



**Sustainable
Tree Management**

1/33 Colemans Road, Carrum Downs VIC 3201

PRELIMINARY ARBORICULTURAL ASSESSMENT

Site address
1450 Thompsons Road
Cranbourne East 3977

Report prepared for
1450 Holding Pty Ltd
ATF Cranbourne 1450 Holding Unit Trust
C/- Marshal Melbourne

Oct 01, 2024 09:14 AM



Prepared by
Brendan Pike
Senior Consulting Arborist
Sustainable Tree Management

Prepared 3 October 2024

Member 2024-25



TABLE OF CONTENTS

1. INTRODUCTION	2
2. SCOPE AND REPORT OBJECTIVES	2
3. SITE ANALYSIS	3
4. PLANNING CONSIDERATIONS	4
5. SURVEY METHODOLOGY	6
6. DOCUMENTS VIEWED IN PREPARATION OF THIS REPORT	6
7. ARBORICULTURAL ASSESSMENT	6
7.1 TREE DATA SUMMARY	7
7.2 TREE LOCATION PLAN – HERITAGE SITE (HO137)	8
7.3 TREE LOCATION PLAN – PSP	9
8. OBSERVATIONS AND CONCLUSION	10
APPENDIX A – INDIVIDUAL TREE DATA TABLES	12
APPENDIX B - TREE PROTECTION GUIDELINES	19
APPENDIX C - BIBLIOGRAPHY AND CITED REFERENCES	22
APPENDIX D - QUALIFICATIONS OF CONSULTANTS	22
APPENDIX E – SITE PHOTOGRAPHS.....	23
APPENDIX F - GLOSSARY OF TERMS.....	24
APPENDIX G - TERMS AND CONDITIONS	29

1. INTRODUCTION

This Preliminary Arboricultural Assessment (PAA) has been prepared for 1450 Holding Pty Ltd ATF Cranbourne 1450 Holding Unit Trust C/- Marshal Melbourne for the analysis of trees growing on site at 1450 Thompsons Road Cranbourne East. This assessment is provided based on the identification of the current health, structure, and overall condition of the trees growing within proximity to the existing dwelling and two patches of native vegetation growing within proximity to the existing dam.

This assessment also provides comment regarding the potential loss of landscape amenity, the significance of the trees based on their contribution to the local environment and their individual protection status under the Casey Planning Scheme.

The results of this Preliminary Arboricultural Assessment and a discussion of the relevant arboricultural characteristics are provided. The recommendations given are based on the condition of the trees and their significance in relation to their current and future growing environment.

All trees assessed are afforded general guidelines for tree protection under AS4970-2009. These guidelines do not constitute a comprehensive Tree Management Plan or Tree Protection Plan.

2. SCOPE AND REPORT OBJECTIVES

Sustainable Tree Management was engaged by Marshal Melbourne to prepare a Preliminary Arboricultural Assessment on trees growing on site at 1450 Thompsons Road Cranbourne East.

The report objectives are:

- To comment on the health, structure and overall condition of the trees growing on site in proximity to the existing Casey Shire heritage listed property (HO137 “Springmont”);
- To assess two patches of native vegetation growing in proximity to the existing dam nominated for retention under the Croskell (Employment) Precinct Structure Plan – September 2004;
- To assess tree condition and suitability for preservation based on the characteristics observed; and
- To provide up-to-date tree data, including Structural Roots Zones (SRZs) and Tree Protection Zones (TPZs);

3. SITE ANALYSIS

The property located at 1450 Thompsons Road Cranbourne East is currently used for farming purposes. The area of assessment consists of three locations within the property:

- Area 1: Vegetation planted in proximity to the existing homestead known as “Springmont” under Heritage Overlay – HO137 of the Casey Planning Scheme;
- Area 2: Native vegetation growing on the southeast embankment of the existing dam, nominated for retention under the Croskell (Employment) Precinct Structure Plan; and
- Native vegetation growing on the northern embankment of the existing dam, nominated for retention under the Croskell (Employment) Precinct Structure Plan.



Figure 1. Aerial Nearmap imagery of site dated 1st August 2024.

4. PLANNING CONSIDERATIONS

Under the provisions of the Casey Planning Scheme, the subject parcel of land is divided with General Residential Zone – Schedule 1 (GRZ1) to the west and Farming Zone – Schedule 2 (FZ2) to the east (see Figure 2). The site is also partially located within a designated Bushfire Prone Area (see Figure 3).

