EARTHSCAPE HORTICULTURAL SERVICES
Arboricultural, Horticultural and Landscape Consultants

ABN 36 082 126 027

ARBORICULTURAL IMPACT ASSESSMENT REPORT

PROPOSED COMMUNITY TITLE SUBDIVISION

39 STARKEY STREET, FORESTVILLE

August 2023

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1 INTRODUCTION

1.1.1 This report was commissioned by Mr David Lin to assess the health and condition of four (4) trees located within or immediately adjacent to 39 Starkey Street, Forestville. The report has been prepared to aid in the assessment of a Development Application (DA) for the Community Title subdivision of the property to create two new residential allotments together with one common driveway allotment and associated civil works (driveway entry and turning areas). This assessment has been limited to trees within the front yard of the property within 5 metres of the proposed civil works in accordance with Council's requirements.

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 (Tree Protection Plan and Specification) 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 the Northern Beaches Council's guidelines for preparation of Arborists Reports as outlined in Part E and Part H (Appendices 9, 11 & 12) of the *Warringah Development Control Plan 2011* (WDCP) 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 17 in DP 23118, being 39 Starkey Street, Forestville. For the purposes of this report, the subject allotment will be referred to as 'the site'. The total area of the site is approximately 939.7 m². The site is zoned Low Density Residential [R2] under the *Warringah Local Environmental Plan 2011* (WLEP).

2.1.2 The site contains an existing single storey dwelling located in the central northern portion of the lot and a detached secondary dwelling (Granny Flat) plus home office near the south-western corner, together with two outbuildings in the rear yard. The site has a slight to moderate south-easterly gradient with established lawns and gardens typical of surrounding residential properties. The site contains a number of mature and semi-mature trees. These include a variety of non-local native and exotic (introduced) species.

2.1.3 The soils of this area are typical of the Gymea Landscape Group (as classified in the *Soil Landscapes of the Sydney 1:100,000 Sheet*), consisting of "shallow to moderately deep (300 – 1000 mm) *Yellow Earths* and *Earthy Sands* on crests and inside of benches and shallow (< 200 mm) *Siliceous Sands* on leading edges of benches; localised *Gleyed Podzolic Soils* and *Yellow Podzolic Soils* on shale lenses; and shallow to moderately deep (< 1000mm) *Siliceous Sands* and *Leached Sands* along Drainage Lines."[1] Soil materials are derived Hawkesbury Sandstone and may be discontinuous with localised rock outcrop.

2.1.4 The original vegetation of this area consisted of open forest & woodland typical of Hawkesbury Sandstone areas.[2] Most of the original vegetation has been cleared for residential development in the post-WWII era (1945-1955). The locally-indigenous tree species formerly occurring in this area included *Angophora costata* (Sydney Red Gum), *Corymbia gummifera* (Red Bloodwood) and *Eucalyptus haemastoma* (Scribbly Gum). Other species occurring in this vegetation community may include *Allocasuarina littoralis* (Black She-Oak), *Eucalyptus globoidea* (White Stringybark), *Eucalyptus sieberi* (Silvertop Ash) and *Banksia serrata* (Old Man Banksia).

3 SUBJECT TREES

3.1.1 The subject trees were inspected by Earthscape Horticultural Services (EHS) on the 23rd May 2023. 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 Bee & Lethbridge Pty Ltd, Dwg. Ref No. 19539 [00] dated 21/02/2023. The numbers used on this plan correlate with the Tree Assessment Schedule (**Appendix 3**).

