



Sustainable
Tree Management

ARBORICULTURAL IMPACT ASSESSMENT

Site address
325 Pinnacle Lane, Steels Creek

Report prepared for
David Angello from FGR Architects



Prepared by
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1. INTRODUCTION

This amended Arboricultural Impact Assessment has been prepared for David Angello from FGR Architects in response to the RFI from Yarra Ranges Council REF YR-2021/406. The application for a Planning Permit includes demolishing the existing dwelling and constructing a large residential dwelling with swimming pool, bushfire bunker and extended the existing driveway at 325 Pinnacle Lane, Steels Creek.

This report is an analysis of seventy (70) trees growing on site within proximity to the proposed construction envelope and includes vegetation impacted by the corresponding Bushfire Management Plan defensible space requirements at 325 Pinnacle Lane, Steels Creek.

The report identifies all trees proposed to be removed and retained in accordance with the Bushfire Management Overlay (BMO) defensible space requirements, while taking into consideration the requirements within the Bushfire Management Plan. See Section 4 of this report.

This amended proposed focuses on retaining mature, healthy, and high retention value native canopy trees growing around the proposed dwelling, while still complying with the BMO defensible space requirements. The proposed extended driveway has also been designed to retain all native vegetation on site. This approach has minimised vegetation loss/impacts and demonstrates the appropriate balance between retention of high value native vegetation while achieving the bushfire management objectives within the planning scheme.

The report provides comment on the impact from the proposed construction and overall existing condition of the trees. An assessment is provided based on the identification of the current health, structure and overall condition characteristics. Where relevant, the report provides comment on the potential loss of visual/landscape or streetscape amenity and the environmental significance of the trees based on their contribution to the local environment.

The results of this assessment and a discussion of the relevant arboricultural characteristics are provided. The recommendations given are based on the condition of the trees and the sustainable life expectancy in relation to their current and future growing environment.

Due to recent design changes a Native Vegetation Removal Report (NVRR) Is not required as part of this application.

Recommendations are not driven by the proposed development.

Trees that are worthy of retention are afforded general guidelines for tree protection measures. These guidelines do not constitute a Tree Management or Protection Plan (*as per the Australian Standard AS 4970 - 2009 - Protection of Trees on Development Sites*).

2. SCOPE AND REPORT OBJECTIVES

Sustainable Tree Management was engaged by David Angello from FGR Architects to amend the original Arboricultural Impact Assessment and prepare a new Native Vegetation Removal Report on trees likely to be impacted by the amended development proposal at 325 Pinnacle Lane, Steel Creek.

The report objectives are:

- To comment on the health, structure and overall condition of the trees on the site and within proximity to existing boundaries;
- To assess tree condition and suitability for preservation based on the characteristics observed of the subject trees;
- To investigate the suitability for retention/preservation of the trees in relation to the proposed overall development and to outline the guidelines for tree protection where applicable;
- To provide up-to-date tree data including Structural Roots Zones (SRZs) and Tree Protection Zones (TPZs);
- To calculate proposed development encroachments into Structural Roots Zones (SRZs) and Tree Protection Zones (TPZs);
- Respond to the RFI from Yarra Ranges Council REF YR-2021/406;
- To nominate trees proposed for removal that will require offsetting under Clause 52.17 for the loss of non-exempt native vegetation; and
- Recommend the appropriate incorporation of high retention healthy canopy trees while still complying with the BMO defensible space requirements.

3. SITE ANALYSIS AND SURVEY METHODOLOGY

3.1. SITE AND VEGETATION ANALYSIS

The land is a large and partially developed rural allotment. This report is an analysis of seventy (70) trees that are growing within close proximity to all proposed construction at 325 Pinnacle Lane, Steels Creek.

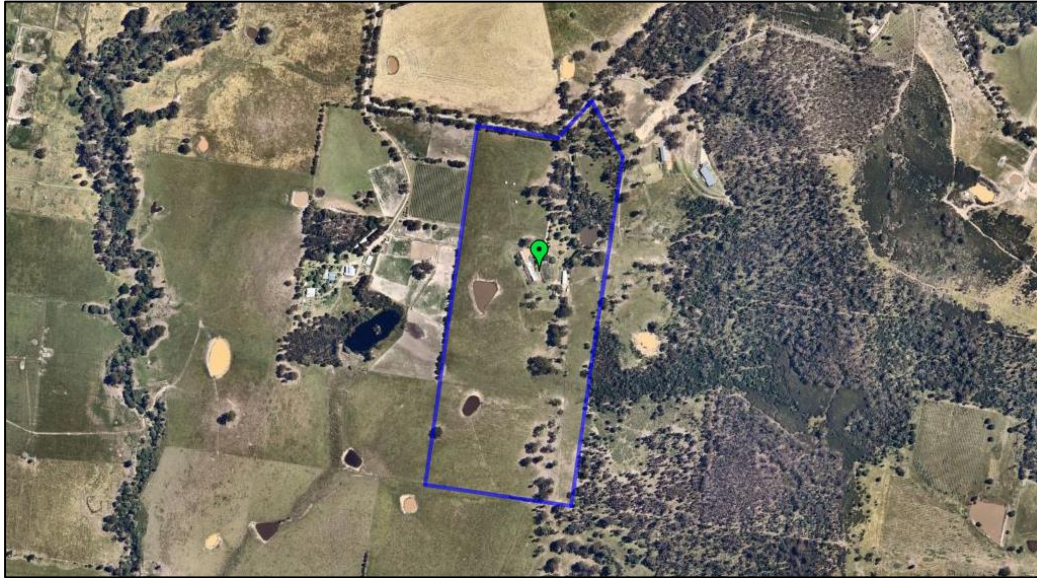


Figure 1. Aerial Nearmap image, dated Sunday 13th December, 2020.

3.2. PLANNING AND CONSIDERATIONS

The site is located at 325 Pinnacle Lane, Steels Creek. The site is within a Green Wedge Zone – Schedule 5 (GWZ5) of the Yarra Ranges Planning Scheme and is also within a designated Bushfire Prone Area (BPA). A Bushfire Management Overlay (BMO) partially applies to the site, see Figure 2 below.

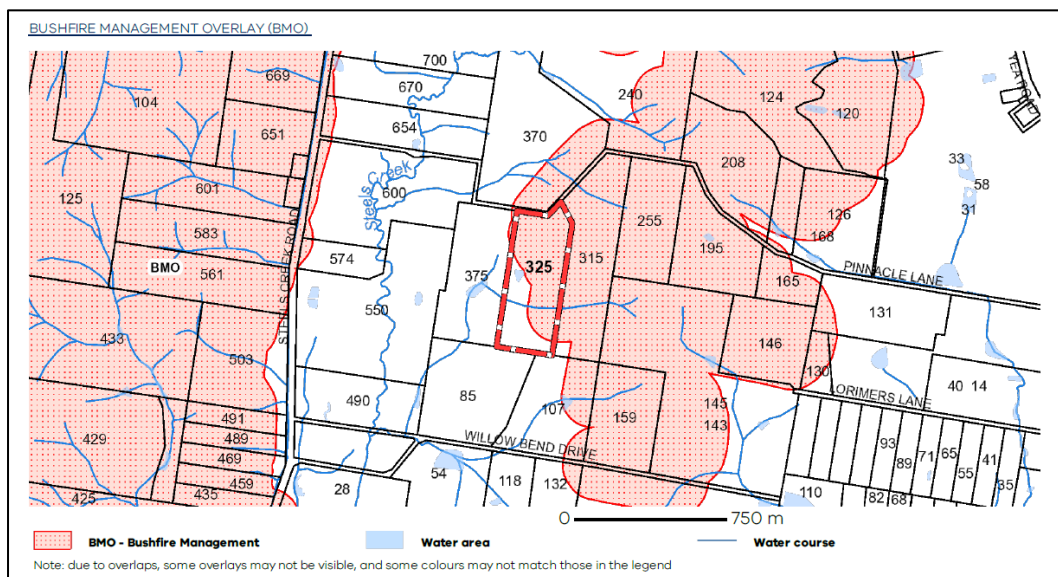


Figure 2 – Bushfire Management Overlay (BMO), VicPlan, Property Planning Report, dated 15th April, 2021.