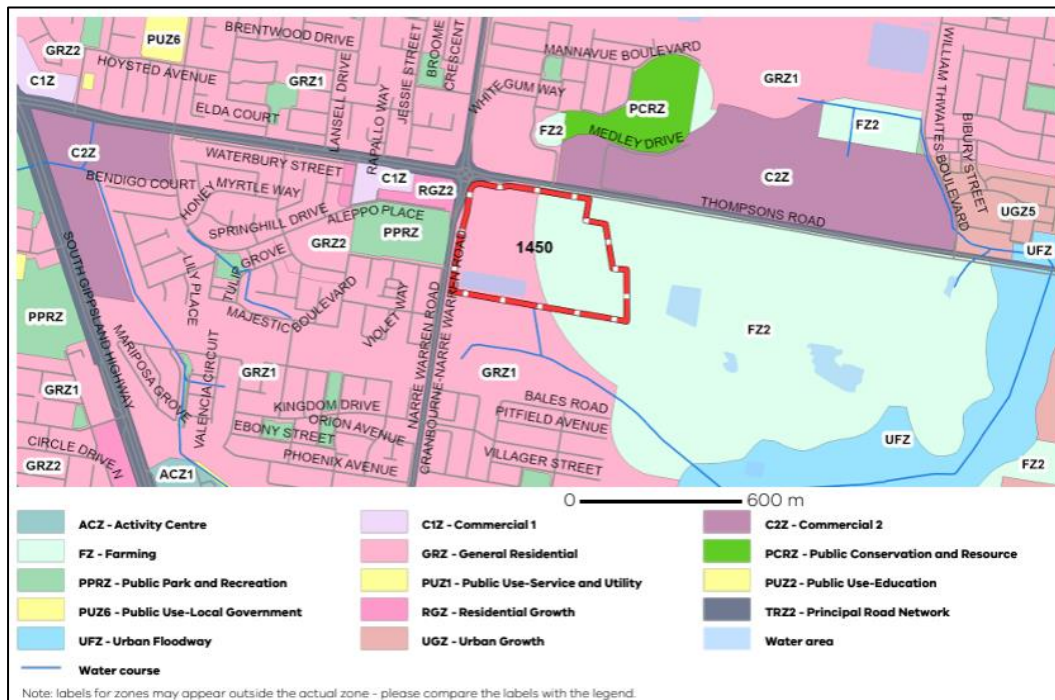


Figure 2. Extract - Planning Property Report (VicPlan) dated 1 October 2024.

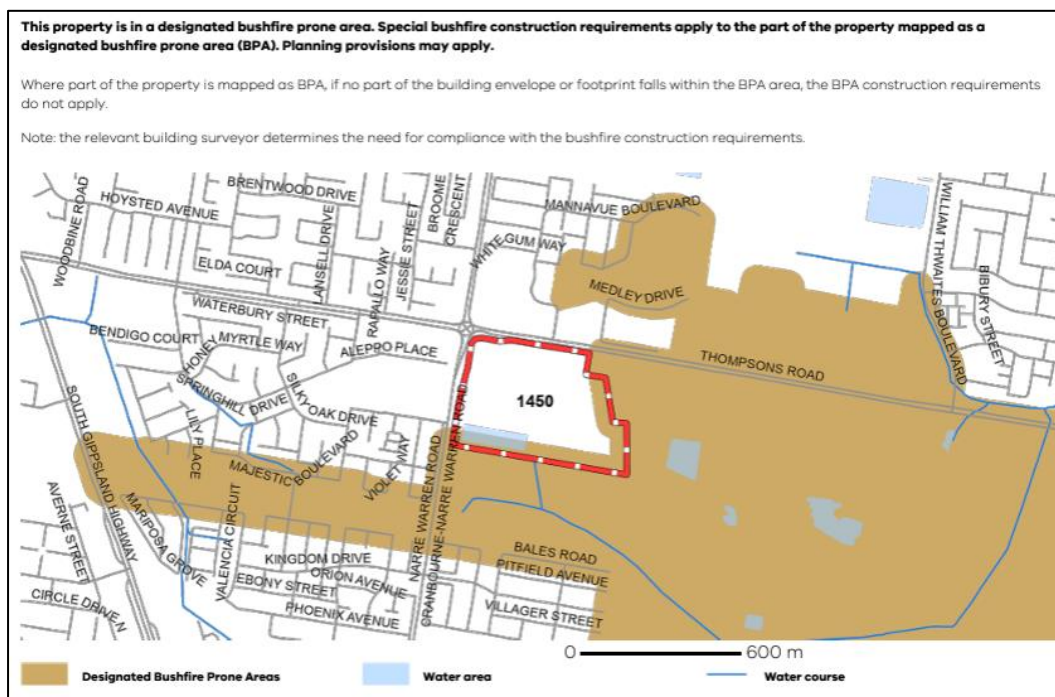


Figure 3. Extract - Planning Property Report (VicPlan) dated 1 October 2024.

Heritage Overlay

Heritage Overlay – Schedule (HO137) applies to the portion of site surrounding the existing dwelling (see Figure 4). Tree controls are applicable to the heritage listing (see Figure 5).



Figure 4. Extract - Planning Property Report (VicPlan) dated 1 October 2024.

PS map ref	Heritage place	External paint controls apply?	Internal alteration controls apply?	Tree controls apply?
HO137	"Springmont" 1450 Thompsons Road, Cranbourne East	No	No	Yes

Figure 5. Extract - Schedule to clause 43.01 Heritage Overlay.

Croskell (Employment) Precinct Structure Plan

The Victorian Planning Authority (VPA) is preparing a Precinct Structure Plan (PSP) and accompanying Infrastructure Contributions Plan (ICP) for the Croskell (Employment) precinct, working in partnership with Casey City Council, State government agencies and service authorities.

