachment to the TPZ is unavoidable, an incursion to the TPZ of not exceeding 10% of the area of the TPZ and outside the SRZ may be acceptable. Examples of acceptable incursions are shown in **Appendix 2**. Greater incursions to the TPZ may result in an adverse impact on the tree.
- 7.3.2 Where incursions greater than 10% of the TPZ are unavoidable, exploratory excavation using non-destructive methods may be required to evaluate the extent of the root system affected and determine whether or not the tree can remain viable

7.4 Acceptable Encroachments to the Canopy

- 7.4.1 The removal of a small portion of the crown (foliage and branches) is generally tolerable provided that the extent of pruning required is less than 10% of the total foliage volume of the tree and the removal of branches does not create large wounds or disfigure the natural form and habit of the tree. All pruning cuts must be undertaken in accordance with AS 4373:2007. This generally involves reduction of the affected branches back to the nearest branch collar at the junction with the parent branch, rather than at an intermediate point. The latter is referred to as “lopping” and is no longer an acceptable arboricultural practice. Generally speaking, the minimum pruning as required to accommodate any proposed works is desirable. Extensive pruning can result in a detrimental impact on tree health and may lead to exposure of remaining branches to wind forces that they were previously sheltered from, leading to a greater risk of branch failure.
- 7.4.2 Clearance to between the building line and canopy should take into account any projecting structures, such as balconies, awnings and the roofline and any requirement for temporary scaffolding to be erected during construction (typically 1-1.5 metres wide). High structures should preferably be located outside the canopy dripline (as shown indicatively on the attached plans) in order to avoid or minimise canopy pruning.

8 PROPOSED DEVELOPMENT

- 8.1.1 The proposed development includes the demolition of the existing dwelling and construction of a new dwelling within the property, together with associated landscape works.

9 IMPACT ASSESSMENT

- 9.1.1 The intention of this assessment is to determine the incursions to the root zones and canopies created by the proposed development and evaluate the likely impact of the proposed works on the subject trees. Details shown on the following plans were used in this assessment:-

Title	Author	Dwg No.	Date
<i>Roof & Site Plan</i>	Joshua Mulders Architects	DA02 [01]	25/05/2016
<i>Second Floor Plan</i>	Joshua Mulders Architects	DA03 [01]	25/05/2016
<i>First Floor Plan</i>	Joshua Mulders Architects	DA04 [01]	25/05/2016
<i>Garage Floor Plan</i>	Joshua Mulders Architects	DA05 [01]	25/05/2016
<i>Elevations</i>	Joshua Mulders Architects	DA06 [01]	25/05/2016
<i>Section</i>	Joshua Mulders Architects	DA07 [01]	25/05/2016
<i>Concept Landscape Plan</i>	Bell Landscapes		06/2016

- 9.1.2 A summary of the impact of the proposed development on each tree within the site is shown in **Appendix 5**. The following criteria have been examined as part of this assessment:-

- Existing Relative Levels (R.L.);
- Tree Protection Zone (TPZ);
- Structural Root Zone (SRZ);
- Footprint and envelope of the proposed development and temporary structures (scaffolding, hoardings etc);
- Incursions to the TPZ & SRZ, including estimated cut & fill beyond the building footprint;
- Incursions to the tree canopy from the building envelope and temporary structures; and
- Assessment of the likely impact of the works on existing trees.

- 9.1.3 The proposed development will necessitate the removal of three (3) trees of low and very low retention value. These include Tree No.s T9 (Bottlebrush), T10 (NZ Christmas Bush) and T12 (Frangipani). None of these trees are considered significant or worthy of special measures to ensure their preservation. The removal of these trees to accommodate the proposed development is considered warranted in this instance.

- 9.1.4 The proposed development will also necessitate the removal of two (2) trees of moderate retention value. These include Tree No.s T8 (Japanese Maple) and T11 (Frangipani). These trees are not considered significant, but are in good health and condition and make a fair contribution to the amenity of the site and surrounding properties. In order to compensate for loss of amenity resulting from the removal of these trees to accommodate the proposed development, consideration should be given to replacement planting within the site in accordance with Section 11.

- 9.1.5 A proposed new pathway and associated retaining wall is located within the TPZs of T1 (Spotted Gum), T2, T3, T4 & T5 (all Weeping Lillypillys) and T6 (Michelia). It is understood that the pathway is proposed to be constructed above grade (such that the current crossfall is filled) and supported by a low retaining wall on the northern side of the path. Whilst the pathway results in an encroachment to trees T2-T6 that exceeds acceptable limits under AS 4970:2009, the path should

not result in any adverse impact on these trees provided that the pathway surface is placed above grade as proposed and constructed using a permeable surface (such as gravel or similar). In order to avoid any adverse impact, fill material for the path sub-base should be supplied and placed in accordance with Section 10.9. All excavations for the foundations of the retaining wall within the TPZs of these trees should be undertaken in accordance with Section 10.6.

9.1.6 New bench seats are proposed to be installed within the TPZs of T1a (Weeping Lillypilly) and T6 (Michelia). The seats should not result in any adverse impact on these trees provided that all excavations for the seat footings within the TPZs are undertaken in accordance with Section 10.6.

9.1.7 No other trees will be adversely affected by the proposed development.

10 RECOMMENDED TREE PROTECTION MEASURES

10.1 Tree Protection Plan

10.1.1 The following Tree Protection Measures should be read in accordance with the Tree Protection Plan (**Appendix 6**). The Tree Protection Plan (TPP) indicates the position of tree protection devices and other recommended measures to ensure the protection of trees within the site to be retained as part of the proposed development.

10.2 Prohibited Activities

10.2.1 The following activities should be avoided within specified Tree Protection Zones (refer **Appendix 4 & 6** for extent of the TPZ for each tree):-

- Excavations and trenching (with exception of the approved remediation works, underground services, building foundations or pavement sub-grade);
- Soil disturbance, surface grading, compaction, tining, ripping or cultivation of soil;
- Mechanical removal of vegetation, including extraction of tree stumps;
- Soil level changes including the placement of fill material (excluding imported validated fill for remediation works or placement of fill for approved works)
- Movement and storage of plant, equipment & vehicles (except within defined temporary haul roads, where ground protection has been installed, or within the footprint of existing floor slabs or paved areas);
- Erection of site sheds (except where approved by the site arborist);
- Affixing of signage, barricades or hoardings to trees;
- Storage of building materials, waste and waste receptacles;
- Stockpiling of spoil or fill;
- Stockpiling of bulk materials, such as soil, sand, gravel, roadbase or the like;
- Stockpiling of demolition waste;
- Disposal of waste materials and chemicals including paint, solvents, cement slurry, fuel, oil and other toxic liquids;
- Other physical damage to the trunk or root system; and
- Any other activity likely to cause damage to the tree.

