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Prepared by: ARBORITE TREE MANAGEMENT SOLUTIONS

12 December 2025

Tree Survey Report

Lot 50 Alumina Rd,
East Rockingham WA 6168

[redacted]

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"In nature, nothing is perfect and everything is perfect. Trees can be contorted, bent in weird ways, and they're still beautiful."

- Alice Walker

1. Client

[redacted]

2. Introduction

The purpose of this report is to provide an independent Arboricultural assessment of a tree set located at Lot 50 Alumina Rd, East Rockingham WA 6168 (Fig. 2). Arborite Tree Management Solutions has been employed to determine; tree species, health & condition and Useful Life Expectancy (ULE) to assist design & sub-division works through the establishment of tree retention values.

3. Key objectives

- Retain the subject trees through appropriate management
- Perform Visual Tree Assessment (VTA) on the subject trees to determine health and structure
- Identify scientific and common names
- Determine the subject trees height, width, trunk diameter, Tree Protection Zone (TPZ) and Structural Root Zone (SRZ)
- Establish tree retention values
- Provide information of sub-division & construction works surrounding trees

4. Methodology

- The site was assessed from observations made from ground level on the dates 10th December 2025
- Field notes were taken and the information documented was an accurate account of the subject trees on the above specified date
- Australian Standards 4970-2009 – Protection of trees on development sites has been used as a reference for this Tree Protection Plan (TPP)
- A tape measure was used to determine relevant trees Diameter at Breast Height (DBH)
- Trees with a DBH of less than 200mm and less than 4 meters high have not been surveyed
- The height and spread of the trees were estimated
- A walk by assessment (ISA Level 2 risk assessment) was performed on all trees on site and QTRA risk assessment model was applied to determine levels of risk.
- A Samsung tablet and Geographic Information System (GIS) have been used to assign tree attributes to established survey points

Fig. 1 - An example of a unique tag attached to the tree

5. Limitations

Information contained in this report pertains only to the trees examined on the above specified date of inspection. The tree assessment was performed by a suitably qualified arborist (AQF 5) using a recognised model (VTA) that aligns with the International Society of Arboriculture (ISA). The assessment was limited to a ground based VTA that did not extend to aerial inspections, nor below ground evaluations. The documented, observations, results, recommendations and conclusions given may vary after the site visit due to environmental conditions or variances in site conditions. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject tree may not arise in the future.

6. Site details

6.1 Site Map

The trees' locations (Fig. 2) have been plotted using GIS software and are only accurate that of standard GPS (4-8m). The points have been manually adjusted using aerial imagery to improve accuracy; however, there is a margin of error and points may not be in their correct (accurate) location. It is advised to cross reference the tree's ID with the feature survey to achieve its accurate location. Fig. 2 is the Site Map and has been divided in 3 areas.

Fig. 2 - Indicating subject trees at Lot 50 Alumina Rd, East Rockingham WA 6168 (Google map)

6.2 Area 1

Fig. 3 - Site Map Area 1

6.3 Area 2

Fig. 4 - Site Map Area 2

6.4 Area 3

Fig. 5 - Site Map Area 3

7. Tree survey

7.1 Tree survey

Tag no.	Species	Height (m)	Width (m)	DBH (m)	Health	Structure	Age class	ULE	Retention Priority
Polygon 1	*Schinus sp*	5	9	0.4	8	8	Semi-mature	15-40	Low
Polygon 2	*Schinus sp*	5	9	0.4	8	8	Semi-mature	15-40	Low
3	*Eucalyptus gomphocephala*	4	4	0.25	6	6	Juvenile	5-15	Low
4	*Eucalyptus gomphocephala*	5	6	0.45	7	7	Semi-mature	15-40	Low
Polygon 5	*Schinus sp*	6	9	0.4	8	8	Semi-mature	15-40	Low

Table 1: Tree survey

7.2 Trees not surveyed

Trees not surveyed are those that are or may include trees;

1. Not within the scope of this report
2. With a DBH of less than 100mm
3. That have a low retention value/not significant

8. Retention values

8.1 Tree retention

There is always a compromise between retaining trees on a development site and the economic imperatives of land development. Retaining trees on development sites is a fine balance between sustaining that amenity and the economic development of the land. Establishing priorities for the retention of trees is an important part of the planning process if amenity is to be sustained in the long term. If the trees are found to have high value plans may be altered or construction methods changed to accommodate tree retention. Excavation within the TPZ can be conducted in a non-intrusive manner that can dramatically reduce disturbance to the trees' roots.