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.[3] 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 laser distance measurer in four directions and an average taken);
- **Trunk diameter** (measured with a diameter tape 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);
- **Maturity Class -** the Maturity Class for each tree has been divided into the following categories:-
  - **OM** Over-mature – greater than 80% of the life expectancy for the species;
  - **M** Mature – 50-80% of the life expectancy for the species;
  - **SM** Semi-mature – 20-50% of the life expectancy for the species;
  - **I** Immature – less than 20% of the life expectancy for the species.
- **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); and
- **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 Expectancy[4] 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)

4.2.1 SULE ratings are intended to provide a general overview of the long-term sustainability of the trees within the site in consideration of these factors. The allocated ranges are not intended to be absolute. This information is useful in guiding future planning by highlighting the probable lifespan of individual trees, for which a clear pattern may emerge. This information may be helpful in forecasting likely tree senescence and planning for replacement planting to ensure continuity in tree canopy across the site. It should be noted that SULEs *may* be extended or reduced depending on the way trees are managed. Intervention and remedial works may extend the SULE of some trees.

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 environmental, heritage and amenity 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 a consistent approach, the assessment criteria 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 Northern Beaches (former Warringah) Local Government Area (LGA) are protected under the provisions of Part E1 of the *Warringah Development Control Plan* 2011 (WDCP), made pursuant to Chapter 2, Part 2.3 of the *State Environmental Planning Policy (Biodiversity and Conservation) 2017* (Biodiversity SEPP).

The WDCP generally protects all trees with a height of greater than five (5) metres, all trees that are or form part of Heritage Items, all trees within designated Heritage Conservation Areas (regardless of dimensions) and other Prescribed Vegetation (mapped on the DCP as Threatened and High Conservation Habitat, Wildlife Corridors or Native Vegetation) or within areas known or having potential habitat for threatened species, populations or ecological communities. Some exemptions apply. The following trees are exempt (not protected) under the provisions of the WDCP 2011:-

Tree No.	Species	Exemption
T3	*Lagerstroemia indica* (Crepe Myrtle)	Undesirable Species
T4	*Dypsis lutescens* (Golden Cane Palm)	Palm tree other than *Livistona* spp.

The remainder of the trees are protected under Council's Tree Management Controls.

5.2.2 Wildlife Habitat

All of the trees are exotic (introduced) or non-local native species that would be of some benefit to native wildlife. However, none of the trees contain cavities that would be suitable as nesting hollows for arboreal mammals or birds. There were no other visible signs of wildlife habitation.

The site is *not* located within a defined 'Wildlife Corridor' as indicated on Council's *Wildlife Corridors Map*.

5.2.3 Noxious Plants & Environmental Weeds

None of the subject trees are scheduled as a potential 'Biosecurity Risk' ('Priority Weed' – formerly 'Noxious Weed') within NSW under the provisions of the *Biosecurity Act 2015.*

None of the subject trees are listed as Environmental Weed Species within the Northern Beaches LGA.

5.2.4 Threatened Species & Ecological Communities

None of the subject trees are listed as Threatened or Vulnerable Species or form part of Endangered Ecological Communities (EECs) under the provisions of the *Biodiversity Conservation Act 2016* (NSW) or the *Environment Protection and Biodiversity Conservation Act 1999*.

The site is *not* identified as containing any 'Threatened High Conservation Habitat' as indicated on Council's *Threatened High Conservation Habitat Map*.

5.2.5 Biodiversity, Bushfire & Riparian Lands

The site does *not* contain any 'Biodiversity Certified Land' as indicated on Council's *Biodiversity Certified Land Map*.

The NSW Office of Environment and Heritage (OEH) *Biodiversity Values Map and Threshold Tool* (refer https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap), indicates that there is no vegetation on or near the site that is subject to the Biodiversity Offset Scheme (BOS).

The site does *not* contain any Bushfire Prone Land as indicated on Council's Bush Fire Prone Land Map (2016).

The site does *not* within a 'Designated Bush Fire Prone Area' as defined by the NSW Rural Fire Service (RFS). The site is *not* within a 'Designated 10/50 Vegetation Clearing Entitlement Area' as defined by the NSW RFS.

The site does *not* contain any 'Riparian Land' as indicated on Council's *Waterways and Riparian Lands Map* forming part of the WDCP.

