Arboricultural report

for

The Metropolitan Planning Authority (MPA)

Arboricultural assessment of Sunbury South

Precinct 1074

Site

PSP 1074
Sunbury South

Submission date

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Prepared for

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Treetec reference

MPA1113.1074.mc

1 Executive summary

Treetec was commissioned by the Metropolitan Planning Authority (MPA) to map and assess any trees of high or very high Arboricultural Retention Value (ARV) that exist within the PSP 1074 - Sunbury South arboricultural assessment area. The field investigations were undertaken in November 2013. PSP 1075 Lancefield Road was assessed concurrently.

PSP 1074 covers an area of 1822 hectares. The arboricultural assessment area was approximately 1096 hectares. DSE's modelled vegetation dataset suggests that pre-European vegetation across the precinct was dominated by Plains Grassy Woodland and Plains Grassland Ecological Vegetation Classes (EVC's). Plains Grassland is typically identifiable in the landscape as a treeless plain dominated by native grass species. Plains Grassy Woodland comprises open, eucalypt woodland to 15m tall. It occupies poorly drained, fertile basalt-derived soils on flat or gently undulating plains at low elevations which typically receive less than 700 mm of rainfall annually (DSE 2004).

The cropping and grazing practices following European arrival resulted in the widespread clearance of most of the native vegetation within the precinct, including the vast majority of the eucalypts. Today the only stand of overstorey eucalypts that exist within the precinct at densities similar to that observed before European arrival are in the very northern section of the area, most are contained within an environmental exclusion zone and therefore were not surveyed.

Due to the relatively small number of high value trees this report also includes trees that fell just below the 'high' rating, they have been assessed as 'Medium/high' for ARV.

Treetec assessed all trees within the precinct that are not within an exclusion zone. This report includes a total of 3 listed trees and 5 groups that justified inclusion as being of higher Arboricultural Retention Value (ARV). Those trees included within this report are typically mature, large in size, and of significant amenity and/or ARV.

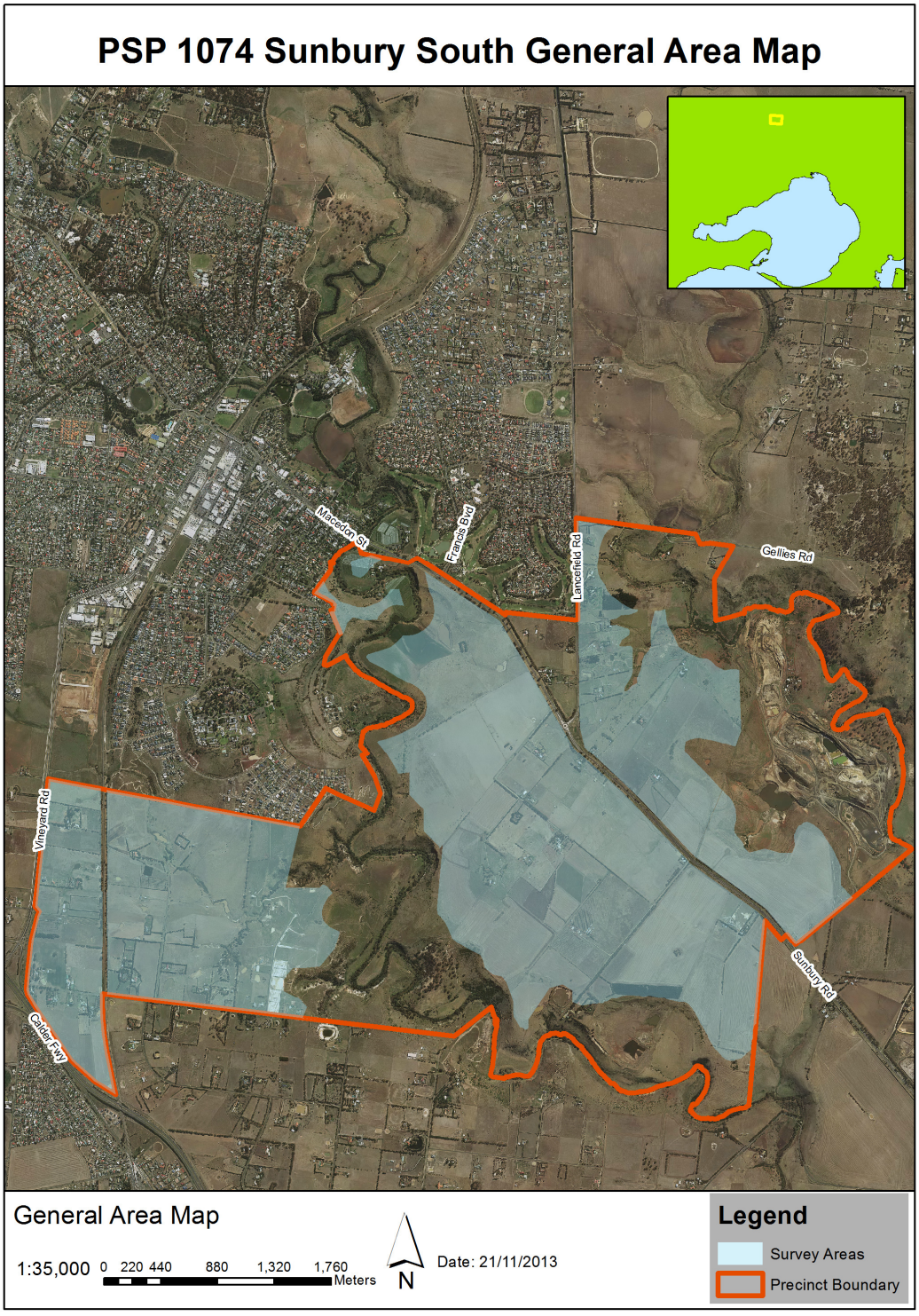
Those trees included within this report are regarded as being worthy of, and suitable for, retention within an urban landscape.