8.2 Low retention value trees

Trees in this category are typically of low health and condition with an estimated remaining life expectancy of 5–15 years or; young trees that are easily replaceable, trees of poor health and structure or undesirable species. Low retention value trees do not typically warrant design consideration.

8.2.1 Area 1

Fig. 6 - Indicating low priority trees in Area 1

8.2.2 Area 2

Fig. 7 - Indicating low priority trees in Area 2

8.2.3 Area 3

Fig. 8 - Indicating low priority trees in Area 3

8.3 Small trees

With present day abilities to easily move small trees or replace them with virtually identical semi-matures, it is inappropriate that they should dictate the long-term layout of a new construction site.

For the purpose of this report, trees/shrubs with a DBH of <150mm or less than 4 meters high have not been regarded.

9. Risk Assessment (QTRA)

9.1 QTRA overview

The QTRA system applies established and accepted risk management principles to tree safety management. The system moves the management of tree safety away from labelling trees as either 'safe' or 'unsafe' and thereby away from requiring definitive judgements from either tree assessors or tree managers. Instead, QTRA quantifies the risk of significant harm from tree failure in a way that enables tree managers to balance safety with tree values and operate to pre-determined limits of tolerable or acceptable risk.

Tree safety management should not seek to minimise the risk of falling trees, but should balance the benefits of risk reduction with the associated costs in terms of both lost tree value and financial expenditure and maintain risks and benefits at a reasonable level.

The QTRA method provides a framework for the assessment of the three primary components of tree failure risk. The input values for these components are set out in broad ranges of Target, Size, and Probability of Failure. The QTRA User estimates values for the three components and inputs them to either the QTRA manual calculator or software application to calculate the Risk of Harm.

9.2 Tree risk management

The risks from tree failure are generally very low and high risks will usually be encountered only in areas with either high levels of human occupation or where valuable property can be affected by the structural failure of trees. Where human occupation and the value of property are sufficiently low, we may be able to identify that the risk is 'broadly acceptable'.

9.3 Tree risk management vs. cost

Risk minimisation is often cited as an objective when managing risks from trees. This is not a reasonable aim because it does not take account of the cost of risk reduction. If reasonable management decisions are to be made, the benefits of controlling a risk must be balanced with its costs, and those costs are not just financial. The tree-related benefits that are lost to risk control are often a substantial cost of managing risks from falling trees.

When considering risks from falling trees, the cost of risk control will usually be too high when it is clearly 'disproportionate' to the reduction in risk. The issue of 'gross disproportion', where decisions are heavily biased in favour of safety, is likely to be considered only where there are annualised risks greater than 1/10, 000.

9.4 Weather affected targets

Often the nature of a structural weakness in a tree is such that the probability of failure is greatest during windy weather, while the probability of the site being occupied by people during those weather conditions is often low. As wind speeds increase to 60-70 knots the failure of branches will increase both in size and number and the population is put on notice that catastrophic tree failure is increasingly likely. In most recreational areas, including the streets of our towns and cities, pedestrian access reduces with inclement weather.

9.5 Land use

The risk assessment has been conducted based on the anticipation of property development. This may include site works, further inspections, contractors entering site etc. It is recommended to conduct a further risk assessment once development has been complete and before opening to the general public.