10.3 Tree Protection Fencing

10.3.1 All trees within the site to be retained shall be protected prior to and during construction from all activities that may result in detrimental impact by erecting a suitable protective fence beneath the canopy to the full extent of the Tree Protection Zone, excluding the footprint of the proposed works and areas within adjoining properties, as indicated on the Tree Protection Plan. As a minimum, the fence should consist of temporary chain wire panels of 1.8 metres in height, supported by steel stakes as required and fastened together and supported to prevent sideways movement using corner braces where required. The fence shall be erected prior to the

commencement of any work on-site and shall be maintained in good condition for the duration of construction. Where tree protection zones merge together a single fence encompassing the area is deemed to be adequate. Existing site boundary fences may form part of the enclosure.

- 10.3.2 Appropriate signage shall be installed on the fencing to prevent unauthorised movement of plant and equipment or entry to the Tree Protection Zone.

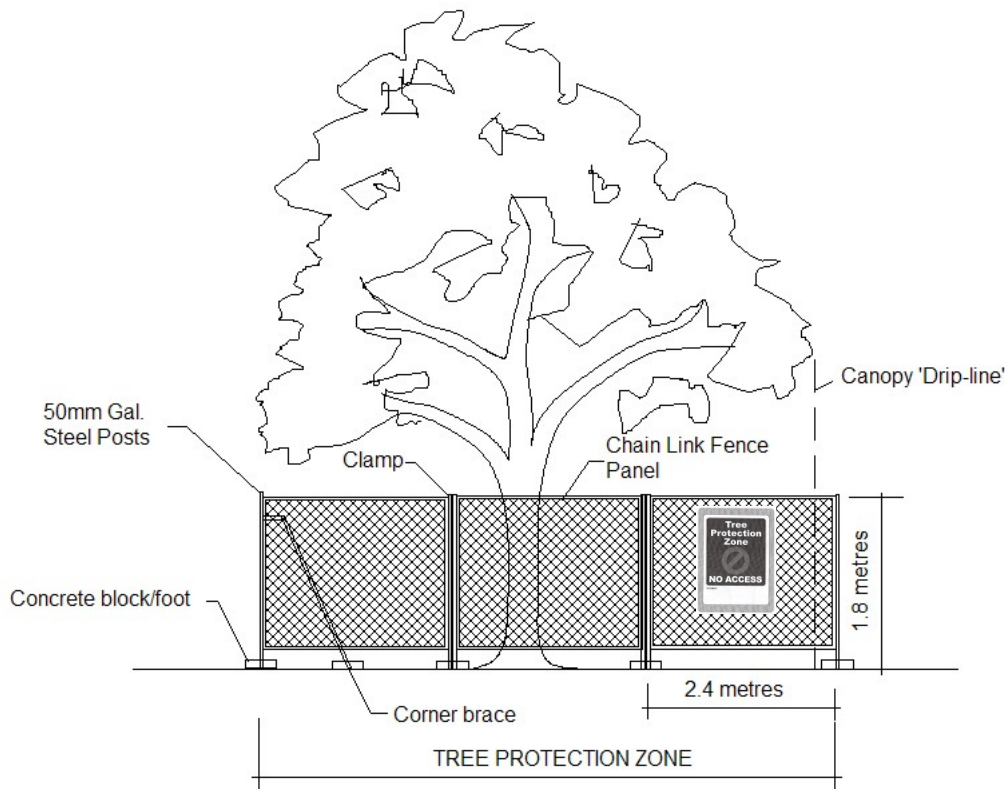


Figure 1 – Detail of Tree Protection Fence

10.4 Tree Protection Signs

- 10.4.1 Signs shall be installed on the Tree Protection Fence to prevent unauthorised movement of plant and equipment or entry to the Tree Protection Zone. The signs shall be securely attached to the fence using cable ties or equivalent. Signs shall be placed at minimum 10 metre intervals. The wording and layout of the sign shall comply with AS 4970-2009 as shown in **Figure 2**.

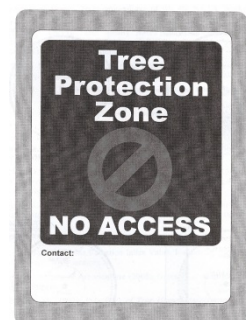


Figure 2 – Detail of Tree Protection Sign

10.5 Demolition Works within Tree Protection Zones

- 10.5.1 Demolition of paved areas within the Tree Protection Zones of trees to be retained shall be undertaken under the supervision of the Site Arborist. The pavement surface and sub-base within the TPZ shall be gradually removed in layers of no greater than 50mm thick using a small rubber tracked excavator or alternative approved method to avoid damage to underlying roots and minimise disturbance and compaction of the underlying soil profile. The machine shall work within the footprint of the existing paved surfaces to avoid compaction of the underlying soil. The final layer of sub-base material shall be removed using hand tools were required to avoid compaction of the underlying soil profile and damage to woody roots.

- 10.5.2 Following removal of the pavement surface and sub-base, clean, friable topsoil shall be used to fill in the excavated area and bring flush with surrounding levels within new landscape areas. Soil shall only be imported and spread when the underlying soil conditions are dry to avoid compaction of the soil profile. Where there is insufficient recovered site topsoil for this purpose, any imported material shall be free of rocks, vegetation, heavy clay or other extraneous matter. Any imported soil material should be similar in texture to the existing site topsoil.
- 10.5.3 Demolition of existing walls, kerbs and other structures within the Tree Protection Zone of trees to be retained shall be undertaken under the supervision of the Site Arborist. The structures shall be demolished using equipment on stationed outside the TPZ where possible or within the footprint of existing hardstand areas. Care shall be taken to avoid the root systems, trunks and lower branches of trees in the vicinity of the structures during demolition works, with special attention required during demolition of the footings and other sub-surface members to avoid damage to woody roots.