Contents

2 Introduction

Treetec has been commissioned by the Metropolitan Planning Authority (MPA) to inspect and classify all trees within the Sunbury South Precinct Structure Plan (PSP) area (1074) located within the City of Hume boundary (see map below).

Any tree of high or very high Arboricultural Retention Value (ARV) was mapped and relevant arboricultural data recorded.



Treetec understands that the data collected during the field assessment will be used to inform the precinct structure planning process. Treetec has identified those trees that:

- Contribute significantly to the natural amenity of the precinct
- Provide significant ecological value
- Are of sufficient vitality to persist within an urban landscape
- Appear to present a manageable degree of risk if retained

It is recommended that those trees recorded by Treetec are retained and their protection should be considered during the design of the precinct.

2.1 Arboricultural Retention Value (ARV)

As per the Request for Tender documentation, this report identifies all individual trees or groups of trees that Treetec consider to be of High or Very High Arboricultural Retention Value. ARV is defined by the consulting Arborist as being:

ARBORICULTURAL RETENTION VALUE	**A rating assigned to a tree or group of trees related to the value of retaining those trees in situ. The judgement is based on tree condition (Health, Structure & Form), Useful Life Expectancy (ULE), Origin and Age.** **Age is a primary consideration as it is the determining factor when considering how long it would take to replace the amenity lost when trees are removed.**	
	Very High	• Mature tree in good condition, long lived species with very high Amenity value • Semi-mature or mature rare species in fair to good condition
	High	• Semi-mature to mature tree in fair to good condition, long lived species with a high Amenity rating • Juvenile rare species • Trees of moderate condition that offer exceptional amenity due to factors such as species, size or ecological value
	Moderate	All trees that don't fit in the alternative categories and that have a ULE of 15+ years
	Low	• Juvenile trees (not including rare species) • weeds that offer medium or high amenity value
	Nil	Contribution in the landscape is of no value or detrimental – usually associated with small dead or dangerous trees or environmental weeds

3 Key objectives

The key objectives of this arboricultural investigation are:

1- To identify all trees within the precinct that are considered to have high or very high retention value

2- Collect and document data on the subject trees including (but not limited to) the species, dimensions (diameter, height, spread), estimated age, origin, vitality of the tree (health, structure), Useful Life Expectancy (ULE) and the Tree Protection Zone (TPZ) of each tree

3- Present the locations of each tree visually

4- Provide recommendations relating to the protection of the subject trees, including TPZ's and other relevant methods of protecting continued vitality of the trees

4 Methodology

4.1 Aerial Photograph Interpretation

Prior to commencing fieldwork, Treetec staff undertook Aerial Photograph Interpretation (API) to gain an understanding of the extent and location of overstorey vegetation across the precinct. This allowed fieldwork to be conducted in a targeted and efficient manner.

4.2 Geographic Information Systems (GIS)

All relevant information relating to each precinct was uploaded onto mobile mappers for use in the field. Roadways, cadastral boundaries and aerial photographs were used, also custom, electronic data collection forms were developed and used during fieldwork. The custom forms facilitated collection of relevant data for each tree or group of trees, while simultaneously recording the geographic location of each tree or group.

4.3 Report review

This report was reviewed; edits were requested and inserted in November 2014. Edits included the definition of exclusion zones and properties visited or inspected from a distance.

4.4 Site inspection

An arboricultural assessment of PSP 1074 was undertaken by Treetec staff during November 2013.

The MPA provided a list of those properties for which permission for access had been granted, as well as the associated names and contact details of many landowners.

After initial site visits, calling, door knocking and letter dropping there remained a small number of properties where access was not granted, this was typically due to the landowner being unreachable. In such cases, any significant trees (where they existed) would have been inspected from the closest accessible boundary and with the use of binoculars. Treetec is satisfied that there were no higher value trees (as defined in this report) on properties that were not accessed.

'Exclusion zones' were not inspected; these are areas subject to the rural conservation zone. The 80 ha at Redstone Hill is subject to review and was inspected.

4.5 Trees not listed

Only trees considered to have high or very high ARV as determined by the consultant Arborist were required for inclusion. In addition to this, some groups of trees that exhibited high potential to provide amenity were included. Other trees were not detailed.

4.6 Inspection method

- All observations were taken at ground level, using the Visual Tree Assessment (VTA) method (Mattheck and Breloer 1994)
- Excavation at the site was not undertaken
- Aerial examination (climbing) of the tree structures was not required
- Heights and canopy widths have been estimated
- Subject trees (or groups) have been numbered
- Data and location was recorded using DGPS/GIS enabled handheld computers (accurate to ±1m)

5 Tree assessments / results

5.1 Condition of roots

Excavations were not undertaken for this report therefore root condition has not been included unless above ground signs, such as soil heaving or cracking were observed.

5.2 Impact assessment

This report relates to the subject trees, their condition and significance. This judgment is based on the site inspections and information supplied to Treetec for the purposes of conducting an arboricultural assessment (GIS layers, plans etc), and is current at the time of the submission of the report.