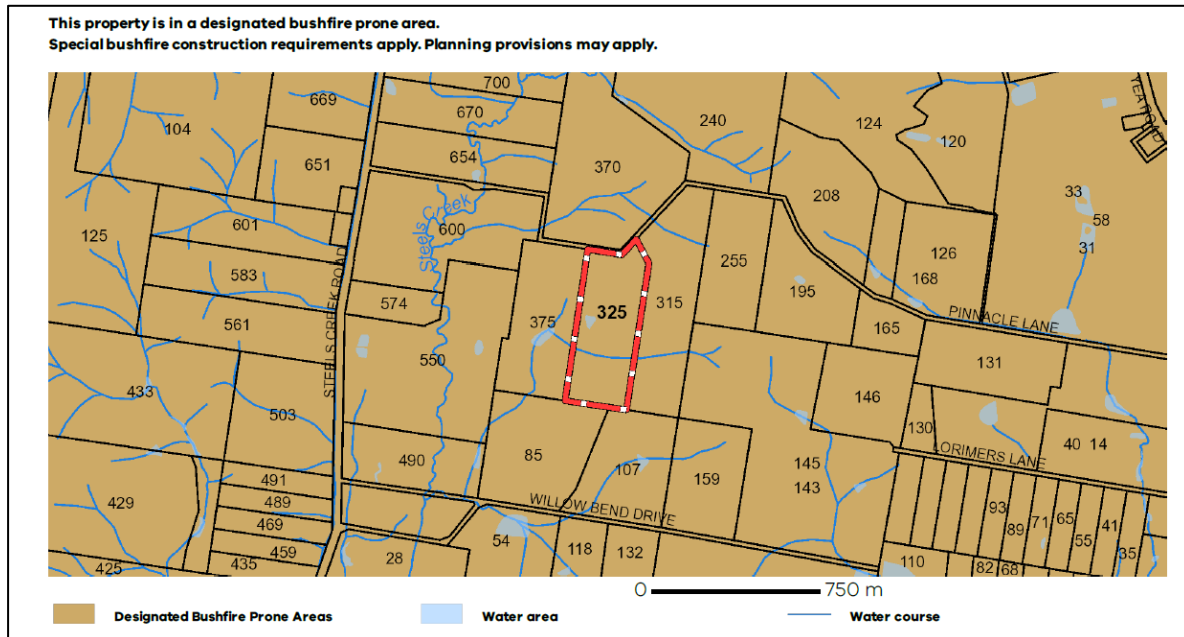


Figure 3 – Designated Bushfire Prone Area (DBPA), Property Planning Report, VicPlan, dated 15th April, 2021.

52.12-1
05/08/2020
VC176

Exemptions to create defensible space around buildings used for accommodation

Any requirement of a planning permit, including any condition, which has the effect of prohibiting the removal, destruction or lopping of vegetation, or any requirement of this planning scheme to obtain a planning permit, or any provision of this planning scheme that prohibits the removal, destruction or lopping of vegetation or requires the removal, destruction or lopping of vegetation to be carried out in a particular manner, does not apply to any of the following:

- The removal, destruction or lopping of any vegetation within 10 metres of an existing building used for accommodation if all of the following requirements are met:
 - The building must be located in an area that is designated as a bushfire prone area under the *Building Act 1993*.
 - The building must have been:
 - constructed before 10 September 2009; or
 - approved by a planning permit or a building permit issued before 10 September 2009; or
 - constructed to replace a dwelling or dependent persons unit that was damaged or destroyed by a bushfire that occurred between 1 January 2009 and 31 March 2009.

Figure 4. Extract: Victoria Planning Provisions – Bushfire Protection Exemptions under Clause 52.12

Given the site is greater than 4,000 square metres in size, native vegetation growing on the site must also be considered under Clause 52.17 of the Yarra Ranges Planning Scheme, see Figure 5 below.

52.17-5 <small>12/12/2017 VC138</small>	Offset requirements If a permit is required to remove, destroy or lop native vegetation, the biodiversity impacts from the removal, destruction or lopping of native vegetation must be offset, in accordance with the <i>Guidelines</i> . The conditions on the permit for the removal, destruction or lopping of native vegetation must specify the offset requirement and the timing to secure the offset.
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Figure 5. Extract: page 610 Victoria Planning Provisions – Planning Scheme

3.3. SURVEY METHODOLOGY

The original collection of data was undertaken by Rosey Bennett, Luke Sturgess and Brendan Pike on 29th April, 2021. A further site inspection and data collection was undertaken by Luke Sturgess and Brendan Pike on 23rd August 2021. The data was captured on site of the characteristics of each tree and is recorded within individual tables. A tree location plan is provided in Appendix 10. This plan is provided as a separate PDF document titled 325 Pinnacle Lane TLP V4.PDF and is at 1:1500 scale when printed in A2 format.

Each tree was assessed and the genus/species, estimated height and canopy width, diameter at breast height (DBH) and the characters of health and structure were recorded. Additionally, the site significance, sustainable life expectancy (SLE), site and environmental contribution, construction impact and retention value of the trees was recorded using the abbreviations as set out in the explanation of terms in Appendix 12.

The survey and assessment undertaken of all the study site trees was made from a visual inspection from ground level only. No trees were climbed and no samples of soil, plant material or pest and disease infestation (if present) were taken for analysis. Species identification was carried out in the field and is considered as common. No samples have been taken to the National Herbarium of Victoria for accurate analysis and identification.

Defects not apparent from this ground-based visual inspection are excluded from the discussion within this report. Additionally, this report is based upon the condition of the trees at the time of assessment only.

3.4. DOCUMENTS VIEWED IN PREPARATION OF THIS REPORT

The following documents were viewed in preparation of this report:

- Yarra Ranges Shire Planning Scheme;
- RFI from Yarra Ranges Council REF YR-2021/406 (date not provided);
- Proposed Site Plan (FGR Architects P/L - Job No. 20549, dated 9 September, 2021);
- Bushfire Management Plan, (SBA Fire, dated 20 August, 2021 V1.21-11);
- Aerial Photography of the site (Nearmap, dated 13th December, 2020); and
- Property Planning Report (VicPlan, dated 23 September, 2021).

3.5. COUNCIL PROPERTY NUMBER 202146

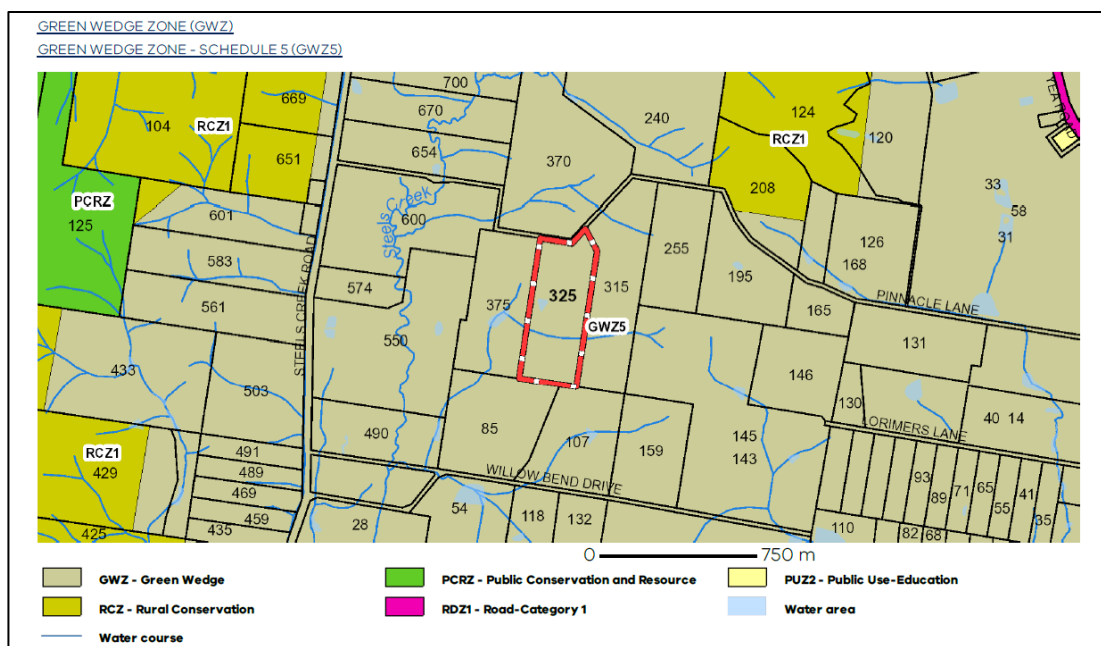


Figure 6 – Green Wedge Zone – Schedule 5 (GWZ5), Property Planning Report, VicPlan, dated 15th April, 2021.

