STRATHBOGIE SHIRE COUNCIL

ORDINARY COUNCIL MEETING - URGENT BUSINESS

TUESDAY 18 DECEMBER 2012

Steve Crawcour
CHIEF EXECUTIVE OFFICER

14 December 2012

12. URGENT BUSINESS REPORTS

12.2 INFRASTRUCTURE

12.2.1 Tree Management – Seven Creeks Park, Euroa Township

Author and Department
Director Asset Services / Asset Services Directorate

File Reference
L10/E180/11

Disclosure of Conflicts of Interest in relation to advice provided in this report
The author of this report and officers/contractors providing advice in relation to this report do not have a direct or indirect interest, as provided in accordance with the Local Government Act 1989

Summary
A plan of management for three trees adjacent to Seven Creeks, the subject of recent community interest, has been prepared for Council consideration.

RECOMMENDATION

For decision.

Background

The trees are listed within Council's tree register as follows:

Tree No.	Species	Location
E58	Red Gum (Eucalyptus Camaldulensis)	Kirkland Avenue adjacent to Rotary BBQ shelter
E243	Red Gum (Eucalyptus Camaldulensis)	Foy Street, midway between Tarcombe Street and Templeton Street
E524	Red Gum (Eucalyptus Camaldulensis)	Corner Slee and Spencer Streets

Each of these trees has been examined by an arborist as part of Council's tree management program, and management works have been commenced on each.

A description of work to date, related issues and a suggested plan of management is as follows.

12.2.1 Tree Management – Seven Creeks Park, Euroa Township (cont.)

Work to date

E58

The findings of arborist Mark Lawson are contained in the visual tree inspection report dated 6th October 2011 and the tree management spreadsheet. Council has accepted Mr Lawson's recommendation that the tree should be removed and partial removal has been completed. Because of its potential to be removed and replaced in the park as a wood carving artwork, the twin trunk, approximately 8 metres high has been left in place awaiting the availability of a crane and float to take it off site.

E243

Arborist Mark Lawson has recommended removal of this tree – refer to visual tree inspection report dated 3rd October 2011, Page 17 and the tree management spreadsheet. Council has accepted Mr Lawson's recommendation and undertaken the work of fencing out a work area for possession of the appointed contractor. The tree removal contract has been frustrated by the unlawful occupation of the worksite by some community members.

For both E58 and E243 the work of removal has been considered as follows:

- Public Consultation and inspection January 31, 2012.
  - No submissions received.
- 2012/13 Budget Process.
  - Funding allocated July 2012
- Planning approval obtained.
  - July 3, 2012
- Contractor appointed November 29, 2012
- Work commenced December 3, 2012

E524

The tree referred to as the "Swaggy Tree" is of significant cultural value. Arborist Richard Kelaart has assisted Council's works unit in its efforts to prevent the collapse of the tree. Mr Kelaart has recommended that a chain be placed around the truck and that the tree be pruned at five locations as shown on the attached photo, all to protect the shell against catastrophic failure.

To date the chain has been placed around the tree. The work of trimming has been delayed to allow Council to consider the view expressed by a member of the Euroa Environment Group to the effect that only one cut should be made, the public excluded from its proximity and that the tree be allowed to collapse in time.

12.2.1 Tree Management – Seven Creeks Park, Euroa Township (cont.)

Issues and Plan of Management

E58

The remaining issues for this tree are that of:

- Unsightliness of the remaining stump
- Cost associated with its removal, and
- Potential for relocation as an artwork ($10,000 budget allowance)

Plan of Management E58

The action recommended is to engage the contractor to cut up and remove the stump at the quoted price of $1,500.

E243

The issues for consideration are:

Public Risk
Council has temporarily mitigated the risk identified by Mr Lawson by fencing out the areas. Public Liability issues will be triggered by removal of the fencing without mitigation of the risk.

Cost
Fencing here, originally estimated at $800 for one working day, had potential to cost many thousands of dollars for a possible delay of two weeks. The fencing has been purchased to avoid a budget overrun. The tree removal cost of $2,400 is accommodated within the budget.

Road Closure
Foy Street has been closed under the provisions of Section 6, Schedule 11 of the Local Government Act 1989, to allow works adjoining the road. Council will need to commence processes for a more permanent closure if the works cannot be completed.

Inconvenience of adjoining residence
The Council has received one complaint to date. The resident is supportive of Council's proposal to remove the tree, following consultation with the arborist on site in 2011, but requests an apology for current inconvenience.

The Euroa Environment Group has provided Council with an additional report on tree E243 by Arborist, Ben Kenyon (refer attached). This report suggests trimming of the tree as an alternative to removal. The exact extent of the trimming is not prescribed.

Trimming is considered to be an acceptable alternative provided that it achieves removal of unsound material to fully address public risk, without the need for restriction of public access within the road reserve. The arborist has provided opinion that trimming will achieve a low risk level. This is taken to mean that the risk of tree failure would be low. The consequence of failure could be death or injury to persons using the roadway, and accordingly Council's risk rating is extreme.

12.2.1 Tree Management – Seven Creeks Park, Euroa Township (cont.)

Such work could proceed under the detailed supervision of an independent arborist to relevant standards.

Plan of Management E243

It is recommended that:

- Trimming of the tree proceed to the minimum extent necessary to remove unsound material under detailed supervision of an independent arborist.

E524

- The main issue is the prevention of the total collapse and the loss of the tree. This can be prevented by pruning as recommended.
- The ancillary issue is the protection of the public into the future within the pruned drop zone.
- The closure or partial closure of the footway and roadway will also need to be considered if the identified work is not mitigated by pruning as recommended by the arborist.

Plan of Management E524

It is recommended that Council:

- Proceed with trimming as recommended by the arborist, and
- Install protective fencing and associated armco railings, all to relevant standards

Budget Implications
The above plans of management can be undertaken within the 2012/13 budget. Details are as follows:

Trees included in Mark Lawson's reports

Trees removed to date	$18,890.00
Trees being removed 13/12/12	$2288.00
Tree 112 (not being removed at this time)	$800.00
Contractor Standby due to frustration	$400.00
Fencing hire for tree 58	$850.00
Tree 243, Foy Street (still to be removed)	$2400.00
Finish tree 58 (BBQ) cut and remove stump	$1500.00
Purchase security fence (finalized)	$4200.00
Total	**$31,328.00**

Swaggy Tree

Arborist report	$1200.00
Place chain around failure (maintenance)	$600.00
Trim tree as per arborist report (maintenance)	$3000.00
Permanent fencing, pool fence (tree management)	$10,000.00
Barrier fence in Slee Street (tree management)	$4500.00
Total	**$19,300.00**

12.2.1 Tree Management – Seven Creeks Park, Euroa Township (cont.)

Alternative Options
Alternative options have been considered in the report.

Risk Management
Significant Risk Management factors have been outlined in the report.
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Strategic Links – policy implications and relevance to Council Plan
The author of this report considers that the report is consistent with Council Policies, key strategic documents and the Council Plan

Best Value / National Competition Policy (NCP / Competition and Consumer Act 2010 implications
The author of this report considers that the report is consistent with Best Value, National Competition Policy and Competition and Consumer Act requirements.

Financial / Budgetary Implications
The author of this report considers that the recommendation has no capital or recurrent budget considerations.

Economic Implications
The author of this report considers that the recommendation has no significant economic implications for Council or the broader community.

Environmental / Amenity
The author of this report considers that the recommendation has no significant environmental or amenity implications for Council or the broader community.

Community Implications
The author of this report considers that the recommendation has no significant community or social implications for Council or the broader community.

Victorian Charter of Human Rights and Responsibilities Act 2006
The author of this report considers that the recommendation does not limit any human rights under the Victorian Charter of Human Rights and Responsibilities Act 2006.

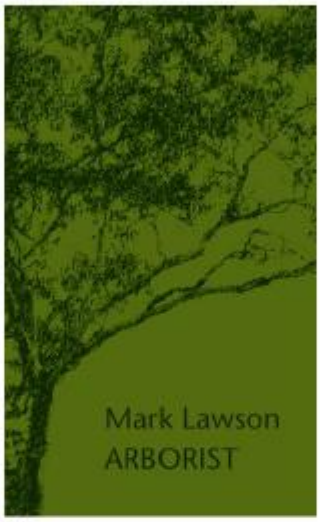
Legal / Statutory Implications
The author of this report considers that the recommendation has no legal or statutory implications which require the consideration of Council.

Consultation
The author of this report advises that Council's proposals have been subject to extensive consultation.

Attachments
Mark Lawson Visual Tree Report 6th October 2011
Relevant spreadsheet page
Mark Lawson Visual Tree Report 3rd October 2011
Richard Kelaart, Arborist
Report on tree E243 provided by Arborist, Ben Kenyon

Visual Tree Inspection Report

Eucalyptus *camaldulensis* (River Red Gum)
Apex Park, Euroa Victoria



Written By:
MARK LAWSON
Arborist
ABN: 76563354713
6 October 2011

Mark Lawson
ARBORIST

043 2392 001

PO Box 86
Woodcroft SA 5162

ABN: 76563354713

30 August 2011

Mr Roy Hetherington
Sire of Strathbogie Vic

[Roy.Hetherington@strathbogie.vic.gov.au]

Re: Arboriculture Visual Tree Inspection Report
Eucalyptus *camaldulensis* (River Red Gum)
Apex Park Euroa Vic

Dear Roy

I am writing with reference to the visual tree inspection performed on 16 September 2011 at 1400 hrs on the health, root spread/damage and condition of a singular Eucalyptus *camaldulensis* (River Red Gum), located at the above mentioned address.

The visual tree inspection was performed from ground level with climbing. The weather at the time was sunny and clear with no wind.

SITE

The tree is situated on the south western side of Apex Park and about 15 Metres from the BBQ area. The tree is not the only tree on the land but I'm of the opinion that it cannot be mistaken for any other tree.

Tree

Tree at location

Tree at location the tree looking from the east

History of the Site

I would believe the tree would be of an age of more than 100 years due to the size of the base and the location on the river bank. I have been informed that the area has had a ten year drought and now has seen a number of floods which have covered the roots of this tree. I'm of the understanding that this type of tree is well known to have deep roots so flooding should not be such an issue compared with other trees.

Tree Details:

Trunk Circumference : +2000 mm

Tree Height: 20+ Metres

Crown Spread: (approx only)

North:	15 Metres
South:	12 Metres
East:	10 Metres
West:	8 Metres

TREE/ROOT BASE

The tree's root base is on flat level ground in a typical reserve on a river. A number of times a year a major show and shine is placed in and around the base of this tree which could have place a small amount of soil compaction to the roots of this tree.

Soil compaction harms tree roots by reducing oxygen and water exchange which inhibits root expansion. Trees in compacted soils are smaller, less healthy, and will die sooner if the compaction is left untreated. It is a serious matter which could have catastrophic affects.

