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Arboricultural, Horticultural and Landscape Consultants

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ARBORICULTURAL IMPACT ASSESSMENT REPORT

PROPOSED MULTI-LEVEL CAR PARK

4 FARROW ROAD, CAMPBELLTOWN

May 2022

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1 INTRODUCTION

1.1.1 This report was commissioned by Hill Thalis on behalf of Campbelltown City Council to assess the health and condition of fifty-three (53) trees located within or immediately adjacent to 4 Farrow Road, Campbelltown. The report has been prepared to aid in the assessment of a Development Application (DA) for the construction of a new multi-level commuter car park within the property, together with associated landscape works.

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 In the absence of any specific Council guidelines for the preparation of arborists reports, this report has been prepared in accordance with 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 consists of two (2) large allotments known as Lot 2 in DP 406940 and Lot 245 in DP 1222763, being 4 Farrow Road, Campbelltown. For the purposes of this report, the subject allotments will be referred to as 'the site'. The total area of the site is approximately 2.85 hectares. Lot 2 is zoned Light Industrial [IN2] and Lot 245 is zoned Infrastructure (Car Park) [SP2] under the *Campbelltown Local Environmental Plan 2015* (CLEP).

2.1.2 Lot 2 is presently vacant with no existing improvements upon the land with the exception of perimeter boundary fencing. This lot is covered with exotic pasture grasses, herbaceous and woody weeds with a small copse of native trees in the central south-western portion of the lot and a few isolated trees around the periphery of the lot. The trees within this portion of the site are predominantly locally-indigenous species, with a few exotic (introduced) species. Lot 245 contains an existing on-grade commuter car parking area covering most of the lot with exception of a narrow landscape zone along the north-western boundary and a few small street trees adjacent the south-eastern boundary in Farrow Road. The site adjoins a trapezoidal concrete-lined drainage canal on the north-western boundary. The site is relatively flat with a slight northerly gradient.

2.1.3 Soils of this area are typical of the Blacktown Soil Landscape Group (as classified in the *Soil Landscapes of the Wollongong-Port Hacking 1:100,000 Sheet*), consisting of shallow to moderately deep (< 1500 mm) *Red & Brown Podzolic Soils* on crests, upper slopes and well drained areas. Soils on lower slopes and areas of poor drainage consist of deep (1500-3000 mm) *Yellow Podzolic Soils and Soloth Soils* derived from Wianamatta Group Shales. [1] The landscape generally consists of undulating rises with slopes ranging usually less than 5% grade.

2.1.4 The original vegetation of this area consisted of woodland and open forest typical of the Cumberland Plain.[2] Most of the locally-indigenous vegetation has been cleared from surrounding areas for industrial and residential development. The dominant locally-indigenous tree species occurring in this area include *Eucalyptus moluccana* (Grey Box) and *Eucalyptus tereticornis* (Forest Red Gum). Other species found in this vegetation community may include *Eucalyptus fibrosa ssp. fibrosa* (Broad-leaved Ironbark), *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Eucalyptus globoidea (*White Stringybark) with *Angophora floribunda* (Rough-barked Apple), *Melaleuca linariifolia* (Flax-leaf Paperbark), *Melaleuca decora* (Paperbark) and *Casuarina glauca* (Swamp Oak) occurring in low lying areas or along drainage lines.

3 SUBJECT TREES

3.1.1 The subject trees were inspected by Earthscape Horticultural Services (EHS) on the 17th September 2021. 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 Premise, Dwg. Ref No. 322068-01A-DS01-DS11 [A] dated 01/12/2021. 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

Declared Vegetation and Declared (Prescribed) Trees within the Campbelltown Local Government Area (LGA) are protected under the provisions of Volume 1, Part 11 of the *Campbelltown (Sustainable City) Development Control Plan 2013* (CSCDCP) [as amended 18 August 2021] made pursuant to Part 3, Clause 9 of the *State Environmental Planning Policy (Vegetation in Non-rural Areas) 2017* (Vegetation SEPP). The CSCDCP generally protects all vegetation that:-

- is located with land identified as a Heritage Item or within a Heritage Conservation Area under the CLEP 2015;
- forms part of and Aboriginal object or within an Aboriginal place of heritage significance;
- is listed in Council's Significant Tree Register;
- is required to be retained or planted as a condition of development consent;
- forms part or core or potential Koala habitat areas;
- is scheduled as a threatened or endangered species;
- forms part of an Endangered Ecological Community;
- is occupied by native fauna;
- contains hollows (hollow bearing trees);
- is located on land with a slope gradient of greater than 20%.

The CSCDCP generally protects all trees (other than Declared Vegetation) that have a height of three (3) metres or greater, and/or a canopy spread of four (4) metres or greater; and/or a trunk

circumference of 500mm (160mm in diameter) or greater, measured at ground level. Some exemptions apply. The following trees are exempt (not protected) under the provisions of the CSCDCP [Section 11.3.6 (5)]:-

Tree No.	Species	Exemption
T27	*Celtis sinensis* (Chinese Hackberry)	Noxious Weed, Environmental Weed Species

* Note that these trees are located within the adjoining property.

The remainder of the trees are protected under the CSCDCP.

5.2.2 Wildlife Habitat

Eucalyptus moluccana (Grey Box) [T7, T9, T10, T11, T12, T13, T14, T15, T16, T17, T19, T20, T21, T22, T23 & T24], *Eucalyptus tereticornis* (Forest Red Gum) [T5, T6, T8, T18, T25 & T35] and *Melaleuca decora* (White Feather Honey Myrtle) [T36, T41 & T42] are all locally-indigenous species, representative of the original vegetation of the area and would be of benefit to native wildlife. Trees T8 & T18 (Forest Red Gum) and T15 (Grey Box) contain cavities (hollows) that would be suitable as nesting hollows for arboreal mammals or birds. Several pairs of Red-rumped Parrots were observed frequenting hollows in trees T15 & T18. Roosting pairs of Rainbow Lorikeets were also observed in the canopy of T18. A large bird's nest was also observed in the upper canopy of T15 (approximately 20 metres from Ground Level). There were no other visible signs of wildlife habitation.

The site does *not* contain areas identified as Koala Habitat as indicated on Councils Koala Habitat Planning Map.

5.2.3 Noxious Plants & Environmental Weeds

Celtis sinensis (Chinese Hackberry) [T27] is scheduled as a potential 'Biosecurity Risk' ('Priority Weed' – formerly 'Noxious Weed') within all of NSW under the provisions of the *Biosecurity Act 2015.* The growth of this plant species must be managed in a manner that continuously inhibits the ability of the plant to spread (so far as is reasonably practicable) and the plant must not be sold, propagated or knowingly distributed.

Gleditsia triacanthos (Honey Locust) [T26] is considered to be an Environmental Weed Species in some Local Government Areas (LGAs) within the Sydney Metropolitan Area. This species is protected under Campbelltown City Council's Tree Management Controls.

5.2.4 Threatened Species & Ecological Communities

The National Parks and Wildlife Service (NPWS) 1:25000 Mapping Series (Native Vegetation of the Cumberland Plain)[5] indicates that there are no remnant native vegetation communities in the vicinity of the site. However, the small copse of trees in the central south-western portion of Lot 2 contains species that area characteristic of Shale Plains Woodland. Some of these appear to be remnant trees, but most of are relatively young and are likely to be progeny of the remnant trees.

Shale Plains Woodland (SPW) is a sub-group of Cumberland Plain Woodland. Cumberland Plain Woodland in the Sydney Basin Bioregion is listed as a Critically Endangered Ecological Community (EEC) under the *Biodiversity Conservation Act 2016* (NSW) and a Critically Endangered Ecological Community under the *Environment Protection and Biodiversity Conservation Act 1999*.

Eucalyptus moluccana (Grey Box) [T7, T9, T10, T11, T12, T13, T14, T15, T16, T17, T19, T20, T21, T22, T23 & T24], *Eucalyptus tereticornis* (Forest Red Gum) [T5, T6, T8, T18, T25 & T35] are both Positive Diagnostic Species of both Shale Plains Woodland (SPW).[6]. Trees T5, T8, T15 &

T18 appear to be remnants of the original vegetation community and are therefore considered to be constituents of this EEC.

5.2.5 Biodiversity, Bushfire & Riparian Lands

The site does *not* contain any ecologically significant 'Terrestrial Biodiversity' as indicated on Council's Terrestrial Biodiversity Map forming part of the CLEP 2015.

The site does *not* contain any 'Land Constraints' as indicated on Council's Environmental Constraint Map forming part of the CLEP 2015.

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 all of the vegetation within the adjoining reserve alongside the north-western boundary of the site (including T27-T49 & T53) is subject to the Biodiversity Offset Scheme (BOS).

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 *Campbelltown Local Environmental Plan 2015* (CLEP).

5.3.2 Heritage Conservation Area

The site is *not* located within a Heritage Conservation Area under Schedule 5, Part 2 of the CLEP 2013.

5.3.3 Significant Tree Register

None of the subject trees are listed on Campbelltown City Council's Significant Tree Register.

5.3.4 General

Trees T5, T8, T15 & T18 are visible on the 1969 Aerial Photo of Sydney and are likely to be remnant of the original woodland formerly occupying this area given the size and estimated aged of the trees. At this time, most of the site and surrounding areas had been cleared for some type of pastoral use (with some remaining scattered trees) and some nearby areas developed for industrial use (warehouses), with most of the area east of the railway line developed for residential housing.

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).[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 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 Campbelltown City LGA, a tree located within three (3) metres of a Class 1 to 9 building (as defined under the Building Code of Australia) is exempt (*not* protected) under the CSCDCP. This includes all types of residential dwellings as well as commercial, educational, institutional and industrial buildings, but excludes sheds, swimming

pools, retaining walls, driveways and other ancillary buildings such as gazebos and cabanas. The measurement is taken from the centre trunk of the tree at ground level to the foundation wall of the building. As such, if a tree is considered worthy of preservation, Council is unlikely to approve the construction of a Class 1-9 building within three (3) metres of the tree (regardless of whether this can be undertaken without having an adverse impact on its health or longevity).

8 PROPOSED DEVELOPMENT

8.1.1 The proposed development includes the development of a new multi-level commuter car park within the property, together with associated landscape works. The car park and landscape works will be located in the southern portion of the site (wholly within Lot 245 in DP 1222763) and the adjoining road reserve. The following impact assessment has been limited to the works comprising the multi-level carpark and 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
Overall Landscape Plan	JMD Design	L02 [B]	25/05/2022
Detail Landscape Plan 01	JMD Design	L03 [B]	25/05/2022
Landscape Plan 02 (Detail)	JMD Design	L04 [B]	25/05/2022
Existing EDB Feedback Strategy	O & S Consulting	N/A (Sketch Plan)	19/04/2022
Site Plan	Hill Thalis	DA2.01 [B]	26/05/2022
Ground Floor Plan	Hill Thalis	DA2.10 [C]	26/05/2022
Civil Engineering Drawings	Northrop	212045 C0000 – C8100 [02]	24/05/2022

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 T4 (Water Gum). 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. It should be noted that this tree is located within the adjoining road reserve (Farrow Road).

9.1.4 A further two (2) trees, not adversely affected by the proposed development, have also been recommended for removal. These include Tree No.s T26 (Honey Locust) and T27 (Chinese Hackberry), both being Environmental Weed Species (refer to **Section 5.2.3**) and in poor health and condition.