5.3 Heritage Significance

5.3.1 Heritage Items

The subject property is *not* listed as an item of Environmental Heritage under Schedule 5, Part 1 of the *Warringah Local Environmental Plan 2011* (WLEP).

5.3.2 Heritage Conservation Area

The site is *not* located within a Heritage Conservation Area under Schedule 5, Part 2 of the WLEP 2011.

5.3.3 Significant Tree Register

Northern Beaches Council does *not* currently maintain a Register of Significant Trees.

5.3.4 General

The 1943 Aerial Photograph of Sydney (SIX Maps) indicates that site was un-cleared at this time and contained native bushland, intersected by a number of unmade trails. Some of the surrounding areas had been cleared for pastoral use.

Based on analysis of Historical Imagery of the site (NSW Spatial Services), by 1955 the site and immediately surrounding areas had been partially cleared, subdivided and developed for residential housing. By 1965 the area was completely developed for residential housing. The original dwelling within 39 Starkey Street was constructed by 1955. The secondary dwelling was constructed post 2005. All of the subject trees were planted post-1980 and have no known or suspected heritage significance.

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 1**. 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	**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							

6.1.2 The following table describes the implications of the retention values on site layout and design.

TABLE 2 – TREE RETENTION PRIORITES.

RETENTION VALUE	RECOMMENDED ACTION
"High"	These trees considered worthy of preservation; as such careful consideration should be given to their retention as a priority. Proposed site design and placement of buildings and infrastructure should consider the recommended setbacks as discussed in the following section (refer also **Appendix 2**) to avoid any adverse impact on these trees. In addition to Tree Protection Zones, the extent of the canopy (canopy drip-line) should also be considered, particularly in relation to high rise developments. Significant pruning of the trees to accommodate the building envelope or temporary scaffolding is generally not acceptable.
"Moderate"	The retention of these trees is desirable, but not essential. These trees should be retained as part of any proposed development if possible. However, these trees are considered less critical for retention. If these trees must be removed, replacement planting should be considered in accordance with Council's Tree Replenishment Policy to compensate for loss of amenity (refer also **Section 9**).
"Low"	These trees are not considered to worthy of any special measures to ensure their preservation, due to current health, condition or suitability. They do not have any special ecological, heritage or amenity value, or these values are substantially diminished due to their SULE. These trees should not be considered as a constraint to the future development of the site.
"Very Low"	These trees are considered potentially hazardous or very poor specimens, or may be environmental or noxious weeds. The removal of these trees is therefore recommended regardless of the implications of any proposed development.

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).[5]

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 or 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.

7.5 Legal Protection

7.5.1 Notwithstanding the above recommendations, Council may require a greater setback from certain types of structures to ensure the on-going legal protection of the tree (i.e. its legal status under Council's Tree Management Controls). In the Northern Beaches LGA, a tree located within two (2) metres of the wall of an approved building (*not* including decks, pergolas, sheds, patios or the like, even if they are attached to an approved building) is *not* protected Council's Tree Management Controls (i.e. may be removed without consent). The measurement is taken from the building [wall] to the face of the trunk at ground level. As such, if a tree is considered worthy of preservation, Council is unlikely to approve the construction of a dwelling or other habitable building (Flat building, townhouse, secondary dwelling etc) within two (2) metres of the tree (regardless of whether this can be undertaken without having an adverse impact on its health or longevity). It should be noted that this does not apply to other types of ancillary structures (for example, decks, pergolas, sheds, patios etc).