A tree's root system is the most vital organ on a tree. When roots fail to work properly the tree will eventually decline and die.

Due to this happening yearly, I would say at this time of year that it would have a high volume of traffic. It is well known for this type of tree to drop major branches without warning but it does happen more in summer months than that of other months. Therefore council should have an inspection of this area before events occur.

No mushrooms/toadstools were present on or around this tree. Mushroom/toadstools can be an indication of decay to the root systems or trunks of trees, they attack trees that are in stress and will feed off them. This can lead to catastrophic effects on the health of a tree and in many cases lead to the death of a tree.

No surface roots where seen and a sub surface inspection was not warranted.

Base of the tree

TRUNK CONDITION & MAIN SCAFFOLD BRANCHES

The tree was measured at over 2000mm in circumference at 1metre above ground level, the tree is native and state approval must be gained before this tree is removed.

The tree bark is a smooth cream/grey and tan with some course bark at the base which helps to identify the tree as a Eucalyptus *camaldulensis (*River Red Gum).

The main scaffolding branch union is at approximately 2 metres in height and appears to be in an average condition.

The tree forks at 2 metres into two main scaffolding branches, a multi stemmed one which grows in a southern direction and the other in a northern direction. They then fork again at various heights to form the secondary scaffolding branches.

Multi stemmed tree

Due to the formation of this tree I would like to point out the following quotes, 'Multi-stemmed tree stems typically grow away from each other towards the light rather than staying upright by means of tension-wood formation, then their growth in thickness acts like a set of wedges to drive them apart at the base of the stem cluster. This means that the cluster is suicidally programmed to fall apart (Mattheck and Breloer 03).'

The main scaffolding branch which heads in a northern direction is a major concern as about 4 metres up a wound can clearly be seen. On this wound is a major bracket fungus which will in the future aid in the failure of this tree. More trees fail with bracket fungus than without.

The Fungi will penetrate the timber and destroy the eternal part which is unable to be seen there for the amount of decay would be unknown and unsafe. I have had some research done on the fungi and it would come under the Polyporoid Fungi "Most species of this very large group are involved in the decay of wood, some are destructive tree parasites" (A.M. Young, A Field Guild to the Fungi of Australia, 2005).

This is a clear hazard and it is clear to see that there is major possibility this tree will fail, removing this large branch will unbalance the tree. Pruning this is not an opinion as this is a dangerous scaffolding branch and will fail to the north. I would not allow my children, if I'd known about how dangerous this branch could be, to play under or near this tree.

A number of large branches have fallen from this tree over the past year, reasons are unknown, and however termite damage and Sudden Limb Failure (SLF) cannot be ruled out. Thankfully no one has been injured as this type of tree is well known to drop branches at any time. Please note the same type of trees below which have dropped branches in rear gardens. It is my opinion this tree will fail on the northern side and this will unbalance the tree.

SLF is a common problem for many species of trees including exotic trees, it almost always affects limbs held in a horizontal or near horizontal plane; though more upright limbs have also been known to fail due to SLF. Defects do not have to be present; however, if wounds or decay are present the risk of SLF is usually exacerbated.

CROWN/STRUCTURE & DEVELOPMENT

The crown of this tree is very large and covers a large area of the reserve. The potential of a failure should be a concern to the owners of homes so close to the tree.

Many of the branches in the crown are long and over-weighted and would be subject to SLF. Other branch unions on the tree are in a poor condition and pose the threat of failure; this is due to wild life damage and hollows.

Within in the crown a large number of hollows could be seen, which had compromised the TR Ratio. The area is a concern and holds a large amount of weight above the fault which could fail at any time.

Pictures take at height by climbing the tree

The TR Ratio is a calculation established by Mattheck & Breloer which is used to calculate the strength of hollow stems. Mattheck & Breloer's criteria for strength assessment of hollow stems are as such:

a) Normal safety factor of solid stem
b) Safety factor reduced by only 29% due to central cavity occupying 2 thirds of stem diameter
c) Stem with safety factor estimated as similar to b) having an eccentric cavity occupying half of stem diameter and minimum wall thickness one third of depth to centre of cavity
d) Cavity as in b), but with no safety factor remaining, due to an opening occupying one third of stem circumference

Please not the picture below it is my opinion this would be (D)

I do not believe pruning will save this tree as no arboriculture practice could stop the spread of the disease through the tree; pruning will not guarantee the safety of people working pass or stop this tree from failing. Removing some of the crown could be a possibility but again this will off balance the tree and open the tree up to Asymmetrical wind loading "slowly twists the branches around the observed direction, this in turn can put strain and stress onto this part of the tree and may fail" (Larry Gedney, University of Alaska).

VIGOR/GROWTH

This tree is over mature and has been maintained in the past but the tree's lower branches have all been removed which has lions tailed some of the branches. The vigour and growth will decline due to the fungi bracket growing on the side of the northern scaffolding branch. If it is not happened already doing so.

LIFE EXPECTANY

X	**Less than 5 years(before a failure)**
X	**5-10 years(before a failure)**
	10-25 years
	Over 30 years

(Severe weather/pest and disease can alter tree life expectancy)

POTENTIAL/IMMINENT THREATS

This tree has the potential to fail and cause major structural damage and/or serious injury to visitors to the area (if it were to remain). Probable contributing factors for failure are as follows:

- Long and over-weighted branches – subject to SLF
- Fungi growing of the northern scaffolding branch (Southside)
- Dead wood
- Maintenance
- Soil compaction
- Hollows
- Termite damage (as other tree have this which are close by)
- This type of tree is well known to drop branches

Environmental Assessment:	
Does the tree make an important contribution to the character or amenity of the area? *(The tree does contribute to the amenity of the area; however, we must also not over look the safety aspect for the residents and children).*	**Yes**
Is the tree indigenous and rare or endangered? *(This tree is not rare or endangered but is indigenous).*	**Yes**
Does the tree represent important habitat for native fauna? *(Yes this tree would provide important habitat for native fauna from the hollows or wild life nests we must also not over look the safety aspect for the residents and children as the TR Ratio has failed on a number of areas in the tree).*	**Yes/No**
Is the tree part of a wildlife corridor or area of remnant vegetation? *(I believe that the tree could be remnant vegetation).*	**Yes**
Does the tree have local biodiversity significance? *(Yes this tree would have some biodiversity significance; we must also not over look the safety aspect for the residents and children).*	**Yes**
Is the tree a notable visual element of the local area? *(Yes this tree can be seen from a number of directions but in the future if the council replant this would be a safer plan, removing one tree from this area will not affect the overall appearance).*	**Yes/No**
Is the tree considered to be significant? *(This is a significant tree and in Victoria it would be classified as Native and would need state approval for the removal).*	**Yes**

Hazard Risk Assessment:

Identifying and managing hazards associated with trees can be a subjective process. To produce a user-friendly Tree Hazard Assessment system Matheny and Clarke (1994) has been used. Matheny and Clarke (1994) state that Tree Assessment comprises of 3 parts:

- A tree with the potential to fail
- An environment that may contribute to the failure
- An object or person that may be damaged or injured. (target)

Failure rating: can generally be defined as:

- Defects are minor (small dead wood) with good wound wood present.
- Medium defects are present and obvious (cavities 10-25% of the trees circumference, co-dominant stems without included bark).
- High numerous or significant defects (cavities 30-50%, multi pruning wounds with decay)
- Severe Heart rot and fungal brackets with decay or cavities covering over 50% of the trunk.

Size of limb:

The actual measurement of the limb that is in question.

Target rating:

This would indicate the potential users and level of frequency that may be attributed to the area i.e.

- Occasional Use is likened to a jogging or cycling track
- Intermittent Use is likened to a picnic area or day parking
- Frequent Use is likened to a storage or camping area
- Constant Use is likened to a home or in use for many hours

TOTAL RISK RATING CAN BE SUMMARIZED AS FOLLOWS:

A high number does not necessarily mean the tree must be automatically removed. There are a number of Arboriculture management techniques (e.g. pruning, limb removal, weight reduction and even cabling) which can effectively reduce the failure and size of the limb to an acceptable level. The target rating can also be effectively lowered by excluding persons from the site.

Risk Rating Summary Table

Failure Potential:	1 Low	2 Medium	3 High	*4* *Severe*	*4 Fungi on scaffolding branch*
Size of Limb in mm:	1 450	2 150-450	3 450-750	*4* *750+*	*4Large scaffolding branch could fail*
Target Rating:	1 Occasional Use	2 Intermittent Use	3 Frequent Use	*4* *Constant Use*	*4 due to the amount of buses which stop for tea and shows I would say it would be a 4*
Total Risk Score:					*12*

RECOMENDATIONS & OBSERVATIONS

Tree safety and the associated management of risk is a matter of limiting the risk of significant harm from partial or complete tree failure whilst maintaining the benefits trees provide to our communities. Although it may seem counter intuitive, the condition of trees should not be the first consideration. Instead, first consideration should be given to the usage of the land on which the tree or trees occupy.

Responsible risk management of trees must address the balance of safety with tree values, and operate to a predetermined limit of reasonable or acceptable risk. Whilst in some cases this will allow tree retention with a degree of management/maintenance processes, in other cases it will advocate complete tree removal. (Adapted from Quantified Tree Risk Assessment).

Following extensive analysis and careful consideration, it is my professional opinion this tree should be removed. To support my recommendation, I summarise the following points:

- The tree has the potential of catastrophic failure and to cause serious injury,
- As we know this type of tree will fail and is known to drop large branches
- The tree has many hollow which have compromised the TR ratio
- The tree has bracket fungi growing on the tree. Most species of this very large group are involved in the decay of wood, some are destructive tree parasites
- An accepted model of risk/hazard analysis reveals a rating of 12;
- The tree represents an unacceptable risk to public safety
- The right of the occupant(s) to enjoy their property is limited, reduced or otherwise compromised;
- All forms of remedial action designed to retain and manage the tree have been considered and discounted;
- Written permission should be sighted by any tree contractors before commencement of any work
- The branches of the tree are long and over weighted leaving them subject to SLF
- The tree is multi-stemmed and more trees fail because of this than any other
- It is clear to see the scaffolding branches are growing away from each other opening the crown up to the elements
- Due to the last storm, I witnessed a large amount of trees that have failed with the same degree of problems as this tree has
- Pruning of this tree is not unrealistic
- There is a strong possibility that the tree could have termites due to other tree close by having them
- The tree is in stress due to the past ten years of drought
- The state Government should be held responsible if this tree was to remain
- The Sire should ensure all paper work is held on this tree from he state, in the case the tree is not removed
- Removing this tree could place extra stress on the other trees as this tree in the reserve could have been stopping the major wind from hitting the other trees, therefore they should be regularly checked after storms or failures

The tree in question has been assessed by the following questions

i. *the tree is diseased and its life expectancy is short Yes Fungi brancket fungus*
ii. *the tree represents an unacceptable risk to public or private safety; orYesthis tree could fail due to many faults*
iii. the tree is within 20 metres of a residential, tourist accommodation or habitable building and is a bushfire hazard within a bushfire prone area; or
iv. *the tree is shown to be causing or threatening to cause substantial damage to a substantial building or structure; Yes The tree could hit the BBQ area and seating area*
v. *all other reasonable remedial treatments and measures have been determined to be ineffective. Yes Pruning will not save this tree or stop the spread of the fungi*

If you need any further clarification or information, please do not hesitate to contact me on 0432392001.