9.6 Risk assessment results

Tag no.	Species	Tree defect 1	Tree defect 2	Tree defect 3	Risk rating	Pruning Rec.	Management recommendations	Residual risk
1	*Schinus sp*	Pest			Low	Yes	1. Remove to facilitate work	Low
2	*Schinus sp*	Pest			Low	Yes	1. Prune vegetation away from work or, 2. Remove to facilitate work	Low
3	*Eucalyptus gomphocephala*	Reduced vitality	Major deadwood	Co-dominant stems with minor inclusion	Low	Yes	1. Remove to facilitate work	Low
4	*Eucalyptus gomphocephala*	Co-dominant stems with minor inclusion			Low	No		Low
5	*Schinus sp*	Pest			Low	Yes	1. Remove to facilitate work	Low

Table 2: QTRA result and risk mitigation recommendations

NOTE: Pruning recommendations and comments made are irrespective of the decision to remove or retain the tree.

10. Tree Protection Zone (TPZ)

10.1 TPZ

Tree Protection Zones (TPZ) are the principal means of protecting trees on development sites and are defined by AS 4970-2009 Protection of Trees on Development Sites (Standards Australia 2009). The TPZ is a combination of the root area and crown area requiring protection. It is an area that is required to be isolated from construction disturbance to ensure continued viability of the tree.

The TPZ for an individual tree is determined as follows (Standards Australia 2009):

TPZ = Diameter at Breast Height (DBH) × 12

That is, the radius of the TPZ = 12 X the DBH measured at 1.4 metres (m).

A TPZ should not be less than 2 m nor greater than 15 m except where crown protection is required.

The TPZ incorporates the Structural Root Zone (SRZ).

10.2 SRZ

The Structural Root Zone (SRZ) is the minimum volume of roots required by the tree to remain stable in the ground (Standards Australia 2009). If the SRZ is breached the chances of windthrow are significantly increased, especially if roots are cut on the same side as prevailing winds. Windthrow is an event where the entire tree fails/falls over. Often, the tree is completely uprooted with devastating results.

It is important to note that the SRZ is not related to tree health. It refers to the physical volume of roots required for the tree to remain stable in the ground. It is in no way related to the physiological requirements of the tree but is the minimum volume of roots required for the tree to remain standing.

11. Impact assessment

11.1 TPZ summary

The table below is a summary of the trees TPZ.

Tag no.	Species	DBH (m)	TPZ	SRZ	TPZ area (m^2)
1	*Schinus sp*	0.4	4.80	1.50	72.38
2	*Schinus sp*	0.4	4.80	1.50	72.38
3	*Eucalyptus gomphocephala*	0.25	3.00	1.50	28.27
4	*Eucalyptus gomphocephala*	0.45	5.40	1.62	91.61
5	*Schinus sp*	0.4	4.80	1.50	72.38

Table 3: TPZ summary

11.2 Calculating incursions

Using the above table (Table 3), the relative TPZ values can be added to the feature survey and overlaid with concept/development plans to gain a more accurate TPZ incursion figure (Fig. 9). As a general rule;

1. Trees with a TPZ incursion of <10% can be retained and will not require additional arboricultural input
2. Trees with a TPZ incursion of 10-25% can typically be retained with minimal intervention
3. Trees with a TPZ incursion of 25-50% may have retention viability with additional arboricultural input (i.e., design review & root mapping)
4. Trees with a TPZ incursion of >50% or with an SRZ breach will typically require removal. For trees in this category that have HIGH retention values, an additional viability assessment is recommended.

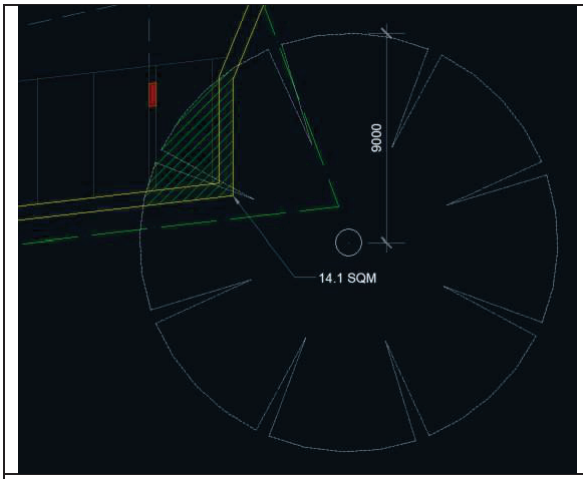


Fig. 9 - An example of TPZ incursion using CAD

12. Discussion

12.1 Tree Protection Zone (TPZ):

Tree protection zones (TPZ) are the principal means of protecting trees on development sites and are defined by AS 4970-2009 Protection of Trees on Development Sites (Standards Australia 2009). The Tree Protection Zone (TPZ) is a guideline established to help protect trees, especially during construction. The TPZ is calculated based on the trunk diameter and makes some assumptions as to the

likely spread of the tree's roots. Theoretically, the standard allows 100% impact on the TPZ, **provided that the project arborist can adequately demonstrate that the tree will remain viable.**

