

ARBORICULTURAL IMPACT ASSESSMENT & TREE PROTECTION MANAGEMENT PLAN

Project

Trunk Stormwater Drainage Project v.2

Site Address

Bradfield City Centre Development, Bringelly, NSW 2556

Assessment Date

May 2023

Project Arborists

lain Dunsmuir

Diploma of Arboriculture (AQF Level 5)

Aymon Dandan

Diploma of Arboriculture (AQF Level 5)





Preface

The planting of trees in urbanised areas for their nutritional, aesthetic and spiritual value has been commonplace for centuries. Historically trees were planted for their known benefits along the main thoroughfares of Egypt approximately 4000 years ago, and in the communal areas of China during the Qin Dynasty, 221-206 B.C. (Gerhold. 2007).

Now the benefits of urban forests are considered to span environmental, economic, cultural and socio-political domains alike. Communities around the world regard trees as critical urban infrastructure. Thus, this 'Green Infrastructure' is considered to be as important to the day-to-day functionality of an urban locale as the roads, public transport and its other 'Grey Infrastructure'. However, trees grow in a delicate balance with their environment and any changes to that balance must be minimized if the tree is to remain healthy and fulfil its potential. Therefore, tree protection is of critical importance, and especially when it comes to the root system. Tree roots not only physically anchor the tree to the ground but are the critical supply lines of water and minerals and are essential for both carbohydrate storage and hormonal signalling. This in turn governing tree functionality, vigour and longevity.

Ergo, the aim of this Arboricultural Report is to pragmatically guide the proposed development works around any retained trees whilst mitigating foreseeable arboricultural impact. This through the formulation and implementation of best management practice tree protection methodologies. Thereby, promoting tree resilience and vitality post development.

PHOTOSYNTHESIS

Urban Heat Island Combatant

Encourages Outdoor Activity Reconnects Children with Nature Reduces Heat Related Illnesses Improves Community Cohesion Improves Mental Well-being Reinforces Sense of Place & City Identity **Enables Energy Savings** Reduces Sun Exposure **Increases Property Prices** Reduces Flows & Nutrients in Stormwater Avoids Costs of Infrastructure Damage **Reduces Air Pollution Enables Health Savings Provides Shade & Cooling** Assists in Carbon Trading **Provides Habitat & Greater Biodiversity**

RESPIRATION TRANSPIRATION



TABLE OF CONTENTS

2 Introduction	1	Exec	cutive Summary	1
2.2 Limitations 2.3 Report References. 2.4 Proposed Scope of Works 3 Mapping 3.1 Mapping Methodology. 3.2 Survey Area Sub-Maps 4 Tree Assessment Methodology. 4.1 Tree Identification 4.2 Visual Tree Assessment Methodology 4.3 Visual Tree Assessment Parameters. 5 Visual Tree Assessment Data 6 Summary 6.1 Summary Findings 6.2 Summary Actions table 7 Tree Protection Management Plan: Trunk Stormwater Drainage Project 7.1 Disclaimer 7.2 Overview 7.3 Project Arborist Site Inspection Schedule 7.4 Summary 7.5 General Comments 7.6 Restricted activities within the Tree Protection Zone 8 Tree Protection Control Framework 8.1 Compliance and Reporting 8.2 Root Protection 8.3 Soil Protection 8.4 Canopy Modifications	2	Intro	oduction	2
2.3 Report References 2.4 Proposed Scope of Works 3 Mapping 3.1 Mapping Methodology 3.2 Survey Area Sub-Maps 4 Tree Assessment Methodology 4.1 Tree Identification 4.2 Visual Tree Assessment Methodology 4.3 Visual Tree Assessment Parameters 5 Visual Tree Assessment Data 6 Summary 6.1 Summary Findings 6.2 Summary Actions table 7 Tree Protection Management Plan: Trunk Stormwater Drainage Project 7.1 Disclaimer 7.2 Overview 7.3 Project Arborist Site Inspection Schedule 7.4 Summary 7.5 General Comments 7.6 Restricted activities within the Tree Protection Zone 8 Tree Protection Control Framework 8.1 Compliance and Reporting 8.2 Root Protection 8.3 Soil Protection 8.4 Canopy Modifications		2.1	Overview	2
2.4 Proposed Scope of Works Mapping 3.1 Mapping Methodology. 3.2 Survey Area Sub-Maps. 4 Tree Assessment Methodology. 4.1 Tree Identification. 4.2 Visual Tree Assessment Methodology. 4.3 Visual Tree Assessment Parameters. 5 Visual Tree Assessment Data. 6 Summary. 6.1 Summary Findings. 6.2 Summary Actions table. 7 Tree Protection Management Plan: Trunk Stormwater Drainage Project. 7.1 Disclaimer. 7.2 Overview. 7.3 Project Arborist Site Inspection Schedule 7.4 Summary. 7.5 General Comments 7.6 Restricted activities within the Tree Protection Zone 8 Tree Protection Control Framework. 8.1 Compliance and Reporting. 8.2 Root Protection. 8.3 Soil Protection. 8.4 Canopy Modifications.		2.2	Limitations	2
3.1 Mapping		2.3	Report References	2
3.1 Mapping Methodology		2.4	Proposed Scope of Works	3
3.2 Survey Area Sub-Maps Tree Assessment Methodology	3	Map	ping	3
4 Tree Assessment Methodology 4.1 Tree Identification		3.1	Mapping Methodology	3
4.1 Tree Identification		3.2	Survey Area Sub-Maps	5
4.2 Visual Tree Assessment Methodology. 4.3 Visual Tree Assessment Parameters. 5 Visual Tree Assessment Data	4	Tree	Assessment Methodology	18
4.3 Visual Tree Assessment Parameters		4.1	Tree Identification	18
5 Visual Tree Assessment Data 6 Summary 6.1 Summary Findings 6.2 Summary Actions table. 7 Tree Protection Management Plan: Trunk Stormwater Drainage Project 7.1 Disclaimer 7.2 Overview 7.3 Project Arborist Site Inspection Schedule 7.4 Summary 7.5 General Comments 7.6 Restricted activities within the Tree Protection Zone 8 Tree Protection Control Framework 8.1 Compliance and Reporting 8.2 Root Protection 8.3 Soil Protection 8.4 Canopy Modifications.		4.2	Visual Tree Assessment Methodology	18
6.1 Summary Findings		4.3	Visual Tree Assessment Parameters	18
6.1 Summary Findings 6.2 Summary Actions table	5	Visu	al Tree Assessment Data	23
7.1 Disclaimer	6	Sum	mary	48
Tree Protection Management Plan: Trunk Stormwater Drainage Project 7.1 Disclaimer		6.1	Summary Findings	48
7.1 Disclaimer		6.2	Summary Actions table	49
7.2 Overview	7	Tree	Protection Management Plan: Trunk Stormwater Drainage Project	50
7.3 Project Arborist Site Inspection Schedule 7.4 Summary 7.5 General Comments 7.6 Restricted activities within the Tree Protection Zone 8 Tree Protection Control Framework 8.1 Compliance and Reporting 8.2 Root Protection 8.3 Soil Protection 8.4 Canopy Modifications		7.1	Disclaimer	50
7.4 Summary		7.2	Overview	50
7.5 General Comments 7.6 Restricted activities within the Tree Protection Zone 8 Tree Protection Control Framework 8.1 Compliance and Reporting 8.2 Root Protection 8.3 Soil Protection 8.4 Canopy Modifications		7.3	Project Arborist Site Inspection Schedule	50
7.6 Restricted activities within the Tree Protection Zone 8 Tree Protection Control Framework 8.1 Compliance and Reporting 8.2 Root Protection 8.3 Soil Protection 8.4 Canopy Modifications		7.4	Summary	51
 Tree Protection Control Framework 8.1 Compliance and Reporting 8.2 Root Protection 8.3 Soil Protection 8.4 Canopy Modifications 		7.5	General Comments	52
 8.1 Compliance and Reporting 8.2 Root Protection 8.3 Soil Protection 8.4 Canopy Modifications 		7.6	Restricted activities within the Tree Protection Zone	53
8.2 Root Protection8.3 Soil Protection8.4 Canopy Modifications	8	Tree	Protection Control Framework	53
8.3 Soil Protection		8.1	Compliance and Reporting	53
8.4 Canopy Modifications		8.2	Root Protection	54
		8.3	Soil Protection	54
8.5 Tree Protection Zones		8.4	Canopy Modifications	55
		8.5	Tree Protection Zones	55



9	Plan [.]	t Health Care	56
	9.1	Overview	56
	9.2	Post Development Plant Health Care Recommendations	56
	9.3	Tree Protection Installations	57
10	Refe	rences	59
11	Glos	sary	60
12	Appe	endix	63
	12.1	Root Morphology Considerations	63
	12.2	Tree Protection Zone (TPZ) & Structural Root Zone (SRZ)	64
	12.3	Compensation for Tree Protection Zone Encroachment	65
	12.4	Initial Non-Destructive Root Exploration & Root Mapping	66
	12.5	Tree Sensitive Urban Design (TSUD)	66
	12.6	Visual Tree Assessment Descriptors	67
	12.7	Assumptions and Limiting Conditions	72
	12.8	AGS Quality Control	73



Trunk Stormwater Drainage Project Site, Bradfield City Centre Development



1 Executive Summary

Active Green Services Pty Ltd (AGS) has been engaged by the Western Parkland City Authority (WPCA) to author an Arboricultural Impact Assessment (AIA) and a Tree Protection Management Plan (TPMP) pursuant to *AS4970-2009 Protection of trees on developments sites*. This regarding the likelihood of impact to trees which will be foreseeably caused by a proposed Stormwater Drainage installation and its associated infrastructure at the Bradfield City Centre Development site. Hence during January and February 2024, four hundred thirty-eight (438) individual Visual Tree Assessments (VTA) were carried out on the significant tree population by suitably qualified AQF Level 5 arborists from AGS.

The following Report and its arboricultural recommendations are based on the abovementioned tree assessment data which includes the subject trees biometrics, pedology, useful life expectancy, vitality, ecophysiology, biomechanics, and landscape significance *in situ*. In addition, the subject trees were further assessed with regards to the proposed Stormwater Drainage alignment footprint and foreseeable impact to their Tree Protection Zones¹ (TPZ). This tree data providing the fundamental elements required to calculate arboricultural impact, so a site-specific TPMP can be formulated and enacted.

On review of the tree assessment data, it was calculated that the proposed project works will encroach and impact upon the TPZ of seventy-seven (77) trees - 'Minor'². Of arboricultural concern is that the encroachment and impact level on three hundred sixty-one (361) additional trees will be 'Major'³, and within the Structural Root Zone⁴ (SRZ). Therefore, if tree sensitive design modifications cannot be implemented, under the current design these three hundred sixty-one (361) identified trees will not remain viable⁵ and will need to be removed to accommodate the design.

Regarding these three hundred sixty-one (361) removals two hundred sixteen (216) of these non-viable trees are related to the Trunk Stormwater Drainage Project. I.e., six (6) of these trees have a 'High' Retention Value; one hundred (100) trees have a 'Medium' Retention Value; eighty-eight (88) trees have a 'Low' Retention Value; and twenty-two (22) trees have No Significant Value. The additional one hundred forty-five (145) tree removals are out of the project scope. The detail supporting this summary follows.

_

¹ AS4970-2009: Tree Protection Zone (TPZ): A specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development.

² AS 4970-2009: Minor encroachment (<10%): If the proposed encroachment is less than 10% (total area) of the TPZ, and outside of the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and be contiquous with the TPZ.

³ AS4970-2009: Major encroachment (>10%): If the proposed encroachment is greater than 10% (total area) of the TPZ, the project arborist must demonstrate that the tree(s) remain viable. The area lost to this encroachment should be compensated for elsewhere and be contiguous with the TPZ. Tree sensitive construction techniques may be used within this area providing no structural roots are likely to be impacted, and the Project Arborist can demonstrate that the tree(s) remain viable. Root investigation by non-destructive methods may be required for proposed works within this area.

⁴ AS4970-2009: The SRZ is the area of the root system used for stability, mechanical support, and anchorage of the tree. Severance of structural roots (>50 mm in diameter) within the SRZ is not recommended as it may lead to the destabilisation and/or serious decline of the tree.

⁵ Tree Viability - the boundaries, infrastructure footprint and scope of works of the project may be modified in an effort to accommodate trees and/or to further pragmatic design and project functionality outcomes. Therefore, where it is foreseeable that a tree may remain viable, this tree is to be retained until further arboricultural investigation by the appointed Project Arborist. Whereby, if tree viability is determined the subject tree is to be retained, its data amended, and the tree afforded protection per the site-specific TPMP.



2 Introduction

2.1 Overview

- i. AGS has been engaged to author an AIA and a site-specific TPMP per AS4970-2009 Protection of trees on development sites. This regarding trees and the proposed construction of a stormwater drain and its associated infrastructure in the eastern area of the Bradfield City Centre Development. The following arboricultural elements will be discussed in this document:
 - The identification and subsequent arboricultural assessment of any tree within the provided survey area.
 - The calculated encroachment level and foreseeable impact of the proposed infrastructural works.
 This so tree viability can be objectively determined post-development and pragmatic tree retention or tree removal recommended.
 - A site-specific Tree Protection Management Plan. These regarding the mitigation of foreseeable arboricultural impact to any retained tree both pre-and-post development pursuant to AS4970-2009 Protection of trees on development sites.

2.2 Limitations

- i. All arboricultural reasonings that have been discussed and provided are based on extensive empirical arboricultural knowledge, the internationally recognised Visual Tree Assessment (VTA) methodology (Lonsdale, 2010), (Dunster et. al, 2019), the recognised Institute of Australian Consulting Arboriculturists (IACA) Significance of a Tree, Assessment Rating System (STARS), and AS4970-2009 Protection of trees on development sites.
- ii. Whilst this arboricultural assessment is thorough it should be noted that trees are dynamic living organisms exposed to both unforeseeable biotic and abiotic variables which on occasion can be harsh and severe. Therefore, this arboricultural assessment will consider on the balance of probabilities the most likely outcome(s) as opposed to those which could, may or fancifully occur.

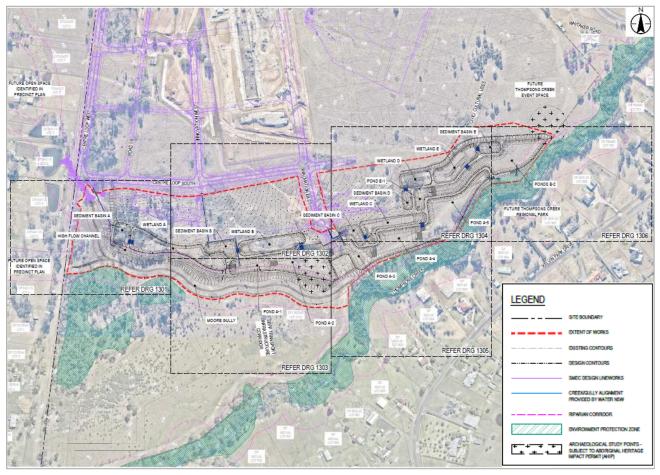
2.3 Report References

- i. As a progressive arboricultural company AGS keeps abreast of research data relating to all aspects of arboriculture and urban forestry. Hence the following arboricultural observations, reasonings, conclusions and recommendations are founded on industry standards and extensive empirical arboricultural knowledge. The science-based arboricultural survey methodologies and references used can be found in the Appendix.
- ii. Please note that additional educational material has been appended to promote the urban forest through understanding and knowledge.



2.4 Proposed Scope of Works

i. A Stormwater drainage installation is proposed for the Bradfield City Centre development per the below design plan supplied by WPCA. A full set of Design Concept Plans can be made available upon request from their design team.



Stormwater Trunk Infrastructure, Sediment Basins, Wetlands & Ponds Design (courtesy of Stantec)

3 Mapping

3.1 Mapping Methodology

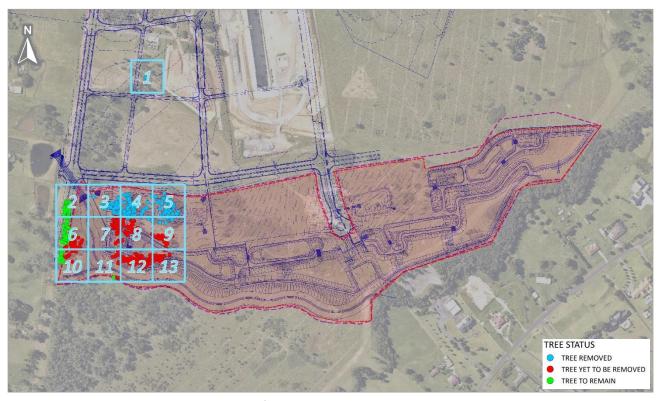
- i. Four hundred thirty-eight (438) trees within the provided study area were individually assessed, tree tagged, and GPS located using the Esri FieldMaps application. For convenience, digital files accompany this Report, which include the tree GPS locations and all the captured tree assessment data.
- ii. Please note that the significant tree population is growing on the western side of the survey area; and no trees of significance were found on the eastern side. This possibly due to the eastern side being historically wet, which has resulted in non-conducive tree growing conditions (i.e., low soil porosity, relatively anerobic and non-friable).





Project Geo-location, Bradfield City Centre Development, NSW 2556

iii. Please see below the Mastermap. Thirteen (13) satellite sub-maps with the locations of the assessed trees follow. These sub-maps indicatively show the proposed infrastructure and whether on the balance of probabilities a subject tree will remain viable under the proposed design. (I.e., Non-Viable = Remove & Compensatory Replanting or Viable = Retain & Protect per the accompanying TPMP).



Trunk Stormwater Project: Master-Map



3.2 Survey Area Sub-Maps





1:350

Coordinate System:

GDA2020 MGA Zone 56

Legend

TREE STATUS

- TREE REMOVED
 - TREE YET TO BE REMOVED
- TREE TO REMAIN

BACKGROUND IMG

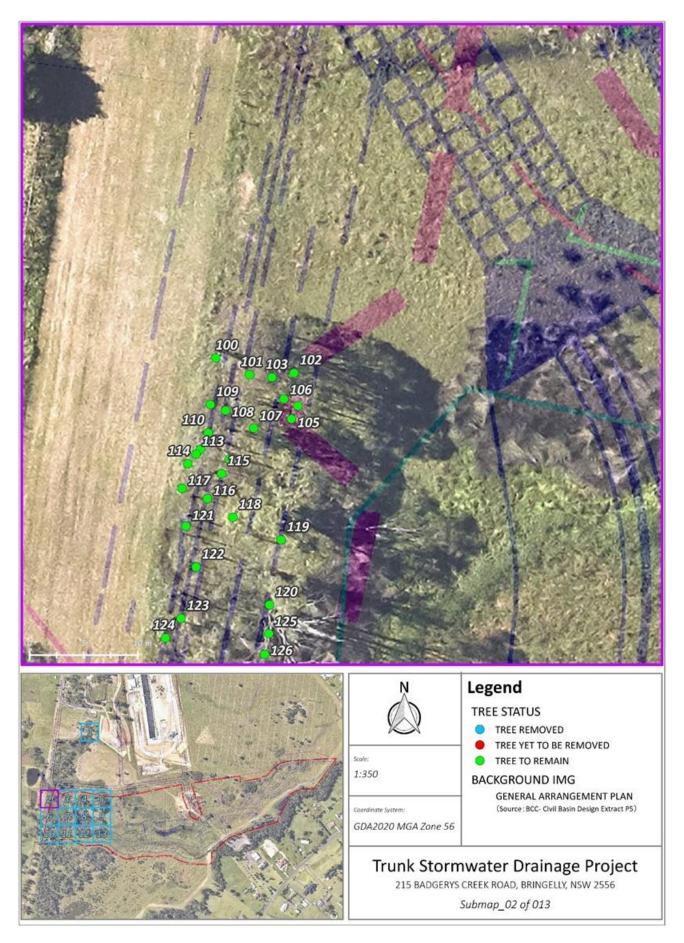
GENERAL ARRANGEMENT PLAN (Source: BCC- Civil Basin Design Extract P5)

Trunk Stormwater Drainage Project

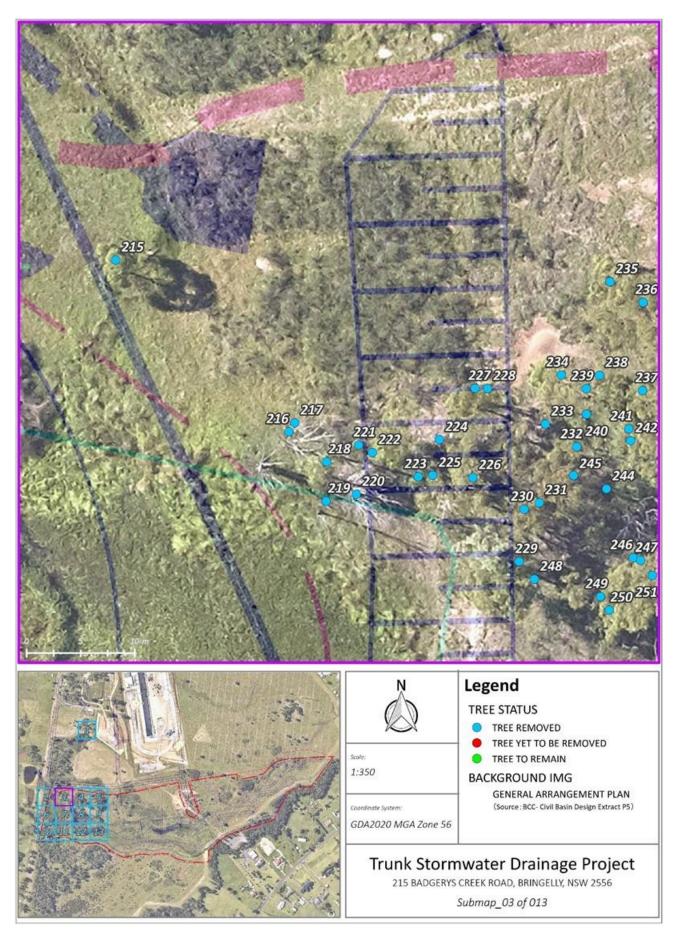
215 BADGERYS CREEK ROAD, BRINGELLY, NSW 2556