5.3 TPZ Calculation

The figure included for TPZ in the Tree Data tables below is calculated to the Australian Standard AS 4970-2009 Protection of Trees on Development Sites. All trees within this report are within the City of Hume and are therefore subject to this Standard.

The Department of Environment and Primary Industries calculate TPZ's similarly to AS 4970-2009 except the measurement of the Calliper follows an alternative methodology (DSE 2004). This can result in a significantly different TPZ calculation to that obtained following the method outlined in the Australian Standard.

5.4 Hazards and risk

Risk assessment of trees relies on an appraisal of the structural integrity of a tree or population of trees in conjunction with the likelihood of tree failure (either whole tree or limbs) adversely impacting people or property.

Any tree exhibiting high risk rating due to failure potential is not considered to have high ARV in an urban setting and therefore is excluded from this report.

All trees drop limbs and have the potential to fail. Large old Eucalypts periodically drop large limbs and deadwood. These limbs have the potential to severely injure or kill any person that may be hit. Although these limbs will fall, they do not fall often and therefore the associated statistical risk is low.

The risk associated with large old trees can be further reduced by:

- Using selected plantings, landscaping or fencing to discourage the use of the fall zone by people
- Regular pruning of deadwood from tree canopies
- Regular risk assessment inspections of the subject trees
- Targeted load reduction pruning of suspect limbs / leaders
- Establishing other indigenous vegetation in the immediate area
- Optimising growing conditions which reduces deadwood and promotes healthy, structurally sound wood

Due to the high amenity value and ecological significance of the older Eucalypts, there are some trees assessed in this report as 'high' for ARV even though they exhibit some obvious structural weaknesses. These trees will require ongoing risk management; it is the opinion of the author that the required work is not an unreasonable burden from either an economic or practical perspective. These high value trees with structural considerations will have structure noted as fair.

A small number of trees were excluded from this report due to structural defects, despite their very high ecological and aesthetic value. It was determined that the ongoing and long term management of those trees would be problematic. These trees were assessed as 'medium' for ARV.

Deadwood

Nearly all inspected trees contained some amount of deadwood within the canopy, this is normal for any mature trees. Only those trees with noticeably significant amounts of deadwood have 'deadwood' included in the notes section.

Deadwood will fall and contributes to the higher risk associated with large trees.

5.5 Tree age

All trees that have been detailed in this report are mature or semi-mature in age. The size of a tree has a strong influence on its retention value. Typically, the larger a tree, the higher the retention value. Age is important in determining how long it would take to replace the amenity that a specific tree provides. Hence it would be unusual for a juvenile tree to attract a high or very high ARV rating.

5.6 Useful Life Expectancy (ULE)

ULE is included in this report typically as 20+ or 40+ years. The subject trees are long lived species (hundreds of years) and this relatively small ULE number should be considered an absolute minimum. If the growing conditions of the subject trees are protected, some or most of those trees could be expected to live for at least another hundred years.

5.7 Data

5.7.1 Individual Trees

Tree #	No of Trees	Species	Common Name	Origin	Calliper (cm)	Height (m)	Spread (m)	Age Class	Health	Structure	ULE (yrs)	ARV	TPZ (m)
1	1	*Eucalyptus cladocalyx*	Sugar Gum	Native	130	22	19	Mature	Good	Fair	20-40	Med/ High	15.0
Notes	Large tree within rail reserve (outside survey area), 3m from fence. Multi-stemmed, some minor wounds and deadwood												
Co-ordinates	298554.39	5835286.42											
2	1	*Eucalyptus camaldulensis*	River Red Gum	Indigenous	~90	19	21	Mature	Good	?	>40	Very High	10.8
Notes	Large spreading tree in creek, limited access due to surrounding blackberries (hence estimated dbh and structure)												
Co-ordinates	299972.27	5835357.64											
3	1	*Quercus robur*	English Oak	Exotic	80	14	16	Mature	Good	Good	>40	High	9.6
Notes	Mature tree in good condition												
Co-ordinates	300666.15	5837850.03											

5.7.2 Tree groups

Patch No.	Species	Common Name	Origin	DBH (cm)	Height (m)	Spread (m)	Age Class	Health	Structure	ULE (yrs)	ARV
1	Mixed Eucalyptus and some Pines	Eucalyptus / Pine	Various	<45	~12	~10	Semi-mature	Good	Good - Fair	>40	Medium
Notes	Group of trees (~8) in good condition, not yet of high ARV may be higher value group in medium term										
Co-ordinates	298287.85 5835802.90										
2	Eucalyptus camaldulensis, Acacia implexa	River Red Gums +	Indigenous	<80	Various	Various	Various	Good	Various	>40	Very high
Notes	Large group (>100) of indigenous trees. Vegetation including high value Red gums, wattles and regrowth, mostly contained within creek gully										
Co-ordinates	299528.48 5834682.72										
3	Eucalyptus camaldulensis	River Red Gum	Indigenous	<35	10	8	Juvenile	Good	Good	>40	Medium / High
Notes	Group (>20) of young trees concentrated around creek, potentially very high value longer term										
Co-ordinates	299644.79 5834905.71										
4	Eucalyptus camaldulensis	River Red Gum	Indigenous	15-70	Various	Various	Various	Good	?	>40	Very high
Notes	Group of River Red Gums within creek area.										
Co-ordinates	299899.32 5835254.62										
5	Mixed Natives		Native	20-45	Various to 12m	Various	Juvenile to Semi-mature	Good	Various	>40	Medium
Notes	Row of planted trees (~12) and large shrubs, mostly, semi-mature, non-indigenous native, apart from trees and groups listed above this was the highest value vegetation within the survey area.										
Co-ordinates	299687.70 5835458.14										