9.1.5 The proposed development will also necessitate the removal of three (3) trees of moderate retention value. These include Tree No.s T1, T2 & T3 (Water Gum). It should be noted that all of these trees are located within the adjoining road reserve (Farrow Road). 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 streetscape. 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 with new trees elsewhere within the road reserve in accordance with **Section 11**.

9.1.6 The existing car park and adjacent pedestrian pavements within the TPZ of T5 (Forest Red Gum) will largely be maintained intact at existing grades, with a portion of the existing car park pavement and curved section of retaining wall to the south of the tree to be demolished and returned to soft landscape, resulting in a reduction in the present encroachment. This work will not result in any adverse impact on this tree, provided that all such demolition works within the TPZ are carried out in accordance with **Section 10.8**.

9.1.7 A new pedestrian pathway/ramp and associated batter are proposed to be installed within the footprint of the existing car park to the south of T5 (Forest Red Gum). This will necessitate some excavation and placement of engineered fill for the pavement sub-grade within the TPZ. However, as these works are located within the footprint of the existing pavement (to be demolished), the proposed works will not result in any actual incursion to the root zone and therefore this work will not result in any adverse impact on this tree. As a precautionary measure, any required excavation for the new pavement sub-grade within the TPZ should be carried out in accordance with **Section 10.9**.

9.1.8 New power and communications (comms) cables are proposed to be installed within the TPZ of T5 (Forest Red Gum), extending from the existing outdoor Electrical Distribution Board (EDB) located approximately 4 metres to the south-west of the tree, to the proposed new multi-level car park building. This will necessitate some open trenching to a depth of approximately 500mm within the TPZ, wholly within the footprint of the existing asphalt car park. This work will not result in any adverse impact on the subject tree, provided that all open trenching for the power and comms conduits within the TPZ are undertaken using non-destructive excavation methods in accordance with **Section 10.9**

9.1.9 A temporary sediment fence is proposed to be installed within the TPZ of T5 (Forest Red Gum) as part of the Sediment and Erosion Control Plan. The present section detail (refer Northrop Dwg. C1100 [02]) indicates the lower section of the geotextile to be embedded in the ground by trenching and backfilling. Trenching within the TPZ at the proximity proposed may result in severance of woody roots of this tree, leading to an adverse impact. In order to avoid any adverse impact on T5, the lower section of the geoxtextile should be placed on top of the existing ground surface and covered with fill not exceeding 300mm deep (or similar alternative method to avoid trenching within the TPZ) to hold the geotextile in place.

9.1.10 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, T2 & T4**] 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.

10.5 Tree Protection Fencing

10.5.1 Trees [**T5**] shall be protected prior to and during construction from all activities that may result in detrimental impact by erecting a suitable protective fence in the positions as indicated on the Tree Protection Plan (**Appendix 6**). As a minimum, the fence shall 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.

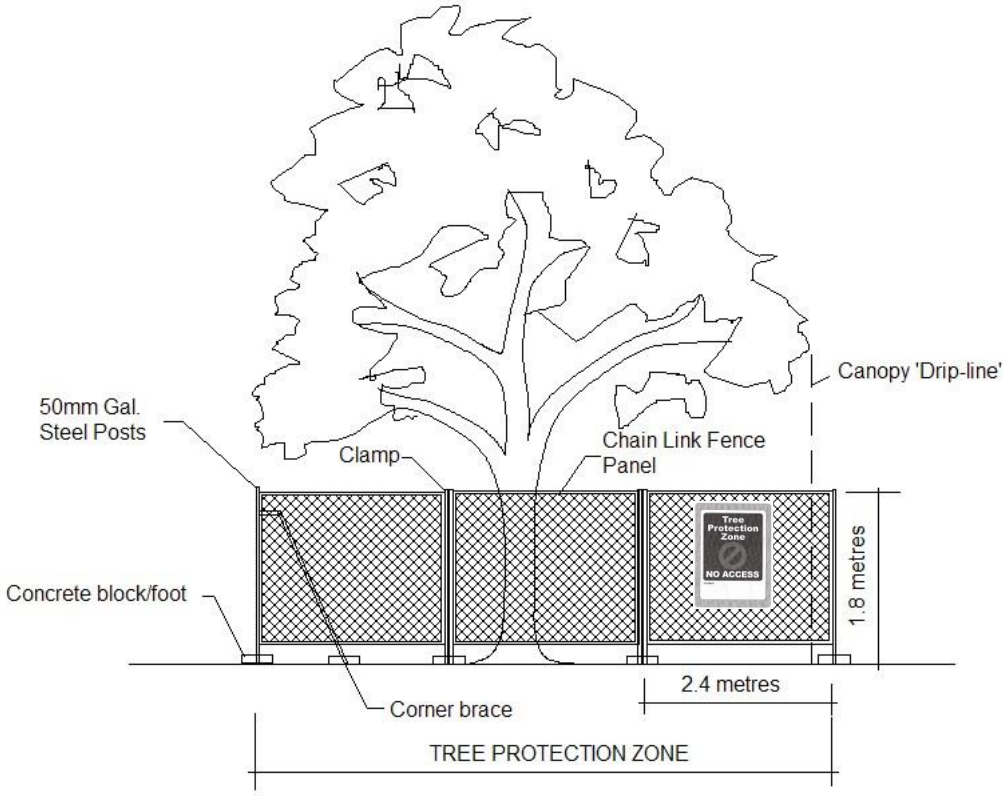

Figure 1 – Detail of Tree Protection Fence

10.6 Tree Protection Signs

10.6.1 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**

10.7 Ground Protection

10.7.1 Construction haul routes shall be confined to existing paved areas wherever possible. Where this is not feasible and construction haul routes or access for plant and equipment must traverse soft landscape areas within TPZs of [**any tree nominated for retention**], 20mm thick marine ply sheets or truck mats (such as Envirex Versadeck® access mats) (refer **Figure 4** shall be placed over the top of the ground surface to minimise compaction and disturbance of the underlying soil profile and root zone.

Figure 4 – Showing typical detail for truck mats.

10.7.2 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.

10.8 Demolition Works within Tree Protection Zones

10.8.1 Existing Turfgrass

No mechanical soil cultivation (using ripping tynes, rotary hoes or the like) is permitted within Tree Protection Zones (TPZs). Where existing turfgrass is proposed to be removed (demolished) within the TPZs of Trees [**any tree nominated for retention**], the turfgrass shall be first treated with a non-selective herbicide with the active constituent Glyphosate (Round-up ® or equivalent) at the manufacturers recommended rate and allowed to dehisce. Once the turfgrass in the effected area is completely dead, any high grass may be slashed/mown close to ground level.

Any residual vegetation (dead grass etc) may then be carefully scraped-off the surface using a small rubber tracked excavator with a broad sand bucket (i.e. without tynes/teeth), taking care to remove the minimum topsoil necessary (no more than 20mm deep) (refer to **Figure 5**). An observer shall be used to ensure that no woody surface roots of any trees are damaged during this process.

Figure 5 – Showing method for removal of residual surface vegetation from Tree Protection Zones following herbicide treatment and slashing.

10.8.2 Paved Areas

Demolition of paved areas within the Tree Protection Zones (TPZs) of trees [**T5**] shall be undertaken under the supervision of a qualified Arborist [Australian Qualification Framework (AQF) Level 5].

Concrete pavements shall be demolished by breaking the slab into manageable sections (using a rock hammer or similar) and asphalt pavements shall be removed by breaking the topcoat into manageable pieces. The broken sections shall be carefully lifted and folded over the remaining paved surface to minimise disturbance and compaction of the underlying soil profile (refer to **Figure 6**). Special care shall be taken where underlying woody roots have lifted or displaced the pavement. Any plant or equipment used in demolition work shall operate within the footprint of existing paved areas and avoid traversing soft landscape areas. Where this is unavoidable, suitable ground protection shall first be installed in accordance with **Section 10.7**.

Figure 6 – Showing method for removal of concrete pavement, by carefully lifting sections and folding over the remaining paved surface.

The pavement sub-base within the TPZ shall be gradually removed (where required) in layers of no greater than 50mm thick using a small rubber tracked excavator or alternative approved method to avoid excessive disturbance and compaction of the underlying soil profile and damage to underlying roots and minimise. The machine shall work within the footprint of the existing path footprint 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 avoid damage to any underlying woody roots.

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 and supplied and spread in accordance with **Section 10.9**. Any imported soil material should be similar in texture to the existing site topsoil.

10.8.3 Structures & Retaining Walls

Demolition of existing walls, kerbs and other structures within the TPZ of trees [**T5**] shall be undertaken under the supervision of a qualified Arborist [AQF level 5]. 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. An observer ('spotter') shall be employed to assist the plant operator in order to detect and avoid damage to underlying woody roots during demolition. Trunk and/or branch protection shall be installed where there is a potential risk of damage to trees in proximity or overhead of the work.

10.9 Excavations within Tree Protection Zones

10.9.1 Prior to any mechanical excavations for building foundations or pavement sub-grade within the TPZs of Trees [**T5**] 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 (hydro-excavation in combination with a vacuum extraction unit). 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.

10.9.2 All care shall be undertaken to preserve woody roots intact and undamaged during exploratory excavation. Any roots encountered of less than 40mm 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. Where large woody roots (greater than 40mm diameter) are encountered during exploratory excavations, further advice from a qualified arborist shall be sought prior to severance.

10.10 Alternative Construction Methods

10.10.1 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.

10.10.2 For masonry walls or fences it may be acceptable to delete continuous concrete strip footings and replace with suspended in-fill panels (e.g. steel or timber pickets, lattice etc) fixed to pillars. For retaining walls, consideration should be given to eliminating continuous strip footings and substituting with pier and beam footings, pier footings (using a post and caisson type wall) or mass wall such as gabions or mass stone that can be placed without a structural footing.

10.10.3 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.

10.11 Underground Services

10.11.1 Trenching for underground services and stormwater pipes within the TPZs of Trees [**T5**], shall be undertaken using non-destructive excavation in accordance with **Section 10.9**. Where large woody roots are encountered during excavation or trenching (root diameter greater than 40mm), 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.

10.11.2 Installation of underground services and stormwater pipes within the SRZs of Trees [**any tree nominated for retention**], shall only be undertaken by Horizontal Directional Drilling (HDD) (also referred to as sub-surface boring or Micro-tunnelling for large diameter pipes). 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.

10.12 Root Pruning

10.12.1 Where root pruning of [**any tree nominated for retention**] is required to facilitate construction, 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.

10.12.2 Any required root pruning shall be carried out in accordance with Australian Standard 4373-2007 – *Pruning of Amenity Trees* 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 roots of greater than 40mm in diameter should be removed or pruned without further advice from a Consulting Arborist [Australian Qualification Framework Level 5].

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 twelve (12) metres at maturity should be planted within the site and/or adjoining road reserve (as applicable).