The Croskell (Employment) precinct is located approximately 40km southeast of Melbourne’s central business district within the City of Casey. The precinct encompasses around 317 hectares and is bounded by Thompsons Road to the north, Berwick Cranbourne Road to the east, and Narre Warren Cranbourne Road to the west. The boundary of the Croskell Employment precinct was expanded in January 2023 to encompass the entirety of 1450 Thompsons Road, an addition of 12.23ha.

5. SURVEY METHODOLOGY

The collection of data was undertaken by Brendan Pike (Senior Arborist) and Alden Collins (Ecologist) of Sustainable Tree Management on 1st October 2024, 2024. The data was captured on site of the characteristics of each tree and is recorded within individual tables provided in Appendix A. A tree data summary is provided in Section 7.1 and Tree Location Plans are provided in Section 7.2.

Each tree was assessed and the species, height, canopy width, measured Diameter at Breast Height (DBH) and the characters of health and structure were recorded. Additionally, the site significance, Useful Life Expectancy (ULE), site and environmental contribution, and retention value of the trees was recorded using the abbreviations as set out in the Glossary of Terms in Appendix F.

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.

6. DOCUMENTS VIEWED IN PREPARATION OF THIS REPORT

The following documents were viewed in preparation of this report:

- Casey Planning Scheme;
- Croskell (Employment) Native Vegetation Precinct Plan – September 2024;
- Statement of Significance: “Springmont” June 2024;
- Aerial Photography of the site (Nearmap, dated 1st August 2024); and
- Planning Property Report (VicPlan, dated 1 October 2024).

7. ARBORICULTURAL ASSESSMENT

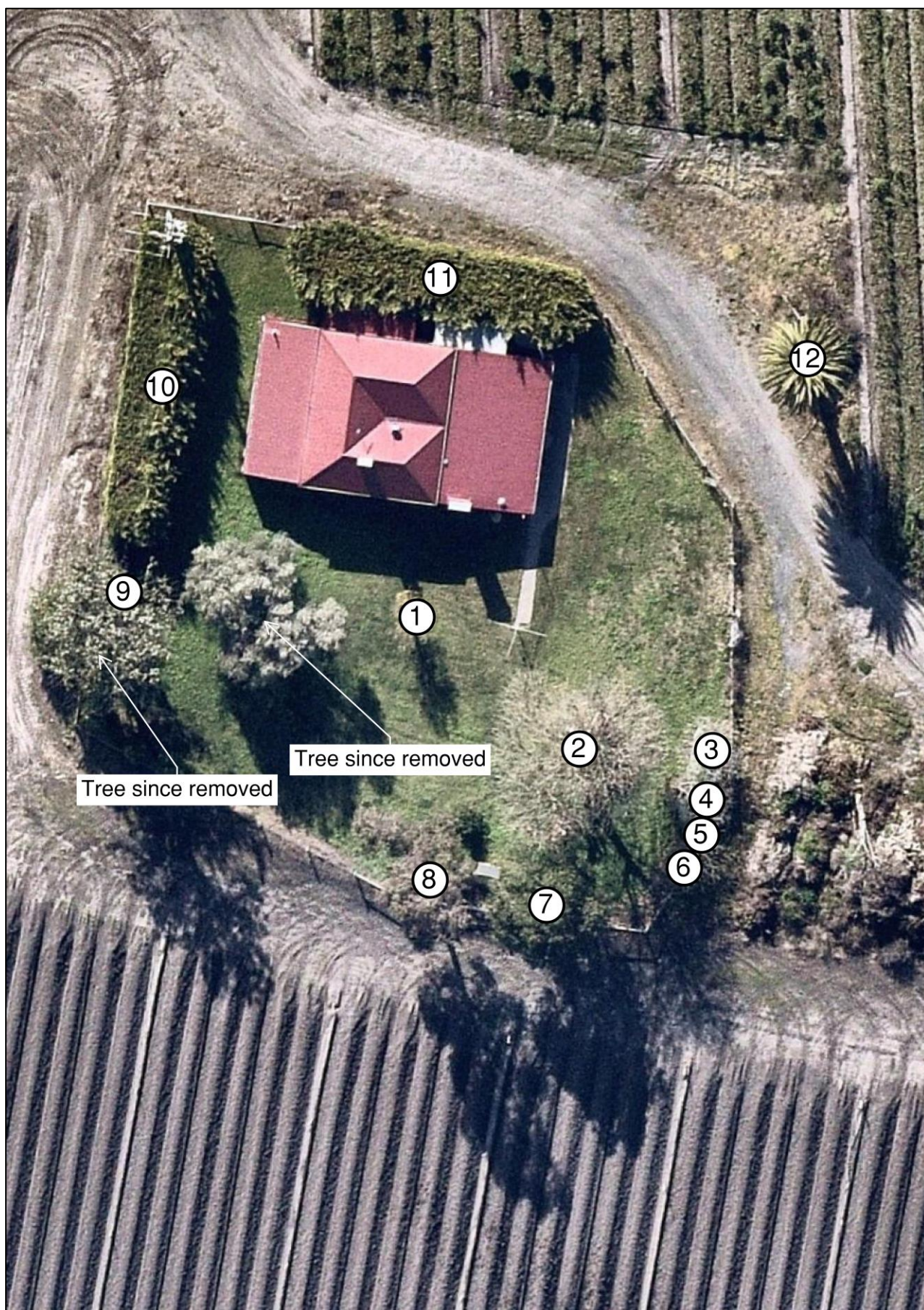
The following trees have been assessed as being of medium and low retention value categories due to their overall age, health and structure. DBH (cm) is the Diameter at breast height measured 1.4m from natural ground level, SRZ (m) is the structural root zone in metres in a radius from the centre of the trunk and TPZ (m) is the tree protection zone in metres in a radius from the centre of the trunk. 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*.