5.7.3 Photographs

Plate 3- Tree 3

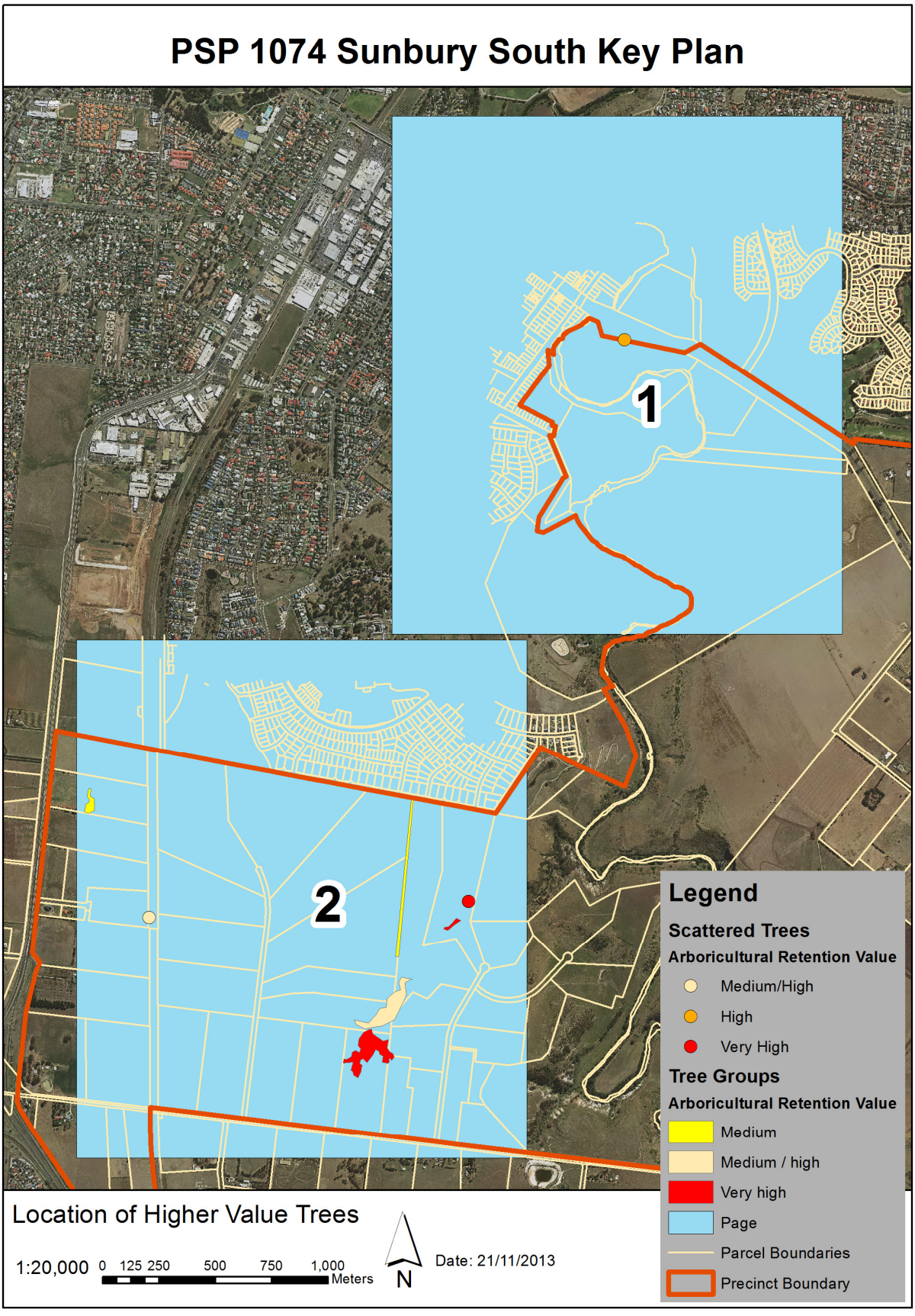
Plate 4- Tree 17

Plate 5- Tree within Patch 2

Plate 6- Patch 3 within gully

Plate 7- Typical of trees within patch 5

5.8 Site plan


PSP 1074 Sunbury South Key Plan
1
2
Legend
Scattered Trees
Arboricultural Retention Value
Medium/High
High
Very High
Tree Groups
Arboricultural Retention Value
Medium
Medium / high
Very high
Page
Parcel Boundaries
Precinct Boundary
Location of Higher Value Trees
1:20,000
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Date: 21/11/2013