4. BUSHFIRE MANAGEMENT PLAN & DEFENDABLE SPACE REQUIREMENTS

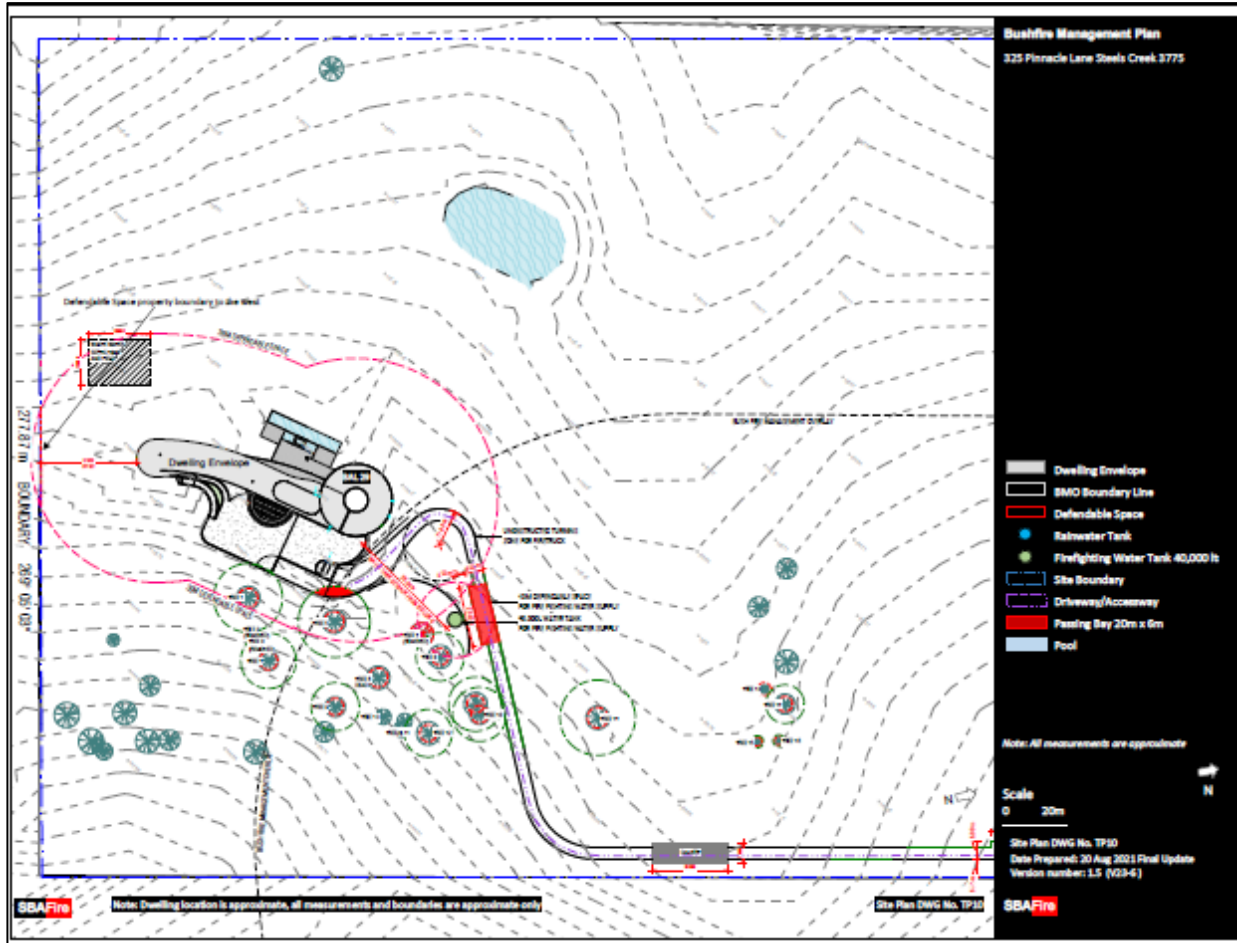


Figure 7. Extract from Bushfire Management Plan

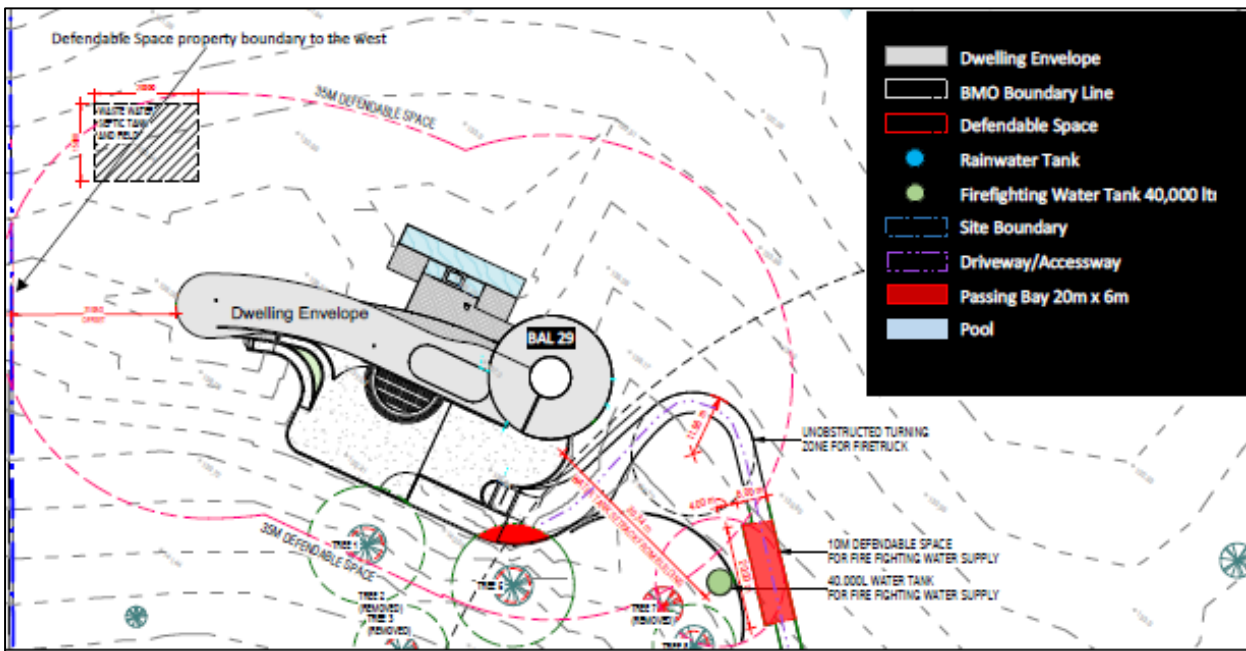


Figure 8. Extract from Bushfire Management Plan.

Bushfire Protection Measures

a) Defendable Space

Defendable space is provided for a distance of 35 metres north, south, east, and property boundary west around the dwelling, where vegetation (and other flammable materials) will be modified and managed in accordance with the following requirements:

- Grass must be short cropped and maintained during the declared fire danger period.
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
- Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
- Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.
- Shrubs must not be located under the canopy of trees.
- Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5 metres.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least 5 metres.
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

b) Construction Standard

- Proposed New Dwelling to be designed and constructed to a minimum Bushfire Attack Level of BAL 29

c) Water Supply

- Show a water supply tank with 40,000 litres of effective water supply for firefighting purposes which meets the following requirements:
 - Be stored in an above ground water tank constructed of concrete or metal.
 - Have all fixed above ground water pipes and fittings required for firefighting purposes made of corrosive resistant metal.
 - Include a separate outlet for occupant use.
 - Be readily identifiable from the building or appropriate identification signage to the satisfaction of the relevant fire authority.
 - Be located within 60 metres of the outer edge of the approved building.
 - The outlet/s of the water tank must be within 4 metres of the accessway and unobstructed.
 - Incorporate a separate ball valve (British Standard Pipe (BSP 65 millimetre) and coupling (64millimetre CFA 3 threads per inch male fitting).
 - Any pipework and fittings must be a minimum of 65 millimetres (excluding the CFA coupling)

d) Access for Site Accessway

- Show the access for firefighting purposes which meets the following requirements:
 - All-weather construction.
 - A load limit of at least 15 tonnes
 - Provide a minimum trafficable width of 3.5 metres
 - Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically
 - Curves must have a minimum inner radius of 10 metres
 - The average grade must be no more than 1 in 7 (14.4 Per cent) (8.1 degrees) with a maximum grade of no more than 1 in 5 (2 per cent) (11.3 degrees) for no more than 50 metres.
 - Dips must have no more than a 1 in 8 (12. Per cent) (7.1 degrees) entry and exit angle.
 - Incorporate a turning area for firefighting vehicles close to the building
 - Incorporate a passing bay at least every 200 metres that are a minimum 20 metres long and a minimum trafficable width of 6 metres

Mandatory Condition

The bushfire protection measures forming part of this permit or shown on the endorsed plans, including those relating to construction standards, defendable space, water supply, and access, must be maintained to the satisfaction of the responsible authority on a continuing basis. This condition continues to have force and effect after the development authorised by this building permit has been completed.