8 PROPOSED DEVELOPMENT

8.1.1 The proposed development includes the Community Title subdivision of the property to create two new residential allotments together with one common driveway allotment and associated civil works (driveway entry and turning areas), 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. [Rev.]	Date
Landscape Plan (Sheets 1-3)	John Lock & Associates	3008 LP-00 to LP-02 [01]	10.07.2023
Concept Civil Works Site Plan	RISE Consulting Engineers	20144 C010 [B]	07.07.2023
Swept Path Plans	RISE Consulting Engineers	20144 C020 [B]	07.07.2023
Driveway Longitudinal Sections (Sheet1/2)	RISE Consulting Engineers	20144 C030 [B]	07.07.2023
Driveway Longitudinal Sections (Sheet2/2)	RISE Consulting Engineers	20144 C040 [B]	07.07.2023

9.1.2 A summary of the impact of the proposed development on each tree within the site is shown in **Appendix 4**. 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 also necessitate the removal of one (1) tree of low retention value, being T2 (Sasanqua Camellia). This tree is not considered significant or worthy of special measures to ensure its preservation. The removal of this tree to accommodate the proposed development is therefore considered warranted in this instance.

9.1.4 The proposed development will also necessitate the removal of one (1) tree of moderate retention value, being T1 (Weeping Bottlebrush). This tree is not considered significant, but is in good health and condition and makes a fair contribution to the amenity of the site, surrounding properties and the streetscape. In order to compensate for loss of amenity resulting from the removal of this tree to accommodate the proposed development, consideration should be given to replacement planting with a new tree elsewhere within the site with a new tree in accordance with **Section 11**.

9.1.5 The proposed new driveway and associated turning areas are located within the TPZs of Trees T3 (Crepe Myrtle) and T4 (Golden Cane Palm). The encroachment to the TPZs is 23% and 20% respectively, which exceeds acceptable limits under AS 4970:2009. In the case of T4, this tree will tolerate the level of encroachment proposed. In the case of T3, the excavations and compaction for the pavement sub-grade are likely to result in some adverse impact on this tree. Note that both of these trees are exempt from Councils Tree Management Controls. Whilst the trees are proposed to be retained, no special tree protection measures have been specified.

9.1.6 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, tyning, 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 Damage

10.3.1 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.

10.3.2 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.

10.4 Tree Removal

10.4.1 The removal of Trees [**T1 & T2**] 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.

10.4.2 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.

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, an equivalent number of new trees capable of attaining a height of at least ten (10) metres at maturity should be planted within the site.

11.1.2 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:-

Local native species:-

- *Eucalyptus haemastoma* (Scribbly Gum),
- *Angophora costata* (Sydney Red Gum)
- *Corymbia gummifera* (Red Bloodwood)
- *Eucalyptus sieberi* (Silvertop Ash)
- *Eucalyptus capitellata* (Brown Stringybark)
- *Corymbia eximia* (Yellow Bloodwood),
- *Banksia serrata* (Old Man Banksia).

Non-local native species:-

- *Acmena smithii* (Lillypilly)
- *Glochidion ferdinandi* (Cheese Tree)
- *Waterhousea floribunda* (Weeping Lillypilly).
- *Elaeocarpus reticulatus* (Blueberry Ash)
- *Syzygium paniculatum* (Magenta Cherry)
- *Syzygium luehmannii* (Small-leaf Lillypilly)

Suitable exotic (introduced) species:-

- *Nyssa sylvatica* (Tupelo)
- *Lagerstroemia indica* (Crepe Myrtle)
- *Jacaranda mimosifolia* (Jacaranda)