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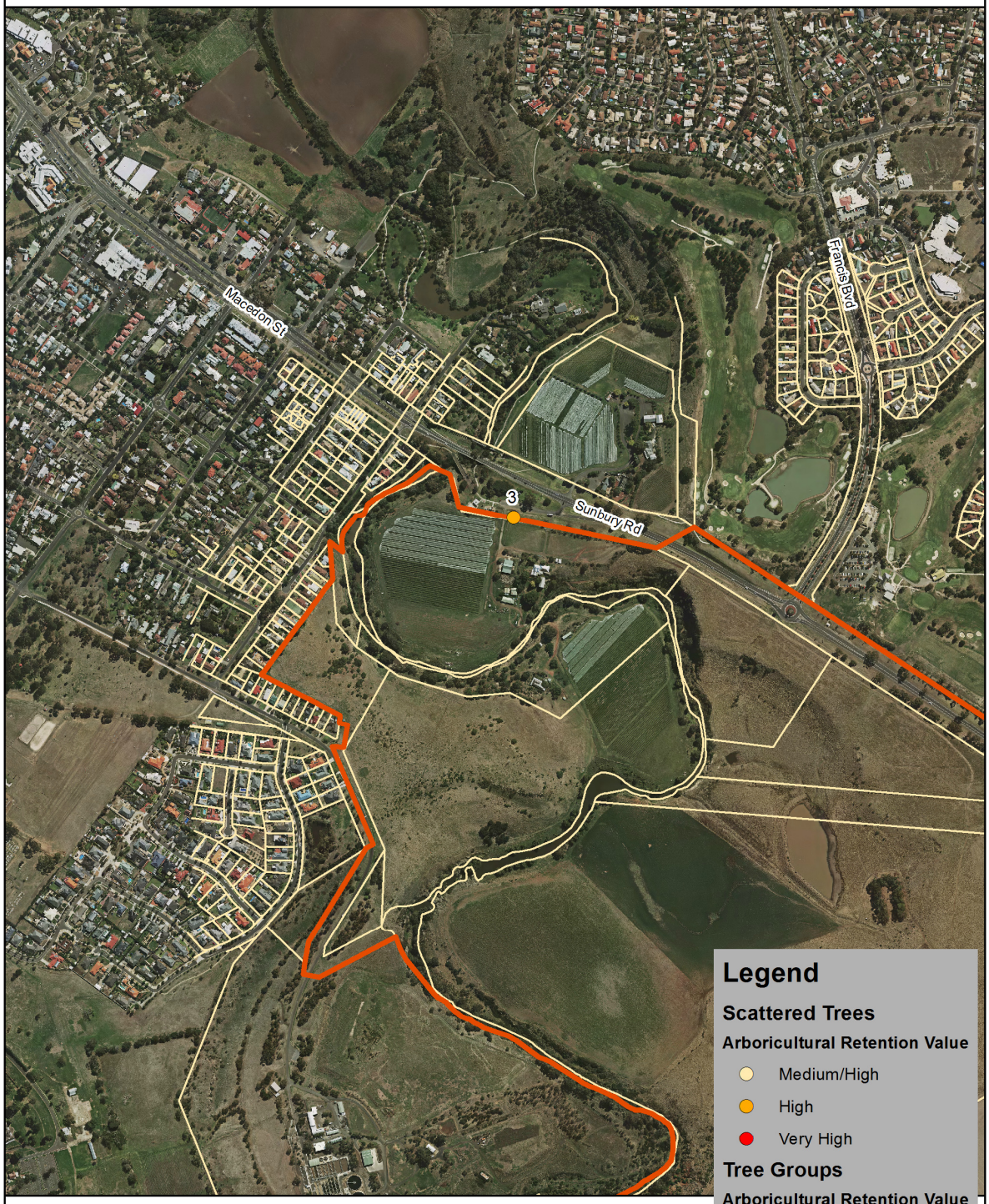

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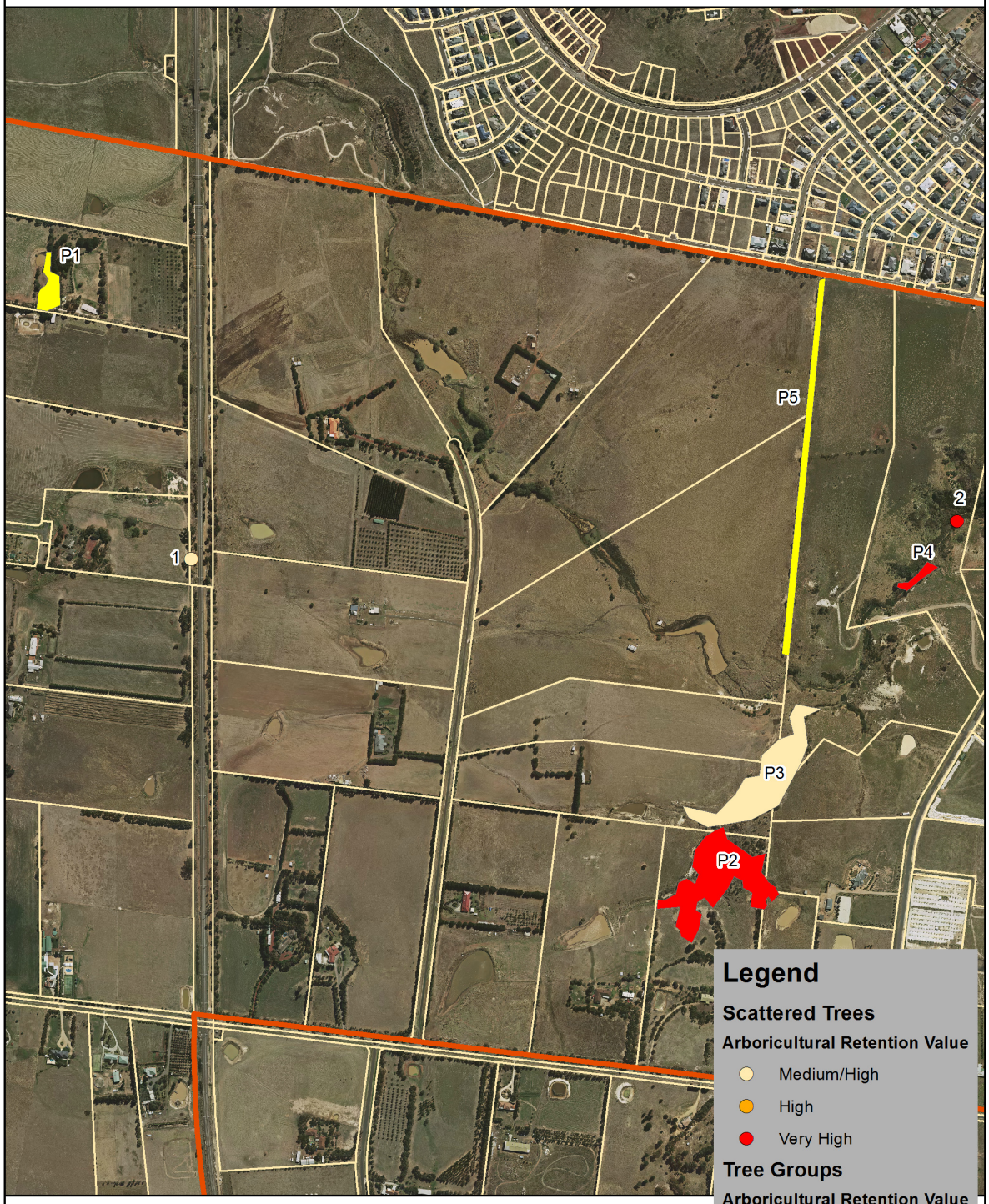