Prepared By: Geoffrey Stone – SBAFire Version: V1.21-11 Final 2 Date: 20 August 2021 Update



Figure 9. Extract from Bushfire Management Plan – Bushfire Protection Measures, dated 20th August, 2021.


5. ARBORICULTURAL ASSESSMENT AND RECOMMENDATIONS


The assessment of seventy (70) trees growing on and adjacent to the site revealed that:


- Nineteen (19) trees growing on and adjacent to site are of high retention value;
- Three (3) trees growing on site are of medium retention value; and
- Forty eight (48) trees growing on site are of low retention value.


The following trees have been assessed as being of high, medium and low site significance categories due to their overall age, health and structure. DBH (cm) is the Diameter at breast height measured 1.4m from natural ground level, SRZ (m) is the structural root zone in metres in a radius from the centre of the trunk and TPZ (m) is the tree protection zone in metres in a radius from the centre of the trunk. Regardless of the current condition of neighbouring assets they must always be considered as high retention value due their location. The encroachment (%) is the level of encroachment into the tree protection zone of each tree. If the proposed encroachment is less than 10% of the area of the TPZ and is outside of the SRZ a detailed root investigation is not required. Any proposed encroachment of greater than 10% of the TPZ or inside the SRZ of tree(s), the project Arborist must demonstrate the tree(s) will remain viable. These measurements and distances are derived from the Australian Standard AS4970 - 2009 - Protection of Trees on Development sites.


High Retention Value Trees


Tree Number	1	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus spp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	95	
Height (m)	20	
Spread NS (m)	15/8	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	3.2	
TPZ (m)	11.4	
Encroachment (%)	0	
Permit Requirement	NA	
Comments	Mature native Eucalypt species. Nominated for retention. No impacts proposed.	


Tree Number	4	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus spp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	77	
Height (m)	12	
Spread NS (m)	7/7	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	3.0	
TPZ (m)	9.2	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mature native Eucalyptus species. No impact proposed.		


Tree Number	5	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus spp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	99	
Height (m)	14	
Spread NS (m)	8/6	
Health	Poor	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	3.3	
TPZ (m)	11.9	
Encroachment (%)	9.0	
Permit Requirement	NA	
Comments		
Mature native Eucalyptus species. Nominated for retention. Minor TPZ encroachment.		


Tree Number	8	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus melliodora</i>	
Common Name	Yellow Box	
Origin	Native	
DBH (cm)	67	
Height (m)	15	
Spread NS (m)	5/6	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	2.8	
TPZ (m)	8.0	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mature native Yellow Box. No impact proposed.		


Tree Number	9	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus melliodora</i>	
Common Name	Yellow Box	
Origin	Native	
DBH (cm)	67	
Height (m)	13	
Spread NS (m)	4/4	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	2.8	
TPZ (m)	8.0	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mature native Yellow Box. No impact proposed.		


Tree Number	12	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus macrorhyncha</i>	
Common Name	Red Stringybark	
Origin	Native	
DBH (cm)	66	
Height (m)	14	
Spread NS (m)	7/5	
Health	Fair	
Structure	Fair	
Age Class	Semi mature	
Site Significance	High	
ULE	Medium	
SRZ (m)	2.8	
TPZ (m)	7.9	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Semi-mature native Red Stringybark. No impact proposed.		

Tree Number	14	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus sp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	104	
Height (m)	14	
Spread NS (m)	12/10	
Health	Fair/Poor	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Medium	
SRZ (m)	3.4	
TPZ (m)	12.5	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mature native Eucalypt species - No impact proposed.		


Tree Number	19	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus melliodora</i>	
Common Name	Yellow Box	
Origin	Native	
DBH (cm)	98	
Height (m)	20	
Spread NS (m)	12/10	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	3.3	
TPZ (m)	11.8	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Tree proposed for retention. No impact proposed.		


Tree Number	23	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus obliqua</i>	
Common Name	Messmate	
Origin	Native	
DBH (cm)	77	
Height (m)	20	
Spread NS (m)	0/10	
Health	Fair	
Structure	Poor	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	3.0	
TPZ (m)	9.2	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Tree nominated for retention. No impact proposed.		


Tree Number	24	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus melliodora</i>	
Common Name	Yellow Box	
Origin	Native	
DBH (cm)	68	
Height (m)	20	
Spread NS (m)	6/8	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	2.8	
TPZ (m)	8.2	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mature native Yellow Box. No developmental impact proposed.		


Tree Number	27	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus melliodora</i>	
Common Name	Yellow Box	
Origin	Native	
DBH (cm)	72	
Height (m)	18	
Spread NS (m)	7x7	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	2.9	
TPZ (m)	8.6	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mature native Yellow Box. No developmental impact proposed.		


Tree Number	29	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus melliodora</i>	
Common Name	Yellow Box	
Origin	Native	
DBH (cm)	Multi = 64	
Height (m)	16	
Spread NS (m)	6x6	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	Medium	
ULE	Long	
SRZ (m)	2.7	
TPZ (m)	7.7	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mature native Yellow Box. No developmental impact proposed.		

Tree Number	30	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus melliodora</i>	
Common Name	Yellow Box	
Origin	Native	
DBH (cm)	73	
Height (m)	18	
Spread NS (m)	8x8	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	2.9	
TPZ (m)	8.8	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mature native Yellow Box. No developmental impact proposed.		


Tree Number	33	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus melliodora</i>	
Common Name	Yellow Box	
Origin	Native	
DBH (cm)	73	
Height (m)	20	
Spread NS (m)	8x8	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	2.9	
TPZ (m)	8.8	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mature native Yellow Box. No developmental impact proposed.		

Tree Number	34	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus melliodora</i>	
Common Name	Yellow Box	
Origin	Native	
DBH (cm)	98	
Height (m)	16	
Spread NS (m)	3x7	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	3.3	
TPZ (m)	11.8	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mature native Yellow Box. No developmental impact proposed.		


Tree Number	35	High Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus melliodora</i>	
Common Name	Yellow Box	
Origin	Native	
DBH (cm)	69	
Height (m)	16	
Spread NS (m)	7x7	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	High	
ULE	Long	
SRZ (m)	2.8	
TPZ (m)	8.3	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mature native Yellow Box. No developmental impact proposed.		

Tree Number	39 (Group of 3)	High Retention Value
Location	Council Assets	
Genus/Species	<i>Acacia sp.</i>	
Common Name	Wattle	
Origin	Native	
DBH (cm)	14	
Height (m)	4	
Spread NS (m)	1x1	
Health	Fair	
Structure	Fair	
Age Class	Young	
Site Significance	Low	
ULE	Medium	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	0	
Permit Requirement	Council approval	
Comments		
Young Council trees nominated for retention. No developmental impacts proposed.		


Medium Retention Value Trees


Tree Number	13	Medium Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus macrorhyncha</i>	
Common Name	Red Stringybark	
Origin	Native	
DBH (cm)	Multi = 75	
Height (m)	12	
Spread NS (m)	8/4	
Health	Fair/Poor	
Structure	Poor	
Age Class	Mature	
Site Significance	Medium	
ULE	Medium	
SRZ (m)	2.9	
TPZ (m)	9.0	
Encroachment (%)	3.0	
Permit Requirement	NA	
Comments		
Mature native Red Stringybark. Minor TPZ encroachment, no further arboricultural investigations required.		


Tree Number	17	Medium Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus macrorhyncha</i>	
Common Name	Red Stringybark	
Origin	Native	
DBH (cm)	53	
Height (m)	12	
Spread NS (m)	6/4	
Health	Fair/Poor	
Structure	Poor	
Age Class	Semi mature	
Site Significance	Medium	
ULE	Medium	
SRZ (m)	2.5	
TPZ (m)	6.4	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Semi mature native Red Stringybark. No impact proposed.		


Tree Number	22	Medium Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus macrorhyncha</i>	
Common Name	Red Stringybark	
Origin	Native	
DBH (cm)	48	
Height (m)	8	
Spread NS (m)	4/4	
Health	Fair	
Structure	Poor	
Age Class	Semi mature	
Site Significance	Medium	
ULE	Medium	
SRZ (m)	2.4	
TPZ (m)	5.8	
Encroachment (%)	0	
Permit Requirement	NA	
Comments	Semi mature native Red Stringybark. Nominated for retention. No impact proposed.	


Low Retention Value Trees


Tree Number	2	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus sp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	19	
Height (m)	5	
Spread NS (m)	2/2	
Health	Fair	
Structure	Fair	
Age Class	Juvenile	
Site Significance	Low	
ULE	Long	
SRZ (m)	1.6	
TPZ (m)	2.3	
Encroachment (%)	100	
Permit Requirement	52.17 Exempt – Establish < 10 years	
Comments	Juvenile native Eucalypt species. Nominated for removal to provide canopy separation between trees numbered 1 and 4.	