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:-

- *Eucalyptus moluccana* (Grey Box);
- *Eucalyptus tereticornis* (Forest Red Gum);
- *Eucalyptus fibrosa ssp. fibrosa* (Broad-leaved Ironbark),
- *Eucalyptus crebra* (Narrow-leaved Ironbark) and
- *Eucalyptus globoidea (*White Stringybark) with
- *Angophora floribunda* (Rough-barked Apple),
- *Corymbia maculata* (Spotted Gum)
- *Melaleuca linariifolia* (Flax-leaf Paperbark),
- *Melaleuca decora* (Paperbark)
- *Melaleuca styphelioides* (Prickly Paperbark)

Andrew Morton
EARTHSCAPE HORTICULTURAL SERVICES
27th May 2022

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[6] Tozer, Mark (2003)
The Native Vegetation of the Cumberland Plain, Western Sydney: Systematic Classification and Field Identification of Communities
Cunninghamia 8 (1) 2003, (Journal of Plant Ecology for Eastern Australia)
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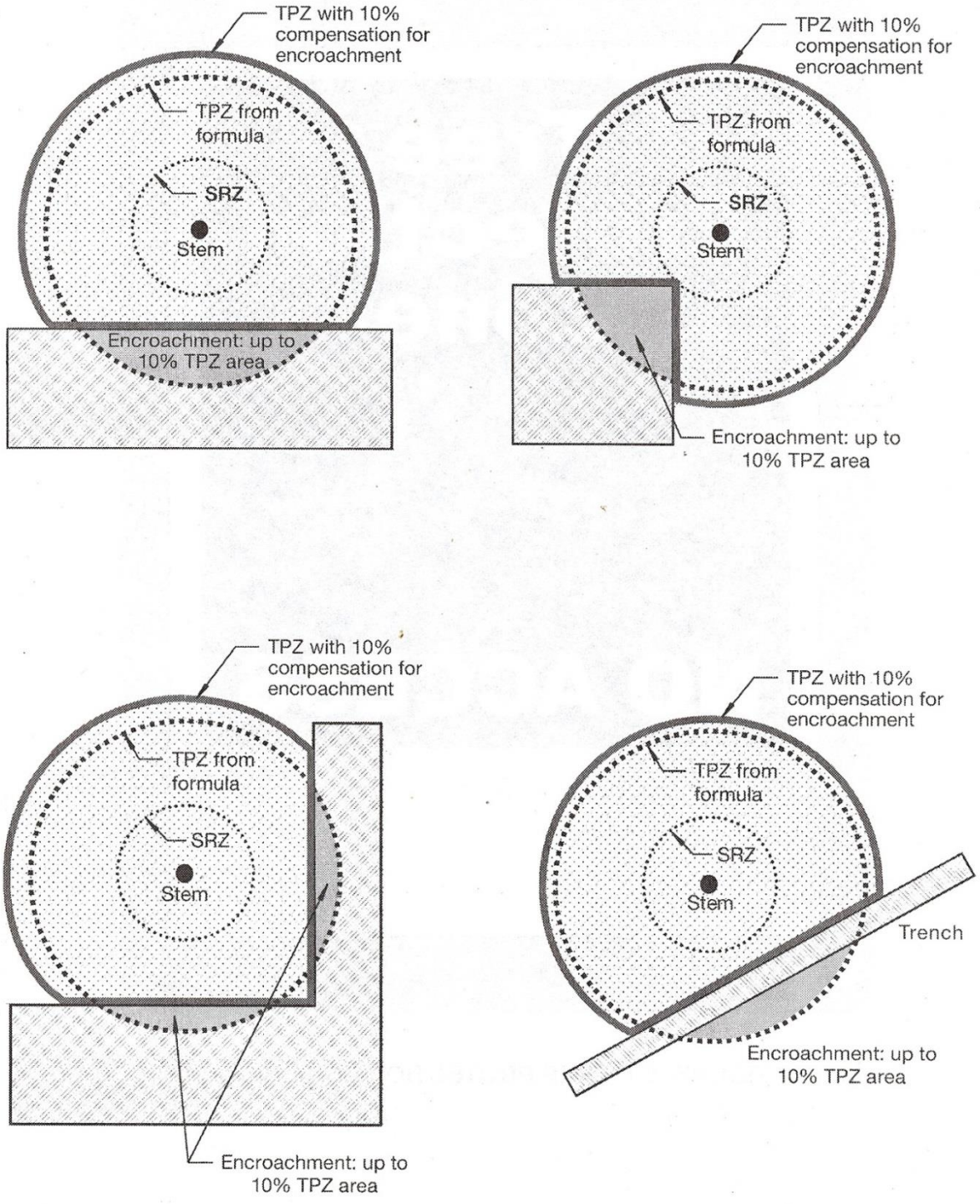
AS 4970 – 2009 – Protection of Trees on Development Sites
Standards Australia, Sydney

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	***Tristaniopsis laurina*** (Water Gum)	4	4	100x3 + 120	12	I	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of co-dominant PLs at 0.8 metres.	No evidence	Very Good	No Evidence	Long - more than 40 years	5	**Moderate**	Nature strip
2	***Tristaniopsis laurina*** (Water Gum)	4	3	130	9	I	Appears stable with sound branching structure.	Selectively pruned. Crown lifted to 2 metres.	Very Good	No Evidence	Long - more than 40 years	5	**Moderate**	Nature strip
3	***Tristaniopsis laurina*** (Water Gum)	4	3.5	70x5 + 100	7	I	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of co-dominant PLs at GL and SLs at 0.7 metres.	Crown lifted to 2 metres.	Good	No Evidence	Long - more than 40 years	5	**Moderate**	Nature strip
4	***Tristaniopsis laurina*** (Water Gum)	3.5	3.5	80 + 100	5.25	I	Appears stable with fair branching structure. Exhibits some dieback with 10% deadwood and 20% epicormic growth.	Crown lifted to 2 metres.	Fair with slightly thinning crown	No Evidence	Medium 15-40 Years	5	**Low**	Nature strip
5	***Eucalyptus tereticornis*** (Forest Red Gum)	17	17	700 + 550	255	M	Appears stable with sound branching structure. Some dieback in lower crown north-west side due previous fire injury with 10% deadwood.	No evidence	Good	Low foliar insect infestation. Moderate borer infestation	Long - more than 40 years	2	**High**	On-site
6	***Eucalyptus tereticornis*** (Forest Red Gum)	11	7	283	63	SM	Appears stable with fair branching structure. Exhibits two x basal sprouts with moderate included bark at junction with main trunk.	No evidence	Very Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
7	***Eucalyptus moluccana*** (Grey Box)	13	8	240 + 260	88	SM	Appears stable with poor branching structure. Exhibits a high bark inclusion at GL at junction of co-dominant leaders.	No evidence	Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
8	***Eucalyptus tereticornis*** (Forest Red Gum)	23	13	892	208	OM	Appears stable with poor branching structure. Exhibits a prominent lean to the north-east. Crown suppressed on the west side due to crowding. Exhibits a large wound on lower trunk from GL to 4 metres due to previous fire injury affecting 50% of the trunk circumference. Substantial deadwood with multiple large dead SLs. Moderate cavity in SL at 10 metres.	No evidence	Poor with sparse crown	Moderate borer infestation. Termite infestation	Transient (less than 5 years)	2	**Low**	On-site

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

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				
9	***Eucalyptus moluccana*** (Grey Box)	9	6	236	42	I	Appears stable with sound branching structure. Prominent lean to the north-east. Crown suppressed on south-west due to crowding.	No evidence	Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
10	***Eucalyptus moluccana*** (Grey Box)	11	5.5	261	49.5	I	Appears stable with sound branching structure. Exhibits interior crown dieback with 10% deadwood.	No evidence	Good	Moderate foliar insect infestation.	Long - more than 40 years	4	**Moderate**	On-site
11	***Eucalyptus moluccana*** (Grey Box)	10	5	197	35	I	Appears stable with sound branching structure.	No evidence	Good	Moderate foliar insect infestation.	Long - more than 40 years	5	**Moderate**	On-site
12	***Eucalyptus moluccana*** (Grey Box)	10	5	226	35	I	Appears stable with sound branching structure.	No evidence	Good	Moderate foliar insect infestation.	Long - more than 40 years	5	**Moderate**	On-site
13	***Eucalyptus moluccana*** (Grey Box)	10	6	242	42	I	Appears stable with poor branching structure. Exhibits a very prominent lean to the south-east. Crown suppressed on the north-west side due to crowding. Large basal wound due to mechanical injury.	No evidence	Good	Moderate foliar insect infestation.	Short 5-15 Years	4	**Low**	On-site
14	***Eucalyptus moluccana*** (Grey Box)	13	6	239	48	I	Appears stable with sound branching structure.	No evidence	Good	Moderate foliar insect infestation.	Long - more than 40 years	4	**Moderate**	On-site
15	***Eucalyptus moluccana*** (Grey Box)	24	15	936	225	M	Appears stable with fair branching structure. Exhibits dieback in main leader with large axial wound from 8 to 18 metres due suspected previous lightning strike. Prominent lean to the north-east. Crown suppressed on the west side due to crown dieback. Multiple extended lateral PLs. Exhibits a small basal wound due previous fire injury.	No evidence	.Fair	No Evidence	Medium 15-40 Years	2	**High**	On-site
16	***Eucalyptus moluccana*** (Grey Box)	8	5	178	20	I	Appears stable with sound branching structure. Exhibits multiple partly occluded axial wounds from GL to 0.8 metres due mechanical injury. Crown suppressed on north side due to crowding.	No evidence	Good	Moderate foliar insect infestation.	Medium 15-40 Years	5	**Low**	On-site

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

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				
17	***Eucalyptus moluccana*** (Grey Box)	13	6	229	48	I	Appears stable with sound branching structure. Exhibits a small basal wound due mechanical injury.	No evidence	Good	Moderate foliar insect infestation.	Long - more than 40 years	4	**Moderate**	On-site
18	***Eucalyptus tereticornis*** (Forest Red Gum)	22	14	857	196	M	Appears stable with fair branching structure. Exhibits a moderate cavity in trunk at PL branch collar at 6 to 7 metres. 15% interior crown deadwood.	No evidence	Fair with slightly thinning crown	No Evidence	Medium 15-40 Years	2	**High**	On-site
19	***Eucalyptus moluccana*** (Grey Box)	14	7	268	77	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
20	***Eucalyptus moluccana*** (Grey Box)	15	6	261	60	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
21	***Eucalyptus moluccana*** (Grey Box)	13	7	274	77	SM	Appears stable with sound branching structure.	No evidence	Good	Moderate foliar insect infestation.	Long - more than 40 years	4	**Moderate**	On-site
22	***Eucalyptus moluccana*** (Grey Box)	13	5.5	287	44	SM	Appears stable with sound branching structure. Exhibits some dieback in lower crown with 10% deadwood.	No evidence	Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
23	***Eucalyptus moluccana*** (Grey Box)	14	8	385	72	SM	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of PLs at 2.5 and 3.5 metres.	No evidence	Very Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
24	***Eucalyptus moluccana*** (Grey Box)	9	7	252	42	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
25	***Eucalyptus tereticornis*** (Forest Red Gum)	9	8	240 + 220x2 + 290	56	SM	Appears stable with fair branching structure. Multi-trunked at GL - possibly epicormic regrowth arising from old stump (previously cut to GL). Multiple bark inclusions at junctions of co-dominant leaders.	Suspected previously cut to GL (crown restored)	Very Good	No Evidence	Medium 15-40 Years	4	**Moderate**	On-site
26	***Gleditsia triacanthos*** (Honey Locust)	9	9	200x2 + 220 + 140	63	SM	Appears stable with poor branching structure. Exhibits multiple basal wounds due suspected previous fire injury. possibly epicormic regrowth arising from old stump (previously cut to GL).	Suspected previously cut to GL (crown restored)	.Fair	No Evidence	Medium 15-40 Years	6	**Low**	On-site