Submap_01 of 013

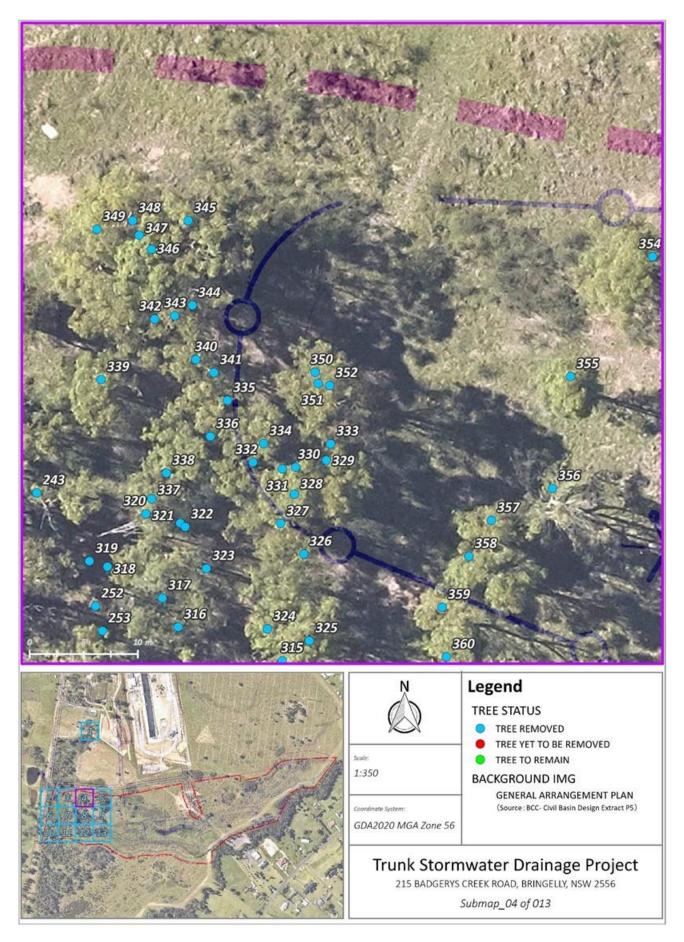




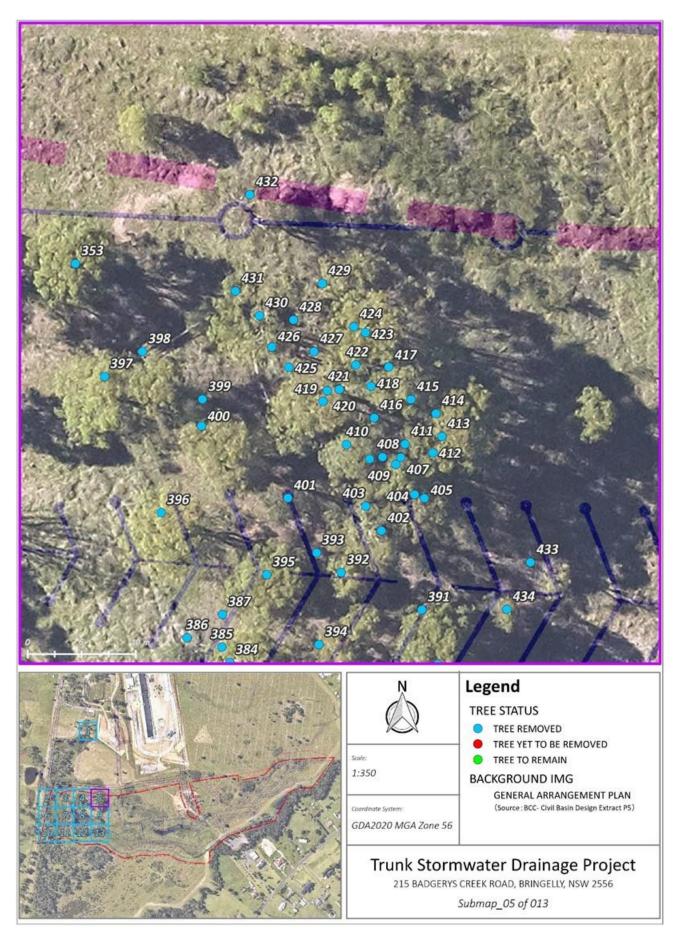




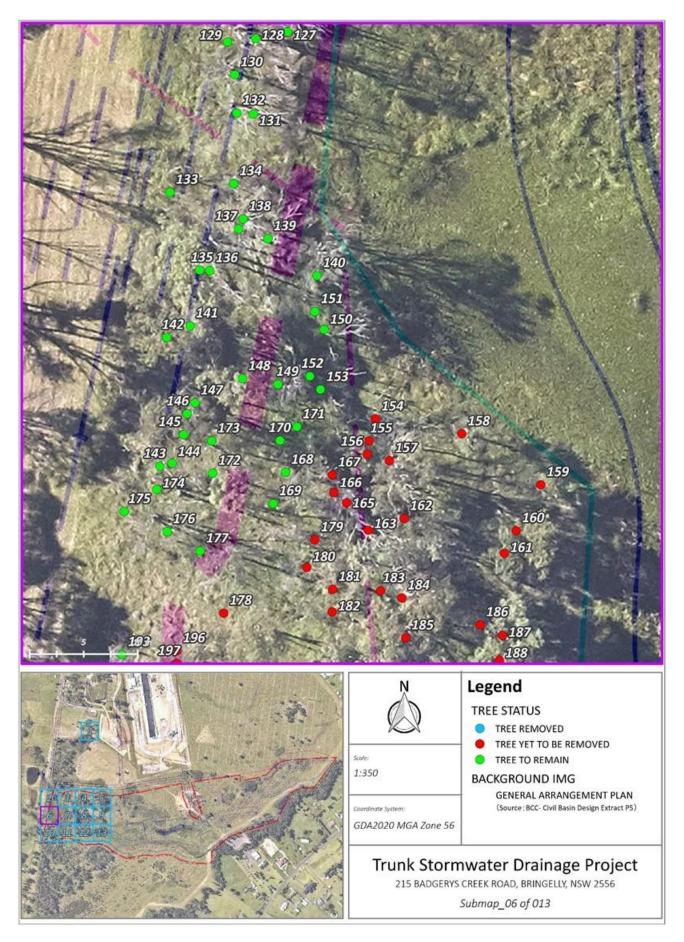




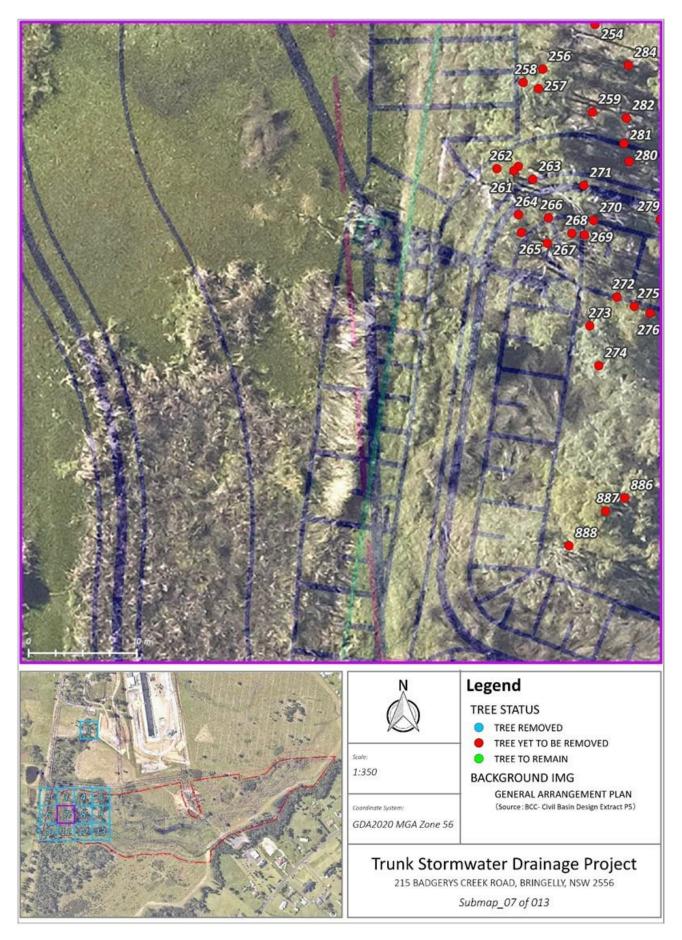




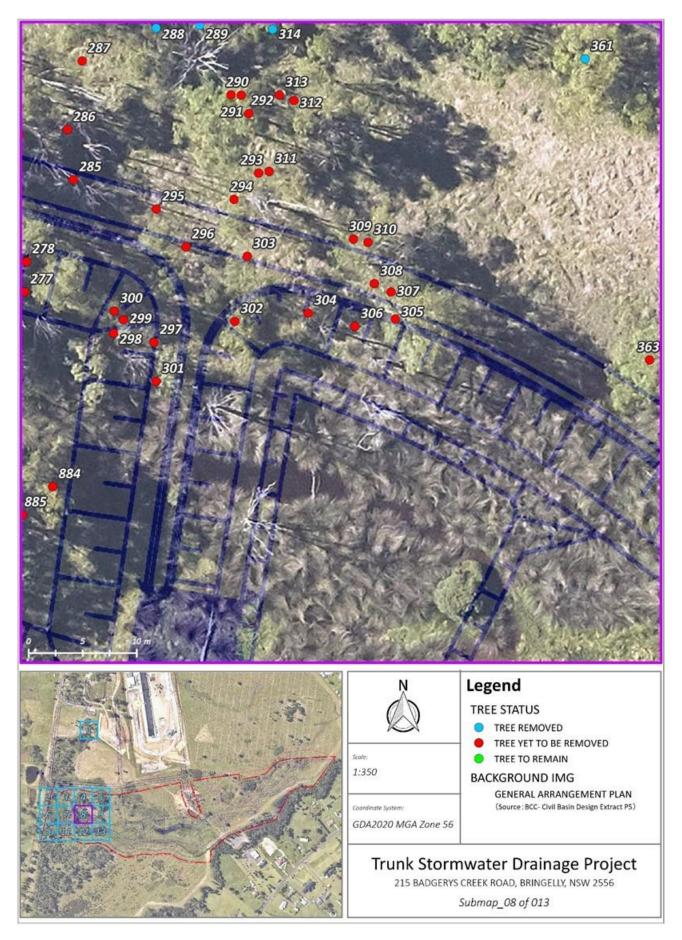




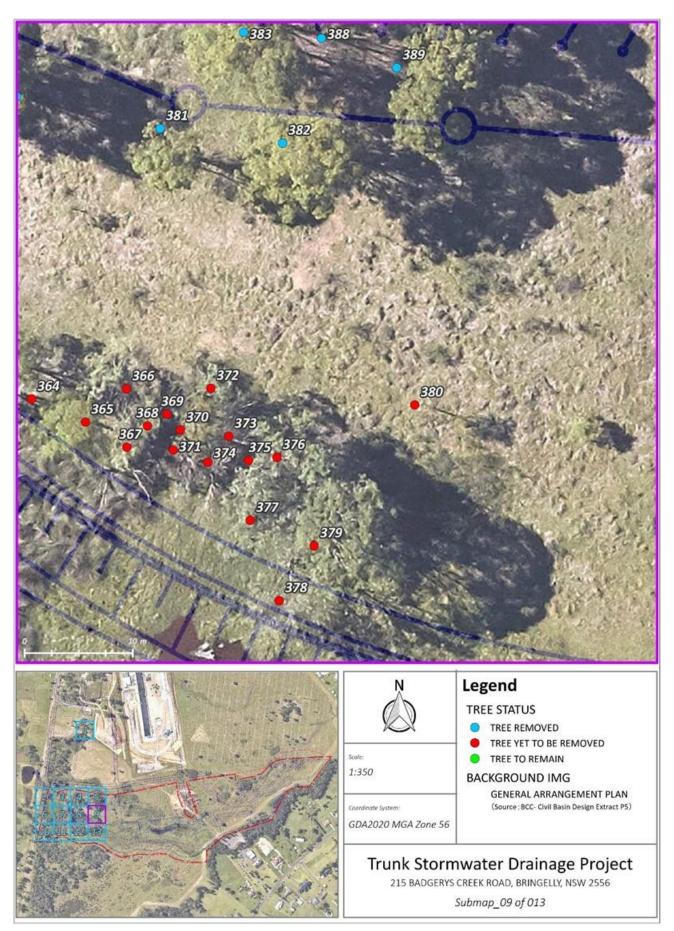




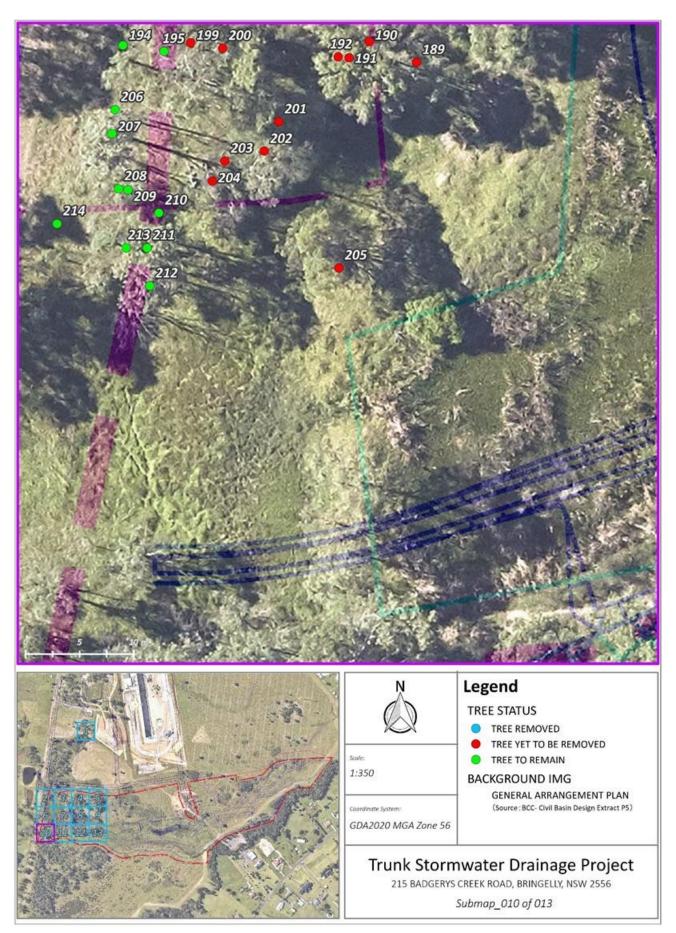




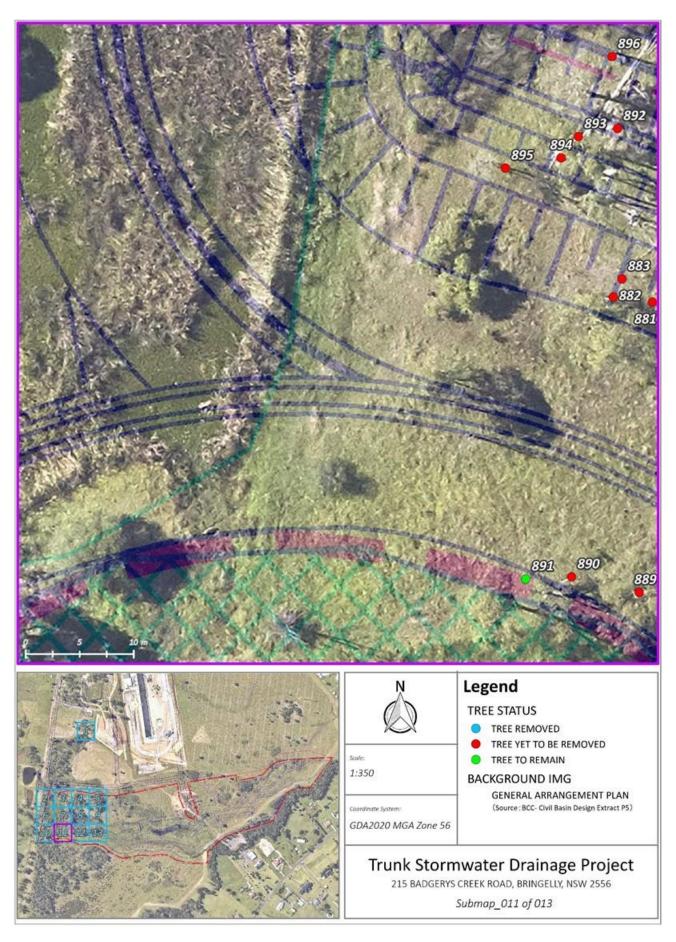




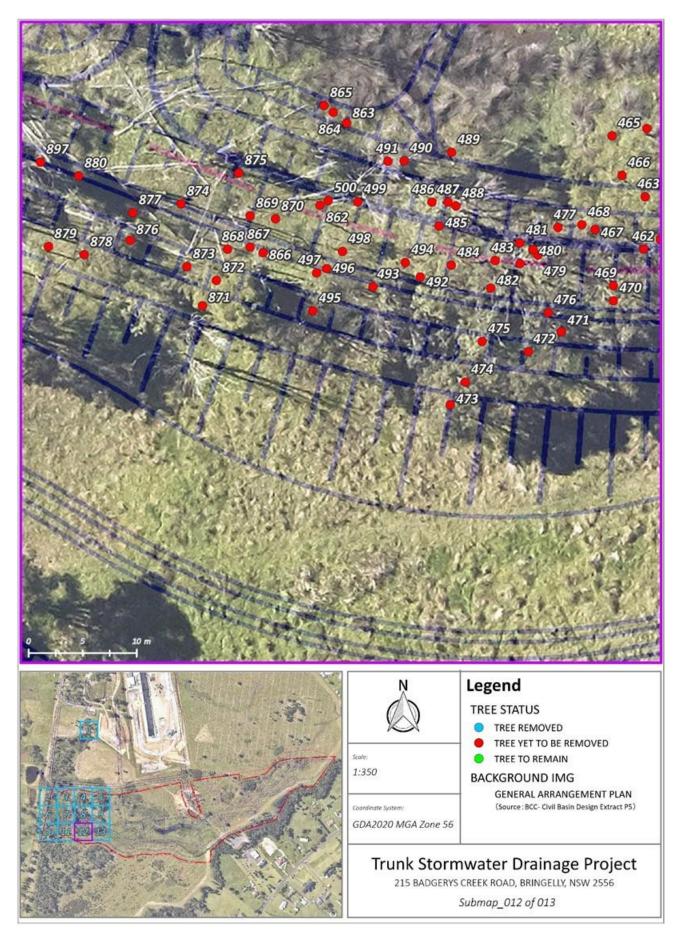




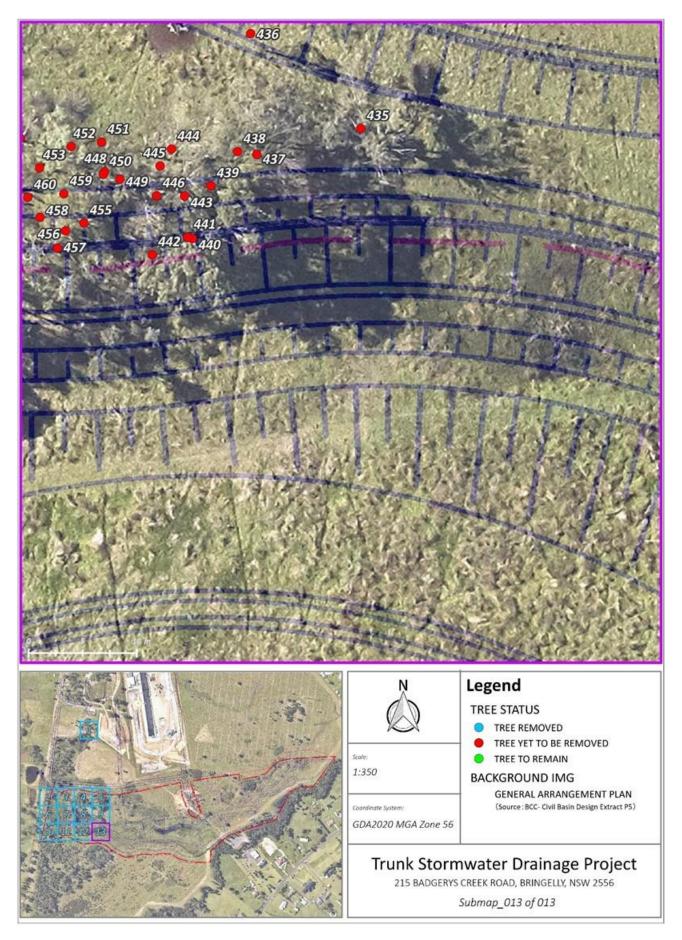














4 Tree Assessment Methodology

4.1 Tree Identification

i. For convenience all of the subject trees have been individually tree tagged at approximately 1.5m. On this tree tag is an engraved number that corresponds to the above maps and Visual Tree Assessment Data tables. Thus, the subject tree can be physically identified, and any recommended arboricultural works and/or tree protection installation carried out.





Indicative aluminum Tree Tag Installation

4.2 Visual Tree Assessment Methodology

- i. Visual Tree Assessments (VTA) consistent with modern arboricultural practices and the International Society of Arboriculture standards were conducted by a suitably qualified and experienced arborist on the subject tree population. These assessments were conducted at ground level and therefore classified as *Level 2: Basic Assessment* (Dunster et al., 2019).
- ii. The tools used onsite to gather the necessary VTA data were a nylon percussion hammer, mobile phone, and an iPad. Tree height and canopy spread were recorded using a digital laser range finder (Nikon Forestry Pro). The trunk diameter and DBH height measurements were made by using a forestry DBH measuring tape. No dendrological diagnostics, soil analysis, tissue sampling and/or geological investigations were conducted at that time. For ease of identification the subject trees have been GPS located and photographed.