Tree Number	3	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus sp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	17	
Height (m)	4	
Spread NS (m)	1/1	
Health	Fair	
Structure	Fair	
Age Class	Juvenile	
Site Significance	Low	
ULE	Long	
SRZ (m)	1.6	
TPZ (m)	2.0	
Encroachment (%)	100	
Permit Requirement	52.17 Exempt – Establish < 10 years	
Comments		
Juvenile native Eucalypt species. Nominated for removal to provide canopy separation between trees numbered 1 and 4.		


Tree Number	6	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus spp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	89	
Height (m)	12	
Spread NS (m)	8/8	
Health	Dead	
Structure	Poor	
Age Class	Dead	
Site Significance	Low	
ULE	Short	
SRZ (m)	3.2	
TPZ (m)	10.7	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Dead Eucalyptus species. No impact proposed.		

Tree Number	7	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus sp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	87	
Height (m)	12	
Spread NS (m)	6/6	
Health	Dead	
Structure	Poor	
Age Class	Dead	
Site Significance	Low	
ULE	Short	
SRZ (m)	3.1	
TPZ (m)	10.4	
Encroachment (%)	100	
Permit Requirement	52.17 Exempt – Dead Tre	
Comments		
Dead Eucalyptus species. Nominated for removal.		


Tree Number	10	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus macrorhyncha</i>	
Common Name	Red Stringybark	
Origin	Native	
DBH (cm)	Multi = 67	
Height (m)	10	
Spread NS (m)	3/4	
Health	Poor	
Structure	Poor	
Age Class	Semi mature	
Site Significance	Low	
ULE	Short	
SRZ (m)	2.8	
TPZ (m)	8.0	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Semi mature native Red Stringybark. No impacts proposed.		

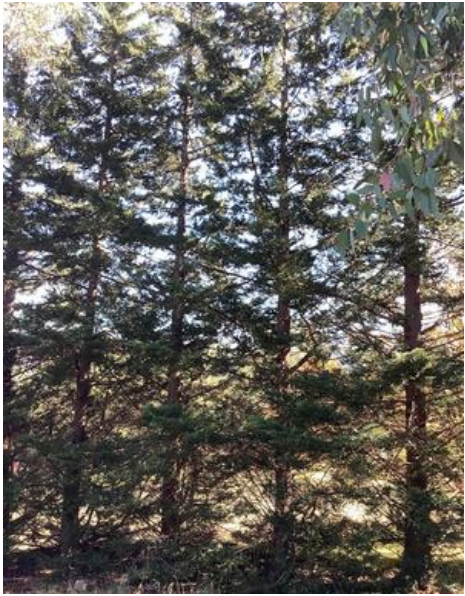
Tree Number	11 (Group of 6)	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus macrorhyncha</i>	
Common Name	Red Stringybark	
Origin	Native	
DBH (cm)	30	
Height (m)	8	
Spread NS (m)	1/1	
Health	Poor	
Structure	Poor	
Age Class	Semi mature	
Site Significance	Low	
ULE	Short	
SRZ (m)	2.0	
TPZ (m)	3.6	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Group of 6 semi mature native Red Stringybark trees. Trees are outside defendable space and are proposed for retention.		

Tree Number	15	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus obliqua</i>	
Common Name	Messmate	
Origin	Native	
DBH (cm)	Multi = 14	
Height (m)	5	
Spread NS (m)	1/1	
Health	Fair	
Structure	Poor	
Age Class	Juvenile	
Site Significance	Low	
ULE	Short	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Juvenile native Messmate. No impact proposed.		


Tree Number	16	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus macrorhyncha</i>	
Common Name	Red Stringybark	
Origin	Native	
DBH (cm)	Multi = 14	
Height (m)	5	
Spread NS (m)	1/2	
Health	Fair/Poor	
Structure	Fair	
Age Class	Juvenile	
Site Significance	Low	
ULE	Short	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Juvenile native Red Stringybark. No impact proposed.		


Tree Number	18	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus spp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	39	
Height (m)	9	
Spread NS (m)	1/1	
Health	Dead	
Structure	Poor	
Age Class	Dead	
Site Significance	Low	
ULE	Short	
SRZ (m)	2.2	
TPZ (m)	4.7	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Dead Eucalypt species. No impact proposed.		


Tree Number	20	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus melliodora</i>	
Common Name	Yellow Box	
Origin	Native	
DBH (cm)	18	
Height (m)	8	
Spread NS (m)	1/4	
Health	Poor	
Structure	Poor	
Age Class	Young	
Site Significance	Low	
ULE	Short	
SRZ (m)	1.6	
TPZ (m)	2.2	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Young native Yellow Box. No impact proposed.		


Tree Number	21 (Group of 14)	Low Retention Value
Location	On Site	
Genus/Species	<i>Cupressus macrocarpa</i>	
Common Name	Monterey Cypress	
Origin	Exotic	
DBH (cm)	20	
Height (m)	6	
Spread NS (m)	1/1	
Health	Fair/Poor	
Structure	Fair	
Age Class	Young	
Site Significance	Low	
ULE	Short	
SRZ (m)	1.7	
TPZ (m)	2.4	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Nominated for retention. No impact proposed.		


Tree Number	25	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus spp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	Multi = 65	
Height (m)	15	
Spread NS (m)	0/0	
Health	Dead	
Structure	Poor	
Age Class	Dead	
Site Significance	Low	
ULE	Short	
SRZ (m)	2.8	
TPZ (m)	7.8	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Dead Eucalypt species. No impact proposed.		


Tree Number	26 (Group of 8)	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus spp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	10	
Height (m)	4	
Spread NS (m)	1/1	
Health	Fair	
Structure	Fair	
Age Class	Juvenile	
Site Significance	Low	
ULE	Short	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Mix of juvenile native Eucalypt species and Acacia species. No impact proposed.		


Tree Number	28	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus radiata</i>	
Common Name	Narrow-leaved Peppermint	
Origin	Native	
DBH (cm)	46	
Height (m)	8	
Spread NS (m)	4x1	
Health	Poor	
Structure	Poor	
Age Class	Mature	
Site Significance	Low	
ULE	Short	
SRZ (m)	2.4	
TPZ (m)	5.5	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
No developmental impacts proposed.		

Tree Number	31	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus obliqua</i>	
Common Name	Messmate	
Origin	Native	
DBH (cm)	Multi = 50	
Height (m)	12	
Spread NS (m)	3x4	
Health	Poor	
Structure	Poor	
Age Class	Semi mature	
Site Significance	Low	
ULE	Short	
SRZ (m)	2.5	
TPZ (m)	6.0	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Nominated for retention, no developmental impacts proposed.		

Tree Number	32	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus obliqua</i>	
Common Name	Messmate	
Origin	Native	
DBH (cm)	Multi = 48	
Height (m)	10	
Spread NS (m)	3x3	
Health	Poor	
Structure	Poor	
Age Class	Semi mature	
Site Significance	Low	
ULE	Short	
SRZ (m)	2.4	
TPZ (m)	5.8	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Nominated for retention, no developmental impacts proposed.		

Tree Number	36 (Group of 3)	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus obliqua</i> .	
Common Name	Messmate	
Origin	Native	
DBH (cm)	14	
Height (m)	4	
Spread NS (m)	1x1	
Health	Fair	
Structure	Fair	
Age Class	Young	
Site Significance	Low	
ULE	Long	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	0	
Permit Requirement	NA	
Comments		
Nominated for retention, no developmental impacts proposed.		

Tree Number	37	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus sp.</i>	
Common Name	Eucalypt	
Origin	Native	
DBH (cm)	48	
Height (m)	10	
Spread NS (m)	3x3	
Health	Dead	
Structure	Poor	
Age Class	Dead	
Site Significance	Low	
ULE	Remove	
SRZ (m)	2.4	
TPZ (m)	NA	
Encroachment (%)	0	
Permit Requirement	NA	
Comments	Nominated for retention, no developmental impacts proposed.	

Tree Number	38 (Group of 3)	Low Retention Value
Location	On Site	
Genus/Species	<i>Eucalyptus obliqua</i>	
Common Name	Messmate	
Origin	Native	
DBH (cm)	12	
Height (m)	4	
Spread NS (m)	1x1	
Health	Fair	
Structure	Fair	
Age Class	Young	
Site Significance	Low	
ULE	Short	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	0	
Permit Requirement	NA	
Comments	Nominated for retention, no developmental impacts proposed.	