7.1 TREE DATA SUMMARY

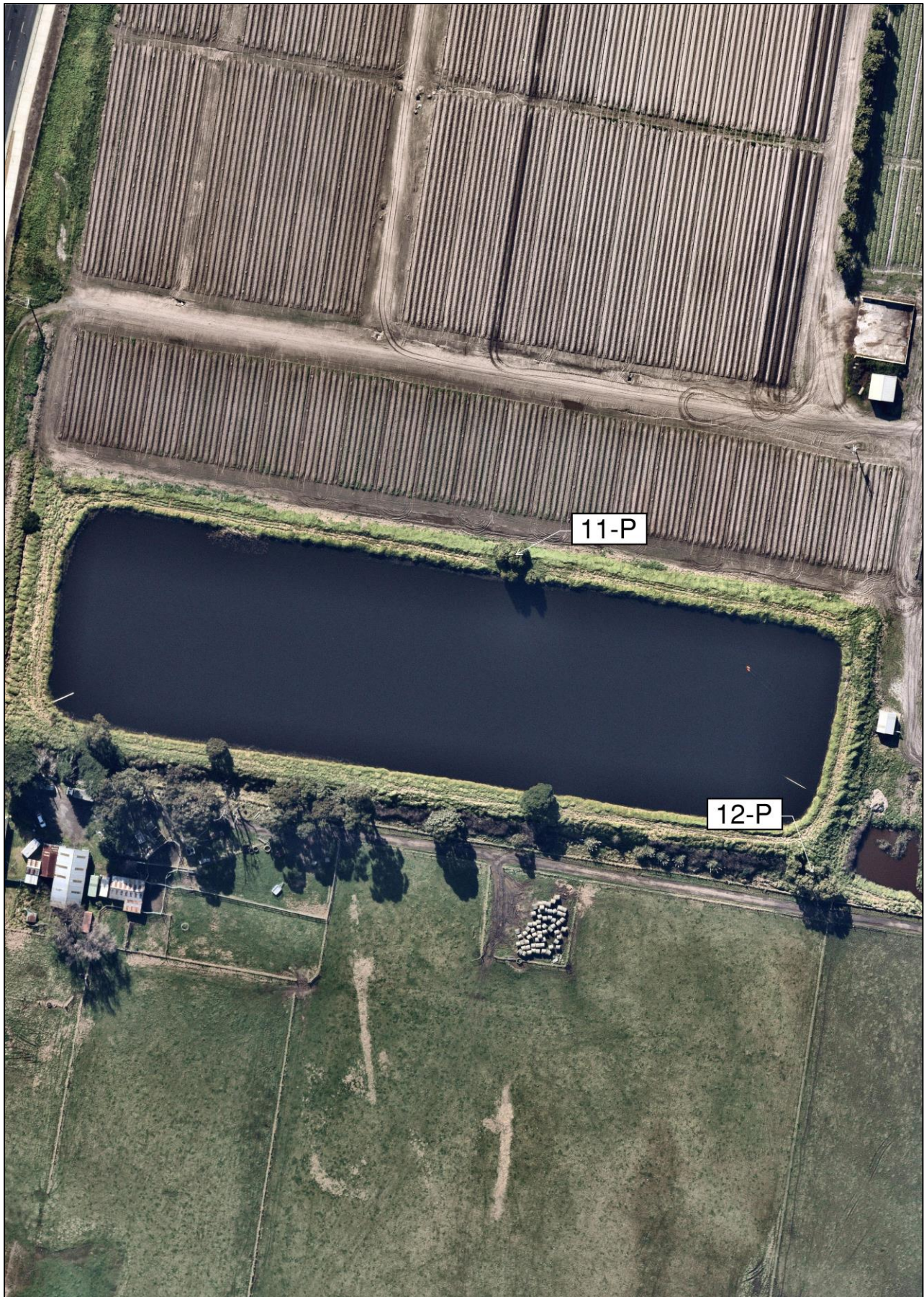
Table 1. Tree Data

Tree No.	Genus/Species	Common Name	Location	Origin	DBH (m)	SRZ (m)	TPZ (m)	Height (m)	Spread (m)	Health	Structure	Age Class	ULE	Site Significance	Retention Value	Planning Control
1	<i>Citrus limon</i>	Lemon	On Site	Exotic	Multi = 22	1.8	2.6	4	2x2	Poor	Poor	Mature	Short	Low	Low	HO137
2	<i>Erythrina x sykesii</i>	Common Coral Tree	On Site	Native (Aus)	Multi = 85	3.1	10.2	11	8x8	Fair	Fair/Poor	Mature	Long	Medium	Medium	HO137
3	<i>Ficus carica</i>	Common Fig	On Site	Exotic	Multi = 21	1.7	2.5	4	3x3	Fair	Fair	Young	Medium	Low	Low	HO137
4	<i>Ficus carica</i>	Common Fig	On Site	Exotic	Multi = 18	1.6	2.2	4	1x3	Fair	Fair	Young	Medium	Low	Low	HO137
5	<i>Erythrina x sykesii</i>	Common Coral Tree	On Site	Native (Aus)	Multi = 15	1.5	2.0	4	2x2	Fair	Fair	Young	Medium	Low	Low	HO137
6	<i>Erythrina x sykesii</i>	Common Coral Tree	On Site	Native (Aus)	Multi = 10	1.5	2.0	3	2x2	Fair	Fair	Young	Medium	Low	Low	HO137
7	<i>Brachychiton populneus</i>	Kurrajong	On Site	Native (Aus)	Multi = 71	2.9	8.5	10	4x4	Fair	Fair/Poor	Mature	Long	Medium	Medium	HO137
8	<i>Corymbia ficifolia</i>	Red Flowering Gum	On Site	Native (Aus)	48	2.4	5.8	12	4x5	Fair/Poor	Fair	Semi mature	Medium	Medium	Medium	HO137
9	<i>Acacia longifolia</i>	Coast Wattle	On Site	Native (Vic)	Multi = 10	1.5	2.0	3	2x3	Poor	Poor	Semi mature	Short	Low	Low	HO137
10	<i>Cupressocyparis leylandii</i>	Leyland Cypress	On Site	Exotic	Multi = 15	1.5	2.0	4	22x2	Fair	Fair	Semi mature	Medium	Medium	Low	HO137
11	<i>Cupressocyparis leylandii</i>	Leyland Cypress	On Site	Exotic	Multi = 10	1.5	2.0	4	19x2	Fair	Fair	Semi mature	Medium	Medium	Low	HO137
12	<i>Phoenix canariensis</i>	Canary Island Date Palm	On Site	Exotic	70	NA	5.0	9	4x4	Fair	Fair	Mature	Medium	Medium	Medium	HO137
11 - P	<i>Acacia melanoxylon</i>	Blackwood	On Site	Native (Vic)	25	1.8	3.0	8	3x3	Fair	Fair	Semi mature	Medium	Medium	Medium	PSP
12 - P	<i>Acacia melanoxylon</i>	Blackwood	On Site	Native (Vic)	Multi = 15	1.5	2.0	6	2x2	Fair	Fair	Semi mature	Medium	Medium	Medium	PSP

7.2 TREE LOCATION PLAN – HERITAGE SITE (HO137)



7.3 TREE LOCATION PLAN – PSP



8. OBSERVATIONS AND CONCLUSION

The findings from the Preliminary Arboricultural Assessment indicate that the vegetation present within the boundaries of Heritage Overlay (HO137) comprises a mixture of planted exotic trees, broader Australian native species, and screening hedges. From an arboricultural standpoint, this vegetation moderately contributes to the landscape providing aesthetic value. An analysis of individual tree health and structural condition reveals that the trees vary in vitality, and no single specimen demonstrates characteristics warranting a designation of high arboricultural significance.