4.3 Visual Tree Assessment Parameters

i. The following information outlines the basic parameters used to visually assess a tree. These parameters relate to the tabled Visual Tree Assessment data below.

Pedology: a visual assessment of the general health and condition of the soil within the trees root zone.

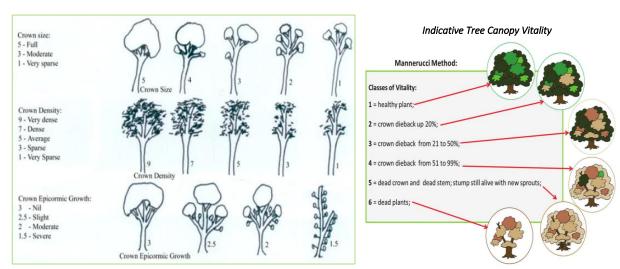
Trunk Stormwater Drainage Project (AIA & TPMP v.2)



For example, such considerations such as soil porosity, compaction level, topography, hydrology, soil profile and root zone growth frustrations both infrastructural and/or otherwise.

Tree Vitality: is categorised through a visual determination using:

- leaf, twig or needle size, shape, and colour
- seasonal growth rates
- reaction wood development
- foliage density & foliage coverage throughout the crown
- branch architecture & ecophysiology
- species specific traits & biomechanics
- branch-tip dieback
- typical branch senescence.



Visual vitality index for mature trees (Callow, 2018)

Structure & Biomechanics: a general evaluation of a tree's branch union formation, growth formation and architecture (this may affect branch weight and/or mass damping). This assessment is species-specific as it is derived from the typical structure and branch formation of the subject species.

Form: 'Trunk Form' is an assessment of the trees basal flare, taper, decay, cavities, formation of multistems that develop near and/or at ground level, girdling roots and growing angles. Whilst general 'Tree Form' is an indication of crown shape. Crown shapes are influenced by their surroundings, light availability and branch loss, which can have varying impacts on their symmetry. A tree is assessed on its individual crown shape. However, as the tree may be growing within a group environment, this could lead to the individual shape being assessed further down the scale. Although a poor rating may be attributed to the tree, the tree's contribution to the setting may be high through association within the group canopy. This can be generally recognised through the Crown Class rating.

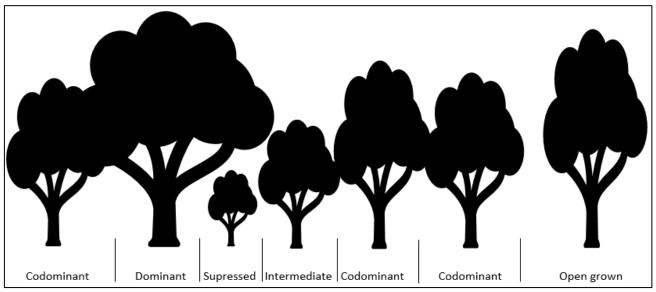
Function: this assesses the site-specific usefulness of the tree *in situ*. Examples include soil retention, stormwater attenuation and mitigation of the Urban Heat Island. This is weighed up against any negative issues the tree(s) may be causing regarding persons, utilities and/or infrastructure.

Impediments: (rootzone & canopy) are structures that impede or supress normal tree development and/or function. This can include hard impervious surfaces within the rootzone or powerlines and other



structures within or adjacent to the canopy.

Crown Class: this rating provides an indication on the tree's relationship with other trees in the subject environment. The categories used include Dominant, Codominant, Intermediate, Suppressed and Open grown, as shown in the below diagram.



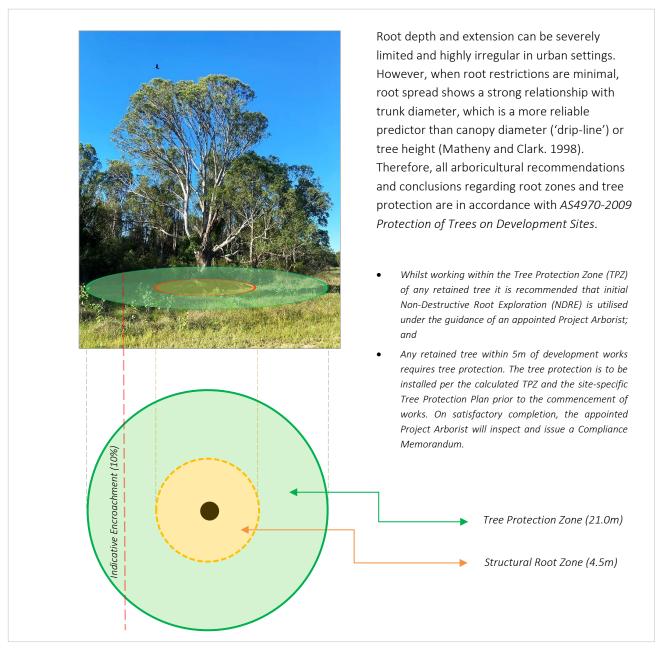
Indicative Crown Class (International Society of Arboriculture)

Useful Life Expectancy: A Useful Life Expectancy (ULE) rating is determined by using the adapted Safe Useful Life Expectancy (SULE) and TreeAZ methodologies (Barrell. 1996, 2000). The aim of these two systems is to convert what amounts to a complex arboricultural assessment into a few broad categories that are more logically understood. A ULE rating provides an estimate of a tree's expected remaining lifespan after considering the current condition, vigour, and vitality of the subject tree(s) in situ. The main aim is the establishment of a tree Retention Value. The objective of a calculated ULE assessment is to contribute to the relative value of individual trees for the purpose of informing future management options and residual risk. This calculated ULE rating will be inserted into the above-mentioned STARS Matrix (please refer to the Appendix section for further information).

Retention Value: The Significance of a Tree, Assessment Rating System (STARS) provides the Retention Value of a tree and/or group of trees by balancing a combination of environmental, cultural, physical, amenity and social values. The Landscape Significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the Retention Value for a tree. Therefore, a tree retention assessment is undertaken in accordance with the Institute of Australian Consulting Aboriculturalists (IACA) Significance of a Tree, Assessment Rating System (STARS). The system uses a scale of High, Medium, and Low significance in the landscape. Once the landscape significance of a tree has been defined, the Retention Value can be determined congruent with the trees' abovementioned Useful Life Expectancy (ULE).



Root Zones: An infographic indicative of a calculated Tree Protection Zone (TPZ), Structural Root Zone (SRZ) and Encroachment level per *AS4970-2009 Protection of trees on development sites* is included below to aid in the visualisation of the 'No-Dig' zones; and where initial Non-Destructive Root Exploration (NDRE) must be carried out under the direct supervision of the Project Arborist. In addition, the formula's provided can be used in combination with the recommended 'stair-step' Construction Encroachment Descriptors & Stair-step Approach table to indicatively calculate impact levels.



- AS4970-2009 Protection of trees on development site s3: The radius of the TPZ is calculated for each tree by multiplying its Diameter @ Breast Height measured @ 1.4m from ground level (DBH \times 12 = TPZ). (DBH = Trunk Girth @ 1.4m \div π).
- To calculate the SRZ: Radius SRZ = Diameter bove Root Crown ($DRC \times 50$) ^ 0.42 x 0.64. If the DRC is less than 0.15m the SRZ will be 1.5m.



Construction Encroachment Descriptors & Stair-step Approach

LEVEL	IMPACT CATEGORY	DESCRIPTION
1	Removal	The design and tree encroach each other to a point that either the design must be modified, or the tree removed.
2	Major (Non- Viable)	The construction proposal design has an encroachment of greater than 10% of the Tree Protection Zone and/or impacts the Structural Root Zone. The tree does require immediate removal, though under the current design proposal, the works are expected to impact the tree significantly enough that it is expected to die or fail in the future due to resultant works. In order to retain the tree, designs modifications are required to reduce construction footprint on tree to an acceptable level. Unless non-destructive root exploration can identify minimal root distribution in area.
3	Major (Viable under design constraints)	The construction proposal designs have an encroachment of greater of 10% of Tree Protection Zone or impacts the Structural Root Zone. These trees can remain viable if the following is applied: • Tree sensitive construction methods are utilised. • Any works in SRZ are undertaken after non-invasive root exploration. • Exploratory root excavation findings are documented and made available to necessary parties for review. • Pre / during/ post inspections are conducted by Project Arborist, on all trees onsite and adjoining properties. • All underground services are diverted around TPZ, with the exception of underground boring.
4	Major (Viable)	The construction proposal designs have an encroachment of greater than 10% of Tree Protection Zone and outside the Structural Root Zone. These trees can remain viable if the following applies: • Alternative tree sensitive design methods are implored. • Site conditions have limited root growth in specific area. • The species is tolerant to development impacts. • Non-destructive root exploration is undertaken and demonstrates minimal root area in TPZ. The tree requires a TPZ erected prior to construction or demolition phase of works. Compensation for lost TPZ area should be added.
5	Minor	The construction proposal designs have an encroachment of less than 10% of Tree Protection Zone. The tree is expected to remain viable. A TPZ is be erected prior to construction or demolition phase.



5 Visual Tree Assessment Data

Visual Tree Assessment Data: January & February 2024 (all measurements are shown in metres)

Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0001	Eucalyptus tereticornis Forest Red Gum	Mature	14	EW:12 NS:12	1.12	1.18	3.5	13.4	Fair	Poor	Very poor	Short	Medium	Low	Removed	6
0100	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:7 NS:8	0.45	0.48	2.4	5.4	Fair	Fair	Fair	Medium	Medium	Medium	Retain	•
0101	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:6 NS:7	0.54	0.56	2.6	6.5	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0102	Eucalyptus tereticornis Forest Red Gum	Semi Mature	7	EW:3 NS:2	0.15	0.16	1.5	2.0	Fair	Fair	Poor	Medium	Medium	Low	Retain	•
0103	Eucalyptus tereticornis Forest Red Gum	Semi Mature	6	EW:3 NS:3	0.14	0.17	1.6	2.0	Fair	Fair	Poor	Medium	Low	Low	Retain	6
0104	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:3 NS:3	0.16	0.17	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0105	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:3 NS:3	0.19	0.22	1.8	2.3	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0106	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:2 NS:3	0.15	0.17	1.6	2.0	Fair	Fair	Poor	Medium	Low	Low	Retain	•
0107	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:3 NS:3	0.15	0.21	1.7	2.0	Fair	Fair	Fair	Medium	Medium	Low	Retain	6
0108	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:3 NS:3	0.23	0.25	1.8	2.8	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0109	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:3 NS:2	0.14	0.17	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Low	Retain	6
0110	Eucalyptus tereticornis Forest Red Gum	Semi Mature	7	EW:1 NS:1	0.09	0.10	1.5	2.0	Fair	Fair	Fair	Medium	Low	Low	Retain	6
0111	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:6 NS:4	0.30	0.33	2.1	3.6	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0112	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:2 NS:2	0.15	0.17	1.6	2.0	Fair	Fair	Poor	Medium	Medium	Low	Retain	6
0113	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:3 NS:3	0.19	0.24	1.8	2.3	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0114	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:3 NS:3	0.18	0.22	1.8	2.2	Fair	Fair	Poor	Medium	Medium	Low	Retain	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0115	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:3 NS:3	0.15	0.22	1.8	2.0	Fair	Fair	Fair	Medium	Medium	Low	Retain	6
0116	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:2 NS:2	0.12	0.14	1.5	2.0	Fair	Fair	Fair	Medium	Low	Low	Retain	6
0117	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:3 NS:2	0.13	0.17	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0118	Eucalyptus moluccana Grey Box	Mature	8	EW:5 NS:5	0.22	0.25	1.8	2.6	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0119	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:9 NS:9	0.53	0.60	2.7	6.4	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0120	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:7 NS:4	0.48	0.53	2.5	5.8	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0121	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:3 NS:2	0.16	0.18	1.6	2.0	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0122	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:2 NS:2	0.16	0.19	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Low	Retain	•
0123	Eucalyptus tereticornis Forest Red Gum	Mature	7	EW:4 NS:4	0.18	0.22	1.8	2.2	Fair	Fair	Poor	Medium	Medium	Low	Retain	6
0124	Eucalyptus tereticornis Forest Red Gum	Semi Mature	5	EW:1 NS:1	0.08	0.10	1.5	2.0	Fair	Fair	Poor	Medium	Low	Low	Retain	6
0125	Eucalyptus tereticornis Forest Red Gum	Mature	15	EW:8 NS:8	0.64	0.72	2.9	7.7	Fair	Fair	Very poor	Short	Low	Low	Retain	6
0126	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:4 NS:2	0.22	0.25	1.8	2.6	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0127	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:4 NS:3	0.22	0.25	1.8	2.6	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0128	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:6 NS:4	0.55	0.60	2.7	6.6	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0129	Eucalyptus tereticornis Forest Red Gum	Mature	15	EW:4 NS:4	0.34	0.37	2.2	4.1	Fair	Fair	Poor	Short	Low	Low	Retain	6
0130	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:4 NS:4	0.24	0.27	1.9	2.9	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0131	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:3 NS:4	0.21	0.22	1.8	2.5	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0132	Eucalyptus tereticornis Forest Red Gum	Mature	14	EW:10 NS:6	0.47	0.52	2.5	5.6	Fair	Fair	Dead	Dead	Low	Low	Retain	•

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	<i>Botanical Name</i> Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0133	Eucalyptus moluccana Grey Box	Mature	6	EW:4 NS:2	0.15	0.18	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Low	Retain	6
0134	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:4 NS:4	0.27	0.30	2.0	3.2	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0135	Eucalyptus tereticornis Forest Red Gum	Mature	14	EW:7 NS:9	0.60	0.65	2.8	7.2	Fair	Fair	Poor	Medium	Medium	Medium	Retain	6
0136	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:6 NS:6	0.25	0.30	2.0	3.0	Fair	Fair	Poor	Short	Low	Low	Retain	•
0137	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:5 NS:5	0.26	0.29	2.0	3.1	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0138	Eucalyptus tereticornis Forest Red Gum	Mature	15	EW:5 NS:5	0.34	0.37	2.2	4.1	Fair	Fair	Poor	Medium	Medium	Medium	Retain	6
0139	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:4 NS:4	0.20	0.23	1.8	2.4	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0140	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:5 NS:6	0.28	0.32	2.1	3.4	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0141	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:4 NS:6	0.17	0.21	1.7	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0142	Eucalyptus moluccana Grey Box	Mature	11	EW:5 NS:6	0.26	0.28	1.9	3.1	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0143	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:6 NS:5	0.14	0.16	1.5	2.0	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0144	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:3 NS:4	0.21	0.22	1.8	2.5	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0145	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:3 NS:3	0.17	0.20	1.7	2.0	Fair	Fair	Fair	Medium	Low	Low	Retain	6
0146	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:4 NS:3	0.24	0.27	1.9	2.9	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0147	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:4 NS:2	0.19	0.21	1.7	2.3	Fair	Poor	Dead	Dead	Low	Low	Retain	6
0148	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:4 NS:4	0.23	0.25	1.8	2.8	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0149	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:2 NS:2	0.22	0.23	1.8	2.6	Fair	Poor	Dead	Dead	Low	Low	Retain	6
0150	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:2 NS:2	0.15	0.16	1.5	2.0	Fair	Poor	Dead	Dead	Low	Low	Retain	•

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0151	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:4 NS:2	0.15	0.16	1.5	2.0	Fair	Poor	Dead	Dead	Low	Low	Retain	6
0152	Eucalyptus tereticornis Forest Red Gum	Semi Mature	10	EW:2 NS:2	0.18	0.20	1.7	2.2	Fair	Poor	Dead	Dead	Low	Low	Retain	6
0153	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:4 NS:2	0.15	0.16	1.5	2.0	Fair	Poor	Dead	Dead	Low	Low	Retain	6
0154	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:4 NS:2	0.16	0.16	1.5	2.0	Fair	Poor	Dead	Dead	Low	Low	To Be Removed	6
0155	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:4 NS:4	0.18	0.20	1.7	2.2	Fair	Poor	Dead	Dead	Low	Low	To Be Removed	6
0156	Eucalyptus tereticornis Forest Red Gum	Semi Mature	10	EW:7 NS:7	0.38	0.16	1.5	4.6	Fair	Fair	Poor	Medium	Medium	Medium	To Be Removed	6
0157	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:4 NS:2	0.15	0.16	1.5	2.0	Fair	Poor	Dead	Dead	Low	Low	To Be Removed	6
0158	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:3 NS:3	0.15	0.16	1.5	2.0	Fair	Fair	Fair	Medium	Low	Low	To Be Removed	6
0159	Eucalyptus tereticornis Forest Red Gum	Semi Mature	7	EW:3 NS:3	0.13	0.14	1.5	2.0	Fair	Fair	Fair	Medium	Low	Low	To Be Removed	6
0160	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:7 NS:7	0.20	0.22	1.8	2.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0161	Eucalyptus tereticornis Forest Red Gum	Semi Mature	10	EW:7 NS:7	0.20	0.22	1.8	2.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0162	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:6 NS:7	0.19	0.21	1.7	2.3	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0163	Eucalyptus tereticornis Forest Red Gum	Semi Mature	11	EW:7 NS:7	0.20	0.22	1.8	2.4	Fair	Poor	Dead	Dead	Low	Low	To Be Removed	•
0164	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:7 NS:6	0.20	0.22	1.8	2.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0165	Eucalyptus tereticornis Forest Red Gum	Semi Mature	11	EW:8 NS:7	0.35	0.38	2.2	4.2	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0166	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:9 NS:6	0.20	0.22	1.8	2.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0167	Eucalyptus tereticornis Forest Red Gum	Semi Mature	12	EW:7 NS:7	0.30	0.31	2.0	3.6	Fair	Poor	Dead	Dead	Medium	Low	To Be Removed	6
0168	Eucalyptus tereticornis Forest Red Gum	Semi Mature	10	EW:7 NS:7	0.25	0.28	1.9	3.0	Fair	Fair	Dead	Dead	Medium	Low	Retain	(a)

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	<i>Botanical Name</i> Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0169	Eucalyptus moluccana Grey Box	Semi Mature	8	EW:7 NS:6	0.20	0.22	1.8	2.4	Fair	Fair	Fair	Medium	Low	Low	Retain	6
0170	<i>Grevillea robusta</i> Silky Oak	Semi Mature	9	EW:5 NS:5	0.10	0.11	1.5	2.0	Fair	Good	Fair	Medium	Low	Low	Retain	6
0171	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:2 NS:2	0.12	0.13	1.5	2.0	Fair	Poor	Dead	Dead	Low	Low	Retain	6
0172	Eucalyptus tereticornis Forest Red Gum	Semi Mature	13	EW:7 NS:7	0.25	0.28	1.9	3.0	Fair	Good	Fair	Medium	Medium	Medium	Retain	6
0173	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:4 NS:4	0.12	0.14	1.5	2.0	Fair	Fair	Poor	Short	Low	Low	Retain	6
0174	Eucalyptus tereticornis Forest Red Gum	Semi Mature	12	EW:7 NS:7	0.26	0.30	2.0	3.1	Fair	Poor	Dead	Dead	Medium	Low	Retain	•
0175	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:6 NS:6	0.27	0.30	2.0	3.2	Poor	Poor	Dead	Dead	Low	Low	Retain	•
0176	Eucalyptus tereticornis Forest Red Gum	Semi Mature	11	EW:4 NS:4	0.15	0.18	1.6	2.0	Fair	Poor	Dead	Dead	Low	Low	Retain	•
0177	Eucalyptus tereticornis Forest Red Gum	Semi Mature	13	EW:8 NS:8	0.26	0.29	2.0	3.1	Fair	Fair	Very poor	Short	Medium	Low	Retain	•
0178	Eucalyptus tereticornis Forest Red Gum	Semi Mature	10	EW:7 NS:7	0.25	0.27	1.9	3.0	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0179	Eucalyptus tereticornis Forest Red Gum	Semi Mature	11	EW:8 NS:6	0.27	0.30	2.0	3.2	Poor	Poor	Dead	Dead	Low	Low	To Be Removed	•
0180	Eucalyptus tereticornis Forest Red Gum	Semi Mature	11	EW:6 NS:6	0.30	0.30	2.0	3.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0181	Eucalyptus tereticornis Forest Red Gum	Semi Mature	10	EW:6 NS:6	0.15	0.18	1.6	2.0	Poor	Poor	Poor	Short	Low	Low	To Be Removed	•
0182	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:7 NS:6	0.15	0.18	1.6	2.0	Poor	Poor	Poor	Short	Low	Low	To Be Removed	•
0183	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:6 NS:6	0.15	0.17	1.6	2.0	Poor	Good	Fair	Medium	Medium	Medium	To Be Removed	•
0184	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:6 NS:6	0.18	0.20	1.7	2.2	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0185	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:9 NS:9	0.47	0.51	2.5	5.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0186	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:3 NS:3	0.17	0.18	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	•