10.6 Excavations within Tree Protection Zones

- 10.6.1 Prior to any mechanical excavations for building foundations or pavement sub-grade within the Tree Protection Zone of all trees nominated for retention, exploratory excavation using non-destructive techniques shall be taken along the perimeter of the structure or pavement within the TPZ. Non-destructive excavation techniques may include the use of hand-held implements, air pressure (using an Air-spade® device) or water pressure. The exploratory excavation shall be undertaken along the perimeter of the foundation or pavement (within the TPZ) to the depth of the foundation or to a maximum of 800mm from surface levels, to locate and expose any woody roots prior to any mechanical excavation. All care shall be undertaken to preserve woody roots intact and undamaged during exploratory excavation. Any roots encountered of less than 50mm in diameter may be cleanly severed with clean sharp pruning implements at the face of the excavation. The root zone in the vicinity of the excavation shall be kept moist following excavation for the duration of construction to minimise moisture stress on the tree.
- 10.6.2 Where large woody roots (greater than 50mm diameter) are encountered during exploratory excavations, further advice from a qualified arborist shall be sought prior to severance. Where necessary, (to avoid severing large woody roots) consideration should be given to the installation of an elevated structure (e.g. pier and beam footing, suspended slab or floor supported on piers, cantilevered slab, up-turned edge beam etc) in preference to structures requiring a deep edge beam or continuous perimeter strip footing. The beam section of any pier and beam footing should be placed **above** grade to avoid excavation within the SRZ. Pier footings intersecting large woody roots should be slightly offset where necessary to avoid root severance.
- 10.6.3 For masonry walls or fences it may be acceptable to delete continuous concrete strip footings and replace with suspended in-fill panels (eg steel or timber pickets, lattice etc) fixed to pillars. For paved areas, consideration should be given to raising the proposed pavement level and using a porous fill material in preference to excavation where large woody roots are found within the sub-base.

10.7 Underground Services

- 10.7.1 All proposed stormwater lines and other underground services should be located outside TPZs of trees proposed to be retained wherever possible or installed by alternative measures. Alternative measures include suspending pipelines beneath the floor of a building or structure (to avoid excavation with the TPZ), non-destructive excavation methods or Horizontal Directional Drilling (HDD). Where the installation of service lines within TPZs is unavoidable, the pipelines or conduits should be installed as follows.
- 10.7.2 Where the extent of the incursion to the root zone is less than 10% of the TPZ including any excavations for benching and shoring the trench, the pipeline or conduit may be installed by open

trenching using standard construction methods (excavator or trenching machine). 10% of the TPZ is equivalent to one-third of the TPZ radius on one side (refer to **Appendix 2**). Refer to **Appendix 4** for radial distances of TPZs for each tree.

- 10.7.3 Where the extent of the incursion to the root zone exceeds 10% of the TPZ, but is outside the SRZ, non-destructive excavation methods must be adopted in accordance with **Section 10.6**. Where large woody roots are encountered during excavation or trenching (root diameter greater than 50mm), these shall be retained intact wherever possible (e.g. by tunnelling beneath roots and inserting the pipeline or conduit beneath or re-routing the service etc). Where this is not practical and root pruning is the only alternative, proposed root pruning should be assessed by a qualified arborist [AQF 5] to evaluate the potential impact on the health and stability of the subject tree.
- 10.7.4 Excavations required for underground services within the Structural Root Zone of any tree to be retained should only be undertaken by sub-surface boring (Horizontal Directional Drilling). The Invert Level of the pipe, plus the pipe diameter, must be lower than the estimated root zone depth as specified. At this site a minimum depth of 1 metre to the invert level of the pipe is specified.

10.8 Pavements

- 10.8.1 Pavements should be avoided within the Tree Protection Zone of trees to be retained where possible. Proposed paved areas within the Tree Protection Zone of trees to be retained should be placed above grade to minimise excavations within the root zone and avoid root severance and damage. Pavement sub-base material should be as per **Section 10.9**.

10.9 Fill Material

- 10.9.1 Placement of fill material within the Tree Protection Zone of trees to be retained should be avoided wherever possible. Where placement of fill is unavoidable, the material should be a well-drained friable material, equivalent in texture to the existing site topsoil material. The fill should be free from rocks, vegetation and other extraneous material complying with AS 4419:2003 (*Soils for Landscaping and Garden Use*). The fill may be consolidated but should not be compacted to engineering standards. No fill material should be placed in direct contact with the trunk. Plant and equipment used to place and spread fill material should be stationed outside the TPZ where possible. Where not possible, suitable ground protection should be installed in accordance with **Section 10.14**.
- 10.9.2 Where placement of fill is required for pavement sub-grade is required within TPZs of trees to be retained, a coarse, gap-graded material such as 20 – 50mm crushed basalt (Blue Metal) or equivalent shall be used to provide some aeration to the root zone. Note that road base or crushed sandstone or other similar material containing a high percentage of fines is unacceptable for this purpose. The fill material should be consolidated with a non-vibrating roller to minimise compaction of the underlying soil. A permeable geotextile may be used beneath the sub-base to prevent migration of the stone into the sub-grade.

10.10 Canopy & Root Pruning

- 10.10.1 All canopy pruning work required shall be carried out in accordance with Australian Standard 4373-2007 – Pruning of Amenity Trees. Written approval from Council may be required under the Tree Preservation Order prior to undertaking this work. All pruning work shall be carried out by a qualified and experienced arborist or tree surgeon [Australian Qualification Framework Level 3] in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998). No branches of greater than 100mm in diameter should be removed or pruned without further advice from a Consulting Arborist [Australian Qualification Framework Level 5].

- 10.10.2 Where root pruning is required, roots shall be severed with clean, sharp pruning implements and retained in a moist condition during the construction phase using Hessian material or mulch where practical. Severed roots shall be treated with a suitable root growth hormone containing the active constituents Indol-3-yl-Butric Acid (IBA) and 1-Naphthylacetic Acid (NAA) to stimulate rapid regeneration of the root system.

10.11 Tree Damage

- 10.11.1 Care shall be taken when operating cranes, drilling rigs and similar equipment near trees to avoid damage to tree canopies (foliage and branches). Under no circumstances shall branches be torn-off by construction equipment. Where there is potential conflict between tree canopy and construction activities, the advice of the Site Arborist must be sought.
- 10.11.2 In the event of any tree becoming damaged for any reason during the construction period a consulting arborist [Australian Qualification Framework Level 5] shall be engaged to inspect and provide advice on any remedial action to minimise any adverse impact. Such remedial action shall be implemented as soon as practicable and certified by the arborist.