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EARTHSCAPE HORTICULTURAL SERVICES
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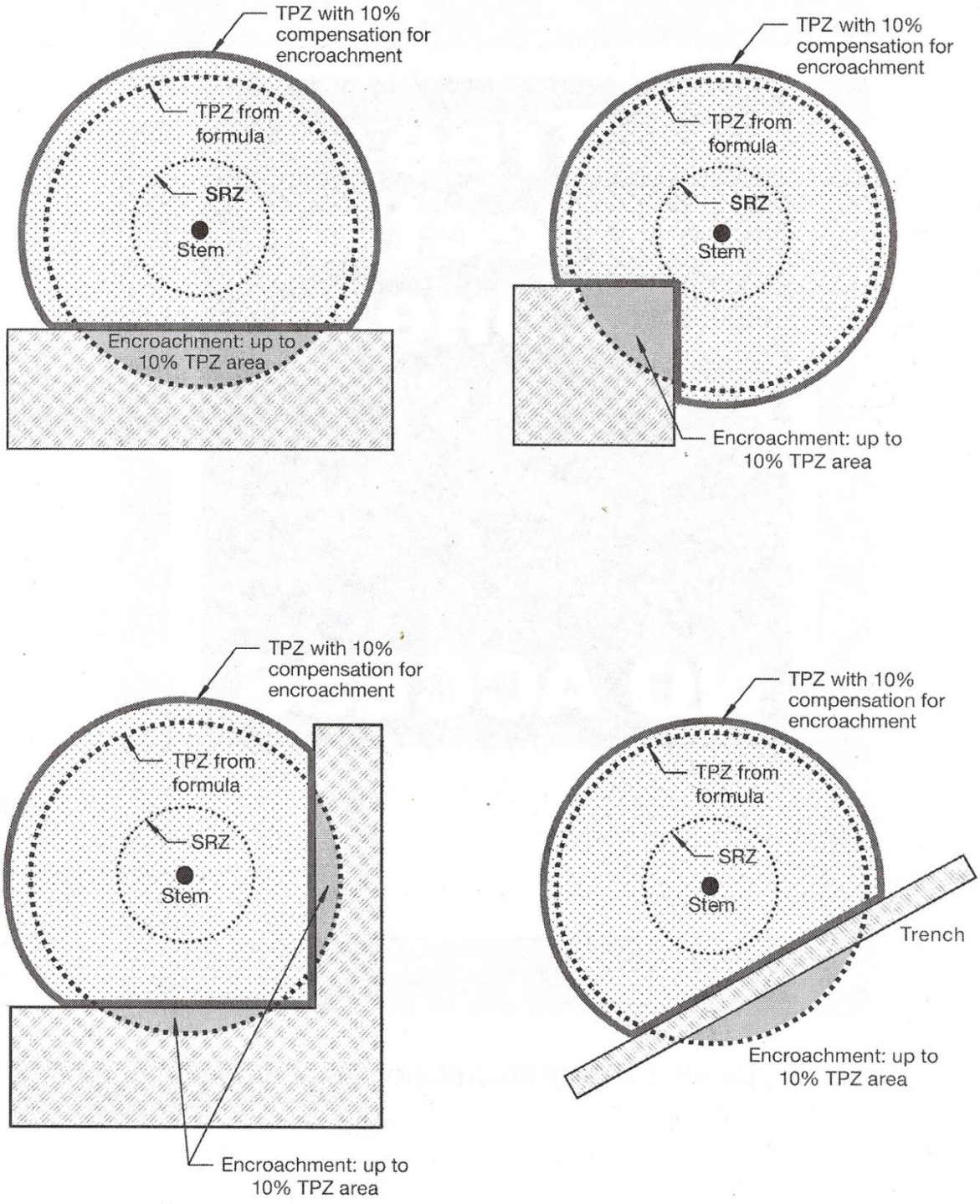
Standards Australia, Sydney

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 or Vulnerable Species as defined under the provisions of the *Biodiversity Conservation Act 2016* (NSW) or the *Environment Protection and Biodiversity Conservation Act 1999*.	The subject tree has a very large live crown size exceeding 300m² 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 200m²; 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 100m²; 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 the local or state planning controls (Development Control Plan etc).	The subject tree has a medium live crown size exceeding 40m²; 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 the local or state planning controls (DCP etc) 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 40m² 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 known heritage value (or any habitat value)	The tree is scheduled as a potential 'Biosecurity Risk' ('Priority Weed' – formerly 'Noxious Weed') within NSW or within the relevant Local Government Area under the provisions of the *Biosecurity Act 2015*	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