Image 1. The area of Heritage Overlay HO137.

The largest tree, subjectively of highest site significance is Tree No.2 - *Erythrina x sykesii*, commonly known as a Common Coral Tree. The species is a popular choice as an ornamental planting due to its striking appearance and adaptability. These trees are valued for their vibrant, showy, deep red flowers, making them a standout feature in gardens and urban landscapes. Although contributing to the landscape with seasonal variation through its foliage and flowering patterns, Tree No. 2 displays signs of structural vulnerabilities including a codominant main stem structure originating close to ground level, and past limb failure.

The Australian native trees numbered 7 and 8 offer value in terms of compatibility with the existing soil conditions, contributing to a low-maintenance landscape. Despite this, their structural integrity is not exceptional, displaying adaptive growth responses to limb loss and union structures.

The hedging, while functional in providing visual screening and enhancing the privacy of the private space around the dwelling, largely contributes at a landscape level rather than being notable for individual tree significance.

Collectively, while the trees within the area of HO137 do enhance the character of the area, they do not exhibit rare or exceptional qualities in terms of age, species, or condition that would qualify them as highly significant from an arboricultural perspective.

Trees 11-P and 12-P (see images 2 and 3 below) are young and semi-mature patches of *Acacia melanoxylon* (Blackwood) nominated for protection under the Croskell (Employment) Native Vegetation Precinct Plan. The subject trees are growing on the existing dam embankment and are likely in an early to mid-phase of their respective life cycles. *Acacia melanoxylon* is known for its ability to enhance soil quality through nitrogen fixation, which can improve the growing conditions for native plants in close proximity. It can be noted that the species often face high mortality rates due to their vulnerability to external stresses including pest infestation, and poor structure.



Image 2. Patch 11-P.



Image 3. Patch 12-P.

Should you have any questions please do not hesitate to make contact.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Brendan Pike'.