10.12 Tree Removal

- 10.12.1 The approval of Pittwater Council shall be obtained prior to the removal or pruning of any tree protected under the Tree Preservation Order.
- 10.12.2 Tree removal work shall be carried out by an experienced tree surgeon in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998). Care shall be taken to avoid damage to other trees during the felling operation.
- 10.12.3 Stumps located within the TPZs of trees to be retained shall be grubbed-out where required using a mechanical stump grinder (or by hand where less than 150mm in diameter) without damage to the root system of other trees. Where trees to be removed are within the SRZ of any trees to be retained, consideration should be given to cutting the stump close to ground level and retaining the root crown intact. Stumps within the Tree Protection Zone of other trees to be retained shall **not** be pulled out using excavation equipment or similar.

10.13 Ground Protection

- 10.13.1 A 100mm layer of woodchip mulch shall be installed within designated areas of the Tree Protection Zone of nominated trees as indicated on the Tree Protection Plan (**Appendix 7**) to minimise compaction of the underlying soil profile during construction activity and haulage. A Geotextile fabric, such as Geotex[®] 'ST' Series manufactured by Synthetic Industries or an equivalent product, shall be installed beneath the mulch layer to minimise compaction to the underlying soil profile and limit migration of mulch into the underlying soil profile. Mulch shall be installed and spread by hand to avoid soil disturbance and compaction within the root zone. Ground protection shall be installed prior to any site works and maintained in good condition for the duration of the construction period. On completion of the works, ground protection shall be removed without damage or disturbance to the underlying soil profile.

11 REPLACEMENT PLANTING

- 11.1.1 In order to compensate for loss of amenity resulting from the removal of trees to accommodate the proposed development, a minimum number of three (3) new trees capable of attaining a height of at least ten (10) metres at maturity should be planted within the allotment. Replacement trees should preferably include some locally indigenous species. These will be most appropriate to the site conditions and be most valuable in terms of preserving the landscape character and wildlife

habitat of the area. The following species are appropriate to the site conditions and could be considered for replacement planting:-

- *Syzygium paniculatum* (Magenta Cherry)
- *Glochidion ferdinandi* (Cheese Tree)
- *Syncarpia glomulifera* (Turpentine)
- *Eucalyptus paniculata* (Grey Ironbark)
- *Angophora floribunda* (Rough barked Apple)
- *Angophora costata* (Sydney Red Gum),
- *Eucalyptus punctata* (Grey Gum)
- *Corymbia maculata* (Spotted Gum)
- *Allocasuarina torulosa* (Forest Oak).