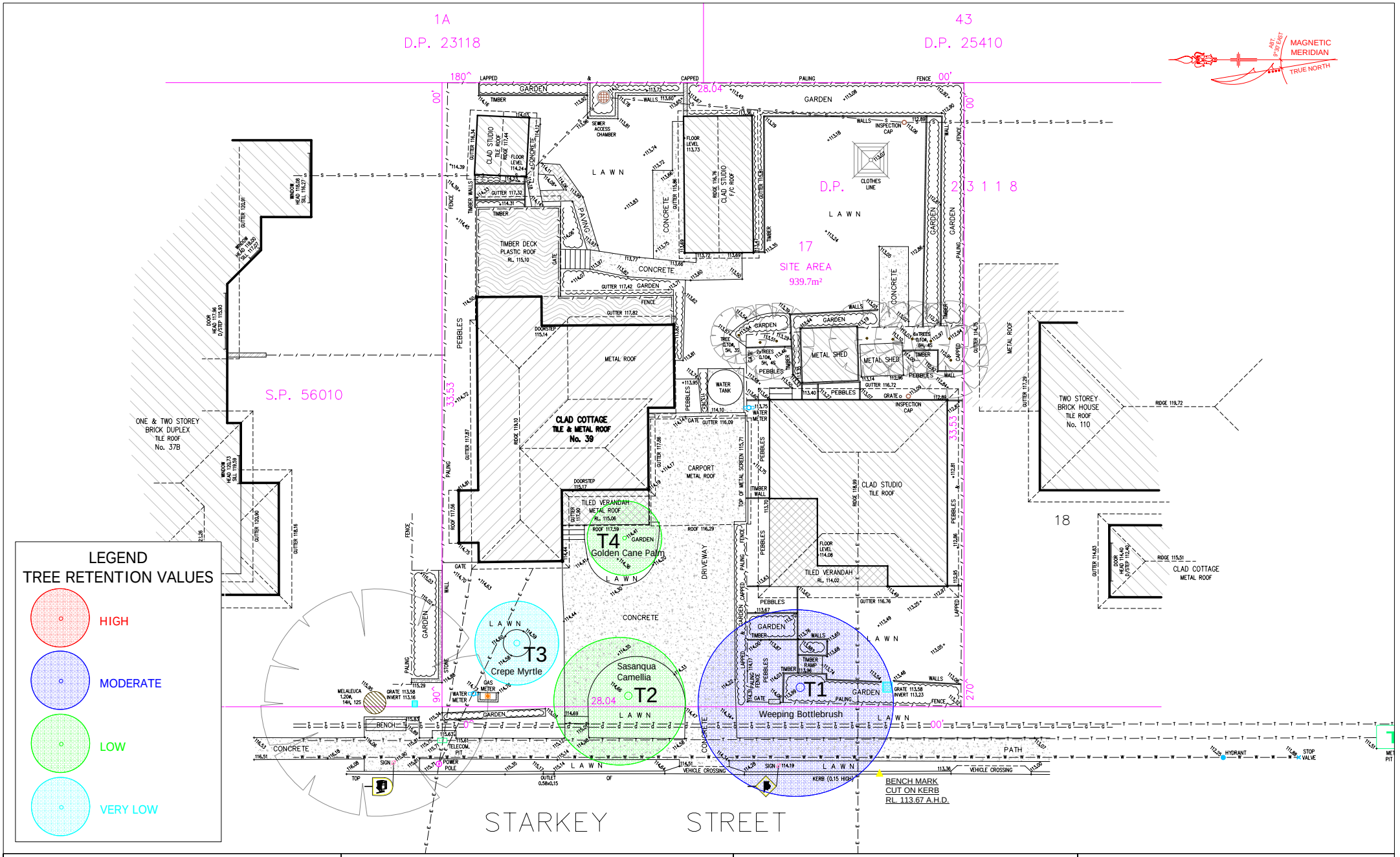
APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	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	***Callistemon viminalis*** (Weeping Bottlebrush)	8	10	433	60	M	Appears stable with sound branching structure. Exhibits mulyiple low bark inclusions at 3.5 metres at junctions of PLs.	Selectively pruned	Fair with slightly thinning crown	No Evidence	Medium 15-40 Years	4	**Moderate**	On-site
2	***Camellia sasanqua*** (Sasanqua Camellia)	5	7	180 + 160x2 + 120x3	35	M	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of co-dominant PLs at GL (x5). Some dieback in upper crown with 10% deadwood. Multiple epicormics in lower crown due previous pruning.	Crown lifted to 3 metres.	Fair with thinning crown	No Evidence	Short 5-15 Years	4	**Low**	On-site
3	***Lagerstroemia indica*** (Crepe Myrtle)	5.5	4.5	120 + 80x5	15.75	M	Appears stable with poor branching structure. Exhibits multiple epicormics arising from old pruning wounds.	Lopped at pollarded at 1.5 metres (crown restored)	Good	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
4	***Dypsis lutescens*** (Golden Cane Palm)	5.5	4	100x2 + 50x2	18	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site