6. CONCLUSION

Table 1: Breakdown of trees nominated for removal or deemed lost under Clause 52.17

Permit & Offsetting Requirements 52.17	Number of Trees	Tree Number
Permit & Offsetting Required	0	NA
Permit Exempt < 10 years	2	2, 3
Permit Exempt Exotic species	0	NA
Permit Exempt – Dead Tree (Clause 51.03)	1	7
Removals - Total	3	

Table 2: Breakdown of trees nominated for retention:

TPZ Encroachments	Number of Trees	Tree Number
No Developmental Impact	65	1, 4, 6, 8, 9, 10, (11 – Group x 6), 12, 14, 15, 16, 17, 18, 19, 20, (21 – Group x 14), 22, 23, 24, 25, (26 – Group x 8), 27, 28, 29, 30, 31, 32, 33, 34, 35, (36 – Group x 3), 37, (38 – Group x 3), (39 – Group x 3)
Minor TPZ Encroachment < 10%	2	5, 13
Major TPZ Encroachment > 10%	0	NA
Total	67	

Proposed Dwelling Construction

The proposed dwelling construction envelope requires minimal vegetation removal and nominates all remnant trees growing within the 35 metre Bushfire Defendable Space for retention. Tree No. 5 was originally proposed for removal and is now being retained due to the relocation of the dwelling and adjacent hardstand. The design change was requested within the RFI from Yarra Ranges Council REF YR-2021/406. The removal of young trees numbered 2 and 3 is required to achieve canopy separation from adjacent mature trees numbered 1 and 4. Trees numbered 2 and 3 have been established for less than 10 years and therefore do not require a Planning Permit or Offsetting under Clause 52.17.

Proposed Driveway Extension

Substantial design changes have been implemented to retain all vegetation growing within proximity to the proposed driveway alignment. From an arboricultural perspective, the retention and incorporation of the existing driveway/crossover along with the construction of the additional driveway extension outside significant vegetation protection zones is an outcome likely to be supported by the Shire of Yarra Ranges. Minor TPZ encroachments to two (2) trees (Tree No. 5 and Tree No. 13) will not require any further arboricultural investigations to successfully retain the subject trees.

Emergency Vehicle Access Pruning Requirements

Vegetation growing along the existing driveway requires clearance pruning to the following minimum clearance requirements:

- A minimum trafficable width of 3.5 metres;
- Be clear of encroachments for at least 0.5 metres on each side;
- Be clear of encroachments at least 4.0 metres from ground level.

e) Access for Site Accessway and Fire Access Track

- Show the access for firefighting purposes which meets the following requirements:
- All-weather construction.
- A load limit of at least 15 tonnes
- Provide a minimum trafficable width of 3.5 metres
- Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically
- Curves must have a minimum inner radius of 10 metres
- The average grade must be no more than 1 in 7 (14.4 Per cent) (8.1 degrees) with a maximum grade of no more than 1 in 5 (2 per cent) (11.3 degrees) for no more than 50 metres.
- Dips must have no more than a 1 in 8 (12. Per cent) (7.1 degrees) entry and exit angle.
- Incorporate a turning area for firefighting vehicles close to the building
- Incorporate a passing bay at least every 200 metres that are a minimum 20 metres long and a minimum trafficable width of 6 metres

Figure 10. Extract: Bushfire Management Plan.

The existing driveway width from fence to fence is 5.0 metres. Uplift pruning to a minimum of 4 high meters back to the existing fence lines will provide sufficient emergency vehicle access. See images 1 and 2 below.



Image 1. Up lift pruning required to the left of the entrance gate.



Image 2. Up lift pruning (hedging) of the row of cypress to the left and minor limb pruning to the eucalypts to the right is required.

The landscape objectives of this project which include retaining as many high values trees as practical, while complying with BMO defensible space requirements have been met. Further, a landscape plan focused towards replanting indigenous tree stock, while taking into consideration defensible space requirements will provide a greater net benefit to the site in the long term.

Yours sincerely,



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7. TREE PROTECTION GUIDELINES

Sustainable Tree Management assesses individual tree protection requirements based upon the Australian Standard AS4970 – 2009 ‘Protection of Trees on Development Sites’. Tree protection requirements are calculated based upon trunk diameter of the tree at breast height. These calculations produce what is referred to in this report as the Tree Protection Zone (TPZ) and is provided as a measurement in metres in a radius from the centre of the trunk.

The TPZ is the zone in which protective measures should be applied in order to protect the tree(s) whilst maintaining the current levels of health and vigour.

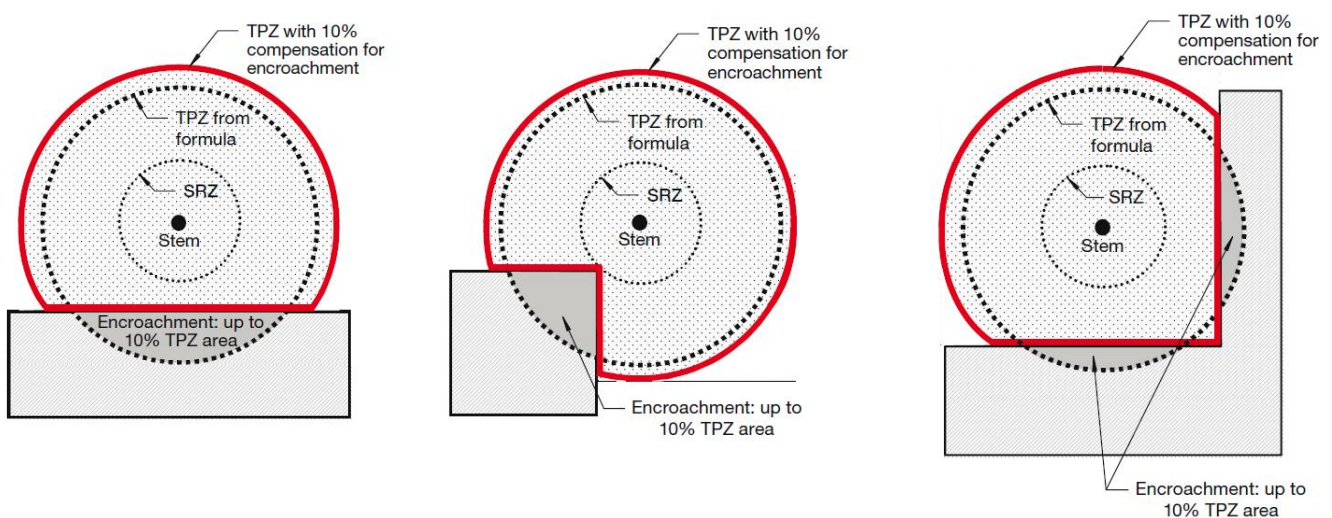
Determination of the structural root zone or the zone of rapid taper is provided as the Structural Root Zone (SRZ). The structural root zone calculations (may also be referred to as the Root Plate Radius (RPR)) of the tree, based upon the Australian Standard AS4970 - 2009. The SRZ determines the minimum distance around the tree in which the structural stability of the tree is able to be maintained.

It is important to note that the SRZ only determines the root plate area or the zone of rapid taper. Excavation within this area will not only cause a decline in tree vigour but may also cause catastrophic tree failure (Coder, 1996).

Often it is difficult to protect the entire TPZ due to site constraints. In such events it is imperative that condition and species tolerance to disturbance are evaluated in conjunction with the site characteristics. Helliwell (1985) and Harris (1999) identified that a healthy tree may tolerate removal of up to one-third of its roots and possibly up to 50% in some cases, although stability may be compromised at this level.

In situations where the TPZ of a tree to be retained will be in close proximity to a proposed development or where there will be encroachment into the TPZ of a tree, a specific tree management plan should be developed. This plan provides prescriptive measures to protect trees on development sites

Extract from Australian Standard AS 4970 - 2009 Protection of trees on Development sites



7.1. GENERAL TREE PROTECTION REQUIREMENTS

The following requirements are only provided only for basic guidance with the design phase for a project. These guidelines do not constitute a specific tree management plan.