Andrew Morton

EARTHSCAPE HORTICULTURAL SERVICES

7th June 2016

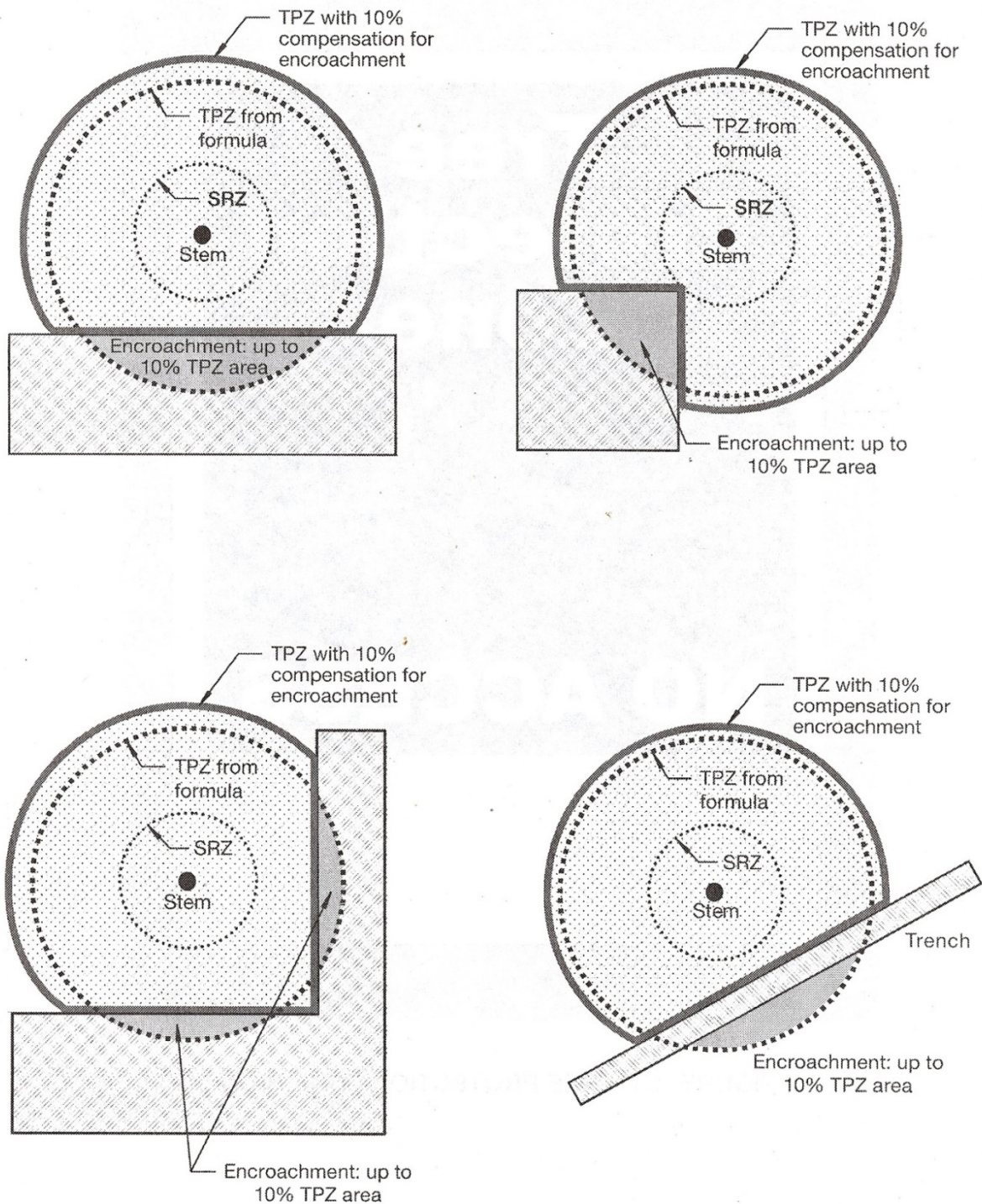
APPENDIX 1 - CRITERIA FOR ASSESSMENT OF LANDSCAPE SIGNIFICANCE

RATING	HERITAGE VALUE	ECOLOGICAL VALUE	AMENITY VALUE
1. SIGNIFICANT	The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance or is listed on Council's Significant Tree Register	The subject tree is scheduled as a Threatened Species as defined under the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999	The subject tree has a very large live crown size exceeding 300m ² with normal to dense foliage cover, is located in a visually prominent position in the landscape, exhibits very good form and habit typical of the species
	The subject tree forms part of the curtilage of a Heritage Item (building /structure /artefact as defined under the LEP) and has a known or documented association with that item	The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species	The subject tree makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity
	The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event	The subject tree is a Remnant Tree, being a tree in existence prior to development of the area	The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance.
2. VERY HIGH	The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site.	The tree is a locally-indigenous species, representative of the original vegetation of the area and is a dominant or associated canopy species of an Endangered Ecological Community (EEC) formerly occurring in the area occupied by the site.	The subject tree has a very large live crown size exceeding 200m ² ; a crown density exceeding 70% (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area
3. HIGH	The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence	The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value	The subject tree has a large live crown size exceeding 100m ² ; The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% (normal); The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area
4. MODERATE	The tree has no known or suspected historical association, but does not detract or diminish the value of the item and is sympathetic to the original era of planting.	The subject tree is a non-local native or exotic species that is protected under the provisions of this DCP.	The subject tree has a medium live crown size exceeding 40m ² ; The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crown density of more than 50% (thinning to normal); and
			The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms. The tree makes a fair contribution to the visual character and amenity of the area.
5. LOW	The subject tree detracts from heritage values or diminishes the value of a heritage item	The subject tree is scheduled as exempt (not protected) under the provisions of this DCP due to its species, nuisance or position relative to buildings or other structures.	The subject tree has a small live crown size of less than 40m ² and can be replaced within the short term (5-10 years) with new tree planting
6. VERY LOW	The subject tree is causing significant damage to a heritage Item.	The subject tree is listed as an Environment Weed Species in the relevant Local Government Area, being invasive, or is a known nuisance species.	The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area. The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% (sparse).
7. INSIGNIFICANT	The tree is completely dead and has no visible habitat value	The tree is a declared Noxious Weed under the Noxious Weeds Act (NSW) 1993 within the relevant Local Government Area.	The tree is completely dead and represents a potential hazard.

Ref:- Morton, A (2006) **Determining the Retention Value of Trees on Development Sites**

TreeNet - Proceedings of the 7th National Street Tree Symposium 2006 Government of South Australia Department for Transport, Energy and Infrastructure

APPENDIX 2 – ACCEPTABLE INCURSIONS TO THE TREE PROTECTION ZONE (TPZ)



NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.

REF:- Council of Standards Australia (August 2009)
AS 4970 – 2009 – Protection of Trees on Development Sites
 Standards Australia, Sydney

REFERENCES:-

- ¹ Chapman, G.A. & Murphy, C. L. (1989)
Soil Landscapes of the Sydney 1:100,000 Sheet
Soil Conservation Service of NSW. Sydney
- ² Benson, Doug & Howell, Jocelyn (1990)
Taken for Granted: the Bushland of Sydney and its Suburbs.
Kangaroo Press & The Royal Botanic Gardens, Sydney, NSW
- ³ Pittwater Council
Native Plants for your Garden
Pittwater Council
- ⁴ Mattheck, Dr. Claus & Breloer, Helge (1994) – Sixth Edition (2001)
The Body Language of Trees – A Handbook for Failure Analysis
The Stationery Office, London, England
- ⁵ Barrell, Jeremy (1996)
Pre-development Tree Assessment
Proceedings of the International Conference on Trees and Building Sites (Chicago)
International Society of arboriculture, Illinois, USA
- ⁶ Office of Environment and Heritage (May 2013)
Pittwater and Wagstaffe Spotted Gum Forest of the Sydney Basin Bioregion – profile (& map)
<http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10634>
- ⁷ Council of Standards Australia (August 2009)
AS 4970 – 2009 – Protection of Trees on Development Sites
Standards Australia, Sydney

APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE														
Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm)	Live Crown Size (m ²)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
1	<i>Corymbia maculata</i> (Spotted Gum)	25	18	700	234	M	Appears stable with sound branching structure. Crown suppressed on the south side due to overshadowing.	No Evidence	Good	No Evidence	Long - more than 40 years	2	High	Adjoining property
1a	<i>Waterhousea floribunda</i> (Weeping Lillypilly)	4	3	60	12	I	Appears stable with sound branching structure.	No Evidence	Very Good	No Evidence	Long - more than 40 years	5	Moderate	On-site
2	<i>Waterhousea floribunda</i> (Weeping Lillypilly)	5	4	70	20	I	Appears stable with sound branching structure.	No Evidence	Very Good	No Evidence	Long - more than 40 years	5	Moderate	On-site
3	<i>Waterhousea floribunda</i> (Weeping Lillypilly)	3.5	3	70	10.5	I	Appears stable with sound branching structure.	No Evidence	Very Good	No Evidence	Long - more than 40 years	5	Moderate	On-site
4	<i>Waterhousea floribunda</i> (Weeping Lillypilly)	5	4	70x2	20	I	Appears stable with fair branching structure. Multiple trunks arising close to GL.	No Evidence	Very Good	No Evidence	Long - more than 40 years	5	Moderate	On-site
5	<i>Waterhousea floribunda</i> (Weeping Lillypilly)	6.5	4	120 + 70	26	I	Appears stable with fair branching structure. Multiple trunks arising close to GL.	No Evidence	Very Good	No Evidence	Long - more than 40 years	5	Moderate	On-site
6	<i>Michelia sp.</i> (Michelia)	5	6	160 + 150	24	M	Appears stable with sound branching structure.	No Evidence	Very Good	No Evidence	Long - more than 40 years	4	Moderate	Adjoining property
7	<i>Dyopsis lutescens</i> (Golden Cane Palm)	6	5	70x5	20	SM	Appears stable with sound branching structure.	No Evidence	Good	No Evidence	Long - more than 40 years	6	Low	Adjoining property
8	<i>Acer palmatum</i> (Japanese Maple)	6.5	7	320	45.5	M	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at 0.5 metres at junctions of PLs.	No Evidence	Very Good	No Evidence	Long - more than 40 years	4	Moderate	On-site
9	<i>Callistemon 'Captain Cook'</i> (Captain Cook Bottlebrush)	3	4	220	8	SM	Appears stable with fair branching structure. Crown suppressed on the south side due to overshadowing. Poor form and habit.	Selectively pruned	Good	No Evidence	Short 5-15 Years	5	Low	On-site
10	<i>Metrosideros excelsa</i> (NZ Christmas Bush)	4.5	3	30x2 + 50 + 80	10.5	SM	Appears stable with fair branching structure. Crown suppressed on the SW side due to crowding. Substantial dieback with 70% deadwood.	No Evidence	Poor with sparse crown	No Evidence	Transient (less than 5 years)	5	Very Low	On-site

		APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE												
Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm)	Live Crown Size (m²)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
11	<i>Plumeria acutifolia</i> (Frangipani)	3.5	4	80x3	14	SM	Appears stable with sound branching structure.	No Evidence	Good	No Evidence	Long - more than 40 years	5	Moderate	On-site
12	<i>Plumeria acutifolia</i> (Frangipani)	3.5	5	250	17.5	M	Stability suspect with sound branching structure. Exhibits a very prominent lean to the north.	No Evidence	Good	Severe Frangipani Rust infection	Medium 15-40 Years	5	Low	On-site

APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	TPZ (m ²)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
1	<i>Corymbia maculata</i> (Spotted Gum)	P	10.5	2.8	346.2	Proposed lawn and paved terrace and associated retaining wall offset 8.2 metres north at RL 28.43 (close to grade to 600mm below grade). Excavations for terrace and retaining wall foundations within TPZ. Encroachment to TPZ = 4%. Proposed pathway offset 5 metres NE at RL 30.00 (at grade to 600mm above grade) and associated retaining wall offset 6 metres NE. Fill for pathway and excavations for retaining wall foundations within TPZ. Encroachment to TPZ = 4%. Cumulative encroachment = 8%	Extent of encroachment to root zone is less than 10% of the TPZ, which is considered within acceptable limits under AS 4970:2009. No adverse impact.	Retain in accordance with recommended Tree Protection Measures (Section 10). Undertake all excavations for terrace retaining wall foundations within TPZ in accordance with Section 10.6. Install pathway above grade using permeable material such as gravel or equivalent. Supply and place fill within TPZ in accordance with Section 10.9. Undertake all excavations for retaining wall foundations within TPZ in accordance with Section 10.6.
1a	<i>Waterhousea floribunda</i> (Weeping Lillypilly)	M	1.5	1.0	7.1	Proposed bench seat offset 0.5 metres north. Excavations for seat footings within TPZ.	No adverse impact, provided that seat footings are excavated as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install Tree Protection Fence in accordance with Section 10.3. Undertake all excavations for bench seat footings within TPZ in accordance with Section 10.6.
2	<i>Waterhousea floribunda</i> (Weeping Lillypilly)	M	2.0	1.1	12.6	Proposed pathway offset 0.7 metres north at RL 30.00 (at grade to 600mm above grade) and associated retaining wall offset 1.9 metres north. Fill for pathway and excavations for retaining wall foundations within TPZ. Encroachment to TPZ = 21%.	Extent of encroachment to TPZ exceeds acceptable limits under AS 4970:2009. No adverse impact provided that all works within the TPZ are undertaken as recommended	Retain in accordance with recommended Tree Protection Measures (Section 10). Install Tree Protection Fence in accordance with Section 10.3. Install pathway above grade using permeable material such as gravel or equivalent. Supply and place fill within TPZ in accordance with Section 10.9. Undertake all excavations for retaining wall foundations within TPZ in accordance with Section 10.6.

APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

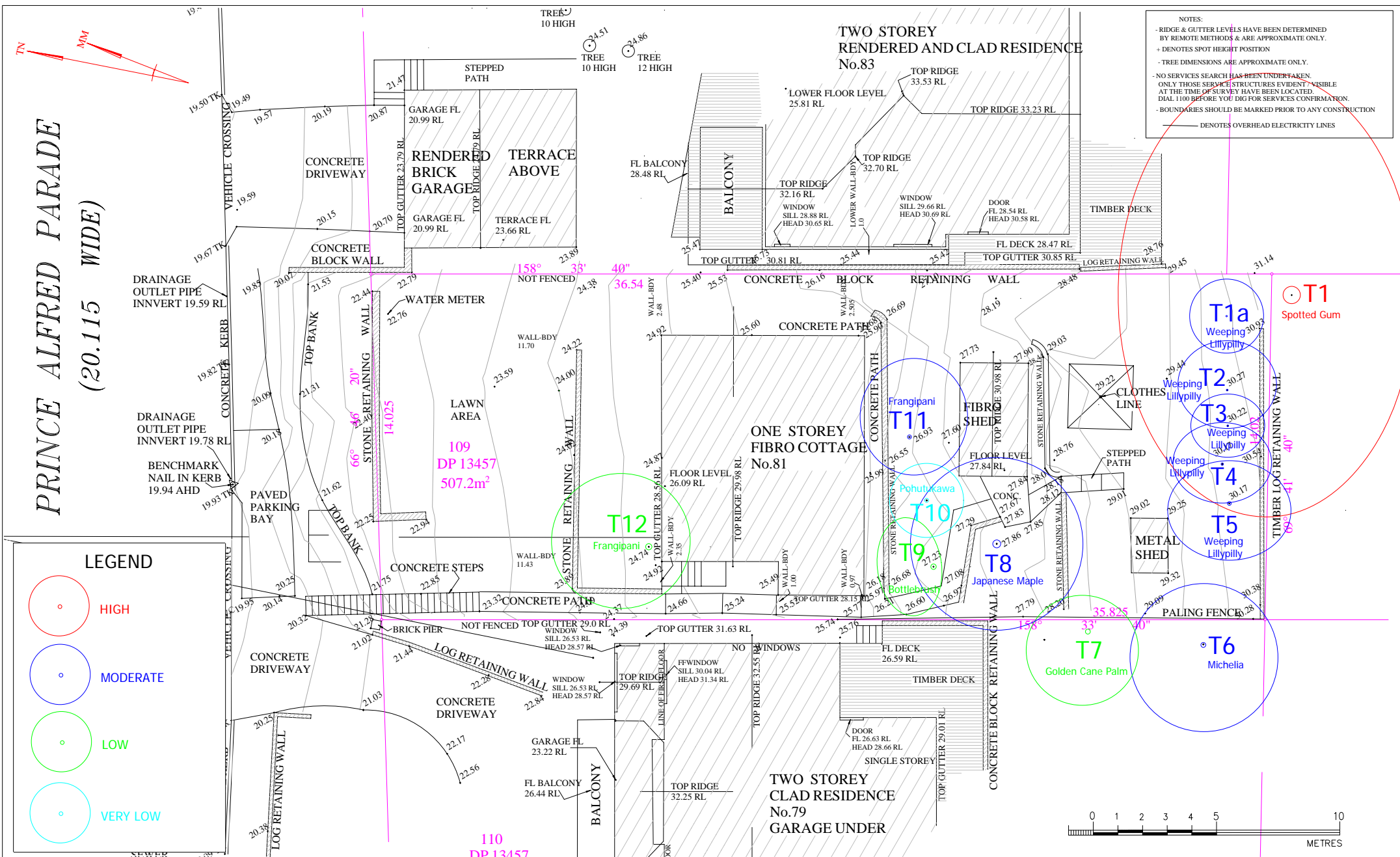
Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	TPZ (m ²)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
3	<i>Waterhousea floribunda</i> (Weeping Lillypilly)	M	1.5	1.1	7.1	Proposed pathway offset 0.5 metres north at RL 30.00 (at grade to 600mm above grade) and associated retaining wall offset 1.5 metres north. Fill for pathway and excavations for retaining wall foundations within TPZ. Encroachment to TPZ = 27%.	Extent of encroachment to TPZ exceeds acceptable limits under AS 4970:2009. No adverse impact provided that all works within the TPZ are undertaken as recommended	Retain in accordance with recommended Tree Protection Measures (Section 10). Install Tree Protection Fence in accordance with Section 10.3. Install pathway above grade using permeable material such as gravel or equivalent. Supply and place fill within TPZ in accordance with Section 10.9. Undertake all excavations for retaining wall foundations within TPZ in accordance with Section 10.6.
4	<i>Waterhousea floribunda</i> (Weeping Lillypilly)	M	2.0	1.3	12.6	Proposed pathway offset 0.1 metres north at RL 30.00 (at grade to 600mm above grade) and associated retaining wall offset 1.2 metres north. Fill for pathway and excavations for retaining wall foundations within TPZ. Encroachment to TPZ = 45%.	Extent of encroachment to TPZ exceeds acceptable limits under AS 4970:2009. No adverse impact provided that all works within the TPZ are undertaken as recommended	Retain in accordance with recommended Tree Protection Measures (Section 10). Install Tree Protection Fence in accordance with Section 10.3. Install pathway above grade using permeable material such as gravel or equivalent. Supply and place fill within TPZ in accordance with Section 10.9. Undertake all excavations for retaining wall foundations within TPZ in accordance with Section 10.6.
5	<i>Waterhousea floribunda</i> (Weeping Lillypilly)	M	2.5	1.5	19.6	Proposed pathway offset 0.1 metres north at RL 30.00 (at grade to 600mm above grade) and associated retaining wall offset 1.9 metres north. Fill for pathway and excavations for retaining wall foundations within TPZ. Encroachment to TPZ = 43%.	Extent of encroachment to TPZ exceeds acceptable limits under AS 4970:2009. No adverse impact provided that all works within the TPZ are undertaken as recommended	Retain in accordance with recommended Tree Protection Measures (Section 10). Install Tree Protection Fence in accordance with Section 10.3. Install pathway above grade using permeable material such as gravel or equivalent. Supply and place fill within TPZ in accordance with Section 10.9. Undertake all excavations for retaining wall foundations within TPZ in accordance with Section 10.6.

APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	TPZ (m ²)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
6	<i>Michelia sp.</i> (Michelia)	M	3.3	1.8	34.2	Proposed pathway and bench seat offset 1.9 metres east at RL 30.00 (at grade to 600mm above grade). Fill for pathway sub-grade within TPZ. Encroachment to TPZ = 13%.	Extent of encroachment to TPZ exceeds acceptable limits under AS 4970:2009. No adverse impact provided that all works within the TPZ are undertaken as recommended	Retain in accordance with recommended Tree Protection Measures (Section 10). Install Tree Protection Fence in accordance with Section 10.3. Install pathway above grade using permeable material such as gravel or equivalent. Supply and place fill within TPZ in accordance with Section 10.9. Undertake all excavations for retaining wall foundations within TPZ in accordance with Section 10.6.
7	<i>Dypsis lutescens</i> (Golden Cane Palm)	G	3.0	1.7	28.3	Proposed new dwelling offset 1.5 metres east at RL 28.48 (300 mm above grade to 600mm below grade). Excavations for building foundations within TPZ. Encroachment to TPZ = 13%.	Extent of encroachment to TPZ exceeds acceptable limits under AS 4970:2009. However, this species will tolerate the extent of encroachment proposed. No adverse impact provided that all excavations for the building foundations are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Undertake all excavations for building foundations within TPZ in accordance with Section 10.6.
8	<i>Acer palmatum</i> (Japanese Maple)	M	3.8	2.1	46.3	Located within footprint of proposed dwelling.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
9	<i>Callistemon 'Captain Cook'</i> (Captain Cook Bottlebrush)	M	2.6	1.8	21.9	Located within footprint of proposed dwelling.	Proposed works will necessitate removal.	Remove tree.
10	<i>Metrosideros excelsa</i> (NZ Christmas Bush)	M	1.8	1.5	10.2	Located within footprint of proposed dwelling.	Proposed works will necessitate removal.	Remove tree.
11	<i>Plumeria acutifolia</i> (Frangipani)	M	2.4	1.5	18.1	Located within footprint of proposed dwelling.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.

APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE								
Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	TPZ (m ²)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
12	<i>Plumeria acutifolia</i> (Frangipani)	M	3.0	1.8	28.3	Located within footprint of proposed dwelling (garage).	Proposed works will necessitate removal.	Remove tree.

