

PUBLIC ENQUIRY INTO JANUARY 2016 WAROONA FIRE



Emergency Services Volunteers Association

**Emergency
Services
Volunteers
Association
submission**

February 2016

Submission to the Public Inquiry into January 2016 Waroona Fire

Submissions should be submitted electronically (preferred) to:

or posted to:

Perth Hills Bushfire February 2011 Review
Locked Bag 10, Cloisters Square
PERTH WA 6850

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Contact Details

Name:	Merv Austic
Address:	PO Box 348 CLOVERDALE 6984
Email address:	executive.officer@esva.asn.au
Telephone number:	0437 820002

Organisation Details (Where Applicable)

Is this submission presented on behalf of an organisation:	<input checked="" type="checkbox"/> Yes
If yes, name of organisation:	Emergency Services Volunteers Association Inc.
Position in organisation:	Executive Officer

Response to Terms of Reference

You must address at least one of the Terms of Reference.

Introduction

The Emergency Services Volunteers Association Inc. (ESVA) represents the interests of 25 Volunteer Fire & Emergency Services (VFES) and their 900 members (approx.) who are responsible for bushfire, road crash rescue, structural fire, cliff rescue etc. VFES's are situated throughout Western Australia from the outer metropolitan area to the rural regions and remote communities. Our volunteers are dedicated to looking after their communities in any type of emergency and are focused on preparedness and prevention.

This submission has been developed reflecting the views and concerns of our volunteers.

Background

The ESVA are well aware that bushfires are an inherent part of the Western Australian environment. We cannot prevent bushfires, but land owners and the appropriate authorities can minimise the risks and impact bushfires pose to life, property, infrastructure and the environment through bushfire risk management strategies. The geographical scale of WA, through the ever expanding urban and rural interface and the potential for the rapid development and spread of a bushfire under adverse weather conditions means that West Australians cannot solely rely on the response of fire agencies to protect lives and properties from the impact of a bushfire.

Bushfires have a fundamental and irreplaceable role in sustaining many of WA's natural ecosystems and ecological processes providing a valuable tool for achieving land management objectives. However, with the advent of climate change and other factors, bushfires in WA are increasing in intensity resulting in significant loss of life, property and causing major disruptions to communities and their livelihoods

WA has a large capable force of volunteer and career firefighters with significant firefighting resources and advanced firefighting technologies to manage most situations. Nonetheless, there are many fundamental problems in the bushfire response model requiring urgent reform as the systems are failing and placing

firefighter at risk. This is despite numerous bushfire reports in WA highlighting familiar themes of concern (Bushfire Risk Management).

WA's preparedness levels are questionable and the Government should now assess the viability of the current bushfire management structure that exists today.

The WA bushfire management structure is made up of, DFES, DPaW and 122 local government managed bushfire brigades. As a consequence of this structure, a bureaucratic and cultural problem exists, hence the difficulties for agencies to work together seamlessly and effectively. In practice these agencies also have their own operational mode and this causes great difficulty on the fire grounds with the variances in operations and operational methods being practiced.

A bushfire risk management model needs to be enacted, so communities have some confidence that the necessary work is being done to prevent the impact of bushfires in bushfire prone areas of WA.

The Perth Hills Bushfire Review in 2011 provided 55 recommendations many of which focused on bushfire risk management. As a consequence of the review, a considerable amount of funding was allocated to both the DFES and DPaW to improve bushfire risk practices. Disappointingly, there is little evidence of any major improvements in bushfire risk management practices apart from theoretical planning processes across some of WA and sadly the time has run out to continue to blame the fire situation on climate change and the misused term "shared responsibility".

The ESVA accepts it is a shared responsibility, however when 92% of the State is land owned or administered by the Crown the responsibility is on the Crown to mitigate.

Since 2011 we have seen considerable funding increases to both DFES and DPaW, however we are only seeing both agencies focus on *fire response operations* rather than bushfire risk management. In addition, the community centred incident management principles seem to no longer apply, therefore B/G/U/S are administered and operationally driven in a dictatorial manner (Control and Command). Many

volunteers have become disgruntled with this and it is felt that there needs to be a return to trust and respect of community centred incident management principles.

TOR 1: The response to the January 2016 Waroona Fire

The effectiveness of pre-incident bushfire prevention and mitigation activities

Bushfires are a major economic, social and environmental hazard in WA. In the past bushfires have not been as economically damaging as cyclones, storms, and floods, however, this is changing. Bushfires are among one of the most hazardous natural disasters in Australia in terms of death and injury to people.