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				
27	***Celtis sinensis*** (Chinese Hackberry)	3.5	7	200	17.5	SM	Appears stable with poor branching structure. Exhibits multiple moderate wounds broken branch stubs, main leader and PLs) due to branch loss (mechanical injury). Located on edge of canal.	No evidence	.Fair	No Evidence	Short 5-15 Years	7	**Very Low**	Adjoining Drainage Reserve
28	***Elaeocarpus reticulatus*** (Blueberry Ash)	4	2.5	100	10	I	Appears stable with sound branching structure. Exhibits substantial dieback with 80% deadwood and 20% epicormic growth due suspected poisoning (herbicide).	No evidence	Poor with sparse crown	No Evidence	Transient (less than 5 years)	5	**Very Low**	Adjoining Drainage Reserve
29	***Elaeocarpus reticulatus*** (Blueberry Ash)	4	2.5	100	10	I	Appears stable with sound branching structure. Exhibits substantial dieback with 80% deadwood and 20% epicormic growth due suspected poisoning (herbicide).	No evidence	Poor with sparse crown	No Evidence	Transient (less than 5 years)	5	**Very Low**	Adjoining Drainage Reserve
30	***Elaeocarpus reticulatus*** (Blueberry Ash)	4	2.5	100	10	I	Appears stable with sound branching structure. Exhibits substantial dieback with 80% deadwood and 20% epicormic growth due suspected poisoning (herbicide).	No evidence	Poor with sparse crown	No Evidence	Transient (less than 5 years)	5	**Very Low**	Adjoining Drainage Reserve
31	***Elaeocarpus reticulatus*** (Blueberry Ash)	4	2.5	100	10	I	Appears stable with sound branching structure. Exhibits substantial dieback with 80% deadwood and 20% epicormic growth due suspected poisoning (herbicide).	No evidence	Poor with sparse crown	No Evidence	Transient (less than 5 years)	5	**Very Low**	Adjoining Drainage Reserve
32	***Elaeocarpus reticulatus*** (Blueberry Ash)	4	2.5	100	10	I	Appears stable with sound branching structure. Exhibits substantial dieback with 80% deadwood and 20% epicormic growth due suspected poisoning (herbicide).	No evidence	Poor with sparse crown	No Evidence	Transient (less than 5 years)	5	**Very Low**	Adjoining Drainage Reserve
33	***Elaeocarpus reticulatus*** (Blueberry Ash)	4	2.5	100	10	I	Appears stable with sound branching structure. Exhibits substantial dieback with 80% deadwood and 20% epicormic growth due suspected poisoning (herbicide).	No evidence	Poor with sparse crown	No Evidence	Transient (less than 5 years)	5	**Very Low**	Adjoining Drainage Reserve
34	***Elaeocarpus reticulatus*** (Blueberry Ash)	4	2.5	100	10	I	Appears stable with sound branching structure. Exhibits substantial dieback with 80% deadwood and 20% epicormic growth due suspected poisoning (herbicide).	No evidence	Poor with sparse crown	No Evidence	Transient (less than 5 years)	5	**Very Low**	Adjoining Drainage Reserve

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				
35	***Eucalyptus tereticornis*** (Forest Red Gum)	8	4	180	28	I	Appears stable with sound branching structure. Located between palisade fence and canal wall.	No evidence	Good	No Evidence	Transient (less than 5 years)	4	**Very Low**	Adjoining Drainage Reserve
36	***Melaleuca decora*** (White Feather Honey Myrtle)	4	4	240	16	SM	Appears stable with fair branching structure. Exhibits multiple low bark inclusions at junctions of PLs	No evidence	Good	No Evidence	Medium 15-40 Years	5	**Low**	Adjoining Drainage Reserve
37	***Melaleuca bracteata*** (Black Tea-tree)	5	5	70x5	20	SM	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of PLs at GL.	Crown lifted to 1.5 metres	Good	No Evidence	Medium 15-40 Years	5	**Low**	Adjoining Drainage Reserve
38	***Melaleuca bracteata*** (Black Tea-tree)	5	4	70x5	16	SM	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of PLs at GL.	Crown lifted to 1.5 metres	Good	No Evidence	Medium 15-40 Years	5	**Low**	Adjoining Drainage Reserve
39	***Melaleuca bracteata*** (Black Tea-tree)	5	5	70x5	20	SM	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of PLs at GL.	Crown lifted to 1.5 metres	Good	No Evidence	Medium 15-40 Years	5	**Low**	Adjoining Drainage Reserve
40	***Melaleuca bracteata*** (Black Tea-tree)	4	4	70x5	12	SM	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of PLs at GL. 15% deadwood and 15% epicormic growth.	Crown lifted to 1.5 metres	Fair with thinning crown	No Evidence	Short 5-15 Years	5	**Low**	Adjoining Drainage Reserve
41	***Melaleuca decora*** (White Feather Honey Myrtle)	5	4	140 + 160	16	SM	Appears stable with fair branching structure. Exhibits substantial dieback with 50% deadwood.	Crown lifted to 1.5 metres	Poor with sparse crown	No Evidence	Transient (less than 5 years)	5	**Very Low**	Adjoining Drainage Reserve
42	***Melaleuca decora*** (White Feather Honey Myrtle)	5.5	5	160x3	22.5	SM	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of PLs.	Crown lifted to 1.5 metres	.Fair	No Evidence	Medium 15-40 Years	5	**Low**	Adjoining Drainage Reserve

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				
43	***Melaleuca bracteata*** (Black Tea-tree)	5	4	70x5	20	I	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of PLs. Crown suppressed NE & SW due crowding.	No evidence	.Fair	No Evidence	Transient (less than 5 years)	5	Very Low	Adjoining Drainage Reserve
44	***Melaleuca liniariifolia*** (Narrow-leaved Paperbark)	5.5	5	120x6	27.5	SM	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of PLs.	No evidence	.Fair	No Evidence	Short 5-15 Years	5	Low	Adjoining Drainage Reserve
45	***Melaleuca liniariifolia*** (Narrow-leaved Paperbark)	4	3	70x2	12	I	Appears stable with poor branching structure. Exhibits multiple moderate bark inclusions at junctions of PLs. Upper crown suppressed due overshadowing with poor form and habit.	No evidence	Fair with thinning crown	No Evidence	Transient (less than 5 years)	5	Very Low	Adjoining Drainage Reserve
46	***Melaleuca liniariifolia*** (Narrow-leaved Paperbark)	4	5	100x6	20	SM	Appears stable with fair branching structure. Exhibits multiple moderate bark inclusions at junctions of PLs.	No evidence	.Fair	No Evidence	Short 5-15 Years	5	Low	Adjoining Drainage Reserve
47	***Elaeocarpus reticulatus*** (Blueberry Ash)	4	3.5	100	14	I	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	5	Low	Adjoining Drainage Reserve
48	***Elaeocarpus reticulatus*** (Blueberry Ash)	4	2.5	70	10	I	Appears stable with sound branching structure.	No evidence	.Fair	Slightly chlorotic foliage	Medium 15-40 Years	5	Low	Adjoining Drainage Reserve
49	***Elaeocarpus reticulatus*** (Blueberry Ash)	5	4	100	20	I	Appears stable with sound branching structure.	No evidence	.Fair	Slightly chlorotic foliage	Medium 15-40 Years	5	Low	Adjoining Drainage Reserve
50	***Elaeocarpus reticulatus*** (Blueberry Ash)	3.5	3	60	10.5	I	Appears stable with sound branching structure.	No evidence	.Fair	Slightly chlorotic foliage	Medium 15-40 Years	5	Low	On-site
51	***Elaeocarpus reticulatus*** (Blueberry Ash)	5	3	90	15	I	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	5	Low	On-site

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				
52	***Elaeocarpus reticulatus*** (Blueberry Ash)	5	4	100x2	20	I	Appears stable with fair branching structure. Exhibits multiple small wounds due previous pruning.	Selectively pruned to clear adjacent powerpole	Good	No Evidence	Medium 15-40 Years	5	**Low**	On-site
53	***Melia azedarach*** (White Cedar)	7	6	140x3	36	I	Appears stable with poor branching structure. Exhibits multiple high bark inclusions at junctions of PLs. Growing between palisade fence and canal wall. Severe bark inclusion at 0.6 metres.	No evidence	Good	No Evidence	Transient (less than 5 years)	6	**Very Low**	Adjoining Drainage Reserve

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	***Tristaniopsis laurina*** (Water Gum)	M	2.5	1.7	1.7	19.6	Existing retaining wall and asphalt car park offset 1.2 metres north-west to be demolished within TPZ/SRZ. Non-engineered fill to be placed to RL 62.10 (600-700mm above grade) level with nature strip (within footprint of existing wall and car park) to create level lawn terrace.	Proposed to be removed to accommodate new landscape works.	Undertaken replacement planting elsewhere within the road reserve to compensate for loss of amenity in accordance with Section 11.
2	***Tristaniopsis laurina*** (Water Gum)	M	2.0	1.6	1.6	12.6	Located within footprint of proposed new concrete footpath.	Proposed works will necessitate removal.	Undertaken replacement planting elsewhere within the road reserve to compensate for loss of amenity in accordance with Section 11.
3	***Tristaniopsis laurina*** (Water Gum)	M	2.6	1.8	1.8	21.9	Located within footprint of proposed new concrete footpath.	Proposed works will necessitate removal.	Undertaken replacement planting elsewhere within the road reserve to compensate for loss of amenity in accordance with Section 11.
4	***Tristaniopsis laurina*** (Water Gum)	M	2.2	1.7	1.7	15.2	Located within footprint of proposed new concrete footpath.	Proposed works will necessitate removal.	Remove tree.

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
5	***Eucalyptus tereticornis*** (Forest Red Gum)	P	14.4	3.8	9.8	651.1	Existing on-grade asphalt car park and kerb offset 3.3 metres south-west and existing concrete pathway offset 6.3 metres to the east to be retained intact at existing grades. Portion of car park offset 3 metres south-east to be demolished and returned to soft landscape area. Existing curved retaining wall offset 9.8 metres south-east to be demolished within TPZ. Proposed new concrete footpath (& associated batter) offset 6.7 metres south at RL61.31 (close to existing grade) to RL61.50 (200-300mm above grade). Excavations and placement of compacted fill for pavement sub-grade within TPZ (within footprint of existing pavement to be demolished). Encroachment to TPZ is less than the present situation. Proposed power and comms conduits extending from existing Outdoor Distribution Board (offset 3.9 metres south) toward new multi-level car park. Open trenching for conduits within TPZ (to 500mm deep), within existing asphalt pavement.	No adverse impact from pavement works, provided that all proposed works within the TPZ are undertaken as recommended. No adverse impact from installation of new underground cables, provided that all open trenching within TPZ is undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavements and structures within TPZ (where required) in accordance with Section 10.8. Undertake all open trenching for power and comms conduits within TPZ in accordance with Section 10.11. Undertake all excavations for pavement sub-grade within TPZ (where required) in accordance with Section 10.9.
6	***Eucalyptus tereticornis*** (Forest Red Gum)	P	4.0	2.2	2.7	50.2	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
7	***Eucalyptus moluccana*** (Grey Box)	P	4.2	2.3	2.9	55.4	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.