6 Observations / discussions

6.1 Site summary

The Sunbury South PSP area covers an area of approximately 1800 ha, and is contained within the Port Philip and Western Port Catchment Management Authority boundary and within the jurisdiction of Hume Shire Council. There are a number of zones within the precinct that have been excluded from the current assessment. These exclusion zones comprise some 726 ha. The total assessment area is approximately 1096 hectares.

The precinct is situated immediately southeast of the Sunbury township, bordered on the south by Watsons Rd and Jacksons Creek, on the east by Emu Creek. The majority of the precinct has been cleared following European settlement and can be classified as pastureland or rural residential. The majority of agricultural activity within this precinct is sheep grazing and cropping. As a result of this land use introduced grasses dominate the understorey vegetation. A single confined area of River Red Gums is the significant vegetative feature of the precinct. These trees are within a tributary to Jacksons Creek area at the northern end of the property at 75 Watsons Road.

Almost all other trees within the survey area are either wind rows of Cypress (*Cupressus spp*) or Sugar Gums (*E. cladocalyx*), or associated with garden plantings around more recently developed allotments in the last 20-30 years. There are very few high value trees.

6.1.1 Site habitat significance

The faunal habitat significance of the individual trees was moderate to high, the highest being the Red Gum – Tree 2. The highest habitat value vegetation is the patch of River Red Gums and Acacias – Patch 2, this area included trees that supported hollows with evidence of faunal habitation.

6.2 General comments

6.2.1 Potential for failure

Any tree can fail and all trees present a risk. The degree of risk presented will impact the ARV assigned to a tree or group of trees. Large trees that are assessed as having poor structure are usually not suitable for retention in an urban environment.

Trees are dynamic structures that change in response to their growing conditions, state of maturity and in accordance with the species. This changing nature also changes their potential to fail and therefore the risk they present.

Failure potential will be increased with:

- Poor tree structure

- Poor tree health
- Increased wind or changes in wind loadings such as those experienced after the removal of nearby trees or structures
- Drought or rain, particularly saturating rains
- Interference with root systems including compaction, disturbance, contamination, trenching or removal (excavations)
- Changes in water regimes such as those experienced when drainage patterns are changed
- Inappropriate pruning of a tree

Different species and provenances of species will influence the likelihood of a failure event, as will the siting of a specimen. Also a tree may shed limbs or fail for no apparent reason. Therefore it's important to be aware of the characteristics of a species and monitor any changes in structural or environmental conditions and manage trees accordingly to reduce risk.

All trees present a hazard; typically, this hazard will be associated with failure potential, however trees may impact structures through changes in soil moisture particularly in reactive soils that can shrink or expand and move structural footings.

Risk assessment will determine the degree of risk associated with a hazard and risk control is the process of implementing measures to reduce risk to an acceptable level.

6.2.2 Controlling risk

Risk mitigation measures may include:

- Pruning to remove weak or damaged components of a tree
- Complete tree removal
- Relocation of targets such as seating, paths or playgrounds
- Fencing of an area to exclude people from under trees - conservation reserves around trees which limit access
- Erecting a structure over a target that can withstand a tree failure
- Appropriate signage
- Improving growing conditions by providing adequate space between development and trees

Though branch shedding and tree failure cannot be eliminated, by implementing regular hazard inspections as well as risk assessment and control; failure events and therefore risk, will be significantly reduced.

Any works undertaken such as pruning and tree removal should be undertaken by a suitably qualified contractor.

6.2.3 Soil compaction

Soil compaction reduces the number and size of soil pores, subsequently reducing the available water and oxygen to a tree, this then impedes a trees ability to respire (consume reserved energy supplies) and increases stress. Subsequent symptoms may include thinning or dying crown, reduced or no seasonal extension growth, limb shed or death of the tree. Insect infestation may increase as a trees natural ability to withstand pests is diminished.