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	<i>Botanical Name</i> Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0187	Eucalyptus tereticornis Forest Red Gum	Mature	7	EW:2 NS:3	0.13	0.13	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	•
0188	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:7 NS:5	0.30	0.32	2.1	3.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0189	Eucalyptus tereticornis Forest Red Gum	Mature	6	EW:4 NS:3	0.16	0.17	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	6
0190	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:5 NS:5	0.20	0.24	1.8	2.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0191	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:5 NS:4	0.29	0.33	2.1	3.5	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0192	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:4 NS:8	0.27	0.33	2.1	3.2	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0193	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:3 NS:3	0.14	0.15	1.5	2.0	Fair	Fair	Poor	Short	Low	Low	Retain	•
0194	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:4 NS:4	0.23	0.26	1.9	2.8	Fair	Fair	Poor	Short	Low	Low	Retain	6
0195	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:8 NS:7	0.30	0.33	2.1	3.6	Fair	Fair	Poor	Medium	Medium	Low	Retain	6
0196	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:8 NS:4	0.45	0.48	2.4	5.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0197	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:7 NS:8	0.34	0.36	2.2	4.1	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0198	<i>Acacia decurrens</i> Green Wattle	Mature	6	EW:4 NS:5	0.10	0.11	1.5	2.0	Fair	Fair	Fair	Medium	Low	Remove	To Be Removed	6
0199	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:6 NS:8	0.45	0.48	2.4	5.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0200	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:4 NS:4	0.14	0.19	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	•
0201	<i>Olea africana</i> African Olive	Mature	6	EW:9 NS:8	0.28	0.49	2.5	3.4	Fair	Fair	Poor	Short	Low	Low	To Be Removed	•
0202	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:4 NS:4	0.34	0.37	2.2	4.1	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0203	Eucalyptus moluccana Grey Box	Mature	10	EW:3 NS:4	0.32	0.39	2.2	3.8	Fair	Fair	Poor	Short	Low	Low	To Be Removed	6
0204	Eucalyptus moluccana Grey Box	Mature	10	EW:4 NS:5	0.28	0.31	2.0	3.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0205	Eucalyptus moluccana Grey Box	Mature	9	EW:7 NS:8	0.31	0.34	2.1	3.7	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0206	Eucalyptus moluccana Grey Box	Mature	13	EW:5 NS:6	0.38	0.40	2.3	4.6	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0207	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:8 NS:4	0.28	0.32	2.1	3.4	Fair	Fair	Fair	Medium	Medium	Medium	Retain	6
0208	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:4 NS:4	0.20	0.24	1.8	2.4	Fair	Fair	Poor	Medium	Medium	Low	Retain	6
0209	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:3 NS:4	0.17	0.19	1.6	2.0	Fair	Fair	Poor	Medium	Medium	Low	Retain	6
0210	<i>Angophora hispidia</i> Dwarf Apple	Mature	11	EW:6 NS:4	0.34	0.39	2.2	4.1	Fair	Fair	Fair	Medium	Medium	Medium	Retain	•
0211	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:6 NS:6	0.29	0.35	2.1	3.5	Fair	Fair	Fair	Medium	Medium	Medium	Retain	•
0212	Eucalyptus moluccana Grey Box	Mature	10	EW:6 NS:5	0.30	0.32	2.1	3.6	Fair	Fair	Dead	Dead	Low	Low	Retain	6
0213	Eucalyptus moluccana Grey Box	Mature	11	EW:3 NS:4	0.18	0.21	1.7	2.2	Fair	Fair	Poor	Medium	Medium	Medium	Retain	6
0214	<i>Angophora floribunda</i> Rough-barked Apple Myrtle	Mature	8	EW:3 NS:3	0.14	0.17	1.6	2.0	Fair	Fair	Poor	Medium	Low	Low	Retain	6
0215	Eucalyptus tereticornis Forest Red Gum	Mature	7	EW:4 NS:3	0.14	0.18	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Low	Removed	6
0216	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:6 NS:6	0.38	0.40	2.3	4.6	Fair	Fair	Dead	Dead	Low	Low	Removed	6
0217	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:6 NS:7	0.32	0.35	2.1	3.8	Fair	Fair	Dead	Dead	Low	Low	Removed	6
0218	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:3 NS:3	0.15	0.17	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Low	Removed	•
0219	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:2 NS:2	0.12	0.12	1.5	2.0	Fair	Fair	Dead	Dead	Low	Low	Removed	•
0220	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:5 NS:7	0.34	0.37	2.2	4.1	Fair	Fair	Dead	Dead	Low	Low	Removed	•
0221	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:3 NS:3	0.18	0.20	1.7	2.2	Fair	Fair	Dead	Dead	Low	Low	Removed	6
0222	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:4 NS:4	0.21	0.23	1.8	2.5	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0223	Eucalyptus moluccana Grey Box	Mature	12	EW:3 NS:5	0.16	0.19	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0224	Eucalyptus moluccana Grey Box	Mature	11	EW:2 NS:2	0.29	0.29	2.0	3.5	Fair	Fair	Dead	Dead	Low	Low	Removed	©
0225	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:3 NS:4	0.22	0.26	1.9	2.6	Fair	Fair	Poor	Short	Medium	Low	Removed	6
0226	Eucalyptus moluccana Grey Box	Mature	12	EW:4 NS:8	0.26	0.29	2.0	3.1	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0227	Eucalyptus moluccana Grey Box	Mature	7	EW:3 NS:3	0.12	0.14	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	©
0228	Eucalyptus moluccana Grey Box	Mature	6	EW:2 NS:2	0.13	0.14	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	©
0229	Eucalyptus moluccana Grey Box	Mature	10	EW:8 NS:6	0.28	0.32	2.1	3.4	Fair	Fair	Fair	Medium	Medium	Medium	Removed	©
0230	Eucalyptus moluccana Grey Box	Mature	11	EW:5 NS:4	0.44	0.47	2.4	5.3	Poor	Poor	Poor	Medium	Low	Low	Removed	6
0231	Eucalyptus moluccana Grey Box	Mature	12	EW:6 NS:8	0.26	0.28	1.9	3.1	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0232	Eucalyptus moluccana Grey Box	Mature	13	EW:5 NS:6	0.33	0.35	2.1	4.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0233	Eucalyptus moluccana Grey Box	Mature	11	EW:3 NS:3	0.14	0.15	1.5	2.0	Fair	Fair	Poor	Short	Low	Low	Removed	6
0234	Eucalyptus moluccana Grey Box	Mature	8	EW:3 NS:3	0.14	0.16	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	©
0235	Eucalyptus moluccana Grey Box	Mature	7	EW:3 NS:2	0.13	0.14	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	Removed	•
0236	Eucalyptus moluccana Grey Box	Mature	13	EW:8 NS:8	0.53	0.57	2.6	6.4	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0237	Eucalyptus moluccana Grey Box	Mature	13	EW:9 NS:8	0.42	0.45	2.4	5.0	Fair	Fair	Poor	Short	Medium	Low	Removed	•
0238	Eucalyptus moluccana Grey Box	Mature	8	EW:3 NS:3	0.14	0.16	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	Removed	•
0239	Eucalyptus moluccana Grey Box	Mature	10	EW:6 NS:6	0.30	0.33	2.1	3.6	Fair	Fair	Poor	Short	Medium	Low	Removed	•
0240	Eucalyptus moluccana Grey Box	Mature	7	EW:2 NS:2	0.10	0.11	1.5	2.0	Fair	Fair	Poor	Medium	Low	Low	Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0241	Eucalyptus moluccana Grey Box	Mature	6	EW:4 NS:2	0.11	0.13	1.5	2.0	Fair	Fair	Poor	Medium	Low	Low	Removed	6
0242	Eucalyptus moluccana Grey Box	Mature	11	EW:3 NS:2	0.18	0.20	1.7	2.2	Fair	Fair	Dead	Dead	Low	Low	Removed	6
0243	Eucalyptus moluccana Grey Box	Mature	12	EW:5 NS:5	0.39	0.42	2.3	4.7	Fair	Fair	Very poor	Short	Low	Low	Removed	6
0244	Eucalyptus moluccana Grey Box	Mature	13	EW:3 NS:6	0.31	0.33	2.1	3.7	Fair	Fair	Dead	Dead	Low	Low	Removed	6
0245	Eucalyptus moluccana Grey Box	Mature	10	EW:4 NS:5	0.19	0.22	1.8	2.3	Fair	Fair	Fair	Medium	Medium	Low	Removed	•
0246	Eucalyptus moluccana Grey Box	Mature	13	EW:9 NS:7	0.35	0.38	2.2	4.2	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0247	Eucalyptus moluccana Grey Box	Mature	10	EW:5 NS:4	0.13	0.15	1.5	2.0	Fair	Fair	Poor	Medium	Medium	Low	Removed	•
0248	Eucalyptus moluccana Grey Box	Mature	6	EW:1 NS:1	0.07	0.09	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	Removed	•
0249	Eucalyptus moluccana Grey Box	Mature	10	EW:3 NS:3	0.14	0.15	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	Removed	•
0250	Eucalyptus moluccana Grey Box	Mature	9	EW:1 NS:1	0.09	0.09	1.5	2.0	Fair	Fair	Dead	Dead	Low	Low	Removed	•
0251	Eucalyptus moluccana Grey Box	Mature	12	EW:2 NS:1	0.14	0.15	1.5	2.0	Fair	Fair	Dead	Dead	Low	Low	Removed	•
0252	Eucalyptus moluccana Grey Box	Mature	12	EW:4 NS:5	0.16	0.17	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0253	Eucalyptus moluccana Grey Box	Mature	7	EW:3 NS:3	0.09	0.09	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	Removed	6
0254	Eucalyptus moluccana Grey Box	Mature	13	EW:3 NS:3	0.14	0.15	1.5	2.0	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6
0255	Eucalyptus moluccana Grey Box	Mature	12	EW:2 NS:3	0.13	0.13	1.5	2.0	Fair	Fair	Poor	Short	Low	Low	To Be Removed	6
0256	Eucalyptus moluccana Grey Box	Mature	13	EW:6 NS:5	0.44	0.48	2.4	5.3	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0257	Eucalyptus moluccana Grey Box	Mature	12	EW:6 NS:7	0.32	0.36	2.2	3.8	Fair	Fair	Poor	Medium	Medium	Medium	To Be Removed	6
0258	Eucalyptus moluccana Grey Box	Mature	13	EW:5 NS:3	0.31	0.34	2.1	3.7	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0259	Eucalyptus moluccana Grey Box	Mature	13	EW:3 NS:3	0.20	0.22	1.8	2.4	Fair	Fair	Dead	Medium	Low	Low	To Be Removed	6
0260	Eucalyptus moluccana Grey Box	Mature	8	EW:4 NS:3	0.14	0.16	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	•
0261	Eucalyptus moluccana Grey Box	Mature	14	EW:2 NS:2	0.19	0.22	1.8	2.3	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6
0262	Eucalyptus moluccana Grey Box	Mature	14	EW:4 NS:5	0.45	0.49	2.5	5.4	Fair	Fair	Very poor	Dead	Low	Low	To Be Removed	6
0263	Eucalyptus moluccana Grey Box	Mature	12	EW:4 NS:3	0.27	0.30	2.0	3.2	Fair	Fair	Poor	Medium	Low	Low	To Be Removed	6
0264	Eucalyptus moluccana Grey Box	Mature	12	EW:4 NS:5	0.25	0.27	1.9	3.0	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0265	Eucalyptus moluccana Grey Box	Mature	10	EW:4 NS:3	0.26	0.27	1.9	3.1	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0266	Eucalyptus moluccana Grey Box	Mature	12	EW:6 NS:5	0.32	0.33	2.1	3.8	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6
0267	Eucalyptus moluccana Grey Box	Mature	12	EW:5 NS:4	0.30	0.32	2.1	3.6	Fair	Poor	Fair	Medium	Medium	Low	To Be Removed	6
0268	Eucalyptus moluccana Grey Box	Mature	11	EW:2 NS:2	0.17	0.18	1.6	2.0	Fair	Fair	Poor	Short	Low	Low	To Be Removed	6
0269	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:2 NS:2	0.13	0.14	1.5	2.0	Fair	Fair	Poor	Short	Low	Low	To Be Removed	6
0270	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:2 NS:2	0.14	0.16	1.5	2.0	Fair	Fair	Poor	Short	Low	Low	To Be Removed	6
0271	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:2 NS:2	0.26	0.29	2.0	3.1	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6
0272	Eucalyptus moluccana Grey Box	Mature	13	EW:5 NS:8	0.20	0.21	1.7	2.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0273	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:5 NS:4	0.40	0.44	2.3	4.8	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	•
0274	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:5 NS:4	0.17	0.18	1.6	2.0	Fair	Fair	Very poor	Short	Low	Low	To Be Removed	•
0275	Exocarpus cupressiformis Cherry Ballart	Mature	4	EW:3 NS:3	0.11	0.13	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0276	Eucalyptus moluccana Grey Box	Mature	7	EW:3 NS:2	0.11	0.13	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0277	Eucalyptus moluccana Grey Box	Mature	12	EW:3 NS:4	0.19	0.19	1.6	2.3	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6
0278	Eucalyptus moluccana Grey Box	Mature	13	EW:5 NS:5	0.35	0.37	2.2	4.2	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0279	Eucalyptus moluccana Grey Box	Mature	13	EW:3 NS:2	0.21	0.22	1.8	2.5	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0280	Eucalyptus moluccana Grey Box	Mature	7	EW:3 NS:3	0.10	0.12	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	6
0281	Eucalyptus moluccana Grey Box	Mature	12	EW:1 NS:2	0.12	0.14	1.5	2.0	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6
0282	Eucalyptus moluccana Grey Box	Mature	7	EW:2 NS:2	0.08	0.09	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	6
0283	Eucalyptus moluccana Grey Box	Mature	12	EW:4 NS:5	0.17	0.18	1.6	2.0	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	©
0284	Eucalyptus moluccana Grey Box	Mature	10	EW:4 NS:4	0.15	0.17	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0285	Eucalyptus moluccana Grey Box	Mature	11	EW:2 NS:2	0.14	0.15	1.5	2.0	Fair	Poor	Dead	Dead	Low	Low	To Be Removed	6
0286	Eucalyptus moluccana Grey Box	Mature	11	EW:2 NS:2	0.14	0.15	1.5	2.0	Fair	Poor	Dead	Dead	Low	Low	To Be Removed	6
0287	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:2 NS:2	0.08	0.09	1.5	2.0	Fair	Fair	Poor	Medium	Low	Low	To Be Removed	6
0288	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:3 NS:3	0.08	0.10	1.5	2.0	Fair	Fair	Fair	Medium	Low	Low	Removed	6
0289	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:10 NS:7	0.48	0.52	2.5	5.8	Fair	Fair	Dead	Dead	Low	Low	Removed	6
0290	Eucalyptus moluccana Grey Box	Mature	13	EW:8 NS:6	0.36	0.39	2.2	4.3	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	©
0291	Eucalyptus moluccana Grey Box	Mature	9	EW:3 NS:3	0.11	0.14	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	6
0292	Eucalyptus moluccana Grey Box	Mature	11	EW:4 NS:3	0.17	0.18	1.6	2.0	Fair	Fair	Poor	Short	Low	Low	To Be Removed	6
0293	Eucalyptus moluccana Grey Box	Mature	13	EW:6 NS:3	0.32	0.30	2.0	3.8	Poor	Poor	Poor	Dead	Low	Low	To Be Removed	6
0294	Eucalyptus moluccana Grey Box	Mature	6	EW:2 NS:2	0.09	0.10	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	<i>Botanical Name</i> Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0295	Eucalyptus moluccana Grey Box	Mature	5	EW:2 NS:2	0.07	0.09	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	6
0296	Eucalyptus moluccana Grey Box	Mature	6	EW:3 NS:3	0.09	0.10	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	6
0297	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:2 NS:3	0.11	0.12	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	6
0298	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:3 NS:4	0.28	0.29	2.0	3.4	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6
0299	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:3 NS:6	0.18	0.19	1.6	2.2	Fair	Fair	Fair	Medium	Low	Low	To Be Removed	6
0300	Eucalyptus moluccana Grey Box	Mature	8	EW:2 NS:2	0.10	0.11	1.5	2.0	Fair	Fair	Very poor	Short	Low	Low	To Be Removed	6
0301	Eucalyptus moluccana Grey Box	Mature	13	EW:4 NS:5	0.32	0.35	2.1	3.8	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6
0302	Eucalyptus moluccana Grey Box	Mature	6	EW:3 NS:2	0.09	0.10	1.5	2.0	Fair	Fair	Fair	Medium	Low	Low	To Be Removed	6
0303	Eucalyptus moluccana Grey Box	Mature	8	EW:5 NS:5	0.14	0.15	1.5	2.0	Fair	Fair	Poor	Medium	Low	Low	To Be Removed	6
0304	Eucalyptus moluccana Grey Box	Mature	12	EW:4 NS:4	0.15	0.16	1.5	2.0	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6
0305	Eucalyptus moluccana Grey Box	Mature	10	EW:4 NS:5	0.18	0.20	1.7	2.2	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	•
0306	Eucalyptus moluccana Grey Box	Mature	11	EW:4 NS:4	0.19	0.20	1.7	2.3	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6
0307	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:5 NS:3	0.19	0.21	1.7	2.3	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0308	Eucalyptus moluccana Grey Box	Mature	12	EW:8 NS:6	0.25	0.28	1.9	3.0	Fair	Fair	Very poor	Short	Low	Low	To Be Removed	•
0309	Eucalyptus moluccana Grey Box	Mature	11	EW:6 NS:5	0.28	0.30	2.0	3.4	Fair	Fair	Very poor	Short	Low	Low	To Be Removed	•
0310	Eucalyptus moluccana Grey Box	Mature	11	EW:4 NS:3	0.23	0.24	1.8	2.8	Fair	Fair	Very poor	Short	Low	Low	To Be Removed	•
0311	Eucalyptus moluccana Grey Box	Mature	5	EW:2 NS:2	0.08	0.09	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	To Be Removed	•
0312	Eucalyptus moluccana Grey Box	Mature	11	EW:5 NS:4	0.26	0.29	2.0	3.1	Fair	Fair	Poor	Medium	Low	Low	To Be Removed	(a)

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0313	Eucalyptus moluccana Grey Box	Mature	12	EW:8 NS:6	0.30	0.32	2.1	3.6	Fair	Fair	Poor	Short	Low	Low	To Be Removed	6
0314	Eucalyptus moluccana Grey Box	Mature	10	EW:3 NS:2	0.15	0.16	1.5	2.0	Fair	Fair	Fair	Medium	Low	Low	Removed	©
0315	Eucalyptus moluccana Grey Box	Mature	6	EW:2 NS:2	0.07	0.08	1.5	2.0	Fair	Fair	Fair	Medium	Low	Low	Removed	6
0316	Eucalyptus moluccana Grey Box	Mature	8	EW:2 NS:2	0.09	0.11	1.5	2.0	Fair	Fair	Fair	Medium	Low	Low	Removed	©
0317	Eucalyptus moluccana Grey Box	Mature	8	EW:2 NS:2	0.11	0.13	1.5	2.0	Fair	Fair	Fair	Medium	Low	Low	Removed	•
0318	Eucalyptus moluccana Grey Box	Mature	12	EW:3 NS:4	0.17	0.20	1.7	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0319	Eucalyptus moluccana Grey Box	Mature	10	EW:2 NS:2	0.10	0.13	1.5	2.0	Fair	Fair	Dead	Dead	Low	Low	Removed	•
0320	Eucalyptus moluccana Grey Box	Mature	12	EW:2 NS:2	0.16	0.19	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	©
0321	Eucalyptus moluccana Grey Box	Mature	13	EW:3 NS:3	0.18	0.19	1.6	2.2	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0322	Eucalyptus moluccana Grey Box	Mature	14	EW:4 NS:3	0.15	0.16	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0323	Eucalyptus moluccana Grey Box	Mature	9	EW:4 NS:4	0.10	0.11	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Low	Removed	•
0324	Eucalyptus moluccana Grey Box	Mature	6	EW:2 NS:3	0.10	0.11	1.5	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0325	Eucalyptus moluccana Grey Box	Mature	12	EW:5 NS:6	0.40	0.44	2.3	4.8	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0326	Eucalyptus moluccana Grey Box	Mature	11	EW:5 NS:4	0.25	0.28	1.9	3.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0327	Eucalyptus moluccana Grey Box	Semi Mature	6	EW:2 NS:4	0.20	0.25	1.8	2.4	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0328	Eucalyptus moluccana Grey Box	Mature	14	EW:6 NS:7	0.40	0.37	2.2	4.8	Fair	Good	Fair	Medium	High	High	Removed	6
0329	Eucalyptus moluccana Grey Box	Mature	14	EW:4 NS:6	0.35	0.38	2.2	4.2	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0330	Eucalyptus moluccana Grey Box	Mature	15	EW:4 NS:6	0.42	0.44	2.3	5.0	Fair	Good	Fair	Medium	High	High	Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	<i>Botanical Name</i> Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0331	Eucalyptus moluccana Grey Box	Mature	6	EW:3 NS:1	0.14	0.17	1.6	2.0	Fair	Fair	Poor	Medium	Low	Low	Removed	•
0332	Eucalyptus moluccana Grey Box	Mature	7	EW:1 NS:2	0.10	0.14	1.5	2.0	Fair	Fair	Poor	Medium	Low	Low	Removed	•
0333	Eucalyptus moluccana Grey Box	Mature	11	EW:4 NS:3	0.38	0.42	2.3	4.6	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0334	Eucalyptus moluccana Grey Box	Mature	13	EW:4 NS:5	0.44	0.45	2.4	5.3	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0335	Eucalyptus moluccana Grey Box	Mature	13	EW:4 NS:4	0.35	0.32	2.1	4.2	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0336	Eucalyptus moluccana Grey Box	Mature	15	EW:4 NS:4	0.44	0.48	2.4	5.3	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0337	Eucalyptus moluccana Grey Box	Mature	14	EW:2 NS:1	0.25	0.28	1.9	3.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0338	Eucalyptus moluccana Grey Box	Mature	14	EW:3 NS:3	0.32	0.35	2.1	3.8	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0339	Eucalyptus moluccana Grey Box	Mature	14	EW:4 NS:5	0.40	0.44	2.3	4.8	Fair	Fair	Fair	Medium	High	High	Removed	6
0340	Eucalyptus moluccana Grey Box	Mature	13	EW:4 NS:3	0.26	0.30	2.0	3.1	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0341	Eucalyptus moluccana Grey Box	Mature	10	EW:3 NS:4	0.28	0.25	1.8	3.4	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0342	Eucalyptus moluccana Grey Box	Mature	9	EW:3 NS:2	0.18	0.24	1.8	2.2	Fair	Fair	Poor	Medium	Low	Low	Removed	•
0343	Eucalyptus moluccana Grey Box	Mature	13	EW:4 NS:3	0.25	0.27	1.9	3.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0344	Eucalyptus moluccana Grey Box	Mature	9	EW:3 NS:4	0.34	0.35	2.1	4.1	Fair	Fair	Poor	Medium	Low	Low	Removed	6
0345	Eucalyptus moluccana Grey Box	Mature	14	EW:6 NS:5	0.50	0.54	2.6	6.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0346	Eucalyptus moluccana Grey Box	Mature	14	EW:4 NS:4	0.45	0.48	2.4	5.4	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0347	Eucalyptus moluccana Grey Box	Mature	13	EW:2 NS:2	0.32	0.35	2.1	3.8	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0348	Eucalyptus moluccana Grey Box	Mature	13	EW:5 NS:4	0.42	0.45	2.4	5.0	Fair	Fair	Fair	Medium	High	High	Removed	•