Yours sincerely

M Lawson
Dip Horticulture (Arboriculture)
HNC Arboriculture
Sunderland University
QTRA No.: 1326
ISA Member: 1632

BIBLIOGRAPHY:

Garnweidner, E (1996)	"Mushrooms and Toadstools of Britain & Europe" Harper Collins Publishers, 77-85 Fulham Palace Road, London
Lonsdale, D (2001)	"Principles of Tree Hazard Assessment and Management" The Stationary Office, London.
Mattheck, C Breloer, H (2003)	"The Body Language of Trees" The Stationary Office, London.
Shigo AL (1986)	"A New Tree Biology" Shigo and Tree Associates, Durham, New Hampshire
Strouts, RG Winter, TG (2000)	"Diagnosis of Ill-Health in Trees" 2nd Edition TSO, Norwich.
Legal Services Commission of South Australia (2004)	Trees and the Law – A guide for neighbours

DISCLAIMER AND LIMITATIONS

This report only covers identifiable defects and issues present at the time of inspection. The author accepts no responsibility or can be held liable for any structural defects or unforeseen event/weather conditions that may occur after the time of the inspection and assessment, unless clearly specified within timescales detailed within the report.

The author cannot guarantee trees contained within the report will be structurally sound under all circumstances and cannot guarantee that the recommendations made will categorically result in the tree being made safe.

Unless specifically mentioned, this report will only be concerned with issues above ground, and are undertaken visually. It is suggested that trees are living entities and as such are subject to forces and influences out of the control of the author. The recommendations are made on the basis of what can be reasonably identified at the time of the inspection; therefore the author accepts no liability for any recommendations made.

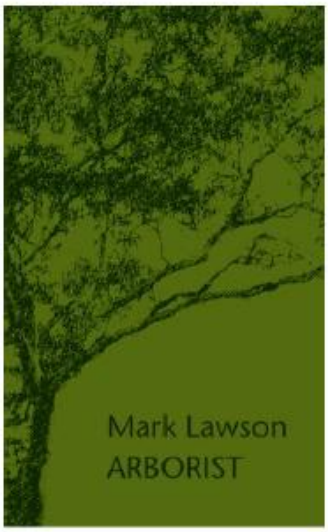
Care has been taken to provide information that is based on sound arboriculture practices and standards. The author accepts no liability for actions undertaken by third parties in undertaking any of the arboriculture work as recommended. All data has been verified and based on sound arboriculture standards, however the author cannot guarantee nor is responsible for the accuracy of information supplied by third parties.

Note: This report is valid for three months from report date.

Tag No	Botanical Name	Common Name	Area Location	Site Occupancy	Height	Circumference	DBH	Age	Crown	Trunk	Roots	Priority	Risk	Condition	Photo	Special Values	Comments
E00058	Eucalyptus camaldulensis	River Red Gum	Apex Park 372716.7646 5931592.5137	Parks -A	25m	5.6m	NA	Mature	25NS 17EW	Poor due to bracket fungus	Good	1	12	Hazard (see comments)	Y	Protected by Government Agency	[redacted]
E00059	Eucalyptus camaldulensis	River Red Gum	Apex Park	Parks -A	25m	3.8m	NA	Mature	18NS 24EW	Good	Good	3	10	Good	N	Protected by Government Agency	Minor dead wood removal.
E00062	Eucalyptus camaldulensis	River Red Gum	Apex Park	Parks -A	25m	6.60m	NA	Mature	20NS 16EW	Termites on northern trunk	Good	1	11	Fair	Y	Protected by Government Agency	Termite treatment required. Crown reduction required. Hollow in crown. Remove dead wood. Multi-stemmed trunk (see footnotes). Large limb failure south side. Remove dead hanging branch south side (approx 20m up).
E00061	Eucalyptus camaldulensis	River Red Gum	Apex Park	Parks -A	25m	3.95m	NA	Mature	17NS 12EW	Good	Good	5	9	Good	N	Protected by Government Agency	Hollow located in crown - habitat (galahs).
E00060	Eucalyptus camaldulensis	River Red Gum	Apex Park	Parks -A	23m	3.35m	NA	Mature	21NS 19EW	Good	Good	2	10	Good	N	Protected by Government Agency	Reduction of crown south side. Large limb failure north side
E00063	Corymbia citriodora	Lemon-scented Gum	Apex Park	Parks -A	11m	1.55m	NA	Young	13NS 10EW	Included bark (see footnotes).	Good	5	7	Good	N	Specimen	Multi-stemmed trunk (see footnotes). Included bark (see footnotes). Crown to be monitored as it will interfere with E00061. Crown lift required.
E00151	Eucalyptus camaldulensis	River Red Gum	Apex Park	Parks -A	22m	2.30m	NA	Semi Mature	7NS 9EW	Poor due to epicormic growth (see footnotes).	Good	2	10	Poor	N	Protected by Government Agency	Remove dead wood. Epicormic growth (see footnotes) due to drought conditions.
E00065	Eucalyptus camaldulensis	River Red Gum	Apex Park	Parks -A	30m	5.15m	NA	Over Mature	20NS 20EW	Good. Forks at 7m (multi-stemmed) (see footnotes).	Good	1	11	Fair	Y	Protected by Government Agency	Reduction of major limbs to reduce possibility of SLF (see footnotes). Remove all dead wood. Aerial damage of unions due to habitat damage
E00064	Eucalyptus camaldulensis	River Red Gum	Apex Park	Parks -A	22m	3.0m	NA	Semi Mature	12NS 11EW	Good. Fork 5m (multi-stemmed) (see footnotes).	Good	4	9	Good	N	Protected by Government Agency	Crown off balance to the south due to E00065.
E00071	Eucalyptus camaldulensis	River Red Gum	Apex Park	Parks -A	25m	3.50m	NA	Semi Mature	12NS 11EW	Poor due to major failure.	Good	2	11	In decline	Y	Protected by Government Agency	[redacted]

E237	Eucalyptus camaldulensis	River Red Gum	Charles Kemp Park	Parks - B	20m	1.32m	NA	Young	NS over river 6EW	Good	Good	5	9	Fair	N	Protected by Government Agency	Fair due to structure. Minor epicormic growth (see footnotes) present. Minor deadwood leave for habitat. Leans to the south west. If failure was to occur likely to fall in river.
E241	Eucalyptus camaldulensis	River Red Gum	Charles Kemp Park	Parks - B	22m	2.43m	NA	Semi Mature	4N over river 11EW	Forks at 2.5m (multi-stemmed) (see footnotes).	Good	5	9	Good	N	Protected by Government Agency	Epicormic growth (see footnotes) present. Remove deadwood on northern side.
E244	Eucalyptus camaldulensis	River Red Gum	Charles Kemp Park	Parks - B	10m	870mm	NA	Young	NS over river 7EW	Good	Good	5	8	Good	N	Protected by Government Agency	No work required.
E242	Eucalyptus camaldulensis	River Red Gum	Charles Kemp Park	Parks - B	25m	4.05m	NA	Mature	22NS 19EW	Forks at base (multi-stemmed) (see footnotes) x2. Second fork at 1m.	Soil compaction on north side due to bitumen road.	5	9	Good	N	Protected by Government Agency	Remove deadwood. Minor nopy lift. Reduce laterals over road.
E243	Eucalyptus camaldulensis	River Red Gum	Charles Kemp Park	Parks - B	25m	3.25m	NA	Mature	20NS 17EW	Forks at 5m (multi-stemmed) (see footnotes). Second fork at approx. 7m.	Good	1	11	Hazard (see comments)	Y	Protected by Government Agency	[redacted]
E245	Eucalyptus camaldulensis	River Red Gum	Charles Kemp Park	Parks - B	22m	2.45m	NA	Mature	6N over river 12EW	Good	Good	5	8	Good	N	Protected by Government Agency	Predominately leans over the river. Few minor failures. If large failure was to occur likely to fall in river. Leave deadwood for habitat. Remove vine (Wandering Dew) along riverbank (environmental weed).
E247	Eucalyptus camaldulensis	River Red Gum	Charles Kemp Park	Parks - B	18m	2.50m	NA	Mature	13N over river 13EW	Forks at base (multi-stemmed) (see footnotes).	Good	3	10	Fair	N	Protected by Government Agency	Fair due to structure. Tree on lean. Reduce north lateral. Reduce western lateral. Remove deadwood. Minor epicormic growth (see footnotes). Pruning evident.

Visual Tree Inspection Report for the Shire of Strathbogie, Victoria, Australia



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8 October 2011

Shire of Strathbogie
P.O. Box 177
EUROA, VICTORIA 3666

Re: Arboriculture Visual Tree Inspection Report on Six Areas Charles's Kemp, Apex and Seven Creeks Parks in Euroa

Dear Roy,

We are writing with reference to the visual tree inspection performed between 16 September 2011 and the 23 September 2011 on the health, root spread/damage and condition of a large amount of assorted trees, most of which are *Eucalyptus camaldulensis* (River Red Gum), with one reserve which is predominately non-native to the area. These trees are located at the above-mentioned addresses.

The inspection at first was only to do five reserves, which are:

- Charles Kemp north of the creek;
- Euroa Apex Park (Apex Park) south of the river (adjacent Charles Kemp);
- Apex Park north and south on the river (Two Reserves); and
- The area which is for the farmer market behind the RSL.

We were also then asked for other reserves to be done if time permits (note quoted for), which are:

- Area which is south of the Bowling Club; and
- Area which is north of the Caravan Park over the river.

Due to the amount of hours worked through the day I would like to point out all the reserves where completed.

The visual tree inspections where performed from ground level with only two trees climbed. The weather at the time was sunny and clear.

An underground root inspection was not carried out, or quoted for. Many of the trees are *Eucalyptus camaldulensis* (River Red Gum), which are well known to have deep root systems. However, other trees may have been affected by previous floods and drought which have occurred over the last 10

years in the area. Pathogens may have been spread from high up river and may have affected the roots of some of the trees and this cannot be detected by any Arborist, as no method to identify this has been produced.

Our company was lucky to meet locals who have allowed us to use their photos in this report to show how far the water level came above the roots of the trees. I wish to thank the following people.

- James & Zehra who live on Foy Street; and
- Helen who also live on Foy Street.