12.2 Structural Root Zone (SRZ)

The SRZ is the area of the root system (as defined by AS 4970-2009) used for stability, mechanical support and anchorage of the tree. It is critical for the support and stability of the tree, and provides the bulk of mechanical support and anchorage. Severance of roots (>50 mmØ) within the SRZ is generally not recommended as it may lead to the destabilisation and/or decline of the tree.

12.3 TPZ Incursion

It may be possible to encroach into or make variations to the standard TPZ. Encroachment includes excavation, compacted fill and machine trenching. Encroachment can be classified as minor or major encroachment.

Minor: If the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ.

Major: If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ.

12.4 Root damage

Root damage is the most common cause of damage to trees on construction sites. Mechanical damage reduces the root:shoot ratio and subsequently inhibits the trees' ability to uptake water resulting in symptoms synonymous to drought and can be fatal.

12.5 Root mapping

Root mapping is the process of investigating the presence of subsurface tree roots in a specific location. This can be achieved by vacuum excavation, Ground Penetrating Radar or more commonly hand excavation. Roots are mapped down to a specified depth, usually the depth of the proposed development. Root mapping is used prior to development to locate structural woody roots so that the extent of root loss can be determined and minimised.

12.6 Clean cutting roots

Damaged roots are very susceptible to pathogen infection so it is important to sterilize equipment before cutting each root, using sharp loppers or hand saws to encourage faster healing and good wound compartmentalisation. Aim to cut at root junctions where possible and after each cut has been made, remove the cutting and fill in soil around the remaining root. When the clean cutting has been completed, water the tree well.

12.7 Excavation

Traditional excavation (levelling) can be very impactful to a tree's root system and typically results in shredding or tearing of the tree's roots. A torn or shredded root is much harder for the tree to compartmentalise and exposes the root to harmful pathogens for a longer period of time. Shredded roots should be 'clean cut' to minimise the risk of infection and facilitate healing. **Excavation close to or within the trees SRZ can be hazardous.** Anchorage roots destroyed in the process can render the tree unstable resulting in an elevated risk of whole tree failure. Backfilling will mask the trees hazardous state and whole tree failure may occur years after the root severance has occurred.

12.8 Manual excavation

Where excavation, demolition or the removal of material is necessary in the TPZ; this should be done manually without the use of heavy machinery to prevent damage to the tree and should be supervised by a suitably qualified arborist (AQF 5 or equiv.)

12.9 Sandy soils

In urban settings, the tree's roots are not often where they are expected and can also be influenced by soil type and tree species. A majority of Perth's suburbs are situated on sandy soils that typically have low compaction rates and high filtration that can result on tree roots growing downwards as opposed to the more conventional lateral growth. As a result, it may be possible in certain circumstances to make significant encroachments into the TPZ and often the structural root zone.

12.10 Root pruning

Most trees will tolerate root pruning up to 25% total mass and some species endure considerably more. Given they have space to do so, roots will regenerate in time to compensate for the loss and re-align the root:shoot ratio.