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	<i>Botanical Name</i> Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0349	Eucalyptus moluccana Grey Box	Mature	7	EW:2 NS:2	0.23	0.25	1.8	2.8	Fair	Fair	Poor	Medium	Low	Low	Removed	6
0350	Eucalyptus moluccana Grey Box	Mature	15	EW:5 NS:5	0.47	0.50	2.5	5.6	Fair	Fair	Fair	Medium	High	High	Removed	•
0351	Eucalyptus moluccana Grey Box	Mature	12	EW:2 NS:2	0.23	0.26	1.9	2.8	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0352	Eucalyptus moluccana Grey Box	Mature	11	EW:3 NS:3	0.26	0.28	1.9	3.1	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0353	Eucalyptus moluccana Grey Box	Mature	10	EW:6 NS:5	0.44	0.48	2.4	5.3	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0354	Eucalyptus moluccana Grey Box	Mature	10	EW:7 NS:6	0.49	0.43	2.3	5.9	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0355	Angophora floribunda Rough-barked Apple Myrtle	Mature	11	EW:3 NS:4	0.37	0.40	2.3	4.4	Fair	Fair	Good	Medium	Medium	Medium	Removed	•
0356	Eucalyptus moluccana Grey Box	Mature	12	EW:7 NS:6	0.46	0.49	2.5	5.5	Fair	Fair	Very poor	Short	Low	Low	Removed	6
0357	Eucalyptus moluccana Grey Box	Mature	10	EW:5 NS:5	0.41	0.44	2.3	4.9	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0358	Eucalyptus moluccana Grey Box	Mature	11	EW:4 NS:4	0.33	0.36	2.2	4.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0359	Eucalyptus moluccana Grey Box	Mature	12	EW:4 NS:4	0.32	0.34	2.1	3.8	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0360	Eucalyptus moluccana Grey Box	Mature	13	EW:4 NS:4	0.30	0.33	2.1	3.6	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0361	Eucalyptus moluccana Grey Box	Mature	14	EW:6 NS:6	0.39	0.42	2.3	4.7	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0362	Eucalyptus moluccana Grey Box	Mature	10	EW:5 NS:6	0.39	0.44	2.3	4.7	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0363	Eucalyptus moluccana Grey Box	Mature	11	EW:5 NS:5	0.32	0.35	2.1	3.8	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0364	Eucalyptus moluccana Grey Box	Mature	6	EW:2 NS:2	0.32	0.37	2.2	3.8	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	6
0365	Eucalyptus moluccana Grey Box	Mature	10	EW:4 NS:4	0.36	0.42	2.3	4.3	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0366	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:5 NS:4	0.41	0.44	2.3	4.9	Fair	Poor	Poor	Medium	Low	Low	To Be Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0367	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:3 NS:2	0.20	0.22	1.8	2.4	Fair	Poor	Dead	Dead	Low	Remove	To Be Removed	6
0368	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:2 NS:3	0.29	0.33	2.1	3.5	Fair	Poor	Poor	Medium	Low	Low	To Be Removed	6
0369	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:3 NS:3	0.26	0.29	2.0	3.1	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0370	Eucalyptus moluccana Grey Box	Mature	11	EW:3 NS:3	0.33	0.35	2.1	4.0	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0371	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:1 NS:2	0.27	0.30	2.0	3.2	Fair	Fair	Poor	Medium	Low	Low	To Be Removed	•
0372	Eucalyptus tereticornis Forest Red Gum	Semi Mature	7	EW:1 NS:1	0.16	0.19	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	©
0373	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:3 NS:2	0.24	0.26	1.9	2.9	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0374	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:2 NS:4	0.37	0.40	2.3	4.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	©
0375	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:4 NS:4	0.38	0.41	2.3	4.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	©
0376	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:4 NS:4	0.30	0.33	2.1	3.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	©
0377	Eucalyptus tereticornis Forest Red Gum	Mature	16	EW:10 NS:10	0.50	0.70	2.8	6.0	Fair	Fair	Fair	Medium	High	High	To Be Removed	©
0378	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:6 NS:7	0.38	0.50	2.5	4.6	Poor	Fair	Fair	Medium	Medium	Medium	To Be Removed	©
0379	Eucalyptus tereticornis Forest Red Gum	Mature	18	EW:10 NS:10	0.72	0.85	3.1	8.6	Fair	Fair	Fair	Medium	High	High	To Be Removed	6
0380	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:4 NS:4	0.13	0.15	1.5	2.0	Fair	Fair	Fair	Medium	Low	Low	To Be Removed	•
0381	Eucalyptus moluccana Grey Box	Semi Mature	9	EW:6 NS:6	0.30	0.40	2.3	3.6	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0382	Eucalyptus moluccana Grey Box	Mature	20	EW:10 NS:7	0.40	0.45	2.4	4.8	Good	Good	Fair	Medium	High	High	Removed	•
0383	Eucalyptus moluccana Grey Box	Mature	20	EW:7 NS:7	0.40	0.42	2.3	4.8	Fair	Fair	Fair	Medium	High	High	Removed	6
0384	Eucalyptus moluccana Grey Box	Mature	20	EW:8 NS:7	0.36	0.40	2.3	4.3	Fair	Fair	Fair	Medium	High	High	Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	<i>Botanical Name</i> Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0385	Eucalyptus moluccana Grey Box	Mature	20	EW:9 NS:9	0.37	0.43	2.3	4.4	Good	Fair	Fair	Medium	High	High	Removed	•
0386	Eucalyptus moluccana Grey Box	Mature	16	EW:7 NS:7	0.30	0.35	2.1	3.6	Fair	Poor	Dead	Dead	Low	Low	Removed	6
0387	Eucalyptus moluccana Grey Box	Semi Mature	8	EW:8 NS:7	0.13	0.15	1.5	2.0	Poor	Fair	Fair	Medium	Low	Low	Removed	6
0388	Corymbia maculata Spotted Gum	Semi Mature	10	EW:5 NS:5	0.13	0.16	1.5	2.0	Fair	Fair	Fair	Medium	Low	Medium	Removed	6
0389	Eucalyptus moluccana Grey Box	Mature	15	EW:7 NS:7	0.34	0.38	2.2	4.1	Fair	Fair	Fair	Medium	High	High	Removed	6
0390	Eucalyptus moluccana Grey Box	Mature	17	EW:8 NS:7	0.38	0.41	2.3	4.6	Good	Fair	Fair	Medium	High	High	Removed	•
0391	Eucalyptus moluccana Grey Box	Mature	20	EW:9 NS:10	0.40	0.43	2.3	4.8	Good	Fair	Fair	Medium	High	High	Removed	•
0392	Eucalyptus moluccana Grey Box	Mature	18	EW:7 NS:7	0.30	0.33	2.1	3.6	Fair	Fair	Fair	Medium	High	High	Removed	•
0393	Eucalyptus moluccana Grey Box	Mature	20	EW:7 NS:7	0.25	0.31	2.0	3.0	Fair	Fair	Fair	Medium	High	High	Removed	•
0394	Eucalyptus moluccana Grey Box	Mature	20	EW:8 NS:7	0.35	0.38	2.2	4.2	Fair	Fair	Fair	Medium	High	High	Removed	6
0395	Eucalyptus moluccana Grey Box	Mature	20	EW:10 NS:10	0.40	0.47	2.4	4.8	Good	Fair	Fair	Medium	High	High	Removed	6
0396	Eucalyptus moluccana Grey Box	Mature	18	EW:9 NS:10	0.45	0.50	2.5	5.4	Good	Fair	Fair	Medium	High	Medium	Removed	6
0397	Eucalyptus moluccana Grey Box	Mature	18	EW:9 NS:9	0.40	0.43	2.3	4.8	Good	Fair	Fair	Medium	High	High	Removed	6
0398	Eucalyptus moluccana Grey Box	Mature	18	EW:7 NS:7	0.37	0.41	2.3	4.4	Fair	Fair	Fair	Medium	High	High	Removed	6
0399	Eucalyptus moluccana Grey Box	Mature	17	EW:8 NS:7	0.35	0.38	2.2	4.2	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0400	Eucalyptus moluccana Grey Box	Mature	17	EW:8 NS:7	0.35	0.38	2.2	4.2	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0401	Eucalyptus moluccana Grey Box	Semi Mature	5	EW:4 NS:2	0.15	0.22	1.8	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0402	Eucalyptus moluccana Grey Box	Semi Mature	8	EW:3 NS:2	0.20	0.24	1.8	2.4	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0403	Eucalyptus moluccana Grey Box	Mature	13	EW:5 NS:4	0.35	0.44	2.3	4.2	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0404	Eucalyptus moluccana Grey Box	Mature	13	EW:3 NS:2	0.22	0.27	1.9	2.6	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0405	Eucalyptus moluccana Grey Box	Mature	13	EW:4 NS:4	0.40	0.45	2.4	4.8	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0406	Eucalyptus moluccana Grey Box	Semi Mature	8	EW:2 NS:2	0.19	0.24	1.8	2.3	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0407	Eucalyptus moluccana Grey Box	Mature	15	EW:2 NS:3	0.35	0.40	2.3	4.2	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0408	Eucalyptus moluccana Grey Box	Mature	14	EW:2 NS:2	0.22	0.26	1.9	2.6	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0409	Eucalyptus moluccana Grey Box	Semi Mature	7	EW:2 NS:3	0.14	0.18	1.6	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	©
0410	Eucalyptus moluccana Grey Box	Mature	16	EW:5 NS:5	0.39	0.46	2.4	4.7	Fair	Fair	Fair	Medium	High	High	Removed	6
0411	Eucalyptus moluccana Grey Box	Mature	15	EW:4 NS:4	0.35	0.38	2.2	4.2	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0412	Eucalyptus moluccana Grey Box	Semi Mature	8	EW:3 NS:3	0.15	0.20	1.7	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0413	Eucalyptus moluccana Grey Box	Mature	15	EW:4 NS:4	0.48	0.56	2.6	5.8	Fair	Fair	Fair	Medium	High	High	Removed	6
0414	Eucalyptus moluccana Grey Box	Mature	14	EW:6 NS:4	0.43	0.48	2.4	5.2	Fair	Fair	Fair	Medium	High	High	Removed	•
0415	Eucalyptus moluccana Grey Box	Semi Mature	9	EW:3 NS:3	0.21	0.26	1.9	2.5	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0416	Eucalyptus moluccana Grey Box	Mature	12	EW:1 NS:1	0.21	0.29	2.0	2.5	Fair	Fair	Dead	Dead	Low	Remove	Removed	•
0417	Eucalyptus moluccana Grey Box	Mature	15	EW:5 NS:5	0.45	0.53	2.5	5.4	Fair	Fair	Fair	Medium	High	High	Removed	6
0418	Eucalyptus moluccana Grey Box	Semi Mature	6	EW:3 NS:2	0.18	0.24	1.8	2.2	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0419	Eucalyptus moluccana Grey Box	Semi Mature	8	EW:2 NS:4	0.18	0.23	1.8	2.2	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0420	Eucalyptus moluccana Grey Box	Mature	16	EW:6 NS:4	0.46	0.55	2.6	5.5	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0421	Eucalyptus moluccana Grey Box	Mature	14	EW:2 NS:2	0.28	0.33	2.1	3.4	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0422	Eucalyptus moluccana Grey Box	Mature	11	EW:3 NS:4	0.32	0.36	2.2	3.8	Fair	Fair	Fair	Medium	Medium	Medium	Removed	©
0423	Eucalyptus moluccana Grey Box	Mature	12	EW:6 NS:5	0.40	0.44	2.3	4.8	Fair	Fair	Very poor	Short	Low	Low	Removed	6
0424	Eucalyptus moluccana Grey Box	Mature	14	EW:5 NS:5	0.44	0.52	2.5	5.3	Fair	Fair	Fair	Medium	High	High	Removed	6
0425	Eucalyptus moluccana Grey Box	Mature	13	EW:3 NS:2	0.33	0.37	2.2	4.0	Fair	Fair	Dead	Dead	Low	Remove	Removed	6
0426	Eucalyptus moluccana Grey Box	Mature	13	EW:4 NS:3	0.30	0.35	2.1	3.6	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0427	Eucalyptus moluccana Grey Box	Semi Mature	5	EW:2 NS:2	0.15	0.21	1.7	2.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0428	Eucalyptus moluccana Grey Box	Mature	12	EW:3 NS:3	0.34	0.40	2.3	4.1	Fair	Fair	Very poor	Short	Low	Low	Removed	•
0429	Eucalyptus moluccana Grey Box	Mature	13	EW:5 NS:3	0.47	0.56	2.6	5.6	Fair	Fair	Fair	Medium	High	High	Removed	•
0430	Eucalyptus moluccana Grey Box	Mature	13	EW:4 NS:5	0.48	0.56	2.6	5.8	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0431	Eucalyptus moluccana Grey Box	Semi Mature	5	EW:2 NS:3	0.21	0.27	1.9	2.5	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0432	Eucalyptus moluccana Grey Box	Mature	12	EW:6 NS:6	0.50	0.58	2.6	6.0	Fair	Fair	Fair	Medium	Medium	Medium	Removed	•
0433	Eucalyptus moluccana Grey Box	Mature	7	EW:3 NS:2	0.28	0.34	2.1	3.4	Fair	Fair	Poor	Medium	Low	Low	Removed	6
0434	Eucalyptus moluccana Grey Box	Semi Mature	7	EW:3 NS:3	0.28	0.35	2.1	3.4	Fair	Fair	Fair	Medium	Medium	Medium	Removed	6
0435	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:7 NS:8	0.50	0.55	2.6	6.0	Fair	Fair	Poor	Medium	Medium	Medium	To Be Removed	6
0436	Eucalyptus tereticornis Forest Red Gum	Semi Mature	5	EW:2 NS:2	0.18	0.24	1.8	2.2	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0437	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:4 NS:5	0.38	0.45	2.4	4.6	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	•
0438	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:4 NS:5	0.42	0.48	2.4	5.0	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0439	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:5 NS:5	0.45	0.52	2.5	5.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0440	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:5 NS:6	0.46	0.53	2.5	5.5	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0441	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:6 NS:6	0.55	0.61	2.7	6.6	Fair	Fair	Good	Medium	High	High	To Be Removed	(
0442	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:3 NS:3	0.20	0.26	1.9	2.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0443	Eucalyptus tereticornis Forest Red Gum	Mature	14	EW:5 NS:4	0.49	0.53	2.5	5.9	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0444	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:3 NS:4	0.35	0.40	2.3	4.2	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0445	Eucalyptus tereticornis Forest Red Gum	Mature	7	EW:4 NS:3	0.32	0.35	2.1	3.8	Fair	Fair	Very poor	Short	Low	Low	To Be Removed	•
0446	Eucalyptus tereticornis Forest Red Gum	Mature	14	EW:3 NS:3	0.39	0.46	2.4	4.7	Fair	Fair	Poor	Short	Low	Low	To Be Removed	6
0447	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:3 NS:3	0.31	0.35	2.1	3.7	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0448	Eucalyptus tereticornis Forest Red Gum	Mature	6	EW:2 NS:3	0.11	0.17	1.6	2.0	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	•
0449	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:2 NS:2	0.16	0.22	1.8	2.0	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	•
0450	Eucalyptus tereticornis Forest Red Gum	Mature	5	EW:2 NS:1	0.14	0.18	1.6	2.0	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	6
0451	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:3 NS:3	0.35	0.40	2.3	4.2	Fair	Fair	Poor	Medium	Medium	Medium	To Be Removed	6
0452	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:1 NS:1	0.31	0.36	2.2	3.7	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	6
0453	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:5 NS:4	0.44	0.49	2.5	5.3	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0454	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:2 NS:2	0.36	0.40	2.3	4.3	Fair	Fair	Fair	Dead	Low	Remove	To Be Removed	6
0455	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:2 NS:2	0.30	0.35	2.1	3.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0456	Eucalyptus tereticornis Forest Red Gum	Mature	7	EW:2 NS:2	0.29	0.34	2.1	3.5	Fair	Fair	Very poor	Short	Low	Low	To Be Removed	•

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	<i>Botanical Name</i> Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0457	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:2 NS:2	0.22	0.31	2.0	2.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0458	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:2 NS:3	0.44	0.48	2.4	5.3	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0459	Eucalyptus moluccana Grey Box	Mature	15	EW:4 NS:5	0.43	0.48	2.4	5.2	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0460	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:4 NS:4	0.32	0.36	2.2	3.8	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0461	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:2 NS:4	0.28	0.32	2.1	3.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0462	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:2 NS:2	0.18	0.27	1.9	2.2	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0463	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:2 NS:2	0.16	0.22	1.8	2.0	Fair	Fair	Very poor	Short	Low	Low	To Be Removed	•
0464	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:4 NS:4	0.24	0.28	1.9	2.9	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	•
0465	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:4 NS:4	0.22	0.29	2.0	2.6	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	•
0466	Eucalyptus moluccana Grey Box	Mature	14	EW:7 NS:7	0.52	0.58	2.6	6.2	Fair	Fair	Fair	Medium	High	High	To Be Removed	•
0467	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:4 NS:3	0.39	0.45	2.4	4.7	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0468	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:2 NS:2	0.25	0.30	2.0	3.0	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0469	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:3 NS:3	0.38	0.45	2.4	4.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0470	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:4 NS:4	0.34	0.45	2.4	4.1	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0471	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:4 NS:2	0.36	0.42	2.3	4.3	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	6
0472	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:4 NS:4	0.39	0.46	2.4	4.7	Fair	Fair	Fair	Medium	High	High	To Be Removed	6
0473	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:4 NS:4	0.30	0.37	2.2	3.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0474	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:4 NS:4	0.47	0.53	2.5	5.6	Fair	Fair	Good	Medium	High	High	To Be Removed	(a)

Keeping our communities safe and green.

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0475	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:4 NS:2	0.31	0.37	2.2	3.7	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0476	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:4 NS:4	0.34	0.40	2.3	4.1	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0477	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:2 NS:2	0.20	0.25	1.8	2.4	Fair	Fair	Poor	Medium	Medium	Medium	To Be Removed	6
0478	Eucalyptus tereticornis Forest Red Gum	Mature	14	EW:5 NS:4	0.45	0.57	2.6	5.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0479	Eucalyptus tereticornis Forest Red Gum	Mature	6	EW:4 NS:2	0.22	0.27	1.9	2.6	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	•
0480	Eucalyptus tereticornis Forest Red Gum	Mature	14	EW:4 NS:4	0.49	0.54	2.6	5.9	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0481	Eucalyptus tereticornis Forest Red Gum	Mature	7	EW:2 NS:2	0.18	0.22	1.8	2.2	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	•
0482	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:3 NS:4	0.30	0.38	2.2	3.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0483	Eucalyptus tereticornis Forest Red Gum	Mature	8	EW:4 NS:2	0.20	0.23	1.8	2.4	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	6
0484	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:3 NS:4	0.34	0.42	2.3	4.1	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0485	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:1 NS:1	0.15	0.20	1.7	2.0	Fair	Fair	Fair	Medium	Low	Low	To Be Removed	6
0486	Eucalyptus moluccana Grey Box	Mature	12	EW:4 NS:4	0.16	0.22	1.8	2.0	Fair	Fair	Poor	Medium	Medium	Medium	To Be Removed	•
0487	Eucalyptus tereticornis Forest Red Gum	Mature	14	EW:4 NS:4	0.38	0.47	2.4	4.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0488	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:4 NS:4	0.31	0.36	2.2	3.7	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	6
0489	Eucalyptus moluccana Grey Box	Mature	10	EW:4 NS:3	0.30	0.35	2.1	3.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0490	Eucalyptus moluccana Grey Box	Mature	10	EW:1 NS:3	0.15	0.19	1.6	2.0	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	6
0491	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:4 NS:5	0.40	0.48	2.4	4.8	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0492	Eucalyptus tereticornis Forest Red Gum	Mature	7	EW:3 NS:4	0.20	0.28	1.9	2.4	Fair	Fair	Poor	Medium	Low	Low	To Be Removed	•

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0493	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:3 NS:4	0.39	0.44	2.3	4.7	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	6
0494	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:3 NS:4	0.32	0.38	2.2	3.8	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0495	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:5 NS:4	0.35	0.45	2.4	4.2	Fair	Fair	Good	Medium	Medium	Medium	To Be Removed	6
0496	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:3 NS:4	0.36	0.45	2.4	4.3	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0497	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:3 NS:3	0.30	0.36	2.2	3.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0498	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:3 NS:4	0.30	0.35	2.1	3.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0499	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:3 NS:4	0.25	0.32	2.1	3.0	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	6
0500	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:1 NS:2	0.16	0.22	1.8	2.0	Fair	Fair	Fair	Medium	Low	Low	To Be Removed	6
0862	Eucalyptus tereticornis Forest Red Gum	Semi Mature	7	EW:1 NS:1	0.16	0.24	1.8	2.0	Fair	Fair	Fair	Medium	Low	Low	To Be Removed	6
0863	Eucalyptus tereticornis Forest Red Gum	Semi Mature	10	EW:2 NS:2	0.25	0.30	2.0	3.0	Fair	Fair	Poor	Short	Low	Low	To Be Removed	•
0864	Eucalyptus tereticornis Forest Red Gum	Semi Mature	10	EW:2 NS:2	0.26	0.30	2.0	3.1	Fair	Fair	Poor	Short	Low	Low	To Be Removed	•
0865	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:2 NS:2	0.20	0.24	1.8	2.4	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6
0866	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:1 NS:1	0.25	0.28	1.9	3.0	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	6
0867	Eucalyptus tereticornis Forest Red Gum	Semi Mature	12	EW:1 NS:1	0.29	0.33	2.1	3.5	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	•
0868	Eucalyptus moluccana Grey Box	Mature	13	EW:3 NS:4	0.35	0.45	2.4	4.2	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0869	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:3 NS:4	0.28	0.32	2.1	3.4	Fair	Fair	Poor	Medium	Low	Low	To Be Removed	•
0870	Eucalyptus tereticornis Forest Red Gum	Semi Mature	9	EW:1 NS:1	0.15	0.20	1.7	2.0	Fair	Fair	Poor	Short	Low	Low	To Be Removed	•
0871	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:6 NS:4	0.38	0.45	2.4	4.6	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	6