PL = Primary Limb; SL = Secondary Limb;
TL = Tertiary Limb. GL = Ground Level

APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions to Root Zone &/or Canopy	Likely Impact	Recommendation
1	***Callistemon viminalis*** (Weeping Bottlebrush)	M	5.2	2.4	3.5	84.8	Existing timber walls and ramp offset 0.7 metres east and 0.8 metres north to be demolished within TPZ/SRZ. Proposed new driveway/turning head offset 2.2 metres north at RL114.30 (close to existing grade) and 0.2 metres east at ≈RL114.00 (assumed slightly above or following existing grade). Excavation and engineered fill for pavement sub-grade within TPZ/SRZ. Encroachment to TPZ = 54%.	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. Proposed works are likely to result in a significant adverse impact, necessitating removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
2	***Camellia sasanqua*** (Sasanqua Camellia)	M	4.2	2.3	2.9	55.4	Proposed new driveway offset 0.8 metres east at RL114.40 (250mm below grade) and 0.9 metres south at RL114.40-114.60 (assumed close to existing grade). Excavation for pavement sub-grade within TPZ/SRZ. Encroachment to TPZ = 60% (partially within footprint of existing paved area).	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. Proposed works are likely to result in a significant adverse impact, necessitating removal.	Remove tree.
3	***Lagerstroemia indica*** (Crepe Myrtle)	M	3.2	2.1	2.2	33.0	Proposed new driveway offset 1.2 metres south at RL114.40-114.59 (close to existing grade). Excavation for pavement sub-grade within TPZ/SRZ. Encroachment to TPZ = 23%.	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. Proposed works are likely to result in some adverse impact.	To be retained - N.B. exempt from Council's Tree Management Controls.
4	***Dypsis lutescens*** (Golden Cane Palm)	G	2.2	1.7	1.5	14.6	Extention to existing driveway offset 1.2 metres south at RL114.05 (150mm below existing grade). Excavation for pavement sub-grade within TPZ/SRZ. Encroachment to TPZ = 20%.	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. However, this tree will tolerate the extent of encroachment proposed.	To be retained - N.B. exempt from Council's Tree Management Controls.