12.11 Tree health amendment prior to construction

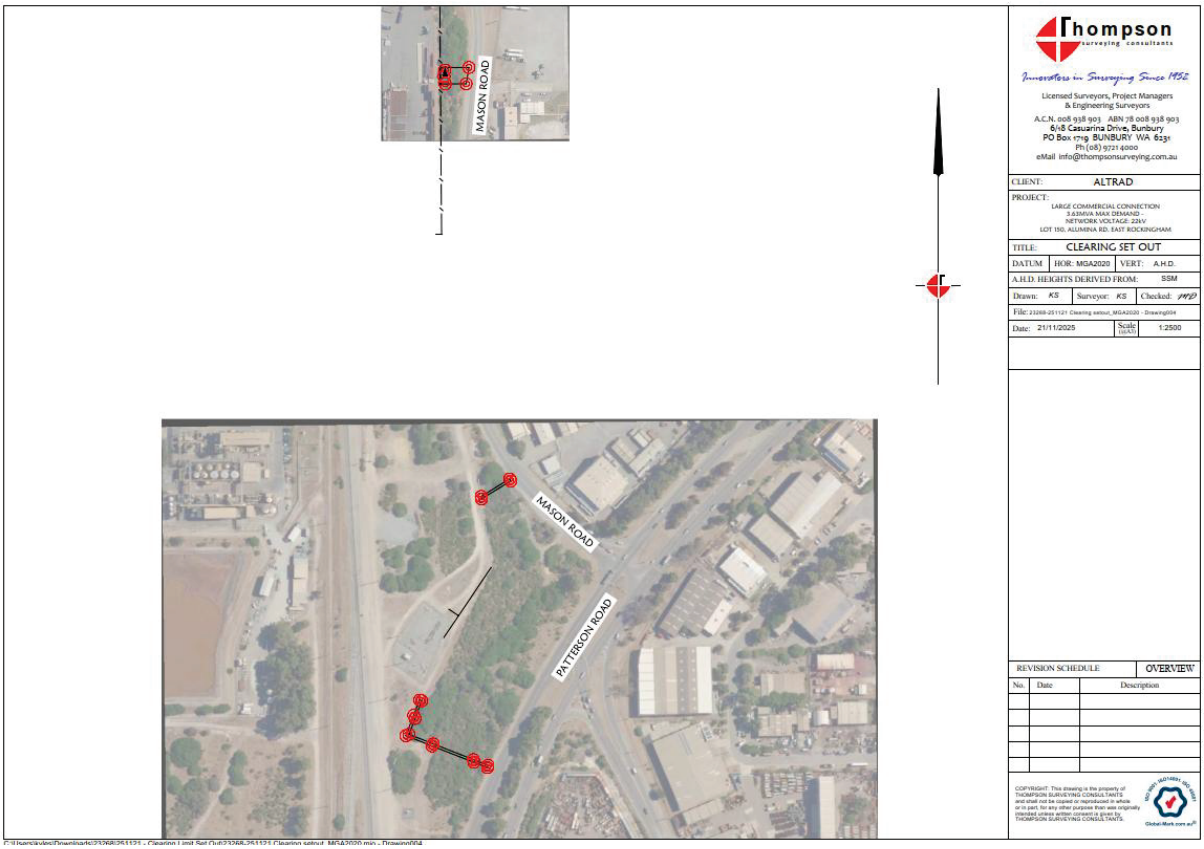
Construction works often compromises the growing environment of nearby trees and may place them in a state of stress which may lead to decline or tree mortality. How a tree responds to various stresses will depend largely on their current health. To greatly increase tree viability on construction sites it is recommended to develop a Tree Health Amendment Strategy. This may be a simple as supplying supplementary irrigation and can extend to mulching, soil amendments and nutrient injections etc. This particularly important where the tree is currently showing signs of stress or reduced vitality, or if the tree is predisposed to decline following changes in its environment.