Flooding in Euroa (Apex Park) 2010

The report is broken down in to a number of areas and recommendations, they are as follows;

- A breakdown of the reserves and recommendations (Areas 1 to 7);
- A number of recommendations on how the trees should be pruned and a guide on how to check the company's qualifications who may carry out the works;
- A brief and main spread sheet of all reserves which are colour coded for easy reference (Areas 1 to 7);
- A number of footnotes;
- Pictures to help identify the trees for removal; and

Kind Regards,

M Lawson
Dip Horticulture (Arboriculture)
HNC Arboriculture
Sunderland University
QTRA No.: 1326
ISA Member: 1632

Area One - Colour Coded Light Green – Apex Park

Google Map image of Area One

The trees are located on the southern side of the creek or south west from the bridge. Most of the trees within this area are *Eucalyptus camaldulensis* (River Red Gum). Most of the trees have been pruned in the past and a number appear to have been removed. Some of the pruning has disfigured the trees and the pruning is not to the Australian Standards Pruning of Amenity Trees AS 4373-2007. The Standards are not law but they are a guide on how to prune and look after trees.

View of Apex Park

The area has a large high canopy which should remain. Within this area there are two trees which have been recommended for removal (refer to spreadsheet and a copy of the attached report for the large western tree close to the footbridge).

Some young trees have been planted within the area, which will only provided a small canopy of about 4 metres and a height of 7-9 metres. These trees should be removed and placed in area which has small trees and lower canopies.

Some of the picnic benches are under the trees which are well known to drop branches at anytime, even if pruning has occurred. It is our opinion that they should be moved to an area which is away from directly underneath the trees. If shadow is required either place them in the shadow which the tree makes (not under the branches). Another possibility would be making a number of areas which have shade cloth or shade sails installed.

Due to this area being utilised in the past for the Euroa Show and Shine it would be suggested that the Shire does not use this area until pruning work is carried out for such purpose. The entrances should have some wood chips placed down to reduce the possibility of soil compaction, (see footnotes). The cars should not be allowed up to park close to the trunk or on the Critical Root Zone of the trees, which is about 3 metres. It is our opinion that the Shire should have a Disclaimer and Limitations, and each owner (of the cars) should sign, as the trees are living and they can drop small twigs or large branches onto the cars at anytime.

Trees to be removed in Area One

E00058

Bracket fungus found on E00058

E00071

Area Two - Colour Coded Blue – Adjacent Apex Park

Google Map image of Area Two

The trees are located on the northern side of the creek or crossing over the main bridge to the left and south of Foy Street. Most of the trees within this area are non-native *Populus* sp. It is our opinion that the *Populus sp.* are old and coming to the end of their natural life and a planting and removal programme (Tree Management Plan) should be initiated. This should be done over a number of years to maintain the reserve's amenity value.

Most of the trees have been pruned in the past and a number appear to have been removed. Some of the pruning has disfigured the trees and the pruning is not to the Australian Standards Pruning of Amenity Trees AS 4373-2007. The pruning is very poor and has caused lions tailed branches as well as epicormic growth (see footnotes). We would like to point out the Standards are not law but they are a guide on how to prune and look after trees.

Trees not pruned to AS 4373-2007

A number of the *Populus alba* where drilled and they were found to be hollow. The TR Ratio (see footnotes) was poor and the trees are in decline. One tree in particular was found to be almost completely hollow and was removed. A number of trees were tested with a sounding hammer in front of Council staff as well as an elected member, it was confirmed in front of them that the trees had hollows and are in decline.

A sample being from a *Populus sp*. taken with a decoerer.

A tree which was removed (from Area 5), which demonstrates a low TR Ratio.

The northern edge of the park is a number of *Liriodendron tulipifera* (Tulip Trees). They have been there for a number of years and have not grown to the extent or height generally expected for this species. They should be replaced with a larger species to provide a larger canopy, which would keep in line with the other creek reserves. Also within the reserve are small trees which will grow to a height of 7-9 metre. Again they should be removed with a backhoe and replaced with larger trees.

This area is a good site for the Euroa Show and Shine. However the trees do need some work and a visual inspection from an Arborist prior to the show should be carried out. Our recommendations for this area are the following:

1. The *Populus alba* numbers E00123, E00124, E00126, E00141 and E00142 should be removed within a year and replanted with other non-native trees to form a avenue of trees. Stage 2 of a Tree Management Plan would include the removal of trees E00117, E00112, E00111, E00113, E00106, E00105, E00102 and E00101. The next stage (once other trees have established a reasonably high crown) would be E00100, E00107 and E00109. It is recommended to replant with deciduous trees as this is on the northern side. Therefore in the summer they would provide shade and in the winter they would allow sun through. It is our opinion to plant large trees which has a reduced chance of sudden limb failure (SLF) (see footnotes), trees such as:

    - *Plantanus orientalis* (Autumn Glory) Height 15m+;
    - *Plantanus orientalis* (Oriental Plane) Height15m+;
    - *Plantanus* x *acerifllia* (London Plane) Height14m+;
    - *Fagus* sylvatica (European or common beech) Height 15m+;
    - *Fagus sylvatica f. purpurea* (Copper beech) Height 15m+; or
    - *Liquidamambar styraciflua* (Oakville Highlight) Height 15m +.

Trees in Area 2 that should be removed and replanted with suggestions below.

All of the above are good large trees which have good foliage and colour. They would suit a large garden or reserve and could be sourced from nurseries such as Flemings Nurseries.

2. The footpath, which comes from the area of the 7 Creeks Hotel across the reserve toward the foot bridge which has *Populus canadensis*, should also be removed. The trees are old and in decline. It is not recommended to remove all trees in the park at the same time (ie *Populus alba* and *Populus canadensis)*. The trees should be removed over a number of years and a Tree Management Plan should be initiated as soon as practical in line with the planting of the *Populus alba* removals. The trees could be planted about 5 metres to the north and south of the footpath, therefore as they grow in the height and form the others can then be removed, therefore some large trees will be left within the reserve as the *Populus sp.* are replaced.

The circled Populus Canadensis should be removed. The trees on the right should be left for the time being.

3. The *Quercus canariensis* (Algerian Oak E00087) should be acknowledged as a historic/heritage tree as it has been planted in recognition of the Lone Soldier. It is recommended that interpretive signage should be installed explaining the importance and history of the Lone Soldier and the tree that has been planted in commemoration.

4. Within the middle of this reserve is an area which is of low foliage and a mix of trees in poor condition which are growing together. This area should be removed. This area would be ideal for a small playground as no play equipment is about for young families

5. Overall three trees needed to be done as a matter of urgency and the other soon. The other as a Tree Management Plan.

It is our opinion that the Shire should have a Disclaimer and Limitations, and each owner (of the cars) should sign, as the trees are living and they can drop small twigs or large branches onto the cars at anytime.

Trees to be removed in Area Two

E00112

E00140

Area Three - Colour Coded Purple – Park at Rear of RSL

Google Map image of Area Three

The trees are located on the southern side of the creek behind the RSL Club. Most of the trees within this area are *Eucalyptus camaldulensis* (River Red Gum). The trees have been pruned in the past and a number appear to have been removed. Some of the pruning has disfigured the trees and the pruning is not to the Australian Standards Pruning of Amenity Trees AS 4373-2007. The Standards are not law but they are a guide on how to prune and look after trees.

The area has a large high canopy which should remain and replacement trees in this area should be keep to indigenous if possible or the only other trees native trees would be *Corymbia maculata* (Spotted Gum) or *Eucalyptus microcarpa* (Grey Box), which have been planted in the area already.

The trees at the (informal) car park on the western side of the RSL have major soil compaction. A number of cars are parking under the trees (which there are two of) and should stop. Or an area of mulch or flower bed be placed around the base and a wire fence to stop cars from parking underneath the trees. One tree has had major failures and the River Red Gum may drop limbs at anytime. "It has a bad habit of dropping limbs particularly during hot weather-without warning" Ivan Holliday (A Field Guide to Australian Trees).

Along the creek is a footpath, which has a large amount of deadwood over it. This should be removed. A number of the trees are in a poor (top (canopy) decline) condition. They should be monitored. It s our belief that the area may be used for markets, if this is so, the stalls should not be placed directly underneath the trees, but close to the buildings. On the creek are a number of trees which can become an environmental weed, they are *Phoenix canariensis* (Canary Island Date Palm).

Due to this area being utilised in the past for the Euroa Show and Shine it would be suggested that the Shire does not use this area until pruning work is carried out for such purpose. The entrances should have some wood chips placed down to reduce the possibility of soil compaction, (see footnotes). The cars should not be allowed up to park close to the trunk or on the Critical Root Zone of the tree, which is about 3 metres. It is our opinion that the Shire should have a Disclaimer and Limitations, and each owner (of the cars) should sign, as the trees are living and they can drop small twigs or large branches onto the cars at anytime.

Also within in this area are three trees which should be looked after as they have been planted in the honour of VC soldiers. It is recommended that interpretive signage should be installed explaining the importance and history of the VC soldiers and the trees that have been planted in commemoration.

An example of an interpretive signage
Photo: John Baker

Area Four - Colour Coded Light Orange - Charles Kemp

Google Map image of Area Four

The trees are located on two areas the southern side of the creek or south east from the bridge. The majority of the reserve however is north of the creek as you drive over the bridge the reserve is on your right. Most of the trees with in this area are *Eucalyptus camaldulensis* (River Red Gum). Most of the trees have been pruned in the past and a number appear to have been removed. Some of the pruning has disfigured the trees and the pruning is not to the Australian Standards Pruning of Amenity Trees AS 4373-2007. The Standards are not law but they are a guide on how to prune and look after trees.

The area has a large high canopy which should remain. Within this area there are a number of trees which should be removed. For further information regarding the trees which have been recommended for removal refer to the spreadsheet and photos later in this report.

Some young trees have been planted within the area, which will only provided a small canopy of about 4 metres and a height of 7-9 metres, they should stay as other *Eucalyptus camaldulensis* (River Red Gum), have also been planted which will grow to large trees. Again other large trees could be planted, for example:

- *Corymbia maculata* (Spotted Gum); and
- *Eucalyptus microcarpa* (Grey Box).

Some of the picnic benches are underneath the trees which are well known to drop branches at any time even if pruning has occurred. It is our opinion that they should be moved to an area which is away not directly underneath the trees. If shadow is required then either place them in the shadows which the tree makes (not under the branches), or prune the tree back from overhanging the benches. Another possibility would be making a number of areas which have shade cloth or shade

sails installed. This area would be a good area to place a playground as you have the 7 Creeks Hotel and the Caravan Park to the south over the bridge.

There are a number of large trees in this area. One of which is over 18 metres in circumference. This particular tree should be listed as a heritage tree for the area, there is another tree (refer to photo below). Again this is an extremely old tree and the height should be reduced and acknowledged as a heritage tree. No cars should park around this tree (or within the Critical Root Zone) even when it is pruned as the tree also has many hollows. Just because a tree has hollows is not a reason enough to remove this tree. This particular tree would be hundreds of years old and will provide major habitat value for years to come. It is recommended that interpretive signage should be installed explaining the importance of these trees.