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
8	***Eucalyptus tereticornis*** (Forest Red Gum)	P	10.7	3.3	7.3	359.5	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
9	***Eucalyptus moluccana*** (Grey Box)	P	4.0	1.9	2.7	50.2	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
10	***Eucalyptus moluccana*** (Grey Box)	P	4.0	1.9	2.7	50.2	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
11	***Eucalyptus moluccana*** (Grey Box)	P	3.5	1.8	2.4	38.5	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
12	***Eucalyptus moluccana*** (Grey Box)	P	3.5	1.8	2.4	38.5	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
13	***Eucalyptus moluccana*** (Grey Box)	P	4.0	1.9	2.7	50.2	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
14	***Eucalyptus moluccana*** (Grey Box)	P	3.5	1.9	2.4	38.5	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.

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
15	***Eucalyptus moluccana*** (Grey Box)	P	11.2	3.4	7.6	396.4	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
16	***Eucalyptus moluccana*** (Grey Box)	P	3.0	1.7	2.0	28.3	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
17	***Eucalyptus moluccana*** (Grey Box)	P	3.5	1.9	2.4	38.5	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
18	***Eucalyptus tereticornis*** (Forest Red Gum)	P	10.3	3.2	7.0	331.8	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
19	***Eucalyptus moluccana*** (Grey Box)	P	4.0	2.0	2.7	50.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
20	***Eucalyptus moluccana*** (Grey Box)	P	3.5	1.9	2.4	38.5	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
21	***Eucalyptus moluccana*** (Grey Box)	P	4.5	2.0	3.1	63.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
22	***Eucalyptus moluccana*** (Grey Box)	P	3.4	2.1	2.3	37.1	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
23	***Eucalyptus moluccana*** (Grey Box)	P	5.5	2.3	3.7	95.0	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.

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
24	***Eucalyptus moluccana*** (Grey Box)	P	3.8	2.0	2.6	44.7	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required - subject to review of future car park design & detail.
25	***Eucalyptus tereticornis*** (Forest Red Gum)	P	4.8	2.4	3.3	72.3	No proposed works within TPZ as part of this DA. Located within footprint of future on-grade carpark.	Subject to review of future car park design & detail.	To be retained - no special tree protection measures required - subject to review of future car park design & detail.
26	***Gleditsia triacanthos*** (Honey Locust)	M	5.0	2.3	3.4	78.5	No proposed works within TPZ.	No adverse impact.	Remove tree - poor specimen.
27	***Celtis sinensis*** (Chinese Hackberry)	M	2.4	2.1	2.1	18.1	No proposed works within TPZ as part of this DA. Future on-grade car park within TPZ	Subject to review of future car park design & detail.	Remove tree - poor specimen, Environmental Weed Species.
28	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.0	1.4	1.4	12.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
29	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.0	1.4	1.4	12.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
30	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.0	1.4	1.4	12.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
31	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.0	1.4	1.4	12.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.

APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

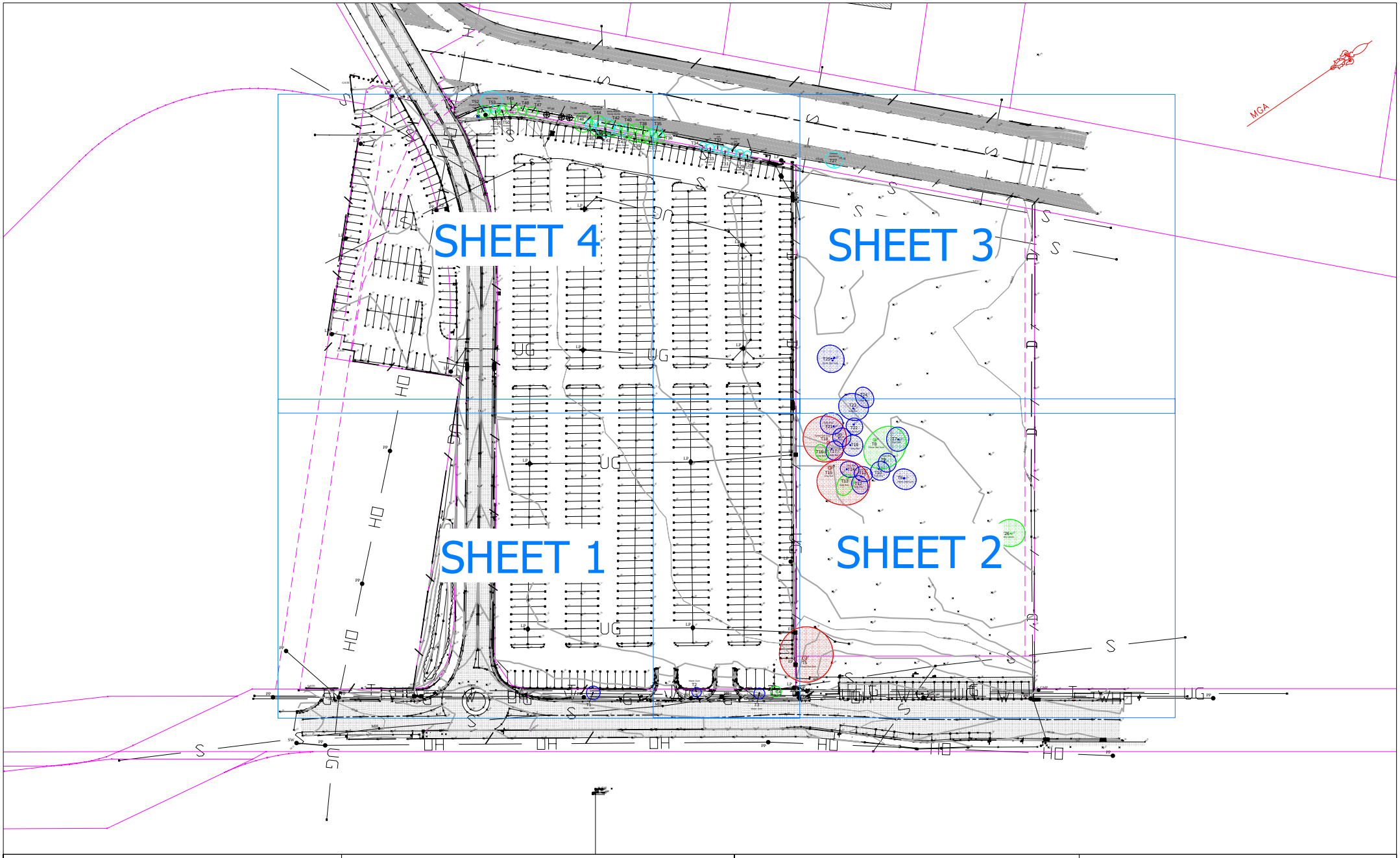
Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
32	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.0	1.4	1.4	12.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
33	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.0	1.4	1.4	12.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
34	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.0	1.4	1.4	12.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
35	***Eucalyptus tereticornis*** (Forest Red Gum)	P	3.0	1.8	2.0	28.3	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
36	***Melaleuca decora*** (White Feather Honey Myrtle)	M	2.9	1.9	2.0	26.0	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
37	***Melaleuca bracteata*** (Black Tea-tree)	M	3.0	1.8	2.0	28.3	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
38	***Melaleuca bracteata*** (Black Tea-tree)	M	3.0	1.8	2.0	28.3	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
39	***Melaleuca bracteata*** (Black Tea-tree)	M	3.0	1.8	2.0	28.3	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.

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
40	***Melaleuca bracteata*** (Black Tea-tree)	M	2.4	1.8	1.8	18.1	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
41	***Melaleuca decora*** (White Feather Honey Myrtle)	M	2.4	1.8	1.6	18.1	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
42	***Melaleuca decora*** (White Feather Honey Myrtle)	M	3.6	2.1	2.4	40.7	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
43	***Melaleuca bracteata*** (Black Tea-tree)	M	3.2	1.8	2.2	32.2	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
44	***Melaleuca liniariifolia*** (Narrow-leaved Paperbark)	M	3.6	2.1	2.4	40.7	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
45	***Melaleuca liniariifolia*** (Narrow-leaved Paperbark)	M	2.2	1.8	1.8	14.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
46	***Melaleuca liniariifolia*** (Narrow-leaved Paperbark)	M	3.6	2.1	2.4	40.7	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
47	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.0	1.4	1.4	12.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.

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
48	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.0	1.3	1.4	12.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
49	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.2	1.4	1.5	15.2	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
50	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.0	1.3	1.4	12.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
51	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.0	1.4	1.4	12.6	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
52	***Elaeocarpus reticulatus*** (Blueberry Ash)	M	2.2	1.5	1.5	15.2	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.
53	***Melia azedarach*** (White Cedar)	M	4.0	1.8	2.7	50.2	No proposed works within TPZ.	No adverse impact.	To be retained - no special tree protection measures required.



APPENDIX 5
TREE LOCATION PLAN SHOWING
TREE RETENTION VALUES

Farrow Road, CAMPBELLTOWN, NSW

Earthscape Horticultural Services
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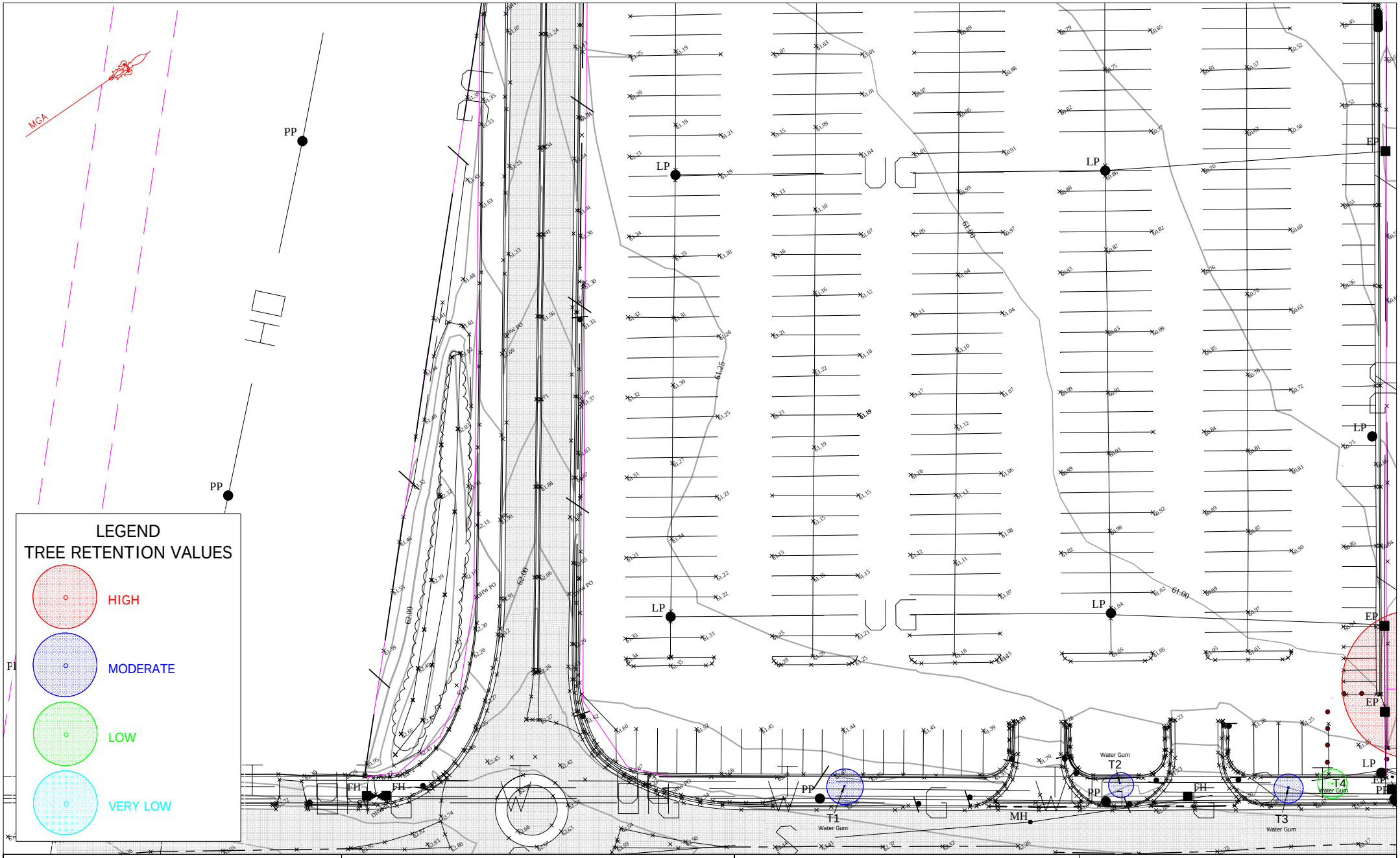
Based on the Survey Drawing
prepared by Premise
Dwg Ref No. 322068-01A-DS01-DS11 [A]
Dated 01/12/2021