Ref: JN138262 Trunk Stormwater Drainage Project (AIA & TPMP v.2)



Tree Tag	<i>Botanical Name</i> Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0872	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:5 NS:4	0.48	0.45	2.4	5.8	Fair	Fair	Dead	Dead	Low	Low	To Be Removed	•
0873	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:4 NS:2	0.30	0.34	2.1	3.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0874	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:4 NS:2	0.26	0.30	2.0	3.1	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0875	Eucalyptus moluccana Grey Box	Mature	11	EW:4 NS:2	0.16	0.20	1.7	2.0	Fair	Fair	Poor	Medium	Low	Low	To Be Removed	6
0876	Eucalyptus moluccana Grey Box	Mature	11	EW:4 NS:4	0.31	0.37	2.2	3.7	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0877	Eucalyptus tereticornis Forest Red Gum	Mature	9	EW:2 NS:3	0.20	0.25	1.8	2.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0878	Eucalyptus moluccana Grey Box	Mature	9	EW:3 NS:4	0.21	0.25	1.8	2.5	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0879	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:1 NS:1	0.19	0.23	1.8	2.3	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0880	Eucalyptus tereticornis Forest Red Gum	Mature	10	EW:2 NS:2	0.22	0.25	1.8	2.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0881	Eucalyptus moluccana Grey Box	Mature	11	EW:4 NS:5	0.40	0.41	2.3	4.8	Fair	Fair	Poor	Medium	Low	Low	To Be Removed	•
0882	Eucalyptus moluccana Grey Box	Mature	13	EW:4 NS:5	0.48	0.56	2.6	5.8	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0883	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:4 NS:5	0.48	0.54	2.6	5.8	Fair	Fair	Poor	Medium	Low	Low	To Be Removed	•
0884	Eucalyptus moluccana Grey Box	Mature	11	EW:4 NS:4	0.30	0.32	2.1	3.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0885	Eucalyptus moluccana Grey Box	Mature	10	EW:2 NS:4	0.35	0.40	2.3	4.2	Fair	Fair	Poor	Medium	Low	Low	To Be Removed	6
0886	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:4 NS:5	0.45	0.54	2.6	5.4	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0887	Eucalyptus moluccana Grey Box	Mature	13	EW:4 NS:5	0.47	0.56	2.6	5.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0888	Eucalyptus tereticornis Forest Red Gum	Mature	49	EW:8 NS:8	0.49	0.56	2.6	5.9	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	6
0889	Eucalyptus tereticornis Forest Red Gum	Mature	13	EW:8 NS:6	0.55	0.64	2.7	6.6	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•





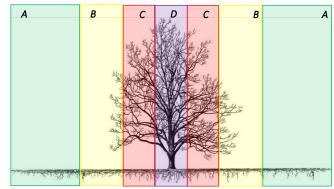
Tree Tag	Botanical Name Common Name	Age Class	Height	Canopy Spread	DBH	DRC	SRZ	TPZ	Form	Structure	Vitality	ULE	Landscape Signaficance	Retention Value	Tree Status	Photo Link
0890	Eucalyptus moluccana Grey Box	Mature	10	EW:5 NS:7	0.44	0.52	2.5	5.3	Fair	Fair	Poor	Short	Low	Low	To Be Removed	•
0891	Eucalyptus moluccana Grey Box	Mature	12	EW:4 NS:7	0.48	0.54	2.6	5.8	Fair	Fair	Fair	Medium	Medium	Medium	Retain	•
0892	Eucalyptus tereticornis Forest Red Gum	Mature	12	EW:4 NS:4	0.40	0.45	2.4	4.8	Fair	Fair	Fair	Medium	Medium	Medium	To Be Removed	•
0893	Eucalyptus moluccana Grey Box	Mature	12	EW:5 NS:4	0.39	0.47	2.4	4.7	Fair	Fair	Fair	Dead	Medium	Medium	To Be Removed	6
0894	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:3 NS:2	0.35	0.39	2.2	4.2	Fair	Fair	Dead	Dead	Low	Remove	To Be Removed	6
0895	Eucalyptus tereticornis Forest Red Gum	Semi Mature	6	EW:2 NS:2	0.22	0.25	1.8	2.6	Fair	Fair	Poor	Short	Low	Low	To Be Removed	6
0896	Eucalyptus tereticornis Forest Red Gum	Mature	11	EW:5 NS:4	0.45	0.52	2.5	5.4	Fair	Fair	Poor	Medium	Medium	Medium	To Be Removed	6
0897	Eucalyptus tereticornis Forest Red Gum	Semi Mature	8	EW:2 NS:2	0.22	0.25	1.8	2.6	Fair	Fair	Fair	Medium	Low	Low	To Be Removed	•

Key

- Age Class, Form, Structure & Vitality: per the International Society of Arboriculture descriptors.
- Canopy Spread: estimation of canopy spread to the four (4) cardinal points in metres. (North-South) & (East-West)
- Diameter at Breast Height (DBH) & Diameter Above Buttress (DAB): per AS4979-2009 & calculated per the QAA & ProofSafe Calculators.
- Structural Root Zone (SRZ) & Tree Protection Zone (TPZ): per AS4979-2009 & calculated per the QAA & ProofSafe Calculators.
- Useful Life Expectancy (ULE): adapted per (Barrell, 1996) & (Barrell, 2000).
- Landscape Significance & Retention Value: Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists (2010).

Indicative Encroachments within the Tree Protection Zone

- No Encroachment Zone (0%): No likely or foreseeable encroachment within the TPZ.
- Minor Encroachment Zone (<10%): If less than 10% (total area) of the TPZ, and outside of the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and be contiguous with the TPZ.
- Major Encroachment Zone (>10%): If the proposed encroachment is greater than 10% (total area) of the TPZ, the Project Arborist
 must demonstrate that the tree(s) remain viable. The area lost to this encroachment should be compensated for elsewhere and be
 contiguous with the TPZ. Tree sensitive construction techniques may be used for minor works within this area providing no structural
 roots are likely to be impacted, and the Project Arborist can demonstrate that the tree(s) remain viable. Root investigation by nondestructive methods may be required for proposed works within this area under the supervision of the Project Arborist.
- Major (Total) Encroachment Zone: Subject trees located wholly within the construction footprint cannot be successfully retained.



Indicative Encroachment: spread and depth of a typical tree root system (Watson & Neely. 1994)



6 Summary

6.1 Summary Findings

- i. On review of the arboricultural data and the provided design footprint it is foreseeable that the TPZ of four hundred thirty-eight (438) trees may be encroached upon and thereby impacted.
- ii. More specifically:
 - Three hundred sixty-one (361) trees will not foreseeably remain viable under the current design.
 Therefore, if tree sensitive design modifications are not implemented these subject trees will need to
 be removed to accommodate the projects scope of works. (Please note that two hundred sixteen (216)
 non-viable trees are related to the Trunk Stormwater Drainage Project; and one hundred forty-five
 (145) non-viable trees are out of this projects scope).
 - These tree removals due to non-viability include:

High Retention (30 trees)								
REMOVED (another project)	24							
TO BE REMOVED	6							
RETAIN	0							

Medium Retention (196 Trees)								
REMOVED (another Project)	72							
TO BE REMOVED	100							
RETAIN	24							

Low Retention (188 Trees)								
REMOVED (another Project)	47							
TO BE REMOVED	88							
RETAIN	53							

Non-Significant (24 Trees)								
REMOVED (another Project)	2							
TO BE REMOVED	22							
RETAIN	0							

- Seventy-seven (77) trees will foreseeably remain viable under the current design. Therefore, these trees
 are to be retained and afforded protection per the following site-specific Tree Protection Management
 Plan.
- iii. Please note that the boundaries, infrastructure footprint and scope of works of the project may be modified in an effort to accommodate trees and/or to further pragmatic design and project functionality outcomes. Therefore, where it is foreseeable that a tree may remain viable, this tree is to be retained until further arboricultural investigation is undertaken by the appointed Project Arborist. Whereby, if tree viability is determined the subject tree is to be retained, its data amended, and the tree afforded protection per the site-specific TPMP.
- iv. In addition, with regards to any necessitated tree removals, it is recommended that a Best Management Practice Compensatory Replanting ratio is adopted and enacted. This to offset tree canopy loss which is in keeping with the NSW Government and Local Government Area Urban Greening and Urban Forest objectives and policies.



6.2 Summary Actions table

Reta	in (77 T	rees)			То Ве	Remove	ed (216	Trees)			Remo	oved By	Others	(145 7	rees)
0100	0101	0102	0154	0155	0156	0157	0158	0159	0160	0161	0001	0215	0216	0217	0218
0103	0104	0105	0162	0163	0164	0165	0166	0167	0178	0179	0219	0220	0221	0222	0223
0106	0107	0108	0180	0181	0182	0183	0184	0185	0186	0187	0224	0225	0226	0227	0228
0109	0110	0111	0188	0189	0190	0191	0192	0196	0197	0198	0229	0230	0231	0232	0233
0112	0113	0114	0199	0200	0201	0202	0203	0204	0205	0254	0234	0235	0236	0237	0238
0115	0116	0117	0255	0256	0257	0258	0259	0260	0261	0262	0239	0240	0241	0242	0243
0118	0119	0120	0263	0264	0265	0266	0267	0268	0269	0270	0244	0245	0246	0247	0248
0121	0122	0123	0271	0272	0273	0274	0275	0276	0277	0278	0249	0250	0251	0252	0253
0124	0125	0126	0279	0280	0281	0282	0283	0284	0285	0286	0288	0289	0314	0315	0316
0127	0128	0129	0287	0290	0291	0292	0293	0294	0295	0296	0317	0318	0319	0320	0321
0130	0131	0132	0297	0298	0299	0300	0301	0302	0303	0304	0322	0323	0324	0325	0326
0133	0134	0135	0305	0306	0307	0308	0309	0310	0311	0312	0327	0328	0329	0330	0331
0136	0137	0138	0313	0363	0364	0365	0366	0367	0368	0369	0332	0333	0334	0335	0336
0139	0140	0141	0370	0371	0372	0373	0374	0375	0376	0377	0337	0338	0339	0340	0341
0142	0143	0144	0378	0379	0380	0435	0436	0437	0438	0439	0342	0343	0344	0345	0346
0145	0146	0147	0440	0441	0442	0443	0444	0445	0446	0447	0347	0348	0349	0350	0351
0148	0149	0150	0448	0449	0450	0451	0452	0453	0454	0455	0352	0353	0354	0355	0356
0151	0152	0153	0456	0457	0458	0459	0460	0461	0462	0463	0357	0358	0359	0360	0361
0168	0169	0170	0464	0465	0466	0467	0468	0469	0470	0471	0362	0381	0382	0383	0384
0171	0172	0173	0472	0473	0474	0475	0476	0477	0478	0479	0385	0386	0387	0388	0389
0174	0175	0176	0480	0481	0482	0483	0484	0485	0486	0487	0390	0391	0392	0393	0394
0177	0193	0194	0488	0489	0490	0491	0492	0493	0494	0495	0395	0396	0397	0398	0399
0195	0206	0207	0496	0497	0498	0499	0500	0862	0863	0864	0400	0401	0402	0403	0404
0208	0209	0210	0865	0866	0867	0868	0869	0870	0871	0872	0405	0406	0407	0408	0409
0211	0212	0213	0873	0874	0875	0876	0877	0878	0879	0880	0410	0411	0412	0413	0414
0214	0891		0881	0882	0883	0884	0885	0886	0887	0888	0415	0416	0417	0418	0419
			0889	0890	0892	0893	0894	0895	0896	0897	0420	0421	0422	0423	0424
											0425	0426	0427	0428	0429
											0430	0431	0432	0433	0434



7 Tree Protection Management Plan: Trunk Stormwater Drainage Project

7.1 Disclaimer

i. The following site-specific Tree Protection Management Plan (TPMP) is to be used throughout the duration of the abovementioned Project. Although the framework includes monitoring controls operated by the appointed Project Arborist, compliance to the TPMP is the responsibility of the 'Client,' and as such AGS cannot accept liability for any adverse effects arising from 'non-compliance' to documented controls and/or any subsequent changes to the scope or methods documented in the TPMP provided to the 'Client.'

7.2 Overview

- i. Trees are dynamic living organisms and therefore are susceptible to development impact either direct and/or indirect, biotic and/or abiotic. Arboricultural impact due to development encroachment, especially within the calculated Tree Protection Zone (TPZ), causes 'dendrological stress' in varying degrees. This stress has the potential to heavily impact upon tree vitality and thus tree longevity (Boddy. 1983). Therefore, the Australian Standard AS4970-2009 Protection of trees on development sites must always be adhered to. The objective of this Standard is to provide guidance through the use of a science-based methodology to arborists and others concerned with the care and protection of trees; and all others interested in the integration between trees and construction. Hence safeguarding community tree assets.
- ii. This Tree Protection Management Plan (TPMP) includes both activity specific controls as well as a range of generic tree protection controls. The control framework pre-dominantly focuses on identifying and mitigating aspects of the design and construction process that can adversely affect tree vitality, stability and/or useful life expectancy. In addition, it includes preventative controls (designed to prevent adverse outcomes), directive controls (designed to promote desired outcomes) and detective controls (designed to monitor compliance with any statutory requirements and the agreed control framework). The engagement of a Project Arborist is a key element of the control framework and is a multi-faceted control, in terms of preventing damage, providing direction, and detecting areas of non-compliance/improvement.

7.3 Project Arborist Site Inspection Schedule

- i. In accordance with the Australian Standard *AS4970-2009 Protection of Trees on Development Sites,* inspections must be conducted by the appointed Project Arborist at the following key project stages:
 - Prior to any work commencing on-site (including demolition, earthworks, or site clearing) and following the installation of tree protection.
 - During any excavations, building works, and any other activities carried out within the Tree Protection Zone (TPZ) of any tree to be retained and protected.
 - A minimum of once per month during the construction phase.



After all major construction has ceased, following the removal of tree protection. It shall be the
responsibility of the project manager to notify the project arborist prior to any works within the TPZ
of any protected tree at a minimum of 48 hours' notice. To ensure the tree protection plan is
implemented, hold points have been specified in the following table.

Development Stage	Hold Point	Description
Pre-Construction	1	Appoint a Project Arborist (minimum AQF Level 5)
		Prior to any development works, any tree for removal is to be marked clearly (tape, paint, tag etc.) by the Project Arborist
	2	Scheduled 'Pre-Start' meeting.
		Tree Protection for any retained tree(s) will be installed prior to demolition and/or site establishment. The appointed arborist will inspect and certify the tree protection per the Tree Protection Management Plan. A Tree Protection Compliance Memorandum issued.
During Construction	3	 Monthly scheduled site inspections of the retained tree population will be conducted (if works are outside the TPZ) and memorandum provided.
	4	The appointed Project Arborist will oversee, and document all works carried out within the TPZ of any retained tree. A weekly Works Memorandum to be provided.
	5	Visual tree inspection by the appointed arborist of the retained tree population once the major works have been completed and the tree protection has been removed.
Post Construction	6	Final Visual Tree Inspection of the retained tree population and a Completion of Arboricultural Works Memorandum provided.
		Ongoing Monthly Inspections & Memorandums issued at the discretion of the Project Arborist.
Plant Health Care (PHC)	7	Top dressing of Organic Mulch – where applicable.
		Liquid solution of Organic nutrients (Botanicals).
		PHC Memorandum provided.

7.4 Summary

- i. A pre-commencement of work ('Pre-Start') onsite meeting must be held with the appointed Project Arborist and all other parties deemed to have locus standii.
- ii. Proactive pruning options with regards to the facilitation of machinery and/or pedestrian access should be considered, discussed and if deemed necessary scheduled prior to the commencement of the main development works per a Pruning Specifications Report.



- iii. Tree Protection Fencing is to be erected. Temporary hard surfaces are to be made readily available and on site whilst working within close proximity of the tree(s) Tree Protection Zone.
- iv. The appointed onsite Project Arborist is to guide/supervise any works within close proximity of the tree(s) Tree Protection Zone. Whilst working within the Tree Protection Zone (TPZ) of any tree, the excavations must be undertaken by initial Non-Destructive Root Exploration through the use of Hand-digging, Air Spade, Air- Vac or a combination thereof under the direct supervision/guidance of the appointed onsite Project Arborist.
- v. The Project Arborist is to author and provide a Completion of Arboricultural Works Memorandum at the end of the works/project.
- vi. Plant Health Care to be applied post-development with a memorandum provided.
- vii. Monthly inspections to be conducted, the observations documented, and a Monthly Inspection Memorandum issued. (These inspections will be conducted per the Tree Management Plan and at the Project Arborist discretion).
- viii. The following Tree Protection Management Plan shall be adhered to at all times.

7.5 General Comments

- i. All construction work within the TPZ of any retained tree must be authorised & supervised by the appointed Arborist.
- ii. The use of amended construction methodology and air excavation along exposed TPZ perimeter(s) and/or minor areas of proposed incursion will assist to ensure ground disturbance and damage to tree roots is minimised within the TPZ of affected trees.
- iii. If the removal of an existing surface (concrete or similar) must occur from above the existing surface the removal work is to be carried out with a straight batter bucket with the machinery operated in a backward direction toward the extremity. Due care must be taken to ensure that the TPZ of adjacent tree(s) are isolated and protected from vehicular entry and therefore soil compaction within the TPZ of retained trees.
- iv. The addition of new soil and replanting must be carried out with due care. There shall be no use of strip style excavation adjacent to or within the TPZ of any retained tree.
- v. Where fencing is to be replaced, it is preferable to use existing post holes when they located within TPZs. New pier holes are to be hand dug or by air-vac excavation under the guidance of the Project Arborist.
- vi. It is imperative that TPZ fencing, or branch /stem and ground protection measures are installed for the protection of all retained trees prior to the commencement of the future Construction Phase, and that it remains *in situ* for the duration and until completion of proposed construction works.
- vii. TPZ fencing and other measures must be fixed so that they cannot be moved either by accidental physical



impact or other inadvertent means. There shall be no entry within any TPZ by any construction crew or other persons during the construction phase without authorisation and/or attendance of the Project Arborist. That includes, no storage of builders' materials, machinery, pedestrian traffic, disposal of waste paints, fuels etc. as listed below.

7.6 Restricted activities within the Tree Protection Zone

- i. As per *AS4970-2009 Protection of trees on development sites* Activities generally excluded from the TPZ include but are not limited to are as follows:
 - a) Machine excavation including trenching.
 - b) Cultivation.
 - c) Storage.
 - d) Preparation of chemicals, including preparation of cement products.
 - e) Parking of vehicles and plant.
 - f) Refuelling.
 - g) Dumping of waste.
 - h) Wash down and cleaning of equipment.
 - i) Placement of fill.
 - j) Soil level changes.
 - k) Temporary or permanent installation of utilities and signs, and
 - I) Physical damage to the tree.

8 Tree Protection Control Framework

8.1 Compliance and Reporting

- i. The generic tree protection controls in this section are designed to be used in conjunction with the recommendations of this site-specific Arboricultural Report.
- ii. All relevant standards, specifications, policies, and resource conditions of consent are incorporated into the TPMP.
- iii. The Project Arborist will undertake scheduled and unscheduled site visits to monitor compliance with all aspects of the TPMP.
- iv. Any deviations from the TPMP must be approved by the Council Arborist. Non-compliance issues must be reported to the Project Management immediately.



- v. An Arboricultural Completion Memorandum must be prepared by the Project Arborist including but not limited to comments and observations about any root pruning/root retention and compliance to the TPMP.
- vi. The TPMP must always be available on site and be included in site inductions and 'toolbox' sessions.
- vii. Any damage to tree protection fencing or trees must be reported to the Project Arborist immediately (including damage not caused by activities associated with the project).
- viii. Non-compliance issues must be documented and addressed at daily pre-start meetings/toolbox sessions.

8.2 Root Protection

- i. Root pruning should be kept to the absolute minimum and should only be completed by the Project Arborist. All root pruning assessments should be made initially by the Project Arborist, and the Council Arborist contacted where approval is required. All roots larger than 25mm in diameter are to be retained in an undamaged state and protected, unless the Council Arborist gives permission for them to be pruned. Irrespective of size, any roots which have a significant effect on the health and stability of a tree shall not be removed without the prior approval of the Council's Arborist, and this may include tree roots that are less than 25mm in diameter.
- ii. Roots must be severed using a sharp pruning saw/tool to create a clean cut that is flush with the face of the completed excavations.
- iii. Retained roots and cut surfaces should be protected from desiccation and physical/frost damage. The method will depend on the seasonal weather conditions and length of time expected between completing the excavations and reinstatement works and should be determined by the Project Arborist. Typically, retained roots must be wrapped in a suitable wool much or hessian product that is secured in place using bio-degradable string and kept moist, however supplementary watering may be required depending on the weather conditions based on the Project Arborist's discretion.

8.3 Soil Protection

- i. All machines shall only operate from either formed surfaces, surfaces that will be excavated or from an appropriate load bearing protective matting. The area covered by the protective matting shall be sufficient to allow ground protection for all vehicle movements, including the turning of any vehicles. (Please refer to Branch, Trunk & Ground Protection in the Appendix).
- ii. No chemicals, re-fueling operations, spoil, fill, soil, materials of any kind, or equipment will be stored, emptied, disposed of, or temporarily placed in areas that the tree's root system could be utilizing unless approved by the Project Arborist and this is on an existing hard impermeable surface.
- iii. Water used for washing down machinery must not be allowed to runoff and contaminate soil volumes/water sources that are either currently or are likely to be utilised by the tree.



iv. The risk of soil borne infections being introduced to the site from equipment, tools and footwear must be assessed by the Project Arborist and mitigated as necessary (mitigation will typically involve cleaning the equipment before it is used on the site with a sterilizing agent, such as Trigene or Sterigene).