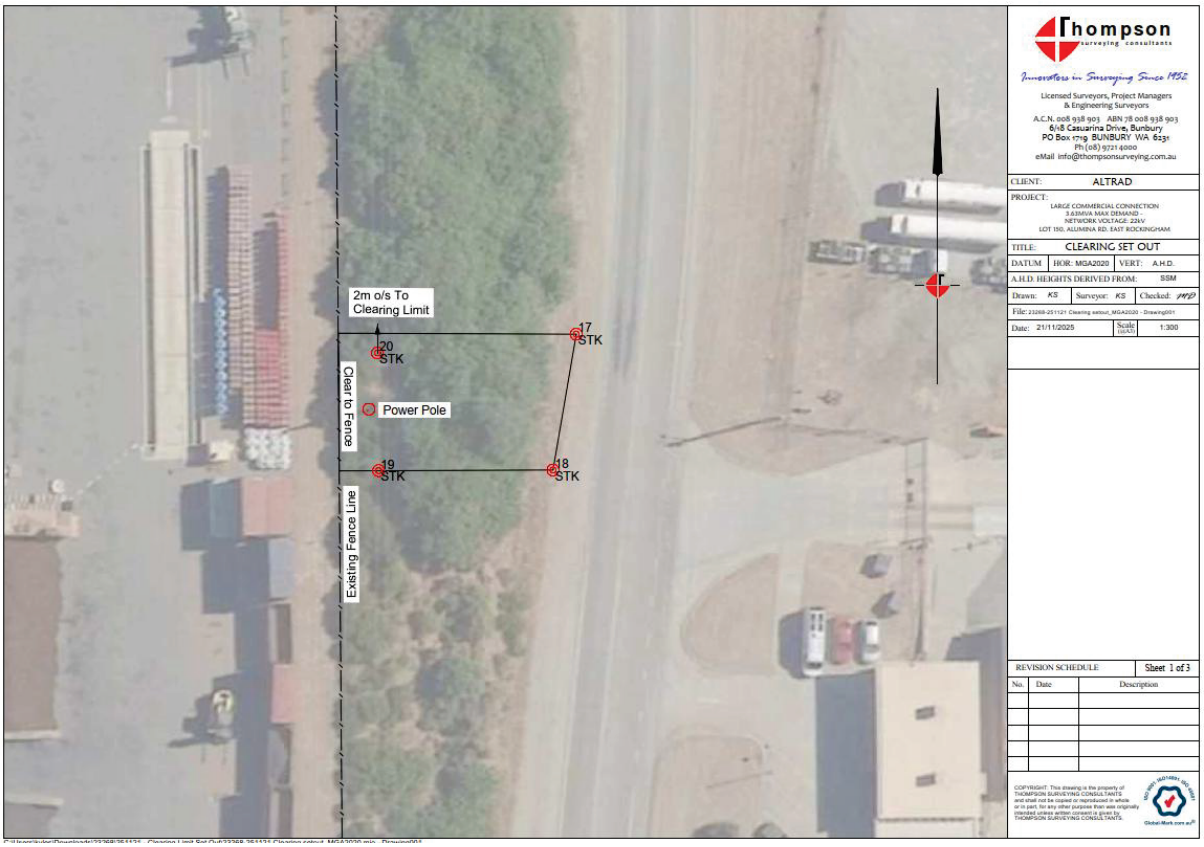
13. Disclaimer

The conclusions and recommendations contained in this report refer to the trees' condition on the day of inspection only. The report should be read and considered in its entirety. All care has been taken using the most up to date arboricultural information in the preparation of this report. The report is based on visual inspection only. No guarantee can be given nor can it be predicted that branch failure or uprooting (windthrow) would not occur as a result of high winds and /or excessive rainfall and other unpredictable events. Tree health and environmental conditions can change at any time due to unforeseen circumstances.