In the middle of the reserve are a number of *Populus sp.* and other various vegetation. A number of the trees have failed and the area provides no amenity value and reduces passive surveillance within the park and this vegetation should be removed. The trees also do not fit in with the characteristics of the reserve and are dangerous. A storm, which occurred on September 19, two trees failed within this area. No one was injured.

This area provides no amenity value and reduces passive surveillance within the park and this vegetation should be removed.

On the creek banks are a number of self-seeded *Fraxinus oxycarpa* (Desert Ash) and *Phoenix canariensis* (Canary Island Date Palm). They do provide some privacy for the Caravan Park but the environmental cost will be greater. It is recommended to remove them and plant a screen (if required) with native trees. Other large *Phoenix canariensis* (Canary Island Date Palm) upstream should be removed to stop the seedlings spreading downstream.

A number of self-seeded *Fraxinus oxycarpa* (Desert Ash) and *Phoenix canariensis* (Canary Island Date Palm) along the creek should be removed.

It should be noted that the *Fraxinus oxycarpa* (Desert Ash) and *Phoenix canariensis* (Canary Island Date Palm) are recognised by the Victorian Government and conservationists as environmental weeds. Although not listed as a Declared Noxious Weed they should be treated with caution and removed as soon as and wherever practical to do so.

One tree, which is on the north east side of the large reserve (tree number E243), was climbed and a major hollow was investigated and has *Phellinus* fungus growing. This tree is hollow and was proven to council staff to be hollow and will become more dangerous in the future. Also refer to the photo below.

Tree number E243 was climbed and a major hollow was investigated and has *Phellinus* fungus growing.

Due to this area being utilised in the past for the Euroa Show and Shine it would be suggested that the Shire does not use this area until pruning work is carried out for such purpose. The entrances should have some wood chips placed down to reduce the possibility of soil compaction, (see

footnotes). The cars should not be allowed up to park close to the trunk or on the Critical Root Zone of the tree, which is about 3 metres. It is our opinion that the Shire should have a Disclaimer and Limitations, and each owner (of the cars) should sign, as the trees are living and they can drop small twigs or large branches onto the cars at anytime.

Trees to be removed from Area 4

E00191

E217 &E218

E240

E230

E243

E226

Area Five - Colour Coded Grey - Euroa Apex Club (Apex Park)

Google Map image of Area Five

This small reserve is on the southern side of the creek (directly across from Charles Kemp Reserve) and has a number of trees. The trees should be pruned and one dead tree should be removed.

Due to this area being utilised in the past for the Euroa Show and Shine it would be suggested that the Shire does not use this area until pruning work is carried out for such purpose. The entrances should have some wood chips placed down to reduce the possibility of soil compaction (see footnotes). The cars should not be allowed up to park close to the trunk or on the Critical Root Zone of the trees, which is about 3 metres. It is our opinion that the Shire should have a Disclaimer and Limitations, and each owner (of the cars) should sign, as the trees are living and they can drop small twigs or large branches onto the cars at anytime.

Trees to be removed in Area Five

E251

E257

Refer to E254

Area Six - Colour Coded Yellow - Adjacent Lawn Bowls Club

Google Map image of Area Six

This site is south of the Bowling Club and may be used in the future for a circus, at this time we would suggest that the trees be pruned or removed before this occurs, within the area are a number of *Eucalyptus camaldulensis* (River Red Gum which are in decline. One large tree E289 which is dead for no reason (no reason for the decline was noted or found). It is a shame, as this tree has good vigour and form.

The *Unmus glabra lutescens* (Golden Wych Elm) are in a fair condition and we believe that they have a number of faults and must be monitored and may have to be removed in the future. A number of *Quercus robur* (English Oak) are young and where pruned by our company. They will be a good tree for this area and will maintain the area with very large trees, which will be safe and have a good long life.

A number of the *Populus alba* (White Poplar) are a major concern and one is completed hollow and it was removed as a matter of urgency due to major safety risks (see photo below). The *Populus alba* (White Poplar) are on the footpath towards Apex Park reserve. We are of the opinion that they should be removed due to the high volume of human traffic. The overall condition of this area is good apart from the above recommendation and the spread sheet.

***Populus alba* (White Poplar) (Tree E295) emergency removal**

Due to this area a circus and possibly Euroa Show and Shine it would be suggested that the Shire does not use this area until pruning work is carried out for such purpose. The entrances should have some wood chips placed down to reduce the possibility of soil compaction, (see footnotes). The cars should not be allowed up to park close to the trunk or on the Critical Root Zone of the tree, which is about 3 metres. It is our opinion that the Shire should have a Disclaimer and Limitations, and each owner (of the cars) should sign, as the trees are living and they can drop small twigs or large branches onto the cars at anytime.

Trees to be Removed from Area Six

E289

Area Seven - Colour Coded Orange – Caravan Park

Google Map image of Area Seven

The final area is north of the Caravan Park (the overflow for the Caravan Park). This has the majority of the high risk trees as most have been pollarded in the past. This practice is very poor and dangerous. While we were inspecting the trees two large branches failed, one of which was more than 5 metres in length, it is our opinion that more branches will fail in the future.

Epicormic branches failed in the pollarded trees.

The history of the pollarding is the trees may have been pollarded about 15 years ago and again about 18 months ago. This practice should stop.

An example of the pollarded trees in the area.

Pollarding practices gives rise to safety issues that can have substantial legal implications for Councils or other tree managers/companies.

It is not recommended to allow people to park their caravans or pitch their tents underneath the trees which have been pollarded. A tent will not provide any safety measure for the people inside the tent, whereas a caravan may provide more safety but the damage to the caravan will be very expensive. Visitors to this site should be informed of the possibility that a branch could fail.

It is recommended to only allow the people to pitch their tents to the north of this area where they are out of reach from falling branches. The trees should be removed if the area was to be as safe as possible and the State Government would have to agree to this.

Signage stating the likelihood of trees dropping branches could be placed in and around the area warning people of the danger. This will help reduce the risk of liability to the Council and management of the Caravan Park.

If the trees are removed a more suitable tree should be planted with knowledge that the council have about *Eucalyptus camaldulensis* (River Red Gum). The Council should look for other indigenous trees that have a reduced chance of dropping branches. No tree is 100% safe as storms pathogens and termites all can affect the health and life of the trees.

There are about 50% of the tree in this area have been pollarded. The Australian Standards Pruning of Amenity Trees AS 4373-2007 refers to pollarding as:

1. **This pruning process is suited mostly to deciduous trees that have been formatively pruned at an early age and should not be carried out on mature trees that have not been previously pollarded.**

2. **Pollarding is not lopping, topping or coppicing.**

3. **Trees pollarded initially and not regularly maintained can become hazardous.**

Due to this area a possibly Euroa Show and Shine and camping it would be suggested that the Shire does not use this area in or around the trees The entrances should have some wood chips placed down to reduce the possibility of soil compaction, (see footnotes). It is our opinion that the Shire should have a Disclaimer and Limitations, and each owner (of the cars) should sign, as the trees are living and they can drop small twigs or large branches onto the cars at anytime.

Recommendations on how the trees should be pruned and a guide on how to check the company's qualifications who may carry out the works

It is our opinion that the work that has been carried out in the past may not have been carried out by an Arborist or qualified/experienced tree works persons. This is demonstrated by the below standard pruning carried out on a number of the trees throughout all the resrves. An old practice, such as pollarding the trees, is dangerous and should not be carried out (refer to the AS4373-2007). Lions tailing the branches should be stop as this causes asymmetrical wind loading, which can cause branch failures to occur. Stumps have also been removed close to other trees. This may affect the tree's stability from either wind damage and/or a storm or flood.

The company or person(s) to carry out scheduled or unscheduled tree works should provide to the council an OH&S Policy and how the company operates and appropriate individual qualifications and tickets. The person(s) carrying out the pruning or removals should have a minimum level 3 qualification in arboriculture. The finalised work should be then inspected by an Arborist with a minimum level 5 (Diploma), or the two should work together if a EWP (elevated work platform) is required.

All staff should have a chainsaw licence (ticket) and use and wear appropriate safety equipment and clothing as required.

If a tree climber is required he must be able to have a second person whom can carry out a rescue from rope and harness.

All works should be carried out to Australian Standards Pruning of Amenity Trees AS 4373-2007.

Equipment

The following shall apply:

- Equipment that will wound the bark and conductive tissues shall not be used on, or insections of a tree to be retained, (e.g. spurs, spikes, hooks, chained platforms, lowering systems or other tools that will penetrate or severely bruise bark an conductive tissue).

Remedial (restorative) pruning

This type of pruning shall only be carried out on trees which have lost their natural form and structure through storm damage, mechanical damage, vandalism, lopping, dieback or disease. This method is usually only used when all other approaches have failed and replacing the tree is difficult. The purpose of this pruning is to prolong the useful life expectancy of such trees and to reduce their hazard potential.

This type of pruning removes damaged, diseased or lopped branches back to undamaged or healthy tissue. The final cut may not necessarily be at the branch collar. The aim is to induce the production of epicormic shoots from which a new crown is intended to be established. To achieve this, regrowth should be managed by reduction pruning or crown thinning.

NOTES:

1. This type of pruning should be done in several stages in an attempt to induce stable and successful regrowth.

2. *Consideration should be given to removing dangerous trees.*

3. Remedial pruning may create hazards from weak branch attachment. Trees should be carefully monitored.

Pruning of palms

Palms are pruned primarily to remove old and potentially hazardous fronds and fruit. The terminal shoots should never be removed as this will kill the palm. In multi-stemmed or clumping species of palms, entire stems are sometimes removed. The removal of healthy fronds should be avoided as it is generally unnecessary and may place the palm under stress. Climbing devices that wound the stem, such as spikes, should not be used as they may allow entry of decay causing organisms and other pathogens. Care should be taken not to damage the trunk of the palm during the pruning process.

NOTE: The genus *Phoenix* and other members of *Arecaceae* are very susceptible to the fatal fungal disease caused by *Fusarium oxysporum*. To avoid transmission of this disease from palm to palm, tools must be disinfected between trees.

UNACCEPTABLE PRACTICES

Lopping and topping

Lopping and topping are unacceptable practices for the following reasons:

1. They increase the rate of shoot production and elongation.
2. The resulting regrowth is weakly attached and becomes prone to failure or collapse.
3. The stubs may decay.
4. The natural habit of the tree is destroyed.
5. They may reduce the lifespan of the tree.
6. They predispose trees to fungal infections and insect attack.