8.4 Canopy Modifications

- i. Trees are complex living organisms and the intervention in the natural growth of a tree should only occur where the biology and the physiology of the organism are understood to such a level that intervention will have clear and predictably beneficial outcomes.
- ii. However, pruning may be required to accommodate construction, plant & equipment and/or vehicles. Thus, any pruning assessments pertaining to the development must be visually made by an AQF Level 5 arborist; and if pruning is deemed necessary a Pruning Specifications Report is to be authored *per AS4373-2007 Pruning of amenity trees* by an AQF Level 5 arborist and provided to the relevant Tree Manager/Owner and Council representative.
- iii. Once the Pruning Specifications Report is formerly approved by the appropriate authority the requested the pruning can be carried out by a minimum AQF Level 3 arborist pursuant to AS4373-2007 Pruning of amenity trees.
- iv. In addition, the risk of damaging agents being introduced from pruning saws/tools must be assessed by the Project Arborist and mitigated as necessary (mitigation will typically involve cleaning the equipment before it is used on the site with a sterilizing agent, such as Trigene or Sterigene). It may be necessary to clean pruning tools during work on the site if there is the potential of transmitting a damaging biotic agent between trees on the same site.

8.5 Tree Protection Zones

- i. Tree Protection Zones are also Exclusion Zones and must be created using tree protection fencing that is consistent with the requirements of *AS4970-2009 Protection of trees on development sites*. The position of the fencing will be determined by the Project Arborist and once positioned shall not be altered without the prior consent from the Project Arborist.
- ii. If it is not pragmatic to use the abovementioned tree protection fencing then individual trunk, branch and ground protection must be installed to any retained tree located within five (5) metres of any proposed work zone. (Please refer to the diagram in the appendix).
- iii. Tree protection zones must be clearly labelled displaying the words 'Tree Protection Zone'. Signs will be placed on fencing of individual trees or every 10 linear metres on groups of trees.
- iv. Where the work site is only on one side of the tree, the barrier may be erected along the face of the tree adjacent to the work site.
- v. Tree Protection Barriers must be erected before any site works commence and shall not be removed or moved closer to the trunk of the tree, until after site works are complete. No person, vehicle or machinery



may enter the Tree Protection Zone unless otherwise authorised to do so by the Project Arborist.

vi. Operating plant must be positioned to avoid the expellant of exhaust fumes and radiant operating heat damaging the physiological functions of the tree.

9 Plant Health Care

9.1 Overview

i. It is well documented that even minor encroachments due to urban development and construction pressures can 'stress' a tree, which in turn can result in a reduced useful life expectancy (Watson, 2014). Therefore, it is strongly recommended that a proactive species-specific Plant Health Care Plan is formulated and implemented with regards to any development and tree vitality. Plant Health Care (PHC) is a holistic approach to best management practice with regards to urban tree care and the understanding of the various interactions within the environment in which they grow. The core objectives being the management and enhancement of the tree(s) biological, physiological, and aesthetic traits whilst maintaining and/or improving the surrounding landscape's appearance. As PHC is science-based it involves routine arboricultural monitoring, proactive soil, and plant treatments, along with the identification and mitigation of foreseeable arboricultural risks to person, property and/or the environment.

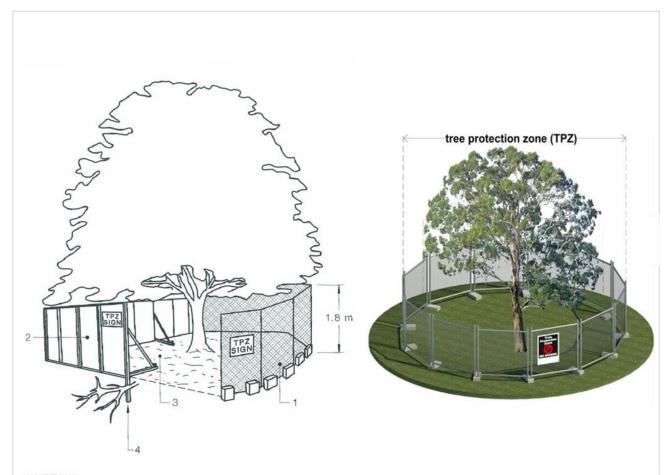
9.2 Post Development Plant Health Care Recommendations

- i. With an educated understanding of the functions of tree roots and the potentially negative effects of development impact it is strongly recommended that a post-development Plant Health Care regimen is formulated by the Project Arborist and enacted. This should include:
 - An application of Organic Botanicals: Organic materials are essential components which stimulate vitality leading to root development and thus development of new tissue. This whilst enacting a tree's defence system improving resistance to disease and increasing defence responses and capabilities.
 - Top-dressing of Organic Mulch: It is strongly recommended that a top-dressing of organic composted
 mulch or woodchips is applied to the TPZ of all retained trees post-development. This layer should be
 added to a depth of 60-70mm (Urban. 2010). A composted mulch application will:
 - Prevent soil compaction and minimise future root damage.
 - Amend soil structure to improve the water-holding capacity and fertility by affecting both texture, porosity and structure.
 - Reduces soil moisture loss through lower temperatures & supress undesirable plant species.
 - Promote root generation & increase soil organic matter and avail nutrients to the tree.
 - Stimulate soil microflora and micro fauna activity and assist in the survival of affected tree(s)
 maintaining and ensuring optimum vitality and structural stability so as to maximize its ability to resist
 pest and diseases (Chalker-Scott. 2007) (Watson et. al. 2014).



9.3 Tree Protection Installations

i. Tree Protection is to be erected around any tree within five (5) metres of development per *AS4970-2009 Protection of trees on development sites*.



LEGEND:

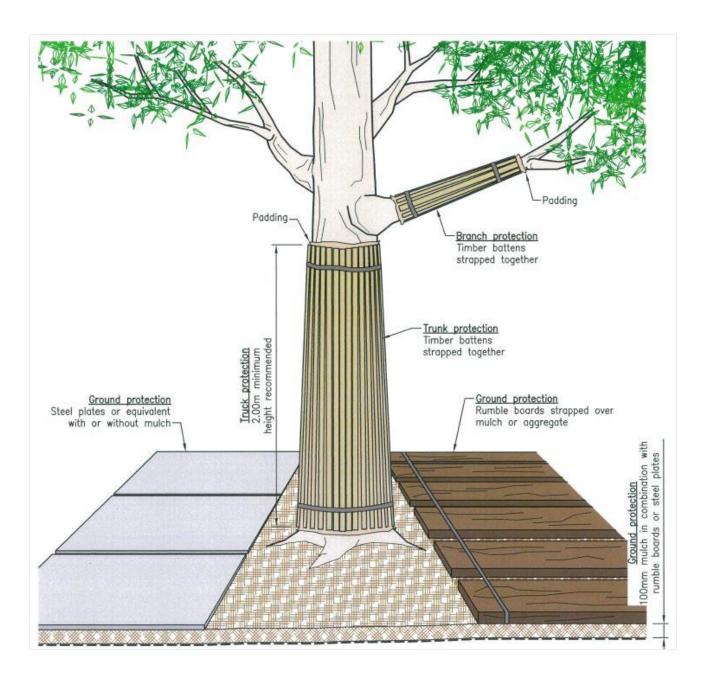
- 1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
- 2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
- 3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
- 4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

Alternative Trunk, Branch & Ground Protection

- i. When tree protection fencing cannot be installed or requires temporary removal, other tree protection measures should be used. Where necessary, install protection to the trunk and branches of trees as pictured below.
- ii. The materials and positioning of protection are to be specified by the Project Arborist and are to include:
 - For the trunk and branch protection use boards and padding that will prevent damage to the bark.
 For the trunk boards a minimum height of two (2) metres is recommended. Boards are to be strapped to trees, not nailed or screwed.



- Do not attach temporary powerlines, stays, guys and the like to the tree.
- If temporary access for machinery is required within the Tree Protection Zone (TPZ) such as site access, ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch or crushed rock below rumble boards. (These measures may be applied to root zones beyond the TPZ).
- Rumble boards should be of a suitable thickness to prevent soil compaction and root damage and a top dressing of Organic Mulch (60mm-70mm deep) is to be applied where pragmatically possible.
- A Tree Protection Installation Compliance Memorandum is issued by the appointed Project Arborist on satisfactory completion.





10 References

Barrell, J.D. (1996). 'Pre-planning Tree Surveys: Safe Useful Life Expectancy (SULE) is the Natural Progression'. Arboricultural Journal, Vol 17 pp 33-46.

Barrell, J.D. (2009). 'Tree AZ. Detailed guidance on its use'. Version 10.10 - ANZ. United Kingdom.

Breloer, H. and Mattheck, C. (1994), 'The Body Language of Trees: A Handbook for Failure Analysis'. Stationary Office Books, London, England, UK.

Boddy, L., and A.D.M Rayner. (1983). 'Origins of Decay in living deciduous trees: The role of moisture content and re-appraisal of the expanded concept of tree decay'. New Phytology 94: 623-641.

Callow, C., May, P. and Johnstone, D. (2018). 'Tree vitality assessment in urban landscapes'. Forests. 9(5), 279.

Coder, K. (2021). 'The Meaning of Tree Biomechanics to Tree Health Care Providers'. ISA Conference 2021.

Draper, D. B and Richards, P.A. (2009). 'Dictionary for Managing Trees in Urban Environments'. CSIRO Publishing, Victoria, Australia.

Dobbertin, M. (2005). 'Tree growth as indicator of tree vitality and of tree reaction to environmental stress: a review'. European Journal of Forest Research 124: 319-333.

Dunster, J., Smiley, E., Matheny, N. and Lily S. (2013). 'Tree Risk Assessment-Manual'. International Society of Arboriculture, Champaign, IL.

Eisner, N., Gilman, E.F. Grabosky, J. and Beeson, R.C. (2002). *'Branch morphology affects compartmentalization of pruning wounds'*. Journal of Arboriculture 28:99–105.

Gilman, E. and Lily, S. (2002). 'Best Management Practices Tree Pruning'. International Society of Arboriculture, Champaign IL. Pp 35.

Harris, R.W., Clark, J.R. and Matheny, N.P. (2004). 'Arboriculture: Integrated management of landscape trees, shrubs and vines, 4th edition'. Prentice Hall, New Jersey, USA.

Hendrickson, N., Fraedrich, B. and Smiley, E. (2007). 'Tree Risk Management'. Bartlett Tree Research Laboratories, Charlotte, North Carolina, USA.

Hayes, E. (2001). Evaluating Tree Defects. Safe Trees, Rochester, Minnesota, USA.

Hitchmough, J.D. (1994) 'Urban Landscape Management'. Inkata Press. Australia.

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

Lily, S., Matheny, N. and Smiley, E. (2011). 'Best Management Practices - Tree Risk Assessment'. International Society of Arboriculture. Champaign, IL 61826-3129.

Lonsdale, D. (2010). 'Principles of Tree Hazard Assessment and Management'. 9th impression, TSO, Norwich.

Mattheck, C. and Breloer, H. (1994). 'The Body Language of Trees, Research for Amenity Trees No. 4'. The Stationery Office, London.

Matheny, N. and Clark, J. (1994). 'A Photographic guide to Hazard Trees in Urban Areas'. 2nd Edition. Illinois, USA.

Matheny, N. and Clark, J. (2004). 'Arboriculture'. Fourth Edition. Pearson Education Incorporated. New Jersey, USA.

Niklas, K. (1992). 'Plant Biomechanics: An Engineering Approach to Plant Form and Function'. The University of Chicago Press, Illinois, USA.

The University of Melbourne. (2016). 'Burnley Plant Guide'. The University of Melbourne.

Trowbridge, P. J. and N. L. Bassuk (2004). 'Trees in the Urban Landscape: Site Assessment, Design and Installation'. Hoboken, New Jersey, John Wiley & Sons, Inc.

Urban, J. (2008). 'Up by roots. Healthy soils and trees in the built environment'. International Society of Arboriculture.

Watson, G. (2011). 'Fifteen years of urban tree planting and establishment research in trees, people and the built environment'. Proceedings of the Urban Trees Research Conference, Institute of Chartered Foresters, Birmingham UK, 13 - 14 April 2011

Watson, G., Hewitt, A., Custic, M. and Lo, M. (2014). *'The Management of Tree Root Systems in Urban and Suburban Settings II: A Review of Strategies to Mitigate Human Impacts'*. Arboriculture & Urban Forestry 2014. 40(5): 249–271.



11 Glossary

The following definitions are stated in the Glossary of Arboricultural Terms, International Society of Arboriculture 2011, unless otherwise stated.

Abiotic: plant ailment caused by non-living, environmental, or man-made agents

Adaptive Growth: or Response Growth is new wood produced in response to damage or loads, which compensates for higher strain (deformation) in marginal fibres; it includes reaction wood (compression & tension) and wound wood.

Barrier Zone: chemically defended tissue formed by the still living cambium, after a tree is wounded or invaded by pathogens to inhibit the spread of decay into new annual growth rings. Wall 4 in CODIT model. Contrast with reaction zone

Bifurcation: Natural division of a branch or stem into two or more stems or parts

Biotic: pertaining to non-human living organism/ biotic agent: a living organism capable of causing disease/ biotic disorder: disorder caused by a living organism.

Bracket: British English term for fruiting body of a decay fungus. See *Conk*.

Codominant Structure: Stems or trunks of about the same size originating from the same position from the main stem52. When the stem bark ridge turns upward the union is strong; when the ridge turns inward the union is weak, a likely point of failure in storm or windy weather conditions or where increasing weight causes undue stress on the defective union.

CODIT: acronym for Compartmentalisation of Decay/Disease In Trees (refer Compartmentalisation).

Compartmentalisation: Dynamic tree defence process involving protection features that resist the spread of pathogens and decay causing organisms. Natural defence process in trees by which chemical and physical boundaries are created that act to limit the spread of disease and decay organisms.

Compaction: Results from loads or stress forces applied to the soil as well as shear forces. Both foot traffic and vehicle traffic exert both forces on soils. Vehicle traffic may cause significant compaction at depths of 150–200 mm (the area in which most absorbing roots are located). The degree of compaction will depend on weight of vehicles, number of movements, soil moisture levels and clay content. Soil handling, stockpiling, and transporting also tend to lead to the breakdown of soil structure and thus to compaction. Vibration as a result of frequent traffic or adjacent construction activities will also compact soils.

Compression wood: (1) in mechanics, the action of forces to squeeze, crush or push together any material (s) or substance(s): contrast with tension. (2) the ability of an internal combustion engine to contain or pressurized a combustible fuel - air mixture.

Conk: Fruiting body or non-fruiting body (sterile conk) of a fungus. Often associated with decay.

Crown/Canopy: The main foliage bearing section of the tree, these terms are interchangeable.

Crown damage: The canopy of trees can be directly or indirectly damaged. Incorrect techniques of pruning such as lopping or flush cutting may produce wounds that are susceptible to infection by wood decay organisms. Similarly, mechanical damage to branches by machinery, etc. will also create wounds. Trees automatically respond to wounding and in doing so use stored sugars. Any wound places an additional load on trees that will inevitably be stressed during construction.

Damping: Damping occurs where energy is dissipated. In trees, damping occurs naturally in three main ways with aerodynamic damping of the leaves, internal damping in the wood and root zones, and with mass damping of the branches.

Deadwood: Dead branches within the canopy of tree. Deadwood is a naturally occurring feature of most tree species and comprises dead or decaying branches within the canopy of a tree. Deadwood may have habitat value and require removal only according to the considered risk of its location, i.e. high use pedestrian area or damage to adjacent infrastructure.

Removal of deadwood is generally recommended only where it represents an unacceptable level of hazard. Consideration of the need for deadwood removal should take into account the occupancy of the target zone, i.e. high use pedestrian area or presence of infrastructure, possible damage to the tree during its removal as well as its conservation for habitat value. In some instances, retention of a reduced tree structure for habitat purposes maybe considered appropriate, especially when hollows are present.

Further reference: Principles of Tree Hazard Assessment. Lonsdale, David. TSO, (2009).



Dead wooding: (Crown cleaning): The removal of dead branches60. Recommendation to remove deadwood is for removal of all dead branches within tree canopy > 30mm diameter in trees which overhang pedestrian or vehicular areas and removal of all dead branches within tree canopy > 50mm diameter if trees are located in a Parkland or similar area.

Decay: The process of degradation of woody tissues by micro-organisms.

Desiccation: Severe drying out. Dehydration.

Drip Line: Is the imaginary perimeter line at soil surface level which is directly below the outermost edge of the tree's foliage or canopy.

Estimated Life Expectancy (ELE): Assessed on trees of particular species in the urban environment, including health and structural conditions which may exist.

Epicormic bud: Latent or adventitious bud located at the cambium and concealed by the bark.

Epicormic shoots: Shoots produced from epicormic buds at the cambium of trunks or branches.

Field Capacity: Maximum soil moisture content following the drainage of water due to the force of gravity.

Hollow: is a semi-enclosed cavity which has naturally formed in the trunk or branch of a tree.

Included bark: Inwardly formed bark within the junction of branches or codominant stems.

Kino: Dark red to brown resin-like substance produced by trees in the genera Eucalyptus, Pterocarpus and Butea and related genera. Kino forms in the barrier zones. Large kino veins form in some tree in response to injury and infection.

Leaves: The main function of leaves is photosynthesis, that is, the production of sugars and oxygen. The sugars produced by the leaves (and any other green tissue) are the source of chemical energy for all living cells in the entire plant and as such are essential for the normal functioning and survival of the tree. Anything that directly or indirectly damages the leaves will interfere with photosynthesis.

Non-Destructive Root Exploration (NDRE): is the most reliable way to conscientiously locate tree roots pre-development; and thus, assist in TSUD options and the subsequent determination of tree viability. Therefore, all excavations that are calculated as a 'Major' Encroachment must be initiated by non-destructive means (Hand-digging, Air Vac and/or Air -Spade) under the guidance of the Project Arborist. Machine excavations will only be permitted within the TPZ if and when the Project Arborist is satisfied that the excavation envelope is free of any significant root biomass.

Non-woody part of tree: 'organs that increase the surface area of vascular plants, thereby capturing more solar energy for photosynthesis'. ... maybe classified as microphylls (usually spine-shaped leaves with a single vein) or megaphylls (leaves with a highly branched vascular system). Needles and leaves are major energy trapping organs of a tree. Flowers are modified leaves as they fit the definition of an organ (*Shigo.2003*).

Macropore: Relatively larger space between soil particles that is usually air-filled and allows for water movement and root penetration. Contrast with micropore.

Minor encroachment (<10%): If the proposed encroachment is less than 10% (total area) of the TPZ, and outside of the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and be contiguous with the TPZ.

Major encroachment (>10%): If the proposed encroachment is greater than 10% (total area) of the TPZ, the project arborist must demonstrate that the tree(s) remain viable. The area lost to this encroachment should be compensated for elsewhere and be contiguous with the TPZ. Tree sensitive construction techniques may be used for minor works within this area providing no structural roots are likely to be impacted, and the project arborist can demonstrate that the tree(s) remain viable. Root investigation by non-destructive methods may be required for proposed works within this area. All work within the TPZ must be carried out under the supervision of the project arborist.

Micropore: Space between soil particles that is relatively small and likely to be water filled.

Mortality Spiral: Sequence of stressful events or conditions causing the decline and eventual death of a tree. Once in a mortality spiral trees are more likely to succumb to any further or additional stress factors such as drought, pest infestation or disease. (See definition Stress)

 $\textbf{Necrosis} \hbox{: Localised death of tissue in a living organism}.$



Occlusion (See wound): Shut in or out. Occlusion is the process of trees forming callus and clear wood over wounds.

Pathogen: A disease-causing organism.

Phototropism: Influence of light on the direction of plant growth. Tendency of plants to grow towards light.

Phloem: Plant vascular tissue that transports photosynthates and growth regulators. Situated on the inside of the bark, just outside the cambium. Is bidirectional (transports up and down). Contrast with xylem.

Photosynthesis: Process in green plants (and in algae and some bacteria) by which light energy is used to form glucose (chemical energy) from water and carbon dioxide.

Reaction wood: Wood forming in leaning or crooked stems or on lower or upper sides of branches as a means of counteracting the effects of gravity. See compression wood and tension wood.

Shrub: A woody plant similar to a tree except it is usually several-stemmed and smaller than a tree.

Significance: The quality of being worthy of attention; importance.

Stem / Trunk: Organ which supports branches, leaves, flowers and fruit; may also be referred to as 'the trunk'.

Stress: In Plant Health Care, (1) a factor that negatively affects the health of a plant; a factor that stimulates a response. (2) mechanics, a force per unit area.

Stress – acute: Disorder or disease that occurs suddenly and over a short period of time.

Stress – chronic: Disorder or disease occurring over a longer time.

Structural Root Zone (SRZ): The SRZ is the area of the root system (as defined by AS 4970-2009) used for stability, mechanical support, and anchorage of the tree. Severance of structural roots (>50 mm in diameter) within the SRZ is not recommended as it may lead to the destabilisation and/or serious decline of the tree.

Tree: Long lived woody perennial plant greater than (or usually greater than) 3 m in height with one or relatively few main stems or trunks. A tree has 3 major organs – roots, stem and leaves.

Tree Protection Zone (TPZ): AS4970-2009 Protection of trees on development sites s1.4.7, Tree Protection Zone (TPZ): A specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development.

Vigour: Ability of a tree to sustain its life processes. The term 'vigour' in this document is synonymous with commonly used terms such as 'health' and 'vitality'. Inherent genetic capacity of a plant to deal with stress. Physical strength and health. A tree with good vigour has the ability to sustain life processes and synonymous with good health.