DWG No. T22-0304/01 [A]

KEY PLAN

DATE: 04/03/2022



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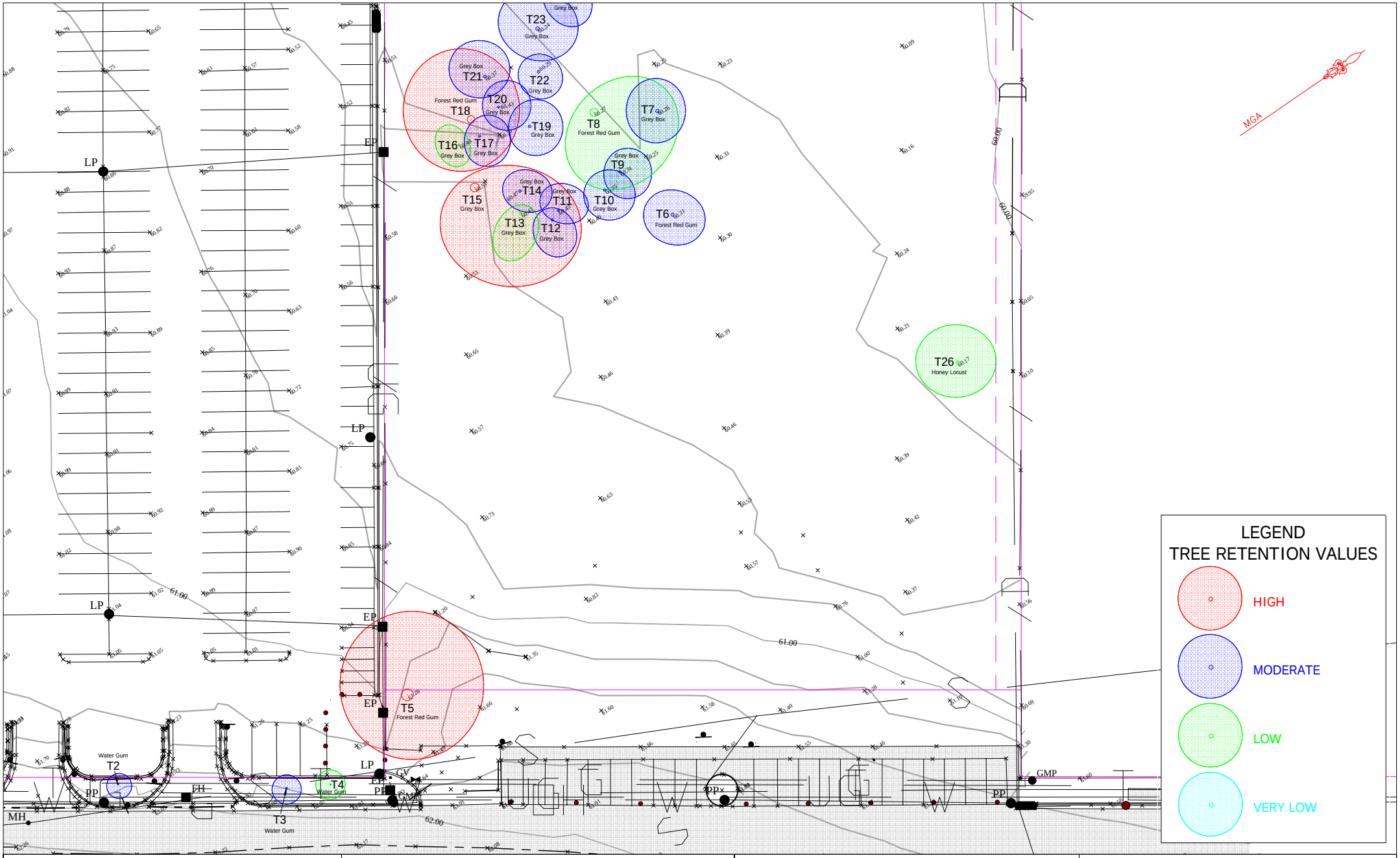
DWG No. T22-0304/01 [A]

SHEET 1

DATE: 04/03/2022



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TREE RETENTION VALUES

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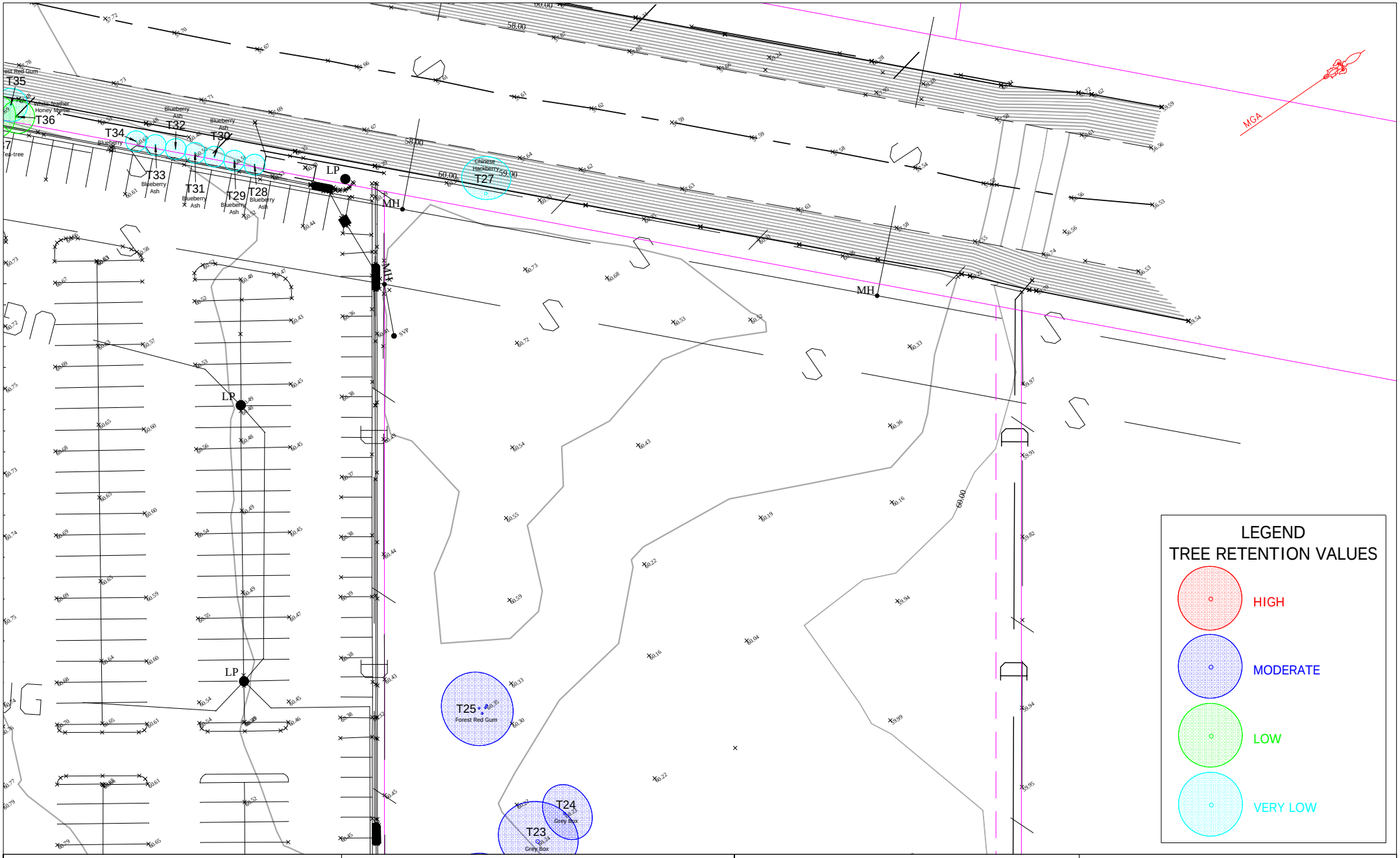
DWG No. T22-0304/01 [A]