PRINCE ALFRED PARADE (20.115 WIDE)



APPENDIX 5
TREE LOCATION PLAN SHOWING
TREE RETENTION VALUES
81 Prince Alfred Parade, NEWPORT, NSW



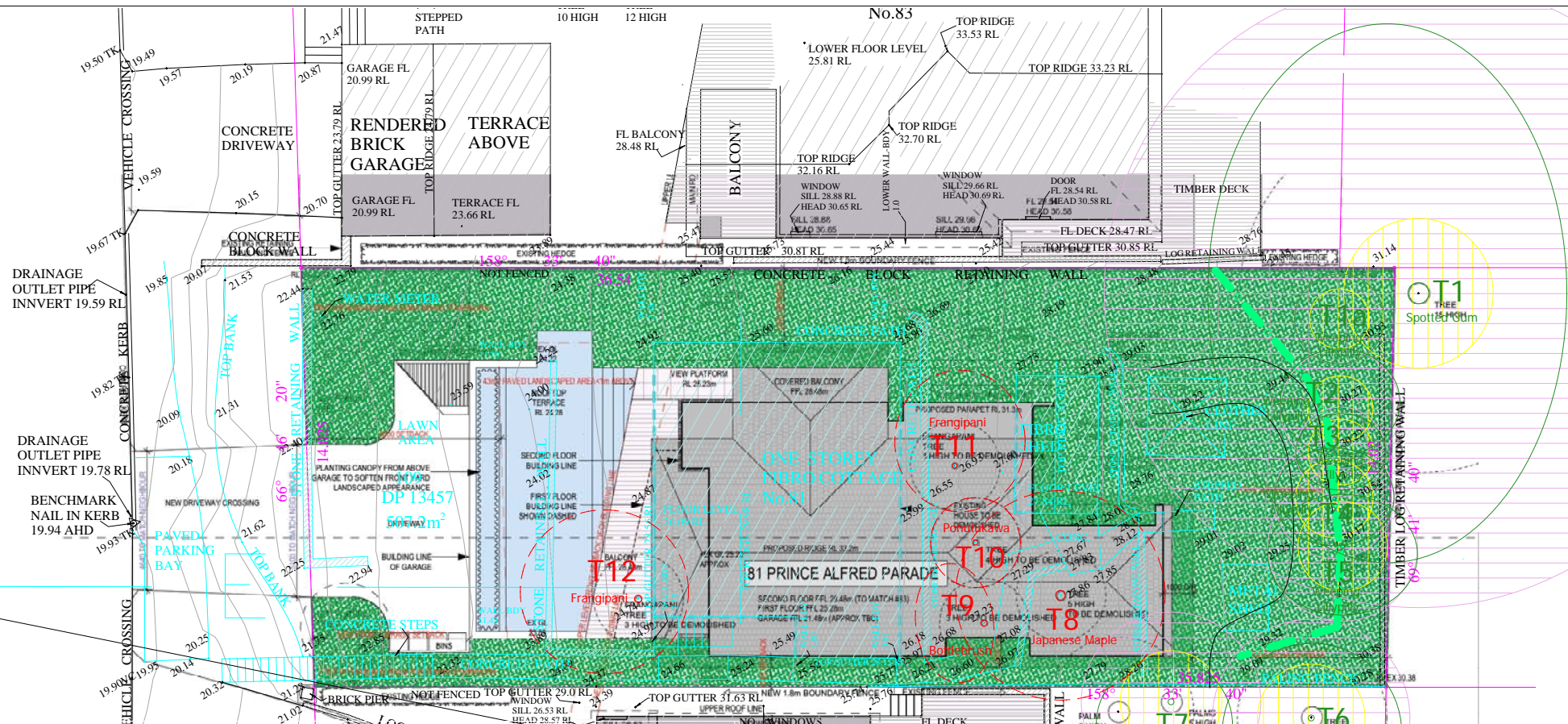
Earthscape Horticultural Services
Arboricultural and Horticultural Consultants
PO Box 364
BEROWRA NSW 2081
Ph: 02 9456 4787
Fax: 02 9456 5757 e: earthscape@iinet.net.au

Based on the Survey Drawing
prepared by Geographic Solutions Surveyors
Dwg Ref No. 2552
Dated 10/12/2014

DWG No. T16-033001

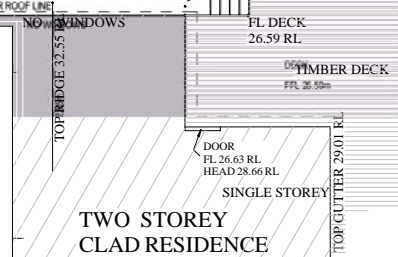
DATE: 01/06/2016

PRINCE ALFRED PARADE (20.115 WIDE)



LEGEND

- Tree to be retained and protected in accordance with Tree Protection Measures (Section 10)
- Tree to be removed in accordance with Section 10.12
- Tree to be pruned in accordance with Section 10.10
- Structural Root Zone (SRZ)
- Tree Protection Zone (TPZ) [refer Section 7]
- Existing buildings & structures to be demolished. Demolition works within TPZ's to be undertaken in accordance with Section 10.5
- New Building works. All excavations for building foundations within TPZ's to be undertaken in accordance with Section 10.6
- Excavations in these areas for footings and services to be undertaken in accordance with Section 10.6
- Proposed stormwater infrastructure to be installed in accordance with Section 10.7
- Tree Protection Fence to be erected in accordance with Section 10.3
- Install Ground Protection in accordance with Section 10.13



- NOTES:
- RIDGE & GUTTER LEVELS HAVE BEEN DETERMINED BY REMOTE METHODS & ARE APPROXIMATE ONLY.
 - DENOTES SPOT HEIGHT POSITION
 - TREE DIMENSIONS ARE APPROXIMATE ONLY.
 - NO SERVICES SEARCH HAS BEEN UNDERTAKEN. ONLY THOSE SERVICE STRUCTURES EVIDENT / VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED. DIAL 1100 BEFORE YOU DIG FOR SERVICES CONFIRMATION.
 - BOUNDARIES SHOULD BE MARKED PRIOR TO ANY CONSTRUCTION
 - DENOTES OVERHEAD ELECTRICITY LINES

APPENDIX 6 TREE PROTECTION PLAN

81 Prince Alfred Parade, NEWPORT, NSW



Earthscape Horticultural Services
Arboricultural and Horticultural Consultants
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BEROWRA NSW 2081
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Based on the Survey Drawing
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Dwg Ref No. 2552
Dated 10/12/2014

DWG No. T16-033002

DATE: 07/06/2016