Visual Tree Inspection (VTA): Is a detailed visual inspection of a tree and surrounding site.

Vitality: Ability of plant to deal effectively with stress.

Watersprouts/ Epicormic growth (Usually multiple shoots): Shoots produced from epicormic buds at the cambium of trunks or branches. Grows 'from the stub ends and only grows from the outermost living tissue layer of that year's growth. They are weakly attached and prone to falling out or being blown off with the risk increasing markedly as they increase in size. When epicormic shoots arise from stub ends that are decaying, the chances of them falling out are significantly greater'.

Wound: An opening that is created when the bark is cut, removed, or injured.

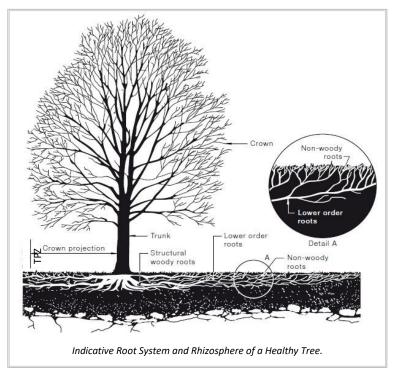
Xylem: Main water and mineral-conducting (unidirectional, up only) tissue in trees and other plants. Provides structural support. Arises (inward) from the cambium and becomes wood after lignifying. Contrasted with phloem.

Zone of *Rapid Taper*: The area within 1–2m of the trunk on larger trees is frequently referred to as the 'Zone of Rapid Taper' because structural roots found there often exhibit considerable secondary thickening- not present on roots farther from the trunk (*Wilson 1964*). *Wilson (1964*) additionally reviews the development of this zone and its relation to mechanical stability.



12 Appendix

12.1 Root Morphology Considerations



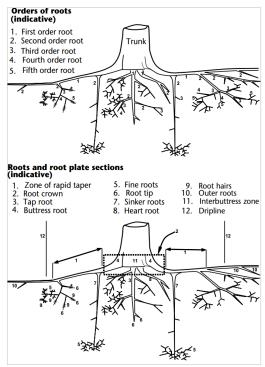


Image credit: AS4970-2009 Protection of trees on developmnet sites

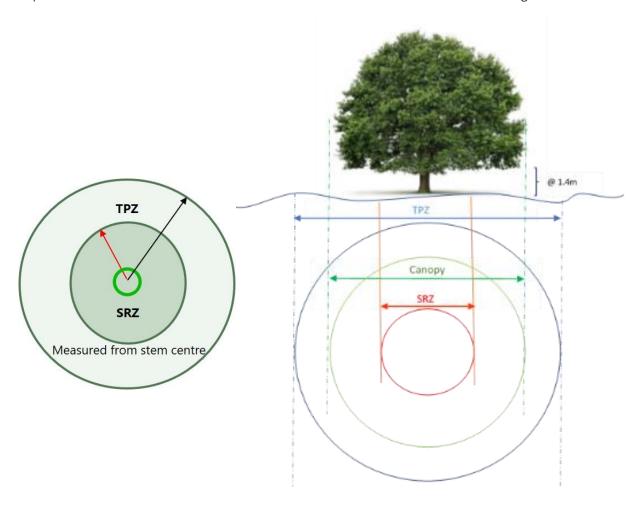
Image credit: Perry. 1992

- i. The main functions of roots include the uptake of water and nutrients, anchorage, storage of sugar reserves and the production of some plant hormones required by the shoots. For roots to function, they must be supplied with oxygen from the soil. The root system of trees consists of several 'types' of roots found in different parts of the soil and is generally much more extensive than commonly thought. The importance of roots is easily overlooked because they are not visible, that is 'out of sight, out of mind'. Damage to the root system is a common cause of tree decline and death and is the most common form of damage associated with development sites (Matheny et. al, 1998).
- ii. Root systems consist of three main parts: (Sutton and Tinus, 1983).
 - The structural woody roots (anchorage, storage and transport);
 - Lower order roots (anchorage, storage and transport); and
 - Non-woody roots (absorption of water and nutrients, extension, synthesis of amino acids and growth regulators) (please refer to Drawing above).
- iii. In addition to lateral root spread being underestimated, root depth in trees has also been grossly exaggerated. Deep root systems or taproots are the exception rather than the rule. Most roots of most trees are found in the very top of the soil. The vast majority of these roots are small non-woody absorbing roots which grow upward into the very surface layers of the soil and leaf litter. This delicate, non-woody system, because of its proximity to the surface, is very vulnerable to injury (Watson et. al, 2014).



12.2 Tree Protection Zone (TPZ) & Structural Root Zone (SRZ).

i. The Australian Standard *AS 4970-2009 - Protection of trees on development sites* is used for the allocation of tree protection zones. This method provides a TPZ that addresses both tree stability and growth requirements. TPZ distances are measured as a radius from the centre of the trunk at ground level.



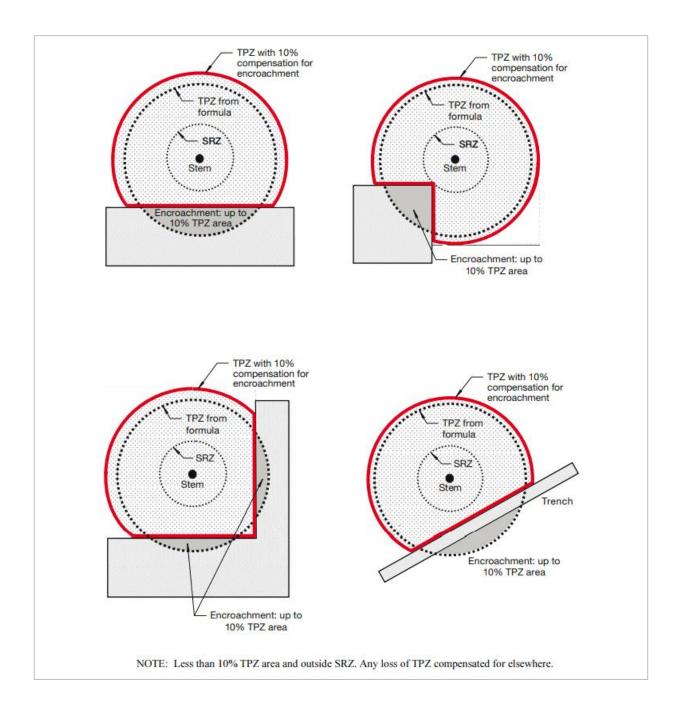
- ii. As per AS4970-2009 Protection of trees on development sites the following calculations are to be used:
 - s3: The radius of the TPZ is calculated for each tree by multiplying its Diameter @ Breast Height measured @ 1.4m from ground level (DBH \times 12 = TPZ). (DBH = Trunk Girth @ 1.4m \div π).
 - To calculate the SRZ: Radius SRZ = **D**iameter above **R**oot **C**rown (**DRC** x 50) ^ 0.42 x 0.64. If the DRC is less than 0.15m the SRZ will be 1.5m.
 - Note: A TPZ should not be less than 2m or more than 15m from the tree stem.

You do not need to calculate the TPZ of palms, cycads and tree ferns. For these plants, the TPZ should not be less than 1m outside the crown.



12.3 Compensation for Tree Protection Zone Encroachment

i. Encroachment into the Tree Protection Zone (TPZ) is sometimes unavoidable. The images above are analogous to the abovementioned works scenario and indicate how encroachment within the tree protection zone can be compensated for elsewhere per *AS4970-2009 Protection of Trees on Development Sites*.





12.4 Initial Non-Destructive Root Exploration & Root Mapping

- i. Non-Destructive Root Exploration (NDRE) or Root Mapping is the most reliable way to locate tree roots pre-development and therefore should always be implemented when a tree is to be retained and impending earthworks are to be undertaken within the TPZ. This NDRE should consist of Hand-digging and/or AirSpade under the guidance of the Project Arborist (Watson et. al. 2014).
- ii. NDRE will often be initiated with the excavation of a 'Slot-Trench' on the edge of the TPZ and/or the required excavation footprint. This will assist in determining the extent of the tree root architecture and provide accurate root location(s) along with additional morphological data. This objective root mapping data can then be utilised to explore and/or implement pragmatic tree sensitive design modifications regarding site-specific tree protection, tree retention and Plant Health Care regimens post development.
- iii. Please note that the Root Mapping findings will ultimately determine foreseeable tree viability and whether tree sensitive design modifications and/or tree removal will need to be undertaken on this Project. (All of the findings from the NDRE should be paroled by the appointed Project Arborist and made available to all parties with *locus standii* upon request. This in the form of a Root Mapping Report).

12.5 Tree Sensitive Urban Design (TSUD)

- i. A commonsensical approach with regards to tree retention and development should always be adopted. I.e., any excavations within the calculated TPZ of a retained tree should be initiated with NDRE; and where practicable should be limited in depth so as to not impact tree roots. However, if during the NDRE a 'significant root' (>30mm in diameter) is encountered candid tree sensitive design modifications will need to be discussed and/or incorporated into the project where reasonably practicable.
- ii. Tree Sensitive Urban Design (TSUD) for both new and existing trees simply aims to provide adequate space for desirable root growth, whilst safeguarding against infrastructure and root damage from potential conflict alike. Some of these proactive solutions include:
 - Sensitive Construction: Directional-drilling, Screw-Piling, Cantilevers, 'Build-outs' and 'Build-overs'.
 - Irrigation, Tree Root Trenches & Paths, Root Barrier, Root Deflectors and Root Directors and De-Compaction/Compaction to direct root growth.
 - Porous Permeable Pavers, Asphalt, Concrete and Resin Bound Aggregates.
 - Structural Confinement System installations with structural soil: Some of these include Natural Cell, Silva Cell, Strata Vault, Strata Pit, Geo Cell, and Terra Vault. In summary these cells can be installed in an urban scape to provide space for root growth limit soil and root compaction, whilst facilitating necessary infrastructure installations.
- iii. Please note that tree roots travel the 'path of least resistance' and like most living organisms require oxygen and water (an aerobic soil with good moisture levels). Therefore, one of the easiest techniques to keep tree roots from growing in unwanted areas is to remove these two essential elements by heavily compacting the soil. Alternatively, by providing ideal levels of these essential resources (water, friable aerobic soil, and organic nutrients), in an area away from infrastructure, tree roots can be encouraged to grow in that direction.



12.6 Visual Tree Assessment Descriptors

(Age Class relates to the ecophysiological stage of the trees life cycle – UK Veteran Trees & Forestry Commission)

TREE AGE CLASS

Life Cycle Stage	Category & Descriptor
Formative Stage	Young or Juvenile: Recently planted or approximately 1-7 years.
Maturing or Mature Stage	Semi-mature: Tree actively growing in size and yet to achieve the expected size in situ. Mature: Tree is approaching the expected size or has reached the expected size in situ
Senescent Stage	Over Mature: Tree is full-size and has started to decline (possible crown retrenchment)

TREE VITALITY

Good	Foliage of the tree is entire, with good colour, very little sign of pathogens and of good density. Growth indicators are good i.e., Extension growth of twigs and wound wood development. Minimal or no canopy dieback (deadwood).
Fair	Tree is showing one or more of the following symptoms: <25% dead wood, minor canopy dieback, foliage generally with good colour though some imperfections may be present. Minor pathogen damage present, with growth indicators such as leaf size, canopy density and twig extension growth typical for the species in this location.
Poor	Tree is showing one or more of the following symptoms of decline; >25% deadwood, canopy dieback is observable, discoloured or distorted leaves. Pathogens present, stress symptoms are observable as reduced leaf size, extension growth and canopy density.
Very Poor	The tree appears to be in a state of decline. The tree is not growing to its full capacity. The canopy may be very thin and sparse. A significant volume of deadwood may be present in the canopy and/or pest and disease problems may be causing a severe decline in tree vitality.
Serious Decline or Dead	Tree is in severe decline; >55% deadwood, very little foliage, possibly Epicormic shoots and minimal extension growth or the tree is completely dead and exhibits no new growth or live tissue.

^{*}Please note that tree vitality cannot be measured directly, hence growth and physiological parameters that indicate tree vitality are used. Health or Vitality of a tree is evidenced by the general appearance of crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion including pathogens and presence of dieback in crown at the time of inspection. Vigour may vary according to seasonal weather patterns and rainfall received (Dobbertin, 2005).

^{**}Tree Condition: The assessment of a tree(s) condition evaluates factors of tree vitality, form and structure. These descriptors of vitality, form and structure attributed to a tree evaluate the individual specimen to what could be reasonably considered by the arborist as typical for that species growing in situ. It is well documented that specific tree species can display inherently poor biomechanics, such as acute branch attachments with included bark, co-dominant leaders and other poor branch and root architecture. Whilst these 'structural defects' may be deemed arboriculturally flawed, they are typical for the species and my not constitute a foreseeable increased risk. These trees may be assigned a 'structural rating' of 'fair-poor' (as opposed to poor) at the arborist's discretion



TREE STRUCTURE

Good: Trunk and scaffold branches show good taper and attachment with minor or no structural defects. Tree is a good example of species with well-developed form showing no obvious root problems or pests and diseases.

Fair/Fair-Poor: Tree shows minor structural defects or minor damage to trunk e.g., bark missing, there could be cavities present. Minimal damage to structural roots. Tree could be seen as typical for this species.

Poor/Very Poor: There are major structural defects, damage to trunk or bark missing. Co-dominant stems could be present with likely points of failure. Girdling or damaged roots obvious. Tree is structurally problematic.

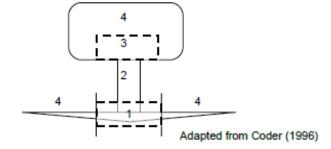
Hazardous: Tree is immediate hazard with potential to fail, this should be rectified as soon as possible.

Tree Structure Matrix

Descriptor	Zone 1 - Root plate & lower stem	Zone 2 - Trunk	Zone 3 - Primary branch support	Zone 4 - Outer crown and roots
Good	No damage, disease or decay; obvious basal flare / stable in ground	No damage, disease or decay; well tapered	Well formed, attached, spaced and tapered	No damage, disease, decay or structural defect
Fair	Minor damage or decay. Basal flare present.	Minor damage or decay	Typically formed, attached, spaced and tapered	Minor damage, disease or decay; minor branch end- weight or over- extension
Fair to Poor	Moderate damage or decay; minimal basal flare	Moderate damage or decay; approaching recognised thresholds	Weak, decayed or with acute branch attachments; previous branch failure evidence	Moderate damage, disease or decay; moderate branch end- weight or over- extension
Poor	Major damage, disease or decay; fungal fruiting bodies present. Excessive lean placing pressure on root plate	Major damage, disease or decay; exceeds recognised thresholds; fungal fruiting bodies present. Acute lean. Stump resprout	Decayed, cavities or has acute branch attachments with included bark; excessive compression flaring; failure likely	Major damage, disease or decay; fungal fruiting bodies present; major branch end-weight or over- extension
Very Poor	Excessive damage, disease or decay; unstable / loose in ground; altered exposure; failure probable	Excessive damage, disease or decay; cavities. Excessive lean. Stump resprout	Decayed, cavities or branch attachments with active split; failure imminent	Excessive damage, disease or decay; excessive branch end- weight or over- extension

Diagram 2: Tree structure zones

- Root plate & lower stem
- Trunk
- 3. Primary branch support
- Outer crown & roots



Structure ratings will also take into account general tree architecture which considers aspects of stem taper, live crown ratio, branch distribution or crown bias and position such as a tree being suppressed amongst more dominant trees.



Useful Life Expectancy (ULE)

The ULE is adapted from (*Barrell, 2001*). The objective of a ULE assessment is to determine the relative value of individual trees for the purpose of informing future management options.

Useful Life Expectancy – Assessment Criteria				
Dead / Serious Decline	Short	Medium	Long	
Trees with a high level of risk that would need removing within the next 5 years. Dead trees. Trees that should be removed within the next 5 years. Dying or suppressed or declining trees through disease or inhospitable conditions. Dangerous trees through instability or recent loss of adjacent trees. Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form. Damaged trees that considered unsafe to retain. Trees that could live for more than 5 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting. Trees that will become dangerous after removal of other trees for the reasons.	Trees that appear to be retainable with an acceptable level of risk for 5-15 years. Trees that may only live between 5 and 15 more years. Trees that may live for more than 15 years but would be removed to allow the safe development of more suitable individuals. Trees that may live for more than 15 years but would be removed during the course of normal management for safety or nuisance reasons. Storm damaged or defective trees that require substantial remedial work to make safe and are only suitable for retention in the short term.	Trees that appear to be retainable with an acceptable level of risk for 15-40 years. Trees that may only live between 15 and 40 more years. Trees that may live for more than 40 years but would be removed to allow the safe development of more suitable individuals. Trees that may live for more than 40 years but would be removed during the course of normal management for safety or nuisance reasons. Storm damaged or defective trees that require substantial remedial work to make safe and are only suitable for retention in the short term.	Trees that appear to be retainable with an acceptable level of risk for more than 40 years. Structurally sound trees located in positions that can accommodate future growth. Storm damaged or defective trees that could be made suitable for retention in the long term by remedial tree surgery. Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long-term retention	



IACA Significance of Tree, Assessment Rating System (STARS)

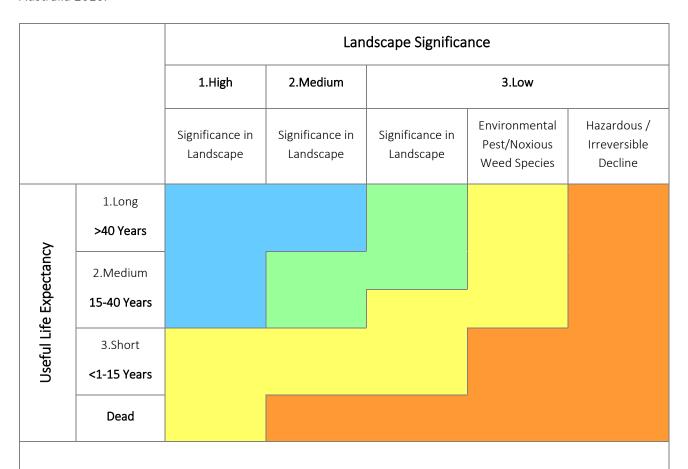
Institute of Australian Consulting Arboriculturists: Significance of a Tree Assessment Rating System (STARS)

The tree is to have a minimum of three (3) criteria in a category to be classified in that group				
Low	<u>Medium</u>	<u>High</u>		
or low vigour. The tree has form atypical of the species. The tree is not visible or is partly visible from the surrounding properties or obstructed by other vegetation or buildings. The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area. The tree is a young specimen which may or may not have reached dimensions to be protected by local Tree Preservation Orders or similar protection mechanisms and can easily be replaced with a suitable specimen. The tree's growth is severely restricted by reduced.	e tree is in fair to good condition. e tree has form typical or atypical of the cies. e tree is a planted locally indigenous or ommon species with its taxa commonly need in the local area. e tree is visible from surrounding perties, although not visually minent as partially obstructed by other etation or buildings when viewed from street. e tree provides a fair contribution to the call character and amenity of the local aa. e tree's growth is Mediumly restricted above or below ground influences, ucing its ability to reach dimensions ical for the taxa in situ.	The tree is in good condition and good vigour. The tree has a form typical for the species. The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age. The tree is listed as a heritage item, threatened species or part of an endangered ecological community or listed on councils' significant/notable tree register. The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity. The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values. The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa in situ – tree is appropriate to the site conditions.		



(STARS) Tree Retention Value - Priority Matrix

Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia 2010.



Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building(s) should be considered to accommodate the setbacks as prescribed by the Australian Standard *AS4970 Protection of trees on development sites*. Tree sensitive construction measures must be implemented (pier and beam cantilever, Structural Confinement Cells etc if works are to proceed within the TPZ).

Consider for Retention (Medium) - These trees may be retained and protected. These are considered less critical; however, their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.

Consider for Removal (Low) - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.

Priority for Removal - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.



12.7 Assumptions and Limiting Conditions

- 1) Active Green Services Pty Ltd (herein after referred to as AGS) contracts with you on the basis that you promise that all legal information which you provide, including land title and ownership of other property, are correct. AGS is not responsible for verifying or ascertaining any of these issues.
- 2) AGS contracts with you on the basis that your promise that all affected property complies with all applicable statutes and subordinate legislation.
- 3) AGS will take all reasonable care to obtain necessary information from reliable sources and to verify data. However, AGS neither guarantees nor is responsible for the accuracy of information provided by others.
- 4) If, after delivery of this report, you later require a representative of AGS to attend court to give evidence or to assist in the preparation for a hearing because of this report, you must pay an additional hourly fee at our then current rate for expert evidence.
- 5) Alteration of this report invalidates the entire report.
- 6) AGS retains the copyright in this report. Possession of the original or a copy of this report does not give you or anyone else any right of reproduction, publication or use without the written permission of AGS.
- 7) The contents of this report represent the professional opinion of the consultant. AGS consultancy fee for the preparation of this report is in no way contingent upon the consultant reporting a particular conclusion of fact, nor upon the occurrence of a subsequent event.
- 8) Sketches, diagrams, graphs and photographs in this report are intended as visual aids, are not to scale unless stated to be so, and must not be construed as engineering or architectural reports or as surveys.
- 9) Unless expressly stated otherwise:
 - a. The information in this report covers only those items which were examined and reflects the condition of those items at the time of the inspection.
 - b. Our inspection is limited to visual examination of accessible components without dissection, excavation or probing. There is no warranty or guarantee, express or implied, that even if they were not present during our inspection, problems or defects in plants or property examined may not arise in the future.
- 10) This Report supersedes all prior discussions and representations between AGS and the client on the subject.



12.8 AGS Quality Control

Document control

File reference	File type	Modifications	Date
JN138262	AR	Original document	04/05/2024

Communication register

Date	Туре	From	То	Description
06/05/2024	PDF	AGS	WPCA	Arboricultural Impact Assessment Report (v.2)

Review register

Date	File reference	Reviewer	Qualification	Company
06/05/2024	JN138262	I.Dunsmuir	Dip of Arb (AQF 5)	Active Green Services