Wound painting

In theory, wound dressings or paints are meant to prevent decay, stimulate wound closure and improve the appearance of a wound. Extensive research has shown that there are no wound dressings that prevent decay. Most dressings have no effect on wound closure and some damage tree tissues and may improve conditions for wood decay fungi. The colour and texture of most paints is far from natural.

The best practice is to prune to the appropriate positions outlined in this Standard and do not use wound paints. If natural target pruning is followed, the tree's own protective mechanisms will normally provide adequate defence.

Flush cutting

This is a method of pruning that was quite common for many years, however it is now considered to be unacceptable and detrimental to tree health and structure. This practice that damages or removes the branch collar is unacceptable for the following reasons:

1. It removes or damages the branch collar and stem tissue. These features define and enclose a range of chemical defences that the tree has in place for the eventual and natural decline of the branch.
2. A larger wound is created.
3. The tree uses more energy and relies on stored starch reserves to deal with the wound; this energy is then unavailable for other essential processes.
4. The exposed wood is prone to decay.
5. Long term defects such as cavities may eventuate.

Root pruning

Roots are responsible for the uptake of nutrients and water and for anchoring and supporting the tree in the ground. The pruning of roots may place the tree under stress, allow entry of pathogens, including root-rotting fungi and may destabilize the tree.

Specialist advice from a person with a minimum AQF Level 4 in arboriculture should be sought before any root pruning occurs. Where possible, the root to be pruned should be located and exposed using minimally destructive techniques such as hand-digging, compressed air or water jetting, or non-destructive techniques such as ground penetrating radar.

All cuts shall be clean cuts made with sharp tools such as secateurs, pruners, handsaws, chainsaws or specialised root pruning equipment.

The effects of root pruning are not always predictable.

Spread Sheet Information (Refer to Spreadsheet at the End of Report)

Tag Number

Tree number tagged on the southern side of the trunk (1.5 – 2m of the ground) with either a plastic or metal tag.

Botanical Name

Latin name of tree (*Eucalyptus camaldulensis)*

Common Name

Common name of tree (River Red Gum),

Area Location

Reserve in which the trees are located (eg Apex Park)

Site Occupancy

This refers to the service standard set by the Shire (eg Area A)

Height

Height of the tree from ground level

Circumference

Distance around the trunk at approximately 1m from ground level

DBH
N/A

Age

Young to over mature

Crown

Size of spread of crown

Trunk

Comments referring to the condition of the trunk

Roots

Comments referring to the condition of the roots

Priority

Priority 1 – Urgent work within 1 to 3 months

Priority 2 – Work to be completed within 3 to 6 months

Priority 3 – Work to be completed within 6 to 12months

Priority 4 – Work to be completed within 12 to 18months

Priority 5 – Work to be completed within 18 to 24months

Trees to be reviewed or works to be completed within 2 years of report or after any major failures or major storms.

Risk

Hazard Risk Assessment:

Identifying and managing hazards associated with trees can be a subjective process. To produce a user-friendly Tree Hazard Assessment system Matheny and Clarke (1994) has been used. Matheny and Clarke (1994) state that Tree Assessment comprises of three parts:

- A tree with the potential to fail;
- An environment that may contribute to the failure; and
- An object or person that may be damaged or injured (target).

Failure rating: can generally be defined as:

- Defects are minor (small dead wood) with good wound wood present;
- Medium defects are present and obvious (cavities 10-25% of the trees circumference, co-dominant stems without included bark);
- Numerous or significant defects (cavities 30-50%, multi pruning wounds with decay); and/or
- Severe heart rot and fungal brackets with decay or cavities covering over 50% of the trunk.

Size of limb:

The actual measurement of the limb that is in question.

Target rating:

This would indicate the potential users and level of frequency that may be attributed to the area i.e.:

- Occasional Use is likened to a jogging or cycling track;
- Intermittent Use is likened to a picnic area or day parking;
- Frequent Use is likened to a storage or camping area; or
- Constant Use is likened to a Home or in use for many hours.

TOTAL RISK RATING CAN BE SUMMARISED AS FOLLOWS:

A high number does not necessarily mean the tree must be automatically removed. There are a number of Arboriculture management techniques (e.g. pruning, limb removal, weight reduction and even cabling) which can effectively reduce the failure and size of the limb to an acceptable level. The target rating can also be effectively lowered by excluding persons from the site.

Risk Rating Summary Table

Failure Potential:	1 Low	2 Medium	3 High	*4 Severe*	
Size of Limb in mm:	1 0-150	2 150-450	3 450-750	*4 750+*	
Target Rating:	1 Occasional Use	2 Intermittent Use	3 Frequent Use	4 Constant Use	
Total Risk Score:					

Condition

In decline to Good

Photo

If taken will be in report

Special Values

Describes whether the tree is protected by a government agency or provides a historic/heritage value to the Shire (eg the VC trees near the RSL Club)

Comments

Brief on tree

Foot Notes for the Report and Spreadsheets

TR Ratio

The TR Ratio is a calculation established by Mattheck & Breloer which is used to calculate the strength of hollow stems. Mattheck & Breloer's criteria for strength assessment of hollow stems are as such:

a) Normal safety factor of solid stem
b) Safety factor reduced by only 29% due to central cavity occupying 2 thirds of stem diameter
c) Stem with safety factor estimated as similar to b) having an eccentric cavity occupying half of stem diameter and minimum wall thickness one third of depth to centre of cavity
d) Cavity as in b), but with no safety factor remaining, due to an opening occupying one third of stem circumference

Mushroom/toadstools

No mushroom/toadstools were seen upon inspection on the tree or around the surface around the tree. Mushroom/toadstools can be an indication of decay to the root systems or trunks of trees, they attack trees that are in stress and will feed off them. This can lead to catastrophic effects on the health of a tree and in many cases lead to the death of a tree.

The stems of multi-stemmed trees typically grow away from each other towards the light rather than staying upright by means of tension-wood formation, then their growth in thickness acts like a set of wedges to drive them apart at the base of the stem cluster. This means that the cluster is suicidally programmed to fall apart (Mattheck and Breloer 03). This has occurred to this tree.

Sudden Limb Failure (SLF)

Sudden Limb Failure (SLF) is a common problem for many species of trees including exotic trees; it almost always affects limbs held in a horizontal or near horizontal plane; though more upright limbs have also been known to fail due to SLF. Defects do not have to be present; however, if wounds or decay are present the risk of SLF is usually exacerbated.







Termites

Termites, sometimes incorrectly called "White Ants" due to their pale appearance are a group of social insects usually classified at the taxonomic rank of order *isoptera*. Termite/white ants mostly feed on dead plant material generally in the form of wood, leaf litter or soil and about 10% of the 4000 odd species (about 2600 taxonomically known) are economically significant as pests that can cause serious structural damage to buildings, crops, plantation forests or individual trees.

Lions tail/end loading

The scaffolding branches have been extremely poorly maintained in the past and incorrect pruned with has lions tailed the branches end loading. This problem of end loading seems to be particularly serious, "if it has been brought about by the removal of middle and lower branches", (Dr David Lonsdale).

Thinning, like reduction, can have undesirable effects when carried out badly or to excess. Excessive opening up of the crown structure can expose individual branches or more to increased

wind penetration and turbulence, so increasing the chance of their breakage which has occurred to this tree.

Asymmetrical Wind Loading
Asymmetrical wind loading "slowly twists the branches around the observed direction, this in turn can put strain and stress onto this part of the tree" (Larry Gedney, University of Alaska)

Co-dominant Leaders
Shigo 86 states "that forks comprising of co-dominant leaders is somewhat weaker than a junction between a main stem and subsidiary branches"

Multi-stem
The tree is a multi-stem (x stems); it was measured over 2metres in circumference at 1metre above ground level.

Multi-stemmed trees typically grow away from each other towards the light rather than staying upright by means of tension-wood formation, then their growth in thickness acts like a set of wedges to drive them apart at the base of the stem cluster. This means that the cluster is suicidally programmed to fall apart (Mattheck and Breloer 03).

Included Bark
It is well documented that trees with included bark have a greater tendency to fail. Included bark "is a strong indication of a weak union (Lonsdale 01).

Low included bark crotches may be more serious than those higher in the tree. Due to the tree having co-dominant leaders at the base (Shigo86) has stated "that a fork comprising of co-dominant leaders is somewhat weaker than a junction between a main stem and subsidiary branches".

Girdling Roots
A root is described as girdling if it crosses over the base of a major root. This type of root's growth is constricted as a consequence and failure can occur at the point of girdling due to the mechanical stress concentrated in that area.

Sunken Cap
A sunken cap is often a good indication of decay.

Kino
Kino is a red resin and is a natural defence mechanism against pathogen attack in most trees. If the tree is under stress and does not have sufficient Kino then pathogens can enter the tree causing possible catastrophic effect on the tree's life.

Once a tree is under stress then it is very prone to borer attack. Most trees have a natural defence mechanism against borers, for example: Gum trees produce a red substance called Kino, wattles produce gum, Figs produce latex (that is the milky white fluid that we see in rubber trees and other fig type plants) and Pines produce resin. Kino, gum, latex and resin are the four most common natural defence mechanisms in trees.

Root/Soil Compaction

Soil compaction harms tree roots by reducing oxygen and water exchange which inhibits root expansion. Trees in compacted soils are smaller, less healthy, and will die sooner if the compaction is left untreated. It is a serious matter which could have catastrophic affects.

A tree's root system is the most vital organ on a tree. When roots fail to work properly the tree will eventually decline and die

FAM *Cerambycidea* (Longicorn Beetle)/Borer

FAM *Cerambycidea* (Longicorn Beetle)

Adult Longicorn Beetle

Longicorn Beetle larva

Adults are active fliers. Their bodies are usually elongated and cylindrical in shape. Their legs are medium length and they have obvious strong mandibles for chewing, many feed on flowers.

Longicorn Beetles lay their eggs in cracks of bark or under bark. Most Longicorn Beetle larva are wood borers. Usually they are host specific of living or dead trees, usually infest severely weakened trees, dying or felled logs. Their life cycles are from few months to more than a year. Longicorn Beetles will eventually kill the tree they infest.

Australian Standards Pruning of Amenity Trees AS 4373-2007

The Australian Standard Pruning Amenity Trees AS4373 -2007, provides a minimum quality pruning standard that must be applied for all tree works on the subject trees. Pruning should only be carried out by trained and experienced Arborists or Horticulturists.

Cobra

Cable, bracing or cobra only shows admittance that the tree is at fault. If the tree were to be braced correctly, two to three scaffolding branches at the very least would need to be braced. However, as pointed out in this report the scaffolding branches have weak attachments and bracing them may not be beneficial for the tree.

RECOMMENDATIONS

Tree safety and the associated management of risk is a matter of limiting the risk of significant harm from partial or complete tree failure whilst maintaining the benefits trees provide to our communities. Although it may seem counter intuitive, the condition of trees should not be the first consideration. Instead, first consideration should be given to the usage of the land on which the tree or trees occupy.