Brendan Pike


Senior Consulting Arborist


e: brendan@sustainabletm.com.au


w: sustainabletm.com.au





APPENDIX A – INDIVIDUAL TREE DATA TABLES


Tree Number	1	Low Retention Value
Location	On Site	
Genus/Species	<i>Citrus limon</i>	
Common Name	Lemon	
Origin	Exotic	
DBH (cm)	Multi = 22	
Height (m)	4	
Spread NS (m)	2x2	
Health	Poor	
Structure	Poor	
Age Class	Mature	
Site Significance	Low	
ULE	Short	
SRZ (m)	1.8	
TPZ (m)	2.6	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		


Tree Number	2	Medium Retention Value
Location	On Site	
Genus/Species	<i>Erythrina x sykesii</i>	
Common Name	Common Coral Tree	
Origin	Native (Aus)	
DBH (cm)	Multi = 85	
Height (m)	11	
Spread NS (m)	8x8	
Health	Fair	
Structure	Fair/Poor	
Age Class	Mature	
Site Significance	Medium (largest on site)	
ULE	Long	
SRZ (m)	3.1	
TPZ (m)	10.2	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		


Tree Number	3	Low Retention Value
Location	On Site	
Genus/Species	<i>Ficus carica</i>	
Common Name	Common Fig	
Origin	Exotic	
DBH (cm)	Multi = 21	
Height (m)	4	
Spread NS (m)	3x3	
Health	Fair	
Structure	Fair	
Age Class	Young	
Site Significance	Low	
ULE	Medium	
SRZ (m)	1.7	
TPZ (m)	2.5	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		


Tree Number	4	Low Retention Value
Location	On Site	
Genus/Species	<i>Ficus carica</i>	
Common Name	Common Fig	
Origin	Exotic	
DBH (cm)	Multi = 18	
Height (m)	4	
Spread NS (m)	1x3	
Health	Fair	
Structure	Fair	
Age Class	Young	
Site Significance	Low	
ULE	Medium	
SRZ (m)	1.6	
TPZ (m)	2.2	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		

Tree Number	5	Low Retention Value
Location	On Site	
Genus/Species	<i>Erythrina x sykesii</i>	
Common Name	Common Coral Tree	
Origin	Native (Aus)	
DBH (cm)	Multi = 15	
Height (m)	4	
Spread NS (m)	2x2	
Health	Fair	
Structure	Fair	
Age Class	Young	
Site Significance	Low	
ULE	Medium	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		


Tree Number	6	Low Retention Value
Location	On Site	
Genus/Species	<i>Erythrina x sykesii</i>	
Common Name	Common Coral Tree	
Origin	Native (Aus)	
DBH (cm)	Multi = 10	
Height (m)	3	
Spread NS (m)	2x2	
Health	Fair	
Structure	Fair	
Age Class	Young	
Site Significance	Low	
ULE	Medium	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		

Tree Number	7	Medium Retention Value
Location	On Site	
Genus/Species	<i>Brachychiton populneus</i>	
Common Name	Kurrajong	
Origin	Native (Aus)	
DBH (cm)	Multi = 71	
Height (m)	10	
Spread NS (m)	4x4	
Health	Fair	
Structure	Fair/Poor	
Age Class	Mature	
Site Significance	Medium	
ULE	Medium	
SRZ (m)	2.9	
TPZ (m)	8.5	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		


Tree Number	8	Medium Retention Value
Location	On Site	
Genus/Species	<i>Corymbia ficifolia</i>	
Common Name	Red Flowering Gum	
Origin	Native (Aus)	
DBH (cm)	48	
Height (m)	12	
Spread NS (m)	4x5	
Health	Fair/Poor	
Structure	Fair	
Age Class	Semi mature	
Site Significance	Medium	
ULE	Medium	
SRZ (m)	2.4	
TPZ (m)	5.8	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		


Tree Number	9	Low Retention Value
Location	On Site	
Genus/Species	<i>Acacia longifolia</i>	
Common Name	Coast Wattle	
Origin	Native (Vic)	
DBH (cm)	Multi = 10	
Height (m)	3	
Spread NS (m)	2x3	
Health	Poor	
Structure	Poor	
Age Class	Semi mature	
Site Significance	Low	
ULE	Short	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		

Tree Number	10	Low Retention Value
Location	On Site	
Genus/Species	<i>Cupressocyparis leylandii</i>	
Common Name	Leyland Cypress	
Origin	Exotic	
DBH (cm)	Multi = 15	
Height (m)	4	
Spread (m)	22x2	
Health	Fair	
Structure	Fair	
Age Class	Semi mature	
Site Significance	Medium	
ULE	Medium	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		

Tree Number	11	Low Retention Value
Location	On Site	
Genus/Species	<i>Cupressocyparis leylandii</i>	
Common Name	Leyland Cypress	
Origin	Exotic	
DBH (cm)	Multi = 10	
Height (m)	4	
Spread (m)	19x2	
Health	Fair	
Structure	Fair	
Age Class	Semi mature	
Site Significance	Medium	
ULE	Medium	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		

Tree Number	12	Medium Retention Value
Location	On Site	
Genus/Species	<i>Phoenix canariensis</i>	
Common Name	Canary Island Date Palm	
Origin	Exotic	
DBH (cm)	70	
Height (m)	9	
Spread NS (m)	4x4	
Health	Fair	
Structure	Fair	
Age Class	Mature	
Site Significance	Medium	
ULE	Medium	
SRZ (m)	NA	
TPZ (m)	5.0	
Encroachment (%)	NA	
Planning Control	HO137	
Comments		