- A tree protective fence should be installed at the recommended distance allocated for each tree to be retained. The fence should be located at the TPZ distance provided.
- The protection fence should be rigid (chain link or similar) and should not be less than 1.8 metres in height. Fencing should be firmly attached to a removable concrete or similar base. Alternatively, star pickets (1.5 metre spacing) and para-webbing may be used to define the tree protection area. Fencing should be in accordance with the Australian Standard for Temporary Fencing AS 4687.
- In cases where the TPZ cannot be entirely fenced, it is recommended that ground protection is used. Specific ground protection requirements will form part of a tree management plan that should be developed for each tree to be retained.
- No soil levels should be altered within the fenced TPZ area, no heavy machinery should be allowed to pass within this area and no spoil, chemicals, building materials or refuse should be stored within this area. Nothing whatsoever should be attached to the tree (excluding tape to identify a tree to be protected).
- The area within the tree protection fence should be covered with a layer of organic mulch (woodchips) to a depth of 100mm prior to the commencement of the project. Mulch material should comply with Australian Standard AS 4454.
- The tree protective fencing should be installed prior to any works (including demolition) commencing on site and should remain in place until all site development work is completed. The protective fencing should be located at the prescribed distances and clearly signed **TREE PROTECTION ZONE**. The sign should be similar to the following (*as recommended by the Australian Standard AS4970*) and should be of a size no smaller than 600mm x 400mm:



- An area should be designated on site, which is at least 10 metres distance from any optimal tree protection zone of the trees to be retained, where all building materials, chemicals etc. can be stored throughout the proposed development.
- Open trenching for underground services located within the recommended tree protection zone (TPZ) must be avoided. Should there be no alternative for service location; the services must be bored underneath the area designated as the tree protection zone. No trenching whatsoever should be used to install services within the protected area.
- Soil moisture during construction should be maintained at not less than 50% of field capacity (usually 10 litres of water per 10mm of each tree DBH per week). Irrigation may be applied by hand, automatic or manual irrigation system, or by fine spray from water tanker located outside the previously submitted exclusion zones. Water is to be applied at a volume and frequency required so as to maintain turgor and leaf retention and encourage healthy root development. The consultant Arborist should discuss variations to the amount of water to be supplied with the site or Project Manager.
- Remedial pruning works recommended to be undertaken on the subject trees must be carried out to Australian Standard AS4373 (2007) – Pruning of Amenity Trees, by a qualified Arborist. If pruning works are to be undertaken, then these works should be carried out prior to any construction works beginning on site.
- Documentation should be provided to the site manager by the consultant Arborist for each inspection during the development process which details the consultant Arborist name, date and time of inspection, the stage of development, and provides comments of what actions are required.

8. BIBLIOGRAPHY AND CITED REFERENCES

Coder, K.D., 1996, *Construction Damage Assessments: Trees and Sites*, The University of Georgia, SC, USA.

Handreck K.A. & Black, N.D., 1994, *Growing Media for ornamental plants and turf*, University of New South Wales Press, Sydney.

Harris, R.W. Clark, J.R. & Matheny, N.P., 1999, *Arboriculture, Integrated Management of Landscape Trees, Shrubs and Vines*, 3rd Edn. Prentice-Hall, Inc, USA.

Hayes, E., 2002, *Safe Trees Seminar*, The Australian College of Applied Science, Melbourne.

Helliwell, D.R., 1985, *Trees on Development Sites*, Arboricultural Association, Romsey, England

Hitchmough, J.D., 1994, *Urban Landscape Management*, Inkata Press, Sydney

Mattheck, C. & Breloer, H., 1998, *The Body Language of Trees – A Handbook for Failure Analysis*, The Stationary Office, Norwich, London.

Matheny, N.P. & Clark, J.R., 1994, *Evaluation of Hazard Trees in Urban Areas*, 2nd Edn., ISA Publications

Matheny, N.P. & Clark, J.R., 1998, *Trees and Development, A Technical Guide to Preservation of Trees During Land Development*, ISA Publications.

Neely, D. & Watson, G.W., 1998, *The Landscape Below Ground 2*, ISA Publications.

Shigo, A.L., 1986, *A New Tree Biology*. Shigo and Tree Associates, Durham, New Hampshire USA.

Shigo, A.L. 1991, *Modern Arboriculture*, Shigo and Tree Associates, Durham, New Hampshire USA.

Schwarze F.W.M.R, Engels, J. & Mattheck, C., 2000, *Fungal Strategies of Wood Decay in Trees*, Springer-Verlag, Germany

9. QUALIFICATIONS AND EXPERIENCE OF CONSULTANT

Qualifications

Diploma Arboriculture (AQF5)

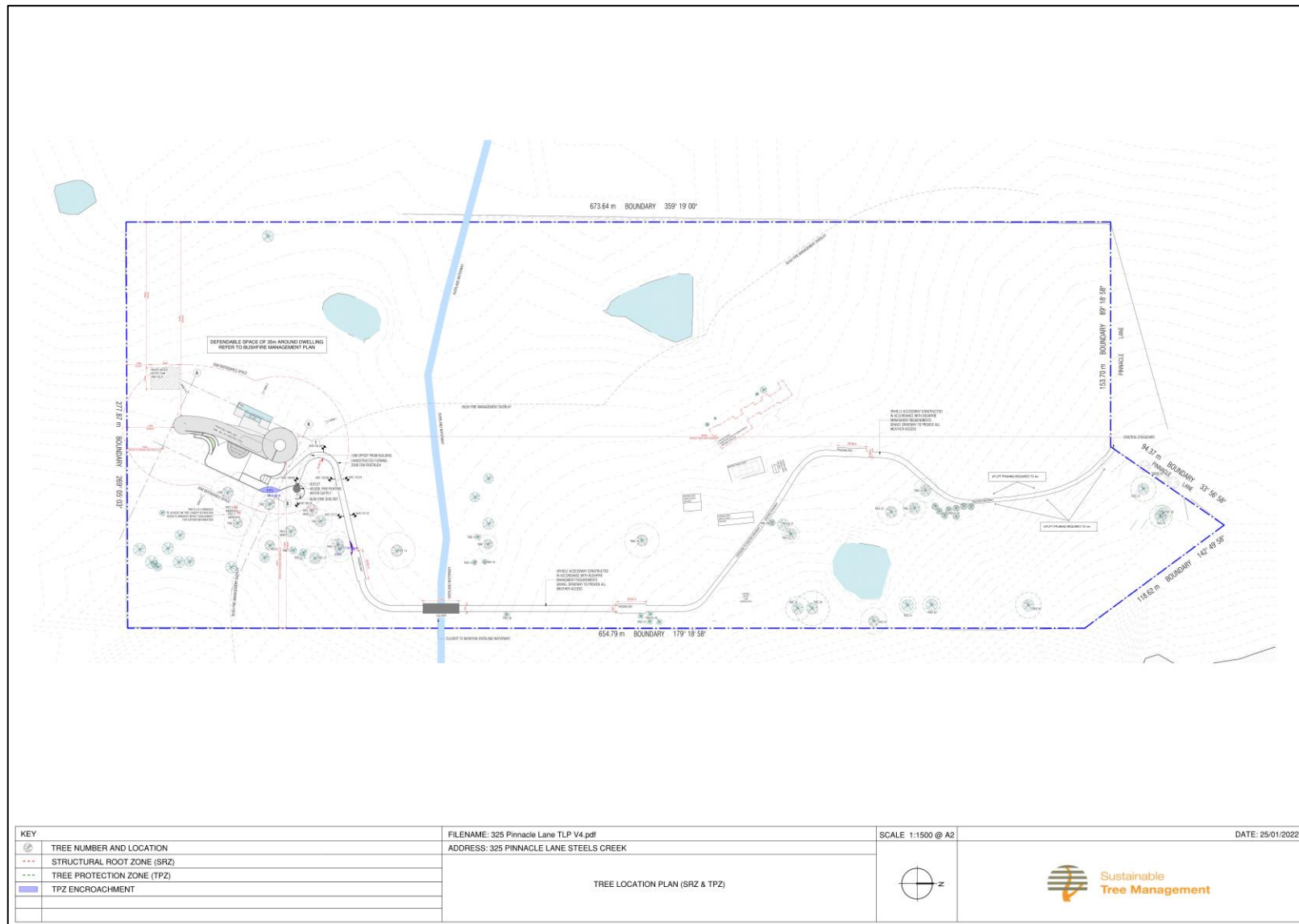
Advanced Diploma Business Management

Experience

Director Sustainable Tree Management 12 years

Senior Vegetation Management Officer 11 years (Arborist Town Planning City of Kingston)

10. APPENDICES - TREE LOCATION PLAN



11. GENERAL SITE IMAGES 29TH APRIL, 2021



Photo 1. South west facing view of vegetation growing on site.



Photo 2. North west facing view of vegetation growing on site.



Photo 3. View of vegetation on site, facing north.



Photo 4. South facing view of Tree No. 14



Photo 5. View facing south, of native vegetation growing on site.