14. Appendices

14.1 Proposed clearing plan



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eMail info@thompsonsurveying.com.au
CLIENT: ALTRAD
PROJECT:
LARGE COMMERCIAL CONNECTION
3.63MVA MAX DEMAND -
NETWORK VOLTAGE: 22kV
LOT 150, ALUMINA RD, EAST ROCKINGHAM
TITLE: CLEARING SET OUT
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A.H.D. HEIGHTS DERIVED FROM: SSM
Drawn: KS Surveyor: KS Checked: MPD
File: 23268-251121 Clearing setout_MGA2020 - Drawing003
Date: 21/11/2025 Scale (SEAT) 1:300
REVISION SCHEDULE Sheet 2 of 3
No. Date Description
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eMail info@thompsonsurveying.com.au
CLIENT: ALTRAD
PROJECT:
LARGE COMMERCIAL CONNECTION
3.63MVA MAX DEMAND -
NETWORK VOLTAGE: 22kV
LOT 150, ALUMINA RD, EAST ROCKINGHAM
TITLE: CLEARING SET OUT
DATUM HOR: MGA2020 VERT: A.H.D.
A.H.D. HEIGHTS DERIVED FROM: SSM
Drawn: KS Surveyor: KS Checked: MPD
File: 23268-251121 Clearing setout_MGA2020 - Drawing003
Date: 21/11/2025 Scale (SEAT) 1:300
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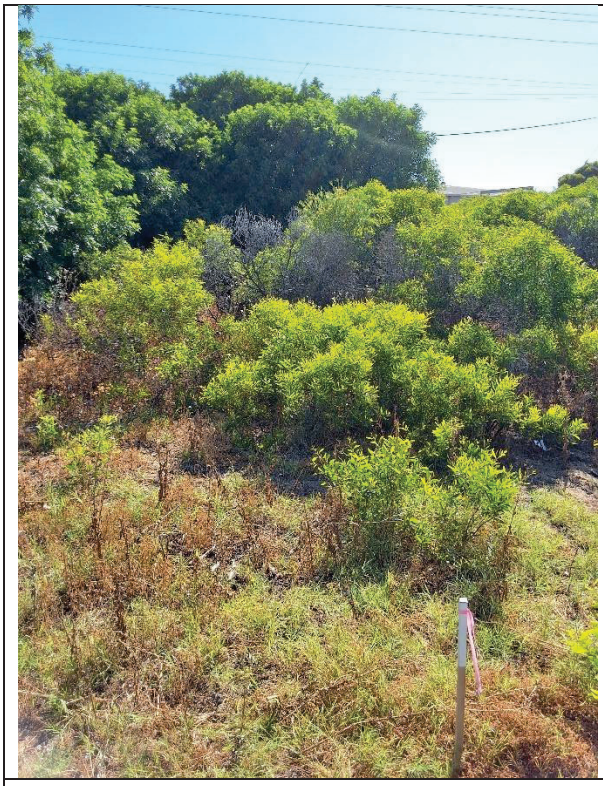
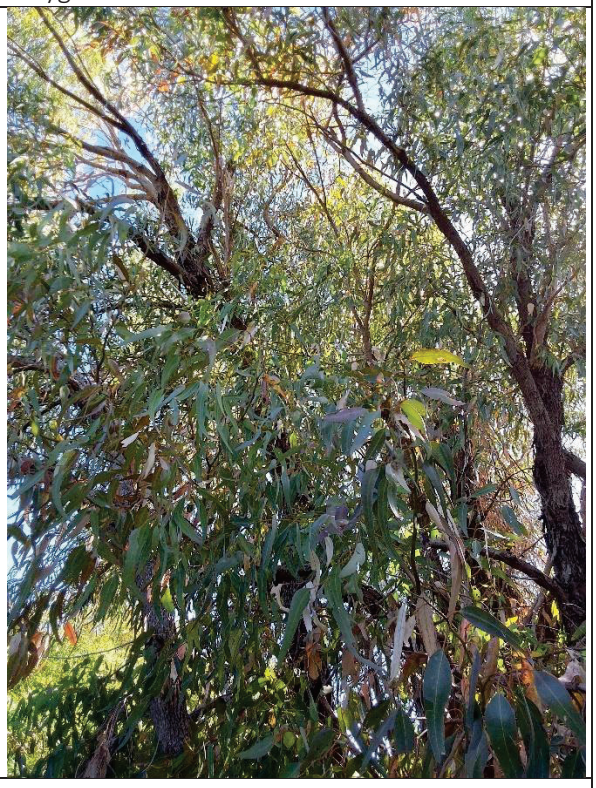
14.2 Tree photos