Responsible risk management of trees must address the balance of safety with tree values, and operate to a predetermined limit of reasonable or acceptable risk. Whilst in some cases this will allow tree retention with a degree of management/maintenance processes, in other cases it will advocate complete tree removal (adapted from *Quantified Tree Risk Assessment*).

Following extensive analysis and careful consideration, it is our professional opinion that the trees should be removed and pruned and inspected ever two years or after major storms or floods or failure.

We cannot be responsible for the third party pruning, we are more than happy to visit and aid or show the company engaged to do the works or work with them for a period of 7-9 days, to give advice when and where it is required.

Our company is more than happy to advise the council at any stage, we are also more than happy to prune a tree in all the reserves so the tree company engaged have a standard to work for but again it may be more beneficial for the company's to work hand in hand

There are number of ways the Council could start the works within the reserves. The Council could start by using the spread sheet and remove or prune the higher risk trees. Another method could be to prune one reserve and then continue this to other areas. The benefit of this would be one area could be used immediately for such events as wedding, fates or small events such as markets.

The Tree Management Plan which is Area B could start almost immediately, so the council and locals could see a plan in place and see the removed of trees being replaced and reserves being utilised to their full potential once again.

GLOSSARY

For the purpose of this report, the definitions below apply.

Amenity trees
Trees with recreational, functional, environmental, ecological, social, health or aesthetic value rather than for production purposes.

Arborist
The person with training to AQF Level 3 in Arboriculture, or above, or equivalent recognised and relevant experience that enables the person to perform the tasks required by this Standard.

Australian Qualification Framework (AQF)
A national framework for all educational and training purposes in Australia.

Bark
All tissues outside the vascular cambium.

Branch
A lateral shoot on a main axis such as a trunk or another branch. A branch arising off a trunk is a first order branch. A branch arising off a first order branch is a second order branch and so on. Second and successive orders of branches may be referred to as 'lateral branches'.

Branch bark ridge
Raised or furrowed bark in the branch union that marks where the branch wood and trunk wood overlap.

Branch collar
Overlapping trunk and branch tissue forming a swelling around the base of many branches and containing defensive chemicals.

Bud
Embryonic vegetative or reproductive tissue which may be terminal, axillary or adventitious in origin. Buds can be active or dormant.

Codominant stems
Stems or trunks of about the same size originating from the same position from the main stem.

Compartmentalisation
Dynamic tree defence process involving protection features that resist the spread of pathogens and decay causing organisms.

Coppicing
The cutting of a trunk close to ground level in order to stimulate the production of epicormic shoots.

Crown
Portion of the tree consisting of branches and leaves and any part of the trunk from which branches arise.

Crown lifting
The removal of the lower branches.

Crown maintenance
Pruning that does not reduce the volume of the crown and retains the structure and size of the tree.

Crown modification
Pruning that changes the form and habit of the tree.

Crown thinning
The selective removal of branches that does not alter the overall size of the tree.

Deadwooding
The removal of dead branches.

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

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

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

Espalier
The training and pruning of trees against a wall or on a trellis.

Extruded bark
Outwardly formed bark at the junction of branches or codominant stems.

Feathering
See Lion's tailing.

Final cut
This is the final cut in the process of the reduction or removal of branches and stems. The purpose of this final cut is to reduce the risk of microorganism infection according to the principles of branch attachment and compartmentalisation to encourage even wound closure (occlusion).

Flush cut
A cut that damages or removes the branch collar or removes branch and stem tissue and is inconsistent with branch attachment as indicated by the branch bark ridge.

Formative pruning
The pruning of young and establishing trees with the general aims of directing plant growth and/or developing a sound structure.

Hanging branches
Unattached, cut or broken branches that are caught in the canopy.

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

Lateral
A branch arising from another branch.

Lion's tailing
The practice of removing branches from the interior of the canopy leaving most of the foliage on the ends of branches. This is not crown thinning and may lead to structural hazards.

Lopping
The practice of cutting branches or stems between branch unions or internodes.

Natural target pruning
The removal of branches, stems and stubs such that final cuts are achieved, according to principles of branch attachment and compartmentalisation.

Pathogen
A disease-causing organism.

Person suitably experienced and competent in arboriculture
See Arborist.

Pleaching
The weaving and intertwining of branches into various forms, which are then maintained by continual pruning.

Pollarding
A specialized pruning technique that establishes branches ending in a pollard head of buds and vigorous shoots. Pollarding is not synonymous with lopping and topping.

Pre-cutting
The practice of making an undercut, side cuts and/or scarf cuts that reduce the risk of a branch splitting or tearing. These cuts are made beyond the branch collar and precede the final cut.

Reduction pruning
The removal of the ends of branches to lower internal lateral branches or stems in order to reduce the height and/or spread of the tree.

Remedial (restorative) pruning
The removal of damaged, diseased or lopped branches back to undamaged tissue in order to induce the production of shoots from latent or adventitious buds, from which a new crown will be established.

Selective pruning
The removal of identified or specified branches.

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

Stem bark ridge
The ridge of bark that forms in the union between codominant stems.

Topiary
The practice of training and shearing plants into various shapes.

Topping
Reducing the height of a tree through the practice of lopping.

Tree
Long lived woody perennial plant greater than (or usually greater than) 3 m in height with one or relatively few main stems or trunks.

Tree worker
A worker who through related training (minimum AQF Level-2 in arboriculture) or equivalent recognised and relevant on-the-job experience, has demonstrated competence in pruning according to this Standard.

BIBLIOGRAPHY

Lonsdale, D (2001) "Principles of Tree Hazard Assessment and Management" The Stationary Office, London.

Mattheck, C
Breloer, H (2003) "The Body Language of Trees" The Stationary Office, London.

Shigo AL (1986) "A New Tree Biology" Shigo and Tree Associates, Durham, New Hampshire

Strouts, RG
Winter, TG (2000) "Diagnosis of Ill-Health in Trees" 2nd Edition TSO, Norwich.

Disclaimer and Limitations

This report only covers identifiable defects and issues present at the time of inspection. The author accepts no responsibility or can be held liable for any structural defects or unforeseen event/weather conditions that may occur after the time of the inspection and assessment, unless clearly specified within timescales detailed within the report.

The author cannot guarantee trees contained within the report will be structurally sound under all circumstances and cannot guarantee that the recommendations made will categorically result in the tree being made safe.

Unless specifically mentioned, this report will only be concerned with issues above ground, and are undertaken visually. It is suggested that trees are living entities and as such are subject to forces and influences out of the control of the author. The recommendations are made on the basis of what can be reasonably identified at the time of the inspection; therefore the author accepts no liability for any recommendations made.

Care has been taken to provide information that is based on sound arboriculture practices and standards. The author accepts no liability for actions undertaken by third parties in undertaking any of the arboriculture work as recommended. All data has been verified and based on sound arboriculture standards, however the author cannot guarantee nor is responsible for the accuracy of information supplied by third parties.

Note: This report is valid for three months from report date.


4
5
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3
2
1

Vegetation Assessment.
Eucalyptus camaldulensis.
Corner Slee and Spencer Streets, Euroa. Victoria. 3666.

Prepared for:
Bob Foster.
Works Superintendent.
Shire of Strathbogie.
Euroa, Victoria. 3666.

Table of Contents.

Date of Inspection: November 17th, 2012.

Date of Report: November 18th, 2012.

Inspected by: Richard A Kelaart.
B App Sci (SIT).
G Dip App Sci (Hort) (Burnley)
Adv Cert Hort (Arb) (Melb)
Dip Hort (Arb) (Melb)

Client Information:

Contact: Bob Foster.
Works Superintendent.
Shire of Strathbogie.

Address: Cnr Binney & Bury Street,
Euroa, Victoria. 3666.

Phone: 0438 348 774.

Site of Report:

Address: Corner Slee and Spencer Street,
Euroa, Victoria. 3666.

City/Council of: Shire of Strathbogie.

Document compiled by **Richard A Kelaart**, Horticulturist and Arborist. **B App Sci (SIT). G Dip App Sci (Hort) (Burnley). Adv Cert Hort (Arb) (Melb). Dip Hort (Arb) (Melb).**

Terms of Reference:

1. To provide a vegetation assessment of a declining veteran road reserve tree that is located at the corner of Slee and Spencer Street, Euroa. Victoria. 3666.
2. To provide recommendations for the management of the tree.

Report Limitations:

The report is based upon the available information as provided by email correspondence from Bob Foster, Works Superintendent, Shire of Strathbogie.

Procedure:

A site inspection was conducted on November 17th, 2012. A walk over tree survey was initially conducted and data collected from the site area.
The visual tree inspection (VTI) assessment method considered species, age, health and structure, target potential and any tree management works previously implemented, individual significance and retention value. A close detailed examination of branch attachments and unions was conducted from the ground
Vegetation inspected has been assessed individually and is documented as photographic plates in Appendix 1. Photographic Images of Vegetation.

Tree Details:

Botanical Name	***Eucalyptus camaldulensis***
Common Name	**River Red Gum**
Origin	**Native**
Canopy Dimensions (HxW)	**~22 m x ~14 m**
Diameter at Breast Height	**~352 cm**
Health	**Declining**
Structure	**Poor, Hazard Tree**
Age	**Senescent, Veteran Tree, > 700 years estimated.**

Findings:

The tree is an over mature, senescent *Eucalyptus camaldulensis*, of immense and significant size, with an extended canopy bias to the west. The tree has a major internal hollow chamber that encapsulates the entire heartwood, which has perished over an extended period of time. The internal chamber has been burnt. Its external casing tissue is composed of dead and live material that holds the fabric of the tree intact, and approximately 40 % of the tree shell is not present, see Appendix 1: Plate 1.
The tree stands upon stilts of live and dead tissue fixed into the ground which keep the structure upright.

The remaining crown and scaffold branch spread holds significant mass and crown spread is wide, with limb diameters of 400 millimeters or greater tapering out, with a

crown spread of about 14 meters overall. The height of the tree carries the remaining viable crown well above the tree line of the surrounding and existing canopy cover. The standing crown would be predisposed to wind loading of prevailing wind and storm influence.

The tree exhibits previous pruning wounds, declining branches, prolific epicormic growth emanating form various limbs, storm and wind damaged limbs, deadwood and hangers.

A major section of the dead external shell, estimated to be approximately 20% has separated and has fallen into the cavity, and is propped against the remaining live tree shell.

The tree has immense cultural significance, however due to its condition presents as a hazard tree. The majority of defects have been present for an extended period of time. The specimen is in decline. Target opportunity for the remaining branches and bulk of the live sections would be the path that is adjacent to the tree. A major limb overhangs the road on the west sector.

Discussion:

The tree is a significant specimen and incorporates marginal levels of viable live intact limbs and sparse foliage.