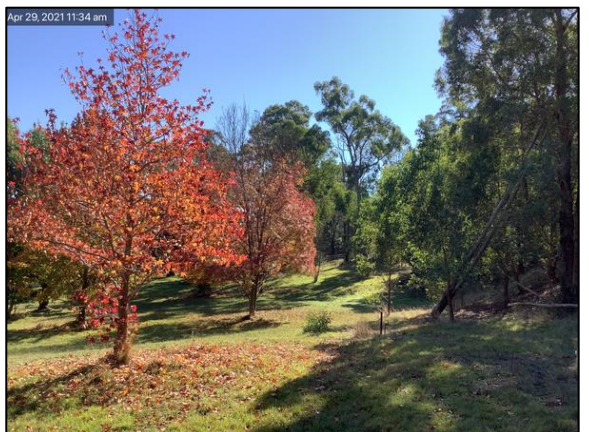


Photo 6. View of exotic trees growing on site.

12. GLOSSARY OF TERMS

Amenity

Although difficult to quantify, the term as used in this report relates to the contribution given to the landscape or streetscape in terms of visual aesthetics. It may also relate to the contribution in terms of shade or protection from the elements.

Bifurcation

Forked or divided into two or more parts or branches. Used to describe a union point.

Branch Bark Ridge

Swelling of bark tissue on the upper side of the branch junction or union. Considered the normal pattern of development in contrast to included bark (from Matheny & Clark, 1994).

Branch collar

Trunk tissue that forms around the base of a branch between the main stem and the branch. As the branch decreases in vigour or begins to die, the branch collar becomes more pronounced. (AS4373).

Structural Root Zone (SRZ)

The Structural Root Zone (SRZ) is the calculated distance based on DBH only. The SRZ identifies the minimum radius at which the root plate cannot be disturbed. This measure only relates to the trees' stability and does not consider the implications of a decline in health. The measurement is given in metres in a radius from the tree trunk. (Coder, 1996). This area may also be referred to as the Root Plate Radius (RPR).

Chlorotic

Discolouration of the leaves, yellow in colour resulting from a lack of chlorophyll

Codominant

Generally, relates to trunks/ stems (although it may relate to scaffold branches within the crown) of two or more and of equal or similar size and relative importance (from Matheny & Clark, 1994).

Compartmentalisation

Physiological process which creates the chemical and mechanical boundaries that act to limit the spread of disease and decay organisms (from Matheny & Clark, 1994).

Decay

Degeneration and de-lignification of plant tissue, including wood, by pathogens or micro-organisms (AS4373).

Diameter at Breast Height (DBH)

DBH is measured at 1.4m above ground level. In cases where the tree has up to three stems the diameter is calculated by taking the area of each stem at 1.4 metres and calculating the combined diameter. In trees with more than three stems the measurement is provided as 'Multi-stemmed', however in some cases the diameter will be taken at the point below the multi-stemmed union.

Epicormic Shoots

Shoots which arise from adventitious or latent buds (usually dormant). They are generally produced in response to environmental stress.

Included Bark

The pattern of development at a branch union where bark is turned inward rather than outward or pushed out. Relates to the branch bark ridge. (from Matheny & Clark, 1994)

Live Crown Ratio

Relative proportion of healthy crown in proportion to overall tree height. Often not used in isolation due to the different natural forms of many species.

Lateral

A branch arising from another branch or stem (AS4373)

Lopping

Cutting back a limb or stem at any point with no regard to natural target pruning. Random cutting of branches or stems between branch unions or at internodes on young trees. Not considered an acceptable practice as part of the Australian Standard AS4373: *Pruning of Amenity Trees*.

Tree Protection Zone (TPZ)

The Tree Protection Zone (TPZ) (referenced from Australian Standard AS 4970 - 2009 - Protection of Trees on Development Sites; is the calculated distance based on the DBH of the tree. The TPZ addresses the physiological implications by retaining enough area around the tree not only to minimise the potential for complete tree failure but for the tree to survive in the landscape on a long-term basis. The measurement is given in metres in a radius from the centre of the trunk.

Senescence

The organic process of age and the deterioration of tissue within the tree.

Stem bark ridge

The ridge of bark that forms in the union between two codominant stems (AS4373).

Wound wood

Lignified, partially differentiated tissue which develops from the callus associated with wound or pruning cuts.

12.1 ORIGIN

Origin is given as Indigenous (the trees' natural range is within the study area), Native (the trees natural range is within Australia) or Exotic (the tree originates from outside of Australia).

12.2 HEALTH

Health relates to the tree vigour, live crown ratio and canopy density.

Health is rated according to the following categories:

Category	Description
Good	Crown is excurrent or decurrent with greater than 50% live crown ratio. Foliage density is greater than 70% at optimal growth. There is less than 10% canopy dieback present and foliage has no or very minor tip dieback. Tree may also have acceptable extension growth if it is in active growth and is showing no symptoms of nutrient deficiency. The tree also has good wound wood development.
Fair	Crown is excurrent or decurrent with 30-50% live crown ratio. Foliage density is between 50-70% at optimal growth for the species. There may be 10-30% canopy dieback present and foliage may have minor tip dieback. Tree maybe showing signs of normal growth, but it is not consistent throughout the crown. Some foliage discolouration maybe present from possible nutrient deficiency or other cause.
Poor	The tree may have less than 30% live crown ratio and the canopy may be codominant or suppressed. There may be greater than 30% canopy dieback present and foliage density is below 50%. Stunted growth through leaf size or petiole extension and discolouration of the leaf may be present. Tree may be producing epicormic shoots as a stress response. Nutrient deficiency, lack of resources (water, light etc) or pathogens may be the causal agent in the tree's decline

12.3 STRUCTURE

Structure relates to the physical form of the tree, including the trunk(s), main scaffold branches and roots. Structure includes the attributes that may influence the probability of major trunk, limb or root failure.

Structure is rated according to the following categories:

Category	Description
Good	The form of the tree is typical for the species and exhibits good symmetrical form. Major limbs are well formed with acceptable branch taper and unions appear to be strong with no signs of defects. The tree has minimal defects throughout the trunk and limbs. There is no sign of root plate heave or damage to the root system. The tree is unlikely to suffer branch or trunk failure under normal environmental conditions.
Fair	Tree has a fairly consistent form for the species. Tree may exhibit minor structural defects that may be managed through formative pruning. Only minor wounds are present that do not affect the overall stability or structural integrity of the tree. Minor root damage may have occurred in the past. Defects present are likely to cause only minor branch failure under normal environmental conditions.
Poor	Tree has a poorly formed crown that is not symmetrical. Branch and or trunk taper may be unacceptable and scaffold limbs may be overextended. Branch unions may exhibit significant defects that cannot be managed through formative pruning. Major root damage may have occurred and there may be evidence of root plate heave. Defects that are present may result in catastrophic failure of branches or trunk under normal environmental conditions.

12.4 AGE CLASS

The age class is given as a guide to the current live stage of the tree. Ultimately, the level of maturity that a tree may reach is dependent on the growing environment.

Age Class is rated according to the following categories

Category	Description
New Planting	Planted within approximately 2 years
Juvenile	Generally, less than 5 years old
Young	Estimated as less than 15 years old
Semi-mature	Estimated at between 15 – 25 years old, however, this may be species dependant
Mature	Estimated at over 25 years old or in a life stage that is considered at the peak of growth for the species.
Senescent	In the declining phase of the trees lifespan

12.5 SITE SIGNIFICANCE

Site significance pertains to the significance of the individual tree to its surroundings. It should be noted that site significance applies only to the tree as it stands and does not allow for future development or decline. Neither hazard nor appropriateness factors other than site significance are taken into account. Site significance does not relate to retention value.

Site significance is rated according to the following categories:

Category	Description
High	The tree may be of large size (height and/or spread) or located on neighbouring land. The tree may be of unusual and attractive form. The tree may be listed as a "Significant Tree" on one or more of several registers. The tree may flower abundantly or attractively. The tree may screen unattractive structures or landscape features. The tree may be part of a design that compliments the landscape. The tree contributes extensively to the landscape and may be worthy of extensive efforts of preservation.
Medium	The tree may be of medium or small size. The tree may be of somewhat unusual or attractive form. The tree may flower moderately. The tree may be isolated or part of a loosely defined planting. The tree may be part of a partially unsuccessful design or contribute moderately to the design. The tree contributes moderately to the landscape and dependant of the situation could be recommended for retention or removal.
Low	The tree may be of small size. The tree may be of nondescript form. The tree may have a poor floral display. The tree may be part of an unsuccessful design. The tree contributes little to the landscape and may be worthy of little attention or care.

12.6 RETENTION VALUE

High – Tree requires no remedial pruning to maintain a typical/high health and a good/fair structure and indigenous to the area.

Medium – Tree requires some environmental improvements or remedial pruning to maintain/achieve a typical/high health and a good/fair structure.

Low – Tree will not improve from low health or poor structure with environmental improvements or remedial pruning. Tree may be a municipal or ecological weed.

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2. The author contracts with you on the basis that your promise that all affected property complies with all applicable statutes and legislation.
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