Tree Number	11-P	Medium Retention Value
Location	On Site	
Genus/Species	<i>Acacia melanoxylon</i>	
Common Name	Blackwood	
Origin	Native (Vic)	
DBH (cm)	25	
Height (m)	8	
Spread NS (m)	3x3	
Health	Fair	
Structure	Fair	
Age Class	Semi mature	
Site Significance	Medium	
ULE	Medium	
SRZ (m)	1.8	
TPZ (m)	3.0	
Encroachment (%)	NA	
Planning Control	PSP	
Comments		

Tree Number	12-P	Medium Retention Value
Location	On Site	
Genus/Species	<i>Acacia melanoxylon</i>	
Common Name	Blackwood	
Origin	Native (Vic)	
DBH (cm)	Av. Multi = 15	
Height (m)	Av. 6	
Spread NS (m)	2x2	
Health	Fair	
Structure	Fair	
Age Class	Semi mature	
Site Significance	Medium	
ULE	Medium	
SRZ (m)	1.5	
TPZ (m)	2.0	
Encroachment (%)	NA	
Planning Control	PSP	
Comments		

APPENDIX B - 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.

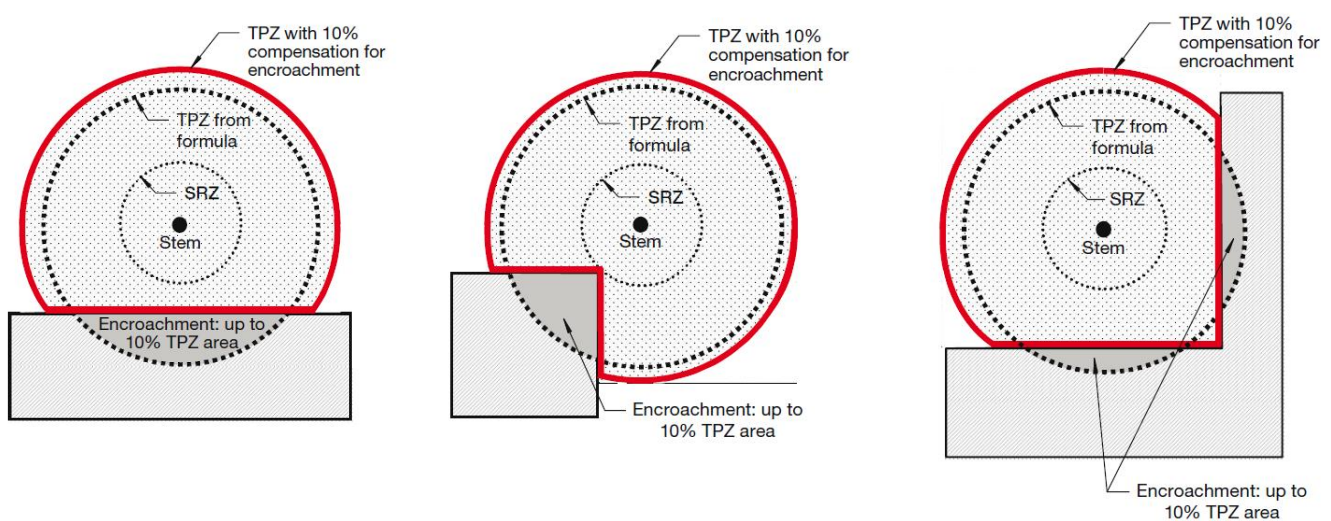
Determination of the structural root zone or the zone of rapid taper is provided as the Structural Root Zone (SRZ). The structural root zone calculations (may also be referred to as the Root Plate Radius (RPR)) of the tree, based upon the Australian Standard AS4970 - 2009. The SRZ determines the minimum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



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 rigidly 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.

APPENDIX C - 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

APPENDIX D - QUALIFICATIONS OF CONSULTANTS

Brendan Pike – Senior Consulting Arborist

Qualifications

Diploma in Arboriculture (AQF5) – Melbourne Polytechnic
 Certificate III in Horticulture (Arboriculture) – Arbortrim Australia
 Certificate IV in Computer Science – Computer Power Institute

Experience

Senior Consulting Arborist – Sustainable Tree Management	2019 – Present
Supervising Arborist - Antler Environmental	2018 – 2019
Supervising Arborist - Austree Contracting Pty. Ltd.	2012 – 2018
Supervising Arborist - Arborco Australia Pty. Ltd.	2011 – 2012
Arborist/Leading Hand - Branching Out Arbor Care Pty. Ltd.	2003 – 2011

APPENDIX E – SITE PHOTOGRAPHS



Photo 1. Vegetation growing within HO137.



Photo 2. Part of the screening hedge.



Tree 2

Photo 3. The basal structure of Tree 2.



Tree 2

Photo 4. The vibrant flower of Tree 2, Erythrina x sykesii

APPENDIX F - 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.

Origin

Origin is given as Victorian Native (the trees' natural range is within the state of Victoria), Non-Victorian Native (the trees natural range is within Australia) or Exotic (the tree originates from outside of Australia).