Polygon 1

Polygon 2

Tree ID 4



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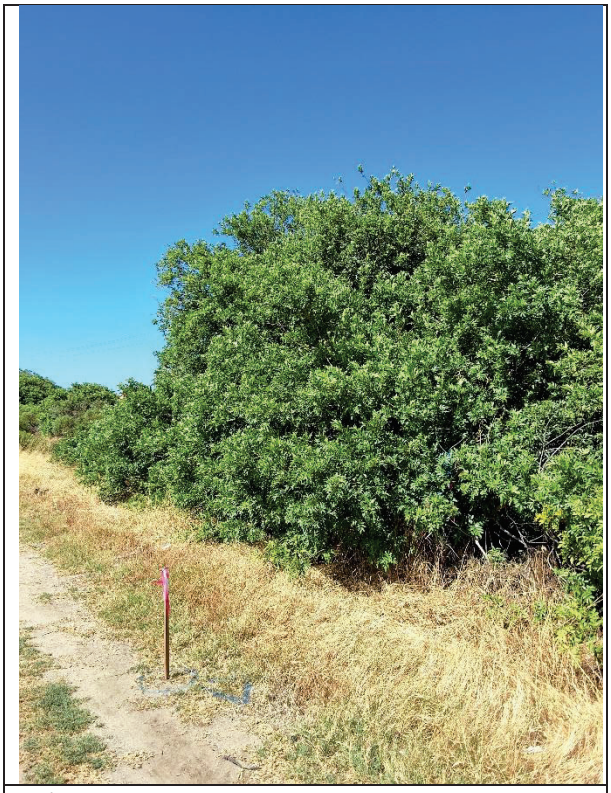

Polygon 5

14.3 Health rating

Assessed trees are given a numerical value to signify their overall health. Several factors and/or symptoms are taken into consideration when assessing the health of a tree. It's vigour and seasonal extension growth, symptoms of decline like deadwood and/or dieback, foliage density, colour, size and intactness as well as signs of pests and/or disease are all appraised.

Rating	Health
10	Exceptional
9	
8	Good
7	
6	Average
5	
4	
3	Poor
2	
1	Dead

Classification	Description
Exceptional	Canopy is full with dense foliage coverage throughout, leaves are entire and are of an excellent size and colour for the species with no visible pathogen damage. Excellent growth indicators, e.g. seasonal extension growth.
Good	Canopy is full with minor variations in foliage density throughout, leaves are entire and are of good size and colour for the species with minimal or no visible pathogen damage. Some minor dead wood and epicormic growth. Good growth indicators.
Average	Canopy has moderate variations in foliage density throughout, leaves not entire with reduced size and/or atypical in colour, moderate pathogen damage. Reduced growth indicators, visible amounts of minor and major deadwood/dieback, and epicormic growth.
Poor	Canopy density significantly reduced throughout, leaves are not entire, are significantly reduced in size and/or are discoloured, significant pathogen damage. Significant amounts of deadwood and/or epicormic growth, noticeable dieback of branch tips, possibly extensive.
Dead	Dead. No live plant material observed throughout the canopy, bark may be visibly delaminating

14.4 Structure rating

Assessed trees are given a numerical rating to signify their overall structure. Several factors and/or conditions are taken into consideration when assessing a tree's structure. It's form, branching habit, trunk and lower stem are all appraised.

Rating	Structure
10	Exceptional
9	
8	Good
7	
6	
5	Average
4	
3	Unacceptable
2	
1	

Classification	Description
Exceptional	Good form and branching habit typical of the species. Structural defects are insignificant or undetected. All major unions appear well attached and devoid of anything that could be considered a weakness. All aspects of the tree exhibit no evidence of pathogens. No obvious damage to the trunk and roots.
Good	Canopy devoid of major defects but may exhibit minor damage, disease or decay in the crown, trunk and roots. Branching habit is well formed, spaced and tapered. May contain small amounts of deadwood or have evidence of previous limb failure.
Average	Moderate structural defects, damage, disease or decay that impact longevity. Defects may not reflect an imminent threat
Unacceptable	Serious structural defects that could cause failure within 12 months i.e., active splits, unstable/loose in ground, excessive branch end-weight. Immediate arboricultural intervention recommended to minimise risk.

15. Glossary of terms

ULE – Useful Life expectancy

DBH – Diameter at breast height

TPZ – Tree protection Zone

SRZ – Structural root zone

VTA - Visual tree assessment

QTRA – Quantified tree risk assessment

DTW – Distance to works

TPP – Tree Protection Plan

TRP – Tree Retention Proposal