6.2.4 Physical / mechanical damage to trees

Physical damage to tree parts, particularly the trunk, is unsightly and provides entry points for pests and diseases such as fungal infections. This may cause long-term decay and can lead to partial or complete tree failure and death.

6.2.5 Alteration of soil levels

Alteration of soil levels around trees will affect the root zone and stability of a tree as well as tree metabolism. This may result in reduced tree health, excessive deadwood, thinning foliage and poor vigour; it can take some years for the impact to become evident at which time it is normally irreversible

6.2.6 Maintaining Tree Protection Zones (TPZ)

Where it is determined that a TPZ is to be established, the area should be fenced prior to commencement of demolition / construction work, this exclusion area must be protected; no materials, equipment, waste, chemicals or vehicles are to be stored or parked within this area. The soil profile and level within the TPZ should not be disturbed or altered.

If at any time the TPZ may need to be infringed upon for works such as excavation for the installation of pipes or drainage or the movement of equipment or any other interference that may cause a change in the availability of water or oxygen to the tree, a suitably qualified Arborist should be consulted to direct and supervise the works.

It may be possible to work within a TPZ without significantly impacting a tree however the size and number of roots in the area would need to be determined prior to commencement and design and construction methods may need alteration to minimize tree impact.

Variations to the TPZ

General
It may be possible to encroach into or make variations to the standard TPZ. Encroachment includes excavation, compacted fill and machine trenching.

Minor encroachment
If the proposed encroachment is less than 10% of the area of the TPZ and is outside the Structural Root Zone (SRZ) detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.
Variations must be made by the project arborist considering relevant factors listed in (see standard)....

Major encroachment
If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ, the project arborist must demonstrate that the tree(s) would remain viable.
The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods and consideration of relevant factors listed in (see standard)

6.2.7 Pruning standards / Lopping

An Australian standard exists to give guidance on pruning of trees.
It is important that all tree works are carried out by a competent contractor in accordance with the Australian Standard. (AS. 4373 2007 - Pruning of Amenity Trees)

Lopping, as defined within the Standard, is detrimental to trees, often resulting in decay and poorly attached epicormic shoots. Natural Target Pruning methods should be used wherever possible when removing sections from trees.

7 Conclusions

7.1 Report summary

Treetec was commissioned by the Metropolitan Planning Authority to map and assess any trees of high or very high Arboricultural Retention Value (ARV) that exist within the defined survey area of PSP 1074 - Sunbury South. The field investigations were undertaken during November 2013.

Due to the small number of High value trees within the survey area Treetec has also included in this report those trees that fall just outside the survey parameters, they are rated as 'Medium' or 'Medium/High'.

The area supports almost no mature indigenous trees except for a large Red Gum (Tree 2), a high value group of River Red Gums (P2) situated within a gully area which is a tributary to Jacksons Creek (75 Watsons Rd); although most of these trees are young regrowth there are a number of mature, high amenity specimens including one that has been included in the Register of Significant Trees of Victoria (plate 5).

A higher value Oak (Tree 3) and a Sugar Gum (Tree 1) were found as well as some smaller groups mostly of younger trees that have the potential to become higher value areas.

Three individual trees and five tree groups were classified as being of higher retention value.

8 Recommendations

Where trees or tree groups of higher retention value are to be retained, measures should be taken to protect them from adverse development related impacts.

Tree related amenity can be maximised within the precinct either through the protection of existing trees or the planting of new ones (or both).

If existing trees are to be retained they should be protected in line with AS 4970-2009 Protection of Trees on Development Sites and the general comments section of this report.

Large old trees present hazards, in particular from falling limbs; the associated risk should be considered and managed in line with Section 5.4 of this report.

9 References

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DSE (2005) Advisory List of Rare or Threatened Plants in Victoria. State of Victoria, Department of Sustainability and Environment, East Melbourne.

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Standards Australia. 2009, AS 4970-2009 Protection of trees on development sites

Standards Australia, 2007, AS 4373-2007 Pruning of amenity trees

10 Assumptions and limiting conditions

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10. Site plans, diagrams, graphs and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
11. Information in this report covers only those items that were examined in accordance with the Terms of Reference, and reflects the condition of those items that were examined at the time of the inspection.