The tree has limited supportive structure and woody framework to hold itself upright, given the extent of live limbs and mass that are attached to the remnant shell. The tree presents as a structurally poor specimen within a public environment and is a hazard, requiring urgent management works. Target opportunity is the path adjacent and the road below the drop zone of any limbs within the crown, in the event of a failure.

The remaining crown presents with a significantly modified canopy and is also predisposed to potential limb failure. These can be induced by either storm or strong wind events. The consequences of limb or crown failure will target the path or the road in close proximity on the west sector.

The specimen exhibits a partial catastrophic failure. The south sector consisting approximately 20% of dead tissue of the stem has collapsed into the remaining shell. The external part of the shell retains remaining live branches and foliage.

Past reactive works and neglect over a period of time have all but stripped away and degraded the supportive structure and frame of the tree. The tree now presents as a structurally poor specimens within the public environment.

Reactive works and self pruning has significantly modified the structure and form of the specimen. The tree has developed into a single stem shell with limited weight bearing branches, limbs and crown foliage. The age of the specimen may predispose itself to self pruning or limb drop and limbs shearing off from the trunk.

Maintenance or retrenchment pruning works on the trees would not present good outcomes nor correct issues with the tree and may increase the likelihood of limb failure and induce and accelerate the tree into dying.

Management of the trees within a public environment leave little scope to retain trees with significant defects or with potential for failure or shedding of limbs which would target space that could be occupied by the public.

Micromanagement of the tree within the specific area that it occupies present limited and difficult options to preserve the tree for its appreciation and importance. The area cannot be isolated from the public and the public cannot be separated from the tree to the extent that would be required to ensure a safe environment.

The tree presents as being unsuitable for its location due to its mature size. It is also naturally advancing into the senescence phase of life.

Trees in poor health or with significant defects in structure are not suitable for preservation in areas where people or structures will be located (Matheny and Clarke, 1998).

Hazard abatement would require that the part of the tree that presents as failure potential be removed to a sound framework.

There is scope to leave a standing stem of the tree with that part of its crown over or towards target opportunity, to be removed or reduced, and the tree retained as a veteran significant cultural tree.

It would be possible for various mitigation actions to be performed to reduce public safety risks to an acceptable level and retain the subject as a cultural tree. A wildlife habitat/hazardous tree decision model provides a logical approach in (Pokorny et al, 2003). The model's function is to help maintain and create wildlife habitat. And reduce public safety risks associated with trees with hazardous defects.

This hazard abatement works however will have an impact on other live branches and limbs remaining. Their subsequent reduction and removal may induce the tree to further decline and death.

Active management of veteran trees may involve not doing very much for extended periods of time. The tree and their situation should be frequently checked and any reactive works conducted only as necessary and when required.

Recommendations:

Hazard abatement and any pruning works to the minimum extent are conducted on the tree stem to modify the risk by a qualified arborist. The parts of the tree that presents as a

failure potential be reduced to a sound framework. Habitat hollows within remnant stem/s to be retained.

Secondary works on the ground surface to exclude the public should be implemented in conjunction to enable the retention of the remnant stem.

Inspection of the tree and its surrounding ground attachments to be conducted every 6 months.

Tree Management Plan:

- Secure failed section, stabilize onto ground or against live stem section.
- Crown reduction of live sections of limbs to reduce target potential.
- Modify gravel path away from stem.
- Bollard area and exclude public.
- Leave ground vegetation unmanaged to deter and exclude approach into target area.
- Engineer a steel prop to support and maintain remnant vertical section.
- Inspect remnant stem annually, in particular ground attachment.
- All pruning management works to be implemented by a qualified arborist.

End of report.

References:

Harris, R.W., Clark, J.R. and Matheny, N.P. 1999. *Arboriculture: Integrated Management of Landscape Trees, Shrubs and Vines.* 3rd Edition. Prentice-Hall, New Jersey.

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

Matteck, C & Breloer, H. 1994. *The body language of trees: a handbook for failure analysis,* London: HMSO.

Matheny, N. & Clark, J. 1998. *Trees and development-a technical guide to preservation of trees during land development,* International Society of Arboriculture, Champaign, IL USA.

Pokorny, J., O'Brien, J., Haver, R., Johnson, G., Albers, J., Bedker, P., Mielke, M. 2003. *Urban Tree Risk Management: A Community Guide to Program Design and Implementation,* USDA Forest Service Northeastern Area. State and Private Forestry. St Paul, MN USA.

ARBORICULTURAL CONSULTANCIES AND REPORTING ASSUMPTIONS AND LIMITING CONDITIONS.

1. Any legal description provided to the consultant is assumed to be correct. Any titles and ownership to any property are assumed to be good. No responsibility is assumed for matters legal in character.
2. It is assumed that any property/project is not in violation of any applicable codes, ordinances, statutes or other government regulations.
3. All information given to the Arborist whether verbal or by print is deemed to be true and the report is based on this information.
4. The consultant shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services.
5. No responsibility is taken for unknown or wrong information being supplied.
6. Loss or alteration of any part of this report invalidated the entire report
7. No responsibility is taken for conditions, which can change in the future.
8. Trees are living organisms and can be affected by changes in the environment; no guarantee can be given that the remaining trees will not be affected.
9. Sketches, 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.
10. Unless expressed otherwise: 1 Information in this report covers only those items that were examined and reflect the condition of those items that were examined at the time of the inspection; and 2: 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 the problems or deficiencies of the plants or property in question may not arise in the future.

Richard. A. Kelaart.

ARBORICULTURAL GLOSSARY.

BRACKET FUNGUS
A type of fungal infection of the tree that can affect its structural strength.

CANOPY
Leaf cover of the tree.

CODOMINANT
Branch or stem junction of two or more with very weak attachment. Common point of tree failure.

CROWN
Top leaf cover of the tree.

DBH
Diameter of trunk at breast height.

EPICORMIC
A rising form of dormant bud on old wood, especially following injury to the plant above the bud.

HEALTH
The trees ability to grow and retain foliage cover and ability to resist pest and disease.

LERP-SCALE
Leaf and stem eating and sucking insects.

LONGICORN BEETLE/BORER
Wood eating insect.

MISTLETOE
A common name for many shrubs that live as parasites in trees.

PATHOGEN
A disease producing fungus, bacterium or other living organism especially one that is parasitic.

STRESS
The reduction of an organism's ability to function properly, or to resist disease as a result of the overuse of its physical resources.

STRUCTURE
Physical support systems of the tree.

SWD
Storm Water Drain.

TPM
Tree Protection Measures.

TPZ
Tree Protection Zone.

ULE
Useful Life Expectancy
ULE is the length of time the tree can be expected to be usefully retained, provided all recommended works are carried out and annual checks undertaken.

Tree Descriptors:
Age:

Category	Description
Young	Juvenile tree and/or recently planted. Between 1 and 5 years.
Semi-mature	Tree still growing.
Mature	Specimen has reached expected size in situation.
Senescent	Tree is senescent. Over mature and in decline.

Condition/Health:

Category	Description
Very Good	Exceptional specimen. Crown full and balanced. Foliage entire with good colour, minimal or no pathogen damage.
Good	Crown full, can be unbalanced. Foliage entire with good colour, minimal or no pathogen damage. Good growth indicators, eg. Extension growth.
Fair	Tree has <30% dead wood. Canopy can be unbalanced. Foliage generally with good colour, some discolouration may
Poor	Tree has >30% dead wood. Discoloured or distorted leaves and/or excessive epicormic growth. Pathogen is present
Dead	Tree is dead.

Structure:

Category	Description
Well Structured	Well-structured branch attachment, no structural defects. Trunk sound. No damage to roots and good root buttressing. Good trunk and scaffold branch taper. No branch over extension.
Good	Good branch attachment and/or minor structural defects. Trunk sound or minor damages. No damage to roots and/or buttressing present.
Fair	Some minor structural defects and /or minor damage to trunk. Bark missing. Cavities could be present. Minor damage to roots.
Poor	Major structural defects and/or trunk damage and/or missing bark, large cavities, and/or girdling or damaged roots that are problematic.
Hazardous	Tree poses immediate hazard potential that should be rectified as soon as possible

Retention:

Good	Good health and structure, with lengthy life span at site
Moderate	Fair health and/or structure, requiring some care, reduced life span due to changes insitu.
Poor	Poor health and/or serious defects, unsuitable for retention

Appendix 1: Photographic Images of Vegetation.

Plate 1: Tree exhibiting remaining structure and ground attachment

Plate 2: Tree vertical perspective.

Plate 3: Tree and proximity to gravel path ▲.

Plate 4: Tree relative to road in proximity to standing Eucalypts ►.

Plate 5: Failed plate resting against callus bulge close frame view ▲.

Plate 6: View of dead shell resting against cavity►.

You requested that I inspect a large Eucalyptus camaldulensis opposite 23 Foy Street near Charles Kemp Park, Euroa.

An inspection by council's arborist has been undertaken in recent times.
The inspection by council's arborist identified a hollow in the main trunk which had evidence of wood decay fungi (Phellinus sp.) in the deadwood within the hollow.
An assessment of the hollow was conducted from within the canopy (Aerial inspection) and a recommendation to remove the tree resulted.

In my opinion, the inspection undertaken by council's arborist:
- Was well thought out
- Considered
- Thorough
- Professional

During my inspection of the tree I inspected the hollow in the main trunk and I also 'sounded' the trunk.
My assessment of the hollow is that it is an issue requiring attention and management.
'Sounding' of the trunk indicates that there is a reasonable degree of solid holding wood around the cavity.
Additionally, the tree is placing a considerable degree of 'wound wood' around the opening.

In essence, the tree has a hollow that is a potential issue when managing the tree.
In this instance, the tree can be managed at an acceptable level of risk by:
- Undertaking some minor reduction pruning within the canopy of the tree
- Preventing car parking within the grassed area near the tree (to reduce compaction)
- Mulching the grassed area near the tree (to improve tree health)

In my report, (which will follow this email in due course) I will demonstrate that the subject tree currently has a 'Moderate' risk associated with it but that with some works, it's associated risk is likely to be reduced to 'Low'.

Given the relatively low occupancy rates of pedestrians, vehicles and any other targets, the level of risk currently associated with this tree is considered at the lower end of any risk assessment scale.

At the time that I conducted the inspection, we noticed some mature trees within Charles Kemp Park. In orders of magnitude, some of the trees we inspected require immediate/urgent management.
In my report, I will demonstrate that 3 trees in the park that are currently 'High' risk can be managed to reduce their level of risk to 'Low' without complete tree removal.

I should highlight, that in a considered response to managing an entire township or shire tree population, individual trees within Charles Kemp Reserve require far more urgent attention and management than the subject tree in Foy Street.

Ultimately, the main area that council's arborist and I differ, is our management approach to the issues that have been identified.

Attached are some photos of a target exclusion management approach that has been successfully adopted by Albury City Council to manage large, mature Eucalyptus camaldulensis in very high use parks.

Regards,

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