SHEET 2

DATE: 04/03/2022



APPENDIX 5
TREE LOCATION PLAN SHOWING
TREE RETENTION VALUES

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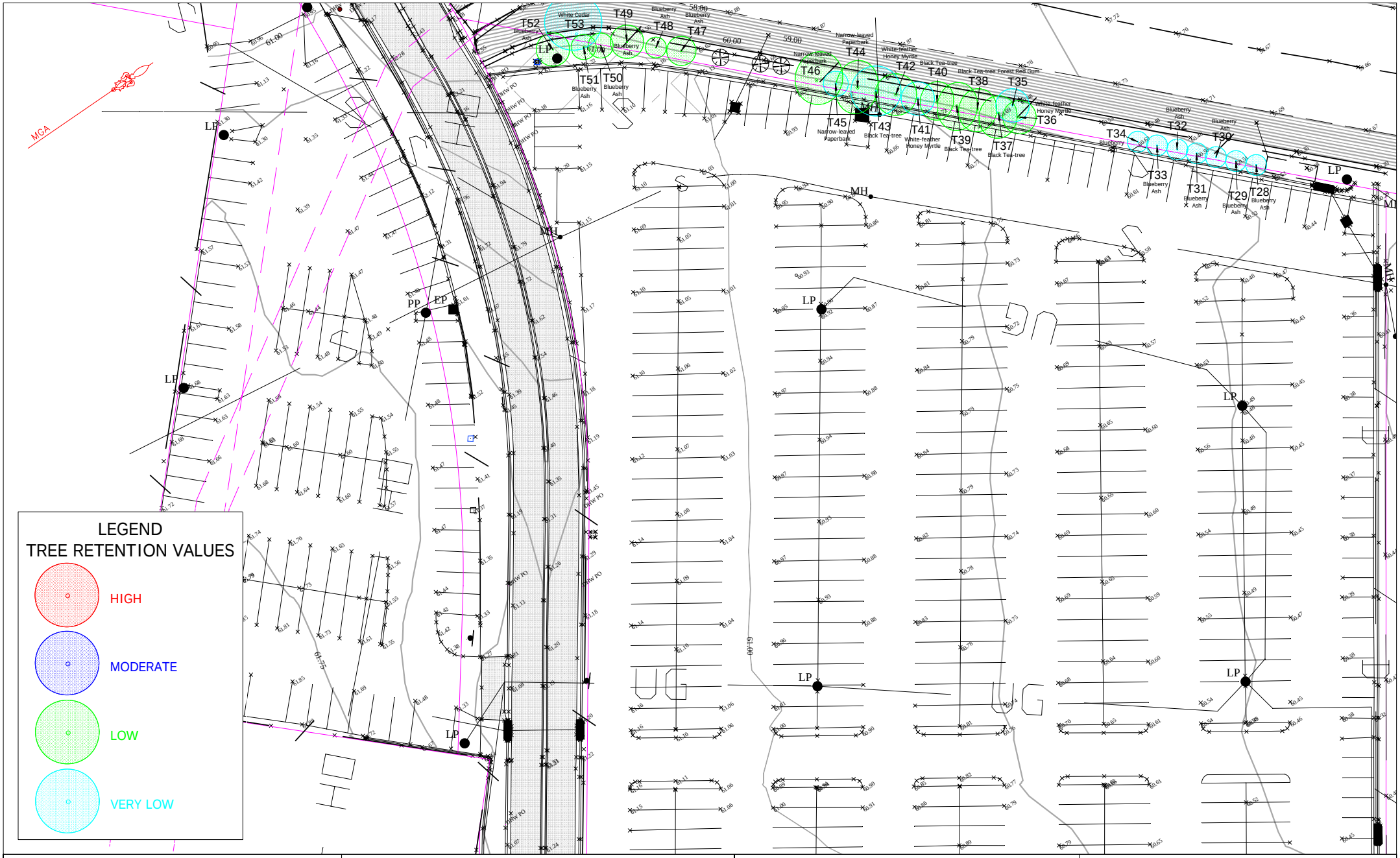
Dwg Ref No. 322068-01A-DS01-DS11 [A]
Dated 01/12/2021

DWG No. T22-0304/01 [A]

SHEET 3

DATE: 04/03/2022



APPENDIX 5
TREE LOCATION PLAN SHOWING
TREE RETENTION VALUES

Farrow Road, CAMPBELLTOWN, 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

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SHEET 4

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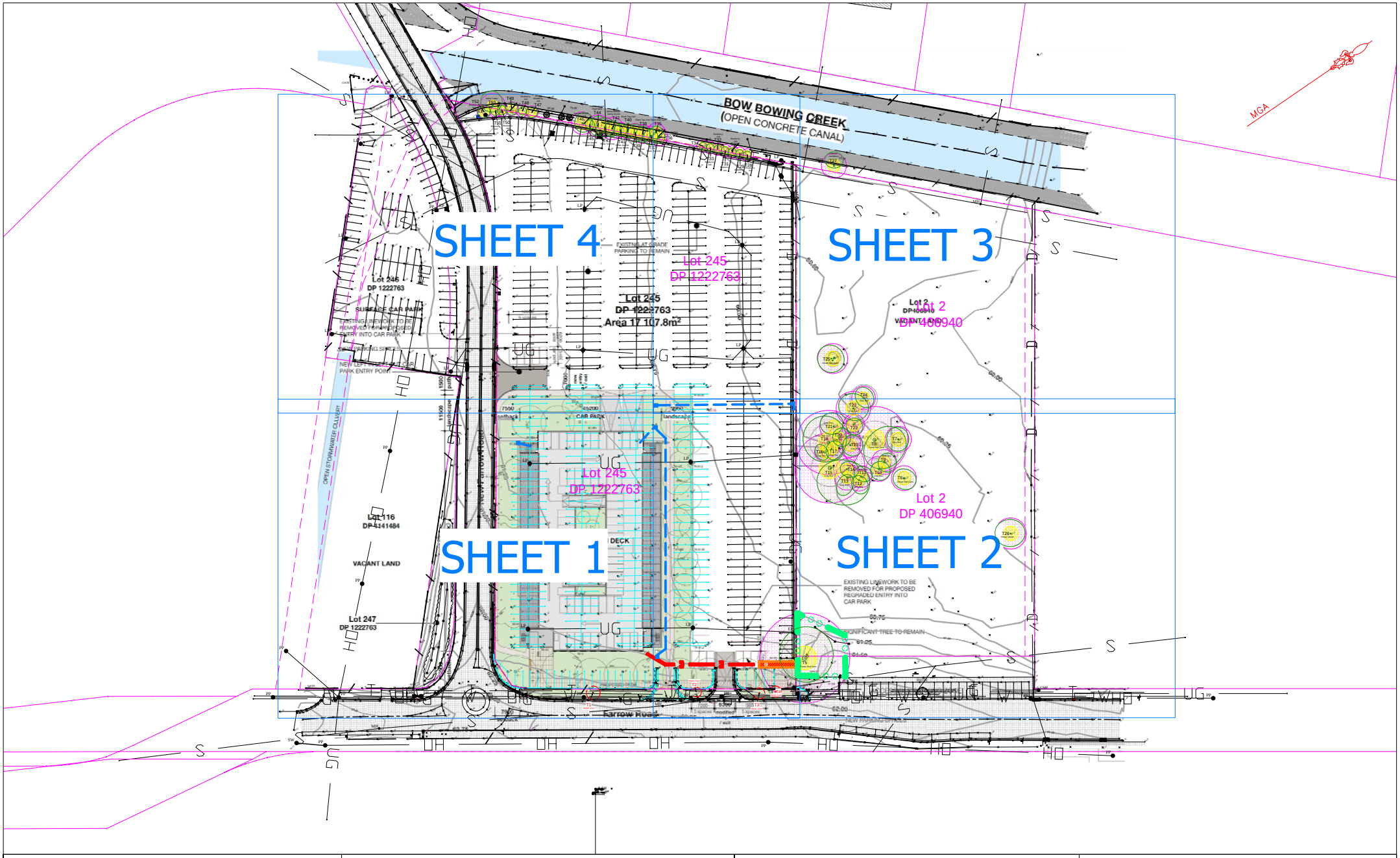

APPENDIX 6
TREE PROTECTION PLAN

Farrow Road, CAMPBELLTOWN, NSW

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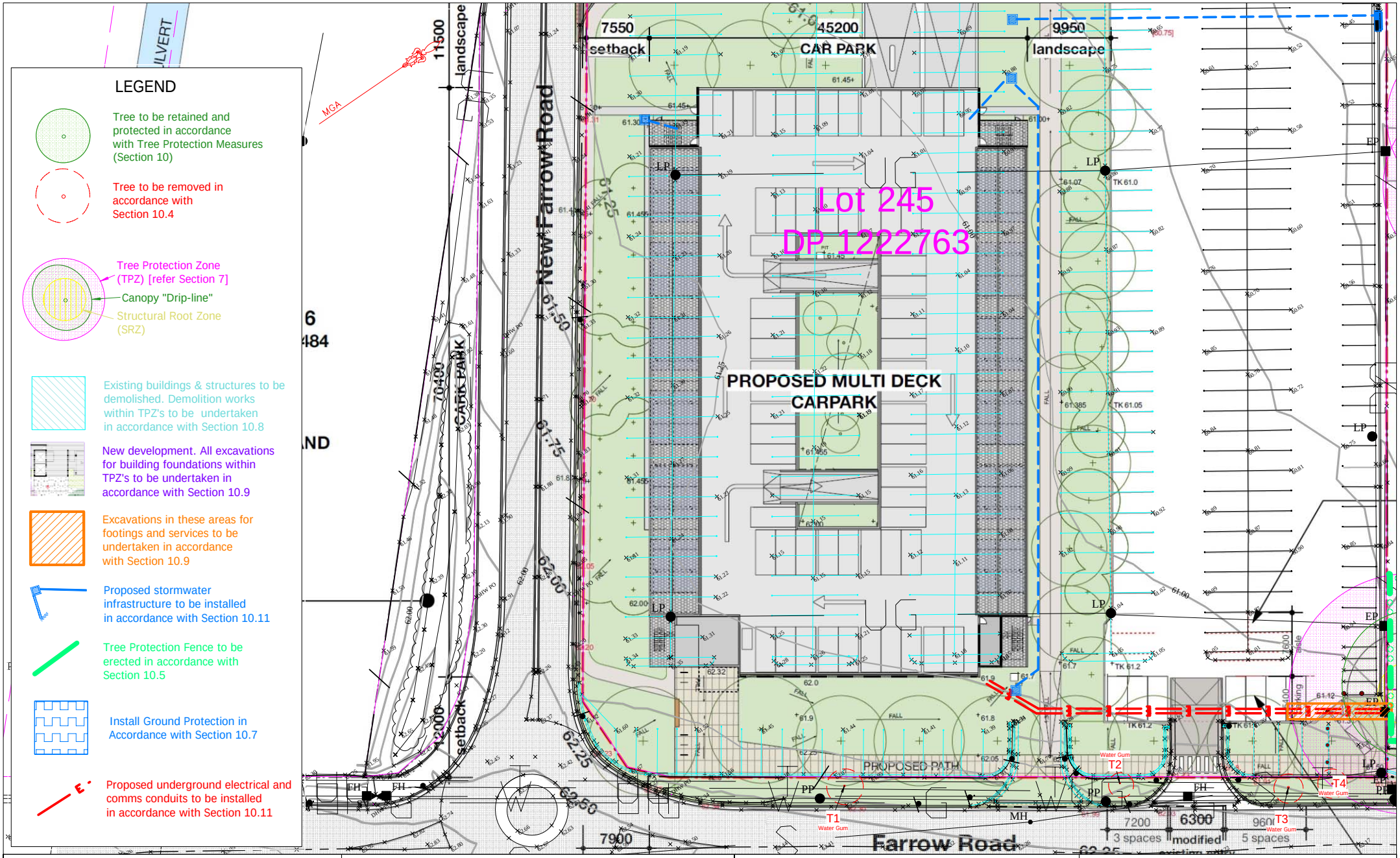
DWG No. T22-0304/02 [E]