APPENDIX 5
TREE LOCATION PLAN SHOWING
TREE RETENTION VALUES

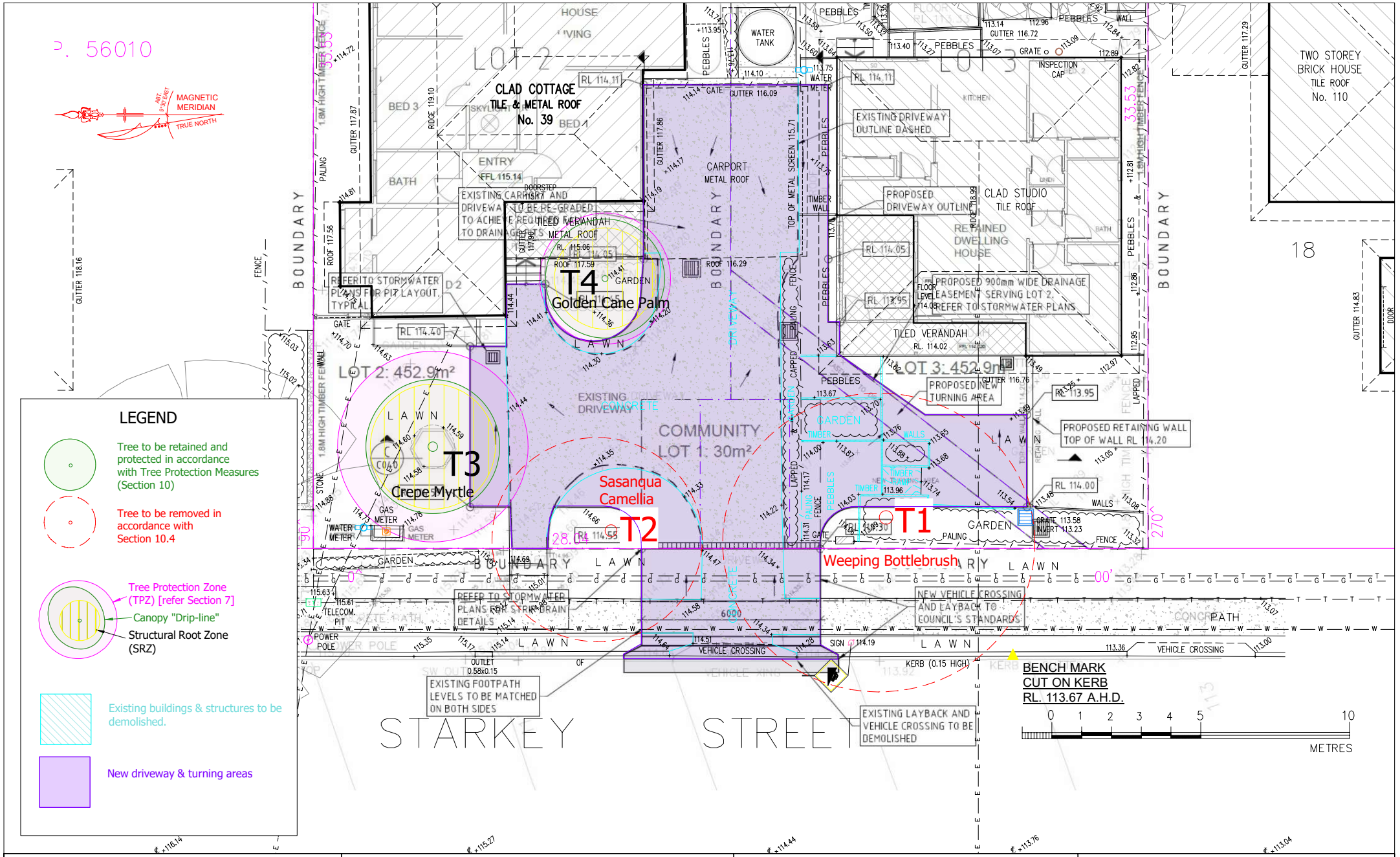
39 Starkey Street, FORESTVILLE, NSW

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 Bee & Lethbridge Pty Ltd
Dwg Ref No. 19539 [00]
Dated 21/02/2023

DWG No. T23-0531/01 [A]

DATE: 31/05/2023



APPENDIX 6
TREE PROTECTION PLAN

39 Starkey Street, FORESTVILLE, NSW

Earthscape Horticultural Services
Arboricultural and Horticultural Consultants
PO Box 364
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Based on the Survey Drawing
prepared by Bee & Lethbridge Pty Ltd
Dwg Ref No. 19539 [00]
Dated 21/02/2023

DWG No. T23-0531/02 [B]

DATE: 10/07/2023