Appendix 1. Glossary

AGE CATEGORY	The age of the tree is represented as Juvenile, Semi-mature, Mature or Senescent.	
	Juvenile:	A young tree, given normal environmental conditions for that tree it will not yet flower or fruit.
	Semi-mature:	Able to reproduce but not yet nearly the size of a mature specimen in that location.
	Mature:	Has reached or nearly reached full size and spread for that species in the given location.
	Senescent:	Has passed maturity, tree health in a state of decline.
AMENITY VALUE	A judgment of amenity and/or utility the tree provides based on Species, size, Age, Health and local environment. Amenity may be based on ecological or landscape value or both. Documented as Low, Medium or High. Amenity value does not consider the degree of risk associated with a tree, a weedy species will not be rated as High for Amenity value.	
ARBORICULTURAL RETENTION VALUE	A rating assigned to a tree or group of trees related to the value of retaining those trees in situ. The judgement is based on Tree condition (Health, Structure & Form), Useful Life Expectancy (ULE), Origin and Age. Age is a primary consideration as it is the determining factor when considering how long it would take to replace the amenity lost when trees are removed.	
	Very High	• Mature tree in good condition, long lived species with Very High Amenity value • Semi-mature or mature rare species in fair to good condition
	High	• Semi-mature to Mature tree in good condition, long lived species with a high Amenity rating • Juvenile rare species • Trees of moderate condition that offer exceptional amenity due to factors such as species, size or ecological value
	Moderate	All trees that don't fit in the alternative categories and that have a ULE of 15+ years
	Low	• Juvenile trees (not including rare species) • weeds that offer Medium or high amenity value
	Nil	Contribution in the landscape is of no value or detrimental – usually associated with small dead or dangerous trees or environmental weeds
CAMBIUM LAYER	A layer of cells between the bark and wood tissue that divide to form new cells. Usually a slimy green layer just under the bark.	
CANOPY SPREAD	Overall size of the canopy as looking from a plan view. Recorded at the widest point.	
CO-DOMINANT STEMS	Two stems of approximately the same thickness and height originating from the same position in the tree.	

CROWN WIDTH	See 'Canopy spread'	
DBH (diameter at Breast height)	The diameter of the trunk measured at or near 1.4m above ground level. Where there is more than 1 stem originating below 1.4m the measurement recorded is calculated as described in AS 4970-2009	
DEAD (AS DEAD)	Cessation of all metabolic processes (or very soon to be)	
DE-OXYGENATION	A lack of oxygen, normally referring to the state of the soil	
EPICORMIC SHOOTS	Re-growth from the trunk or branches, originating from dormant buds under the bark, usually poorly attached, often an indicator of tree stress.	
FORM	Reference to the symmetry of the crown as observed from all angles and in accordance with the morphology of that species, and documented as Poor, Fair or Good.	
HAZARD	Anything that has the potential to cause injury or damage	
HEALTH	A trees vigour as exhibited by the crown density, leaf colour, seasonal extension growth, presence of stress indicators, ability to withstand diseases and pests, and the degree of dieback.	
	Dead:	Cessation or near cessation of all metabolic processes
	Poor:	Indicating symptoms of extreme stress such as minimal foliage, or extensively damaged leaves from pests and diseases. Death probable if condition of tree deteriorates.
	Fair:	Not nearly of 'Good' condition (see below)
	Good:	Usual for that species given normal environmental conditions – full canopy with only minor deadwood, normal leaf size and extension growth, minimal pest or disease damage
	Excellent:	Better than usual for that species under normal conditions
HEIGHT	The distance in metres from the ground to the highest point in the crown, calculated in the vertical plane. This measurement unless otherwise specified is an estimation only.	
INCLUDED BARK UNION	A union within a tree that has included bark (bark pressing on bark), these unions are usually poorly attached and more likely to fail as the included bark is equivalent to a split. Often characterized by an acute angle and sometimes forming ribs or flaring immediately below the union where the tree reacts to the weakness by placing secondary growth. Though these unions are weaker than a 'good ' union, the risk of failure cannot be calculated.	
LOPPING / TOPPING	The removal of parts of a tree giving no consideration to the trees natural defence systems.	
ORIGIN	Origins of the species related to its setting – Indigenous is native to that location, Non-indigenous Native is Australian but not local, Exotic is not from Australia. Sometimes a classification of Weed will be assigned; this indicates that the species is generally unwanted within this geographic area (regardless of origin)	
PATHOGEN	Disease causing agent	
PRUNING	Systematic removal of branches of a plant whilst giving consideration to the trees natural defence systems.	
RETENTION VALUE	See 'Arboricultural retention value'	
RISK	The chance and degree of injury or loss presented by a hazard	
SPECIES	A group of interbreeding individuals not interbreeding with another such group.	

STRUCTURAL ROOT ZONE (SRZ)	The area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres. This zone considers a tree's structural stability only, this is different from the root zone required for a tree's vigour and long-term viability, which will usually be a much larger area.	
STRUCTURE	Reference to the structural integrity of the tree with consideration of the crown, trunk and roots. Determined using the Visual Tree Assessment (VTA) method (Matheck and Breloer 1994) . The failure of small (<60mm calliper) live or dead limbs is normal and not considered here.	
	Very poor:	Clear indications that a significant failure is likely in the near future
	Poor:	Signs of structural weakness obvious and failure likely, one might expect a significant failure event within the next 5 years, possibly tomorrow
	Fair:	Signs of weakness present though not obviously significant, likely to become worse over time
	Good:	No obvious signs of structural weakness
TARGET	People or property	
TREE NUMBER	Identifying number allocated to individual trees or groups of trees, may be used to locate trees using site plans or tags on trees.	
TREE PROTECTION ZONE (TPZ)	An exclusion area that allows for protection of canopy and roots; both the structural roots that give the tree stability and the smaller absorption roots. The radius of the TPZ is normally calculated for each tree by multiplying the DBH × 12. The minimum distance will be 2m and maximum 15 as stipulated in the Australian Standard 4970-2009 – Protection of trees on development sites. For River Red Gums within Whittlesea City Council boundaries the City of Whittlesea Tree Protection Zone calculation method should be applied	
TREETEC REFERENCE	Unique identifier assigned to an individual report by Treetec	
ULE	Useful Life Expectancy is an estimation of how many years a tree can be retained in the landscape provided growing conditions do not worsen and any recommended works are completed. It takes into consideration factors such as species, age, health, defects / hazards and site conditions.	