Health

Dead – Tree is completely dead, non-functional crown (no green leaves), stem cambium dead, no evidence of root suckers, lignotuberous sprouts.

Poor – Tree is presenting symptoms of strain (Shigo A.L. 1986), large quantities of crown dieback extending from tip dieback to major scaffolds. Persistent infections of pathogens, borers, fungal cankers, and root disease. Irreversible condition ultimately leading to premature death. Any treatments may only be seen as temporary to achieve hazard reduction.

Fair – Tree is presenting symptoms of stress that may be due to seasonal biotic or abiotic conditions e.g. water stress, seasonal defoliators. The symptoms may include tip dieback (less than 25mm diameter), crown thinning, defoliation, leaf discoloration, reduced leaf and / or internode length (less than 75% normal average size of non-stressed specimen) up to 50% of the crown is epicormic / juvenile regrowth. These symptoms should be present over more than 25% of the total tree parts concerned. The condition is reversible.

Good – Tree is generally free of pest and disease Symptoms of any biotic or abiotic stress should not be present over more than 25 % of the tree parts concerned. Internode length may be variable but generally consistent in length for the last 3 annual increments.

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.

Extremely Defective - (Hazardous) – Tree has pronounced structural weakness that may be due to poor growth development, fungal decay, mechanical damage or a combination of these and is presenting symptoms of instability and possible imminent structural failure of major structural components.

Moderately Defective (Poor) – Tree has structural weakness that may be due to poor growth development, fungal decay, mechanical damage, or a combination of these but is not at this time presenting symptoms of imminent structural failure of major structural components.

Minimally Defective (Fair) – Tree has some structural weakness but failure of which is not a major structural component and does not present any imminent symptoms of potential failure. Tree does not appear significantly degraded by decay in any structurally significant component.

Non – Defective (Good) – Tree does not appear to have any notable structural weakness, symptoms of structural distress or indicators of fungal decay.

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 the last year
Juvenile	Generally, less than 5 years old
Young	Estimated as less than 10 years old
Semi-mature	Estimated at between 10 – 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 tree's lifespan

Useful Life Expectancy

Long ULE: 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.

Medium ULE: Trees that appear to be retainable with an acceptable level of risk for 15-40 years.

- Trees that may only live between 15-40 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 and nuisance reasons.
- Storm damaged or defective trees that can be made suitable for retention in the medium term by remedial work.

Short ULE: Trees that appear to be retainable with an acceptable level of risk for 5-15 years.

- Trees that may live for 5-15 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 and nuisance reasons.
- Storm damaged or defective trees that can be made suitable for retention in the medium term by remedial work.

Remove: Trees with a high level of risk that would need removal within the next 5 years.

- Dead Trees.
- Dying or suppressed and declining trees through disease or inhospitable conditions.
- Dangerous trees through instability or recent loss of adjacent trees.
- Dangerous trees through structural defects including decay, included bark, wounds or poor form.
- Damaged trees that are considered unsafe to retain.
- Trees that will become dangerous after removal of other trees for the above reasons.

Retention Value

High Retention Value (Third-party ownership)

The tree is located outside of the subject site. It may be owned by a private entity (residential) or public body (council). The tree has been assessed on the assumption that its owner requires retention of the tree. It is neither a recommendation of good health of the tree, or suitability for retention.

Discussions with the relevant parties and authorities may result in the removal of a tree assessed in this category.

High Retention Value

The tree is well suited to the site and offers significant amenity and/or screening values. The tree is typically in fair to good health and has fair to good structure. Its ULE should be medium to long for the species. The tree may need to be retained for cultural/historic reasons, because it is indigenous, old, remnant or because the tree (regardless of species) may offer vital screening for surrounding properties.

Medium Retention Value

The tree is generally of moderate amenity value. Landscape designs should where practical accommodate the tree. The tree may be high amenity value but may be compromised due to the growing environmental conditions. This category may contain trees that are juvenile or semi-mature specimens that can potentially be replaced with standard nursery stock. It may be possible to transplant trees rated in this category.

Low Retention Value

The tree is generally of low amenity value. The tree may not be worth retaining in the landscape or may easily be replaced. The tree may be considered a weed species, structurally unsound, dead/dying/diseased, nearing the end of its ULE or may not be suitable for the site.

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 considered. 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). 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.

APPENDIX G - TERMS AND CONDITIONS

1. The author 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. The author is not responsible for verifying or ascertaining any of these issues.
2. The author contracts with you on the basis that your promise that all affected property complies with all applicable statutes and legislation.
3. The author has taken reasonable care to obtain necessary information from reliable sources and to verify data. However, the author 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 to attend court to give evidence or to assist in the preparation for a hearing because of this report, you must pay an additional fee at the current rate for expert evidence.
5. Alteration of this report invalidates the entire report.
6. The author 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 the author.
7. The contents of this report represent the professional opinion of the consultant. The 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 only.
 - (b) The inspection is limited to visual examination of accessible components without dissection, excavation or probing. There is no warranty or guarantee, expressed 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 agreement supersedes all prior discussions and representations between the author and the client on the subject and is the entire agreement and understanding between the two parties.