KEY PLAN

DATE: 27/05/2022



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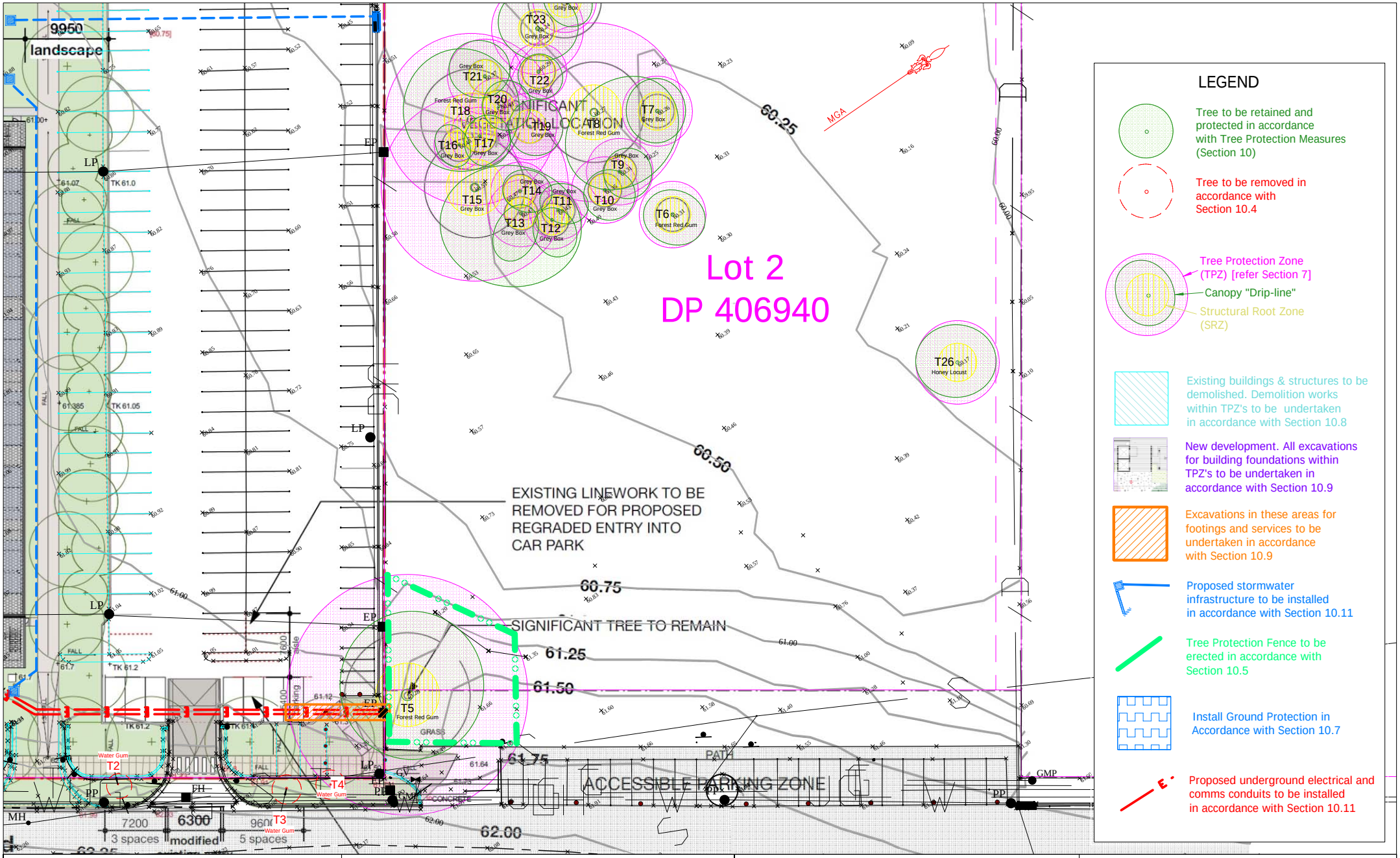
SHEET 1

DATE: 27/05/2022



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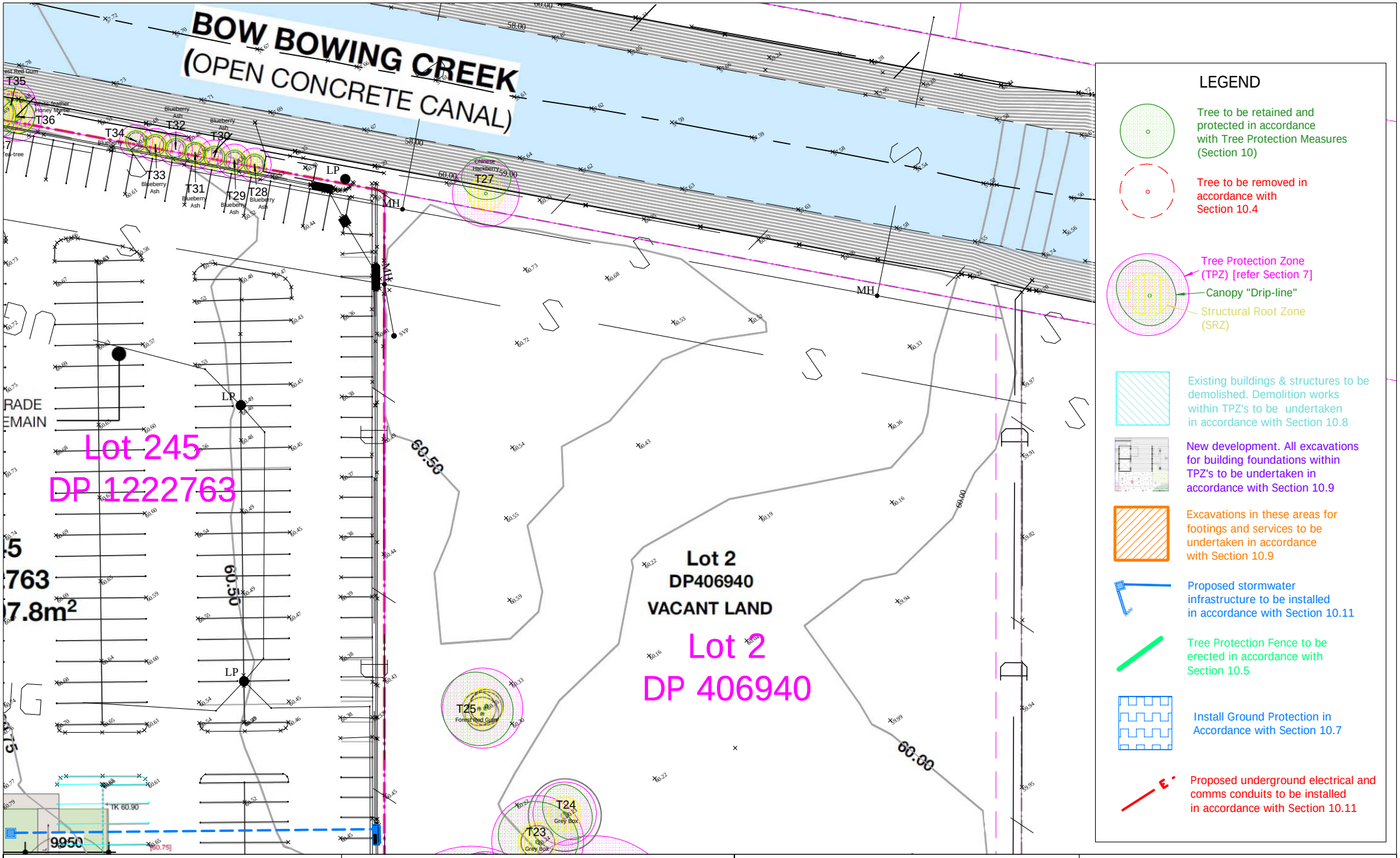
SHEET 2

DATE: 27/05/2022



LEGEND

- Tree to be retained and protected in accordance with Tree Protection Measures (Section 10)
- Tree to be removed in accordance with Section 10.4
- Tree Protection Zone (TPZ) [refer Section 7]
- Canopy "Drip-line"
- Structural Root Zone (SRZ)
- Existing buildings & structures to be demolished. Demolition works within TPZ's to be undertaken in accordance with Section 10.8
- New development. All excavations for building foundations within TPZ's to be undertaken in accordance with Section 10.9
- Excavations in these areas for footings and services to be undertaken in accordance with Section 10.9
- Proposed stormwater infrastructure to be installed in accordance with Section 10.11
- Tree Protection Fence to be erected in accordance with Section 10.5
- Install Ground Protection in Accordance with Section 10.7
- Proposed underground electrical and comms conduits to be installed in accordance with Section 10.11

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MGA

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SHEET 3

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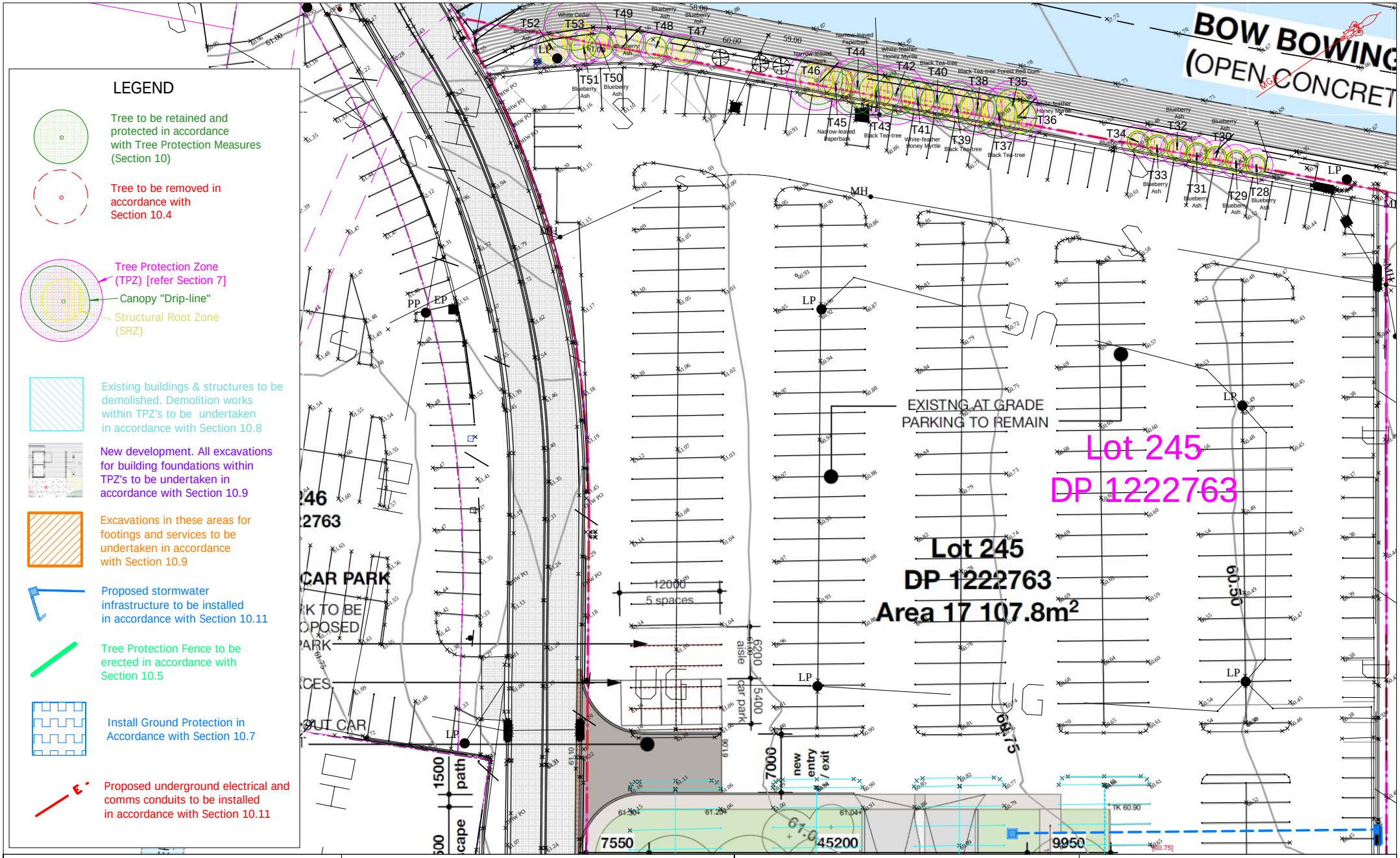

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SHEET 4

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