In the past 70 years' rainfall has decreased in the south east and south west of Australia and droughts have become more severe. Fire danger is exacerbated by changing climatic conditions which is expected to increase bushfire activity and intensities in many high bushfire prone areas of WA. As a consequence, WA is now experiencing large bushfires which are causing widespread devastation. This will only get worse unless State Government, Government agencies, Local Government and private land owners take their responsibility seriously to manage the bushfire risk.

The demand for semi-urban development by people seeking a tree change has resulted in landscapes with heavy vegetation and poorly accessible terrain being populated without adequate consideration for the prevention, mitigation and response to bushfires.

The ESVA concedes that bushfire risk can never be totally eliminated, but constant attention needs to be placed on educating all landowners and the community on bushfire risk management strategies. In addition, the community should become active participants rather than passive recipients of services, sharing the responsibility for managing bushfire risk. This does not mean that fire services can shift their responsibilities under the *Bush Fires Act 1954* (the Act).

The ESVA has for many years actively voiced its concern to DFES, the Minister & Shadow Minister for Fire & Emergency Services and WALGA regarding Bushfire Risk Management policies and practices throughout Western Australia with little response.

Evidence from previous Bushfire Incident Reports post the Keelty Report, clearly indicate that not enough has been done to minimise the bushfire risk in bushfire prone areas in WA, consequently leaving the public very vulnerable to losing their life, businesses or properties.

Clearly this is unacceptable to the people of WA and comes at considerable cost to Businesses, Government, Insurance companies and land owners with noteworthy consequences for rural communities.

The lead fire agencies in WA need to set the example by providing the benchmark for what is expected in managing the bushfire risk, instead of concentrating on theoretical policies. Planning is important but the PRACTICE is more important in terms of managing the bushfire risk.

Since the Keelty Report in 2011, DPaW and DFES have focused on “operations” with very little consideration given to Bushfire Risk Management. This is evident when you examine DPaW’s (DEC) last 10 annual reports and view DFES’s theoretical approach to bushfire risk management.

Lack of commitment by the leading fire agencies to bushfire risk management is having a major impact on the size and duration of major bushfires in WA. Bush mitigation strategies like prescribed burning, scrub modification, firebreaks, mulching and chemical control are required in bushfire prone areas to ensure communities are protected from bush fires. Theoretical processes have NEVER stopped fires.

The introduction of the Office of Bushfire Risk Management (OBRM) after the Keelty Report has been a disappointing failure. At a recurrent cost of \$5 million OBRM is yet another ‘theoretical’ office that has created a bureaucratic nightmare for firefighters on the ground trying to achieve prescribed burns and other treatment measures across the state. OBRM reports to the DFES Commissioner and therefore is not an independent body.

Once again the focus has been on bureaucratic policy and procedures and the theoretical side of bushfire risk management with very little action occurring on the ground.

The keys questions that need to be answered from the Waroona/Yarloop fires are as follows:

1. Who are the land owners of bushland around the town site of Yarloop and Waroona?
2. What were the fuel levels around the town sites of Yarloop and Waroona?
3. If the fuel levels around Yarloop and Waroona were high, was it registered with OBRM?
4. If the fuel levels were so high as to create a risk so great, why had no action been taken?
5. Why are key fire agencies including local government not concentrating on Town site protection from bushfires in WA?
6. Where is DPaWs budget being used? An analysis of the last ten years of annual reports should provide the answers.

These questions need immediate responses, so the state can address similar potential fire scenarios in WA.

Bushfire incidents in WA since the Keelty Report have cost the state hundreds of millions of dollars with loss of life, major losses of critical infrastructure, impact on businesses and destruction of state forests. This does not take into account the cost of the bushfire operations, Eg; Aerial support, fuel, catering, staff salaries, overtime, accommodation, the unknown cost to employers in allowing volunteers to commit to the suppression of bushfires and you then have the unknown impact and cost (personal and financial) to the individual volunteer who give up their time.

Is there a measurement for the success of an operation?

What are the costs to the state in operations compared to bushland mitigation?

Prevention is always better than the cure.

An increase in bushland risk management programs around town sites would have been less costly and the fires would have been contained in a more timely fashion by fire fighters with minimum consequences to life and property in most cases.

On the 31 Jan 2016 the WA Sunday Times newspaper published an article on bushfire fuel fear which stated that “1.625 million hectares or 65 per cent of land managed by DPaW has fuel loads aged 7 years or more (how much of this is over, 10> yrs., over 20> yrs.)”. Dependant on what type of bush is in the location, the ESVA believes these fuel loads need to be addressed with action plans.

As a consequence of this inaction by DPaW, the state is now exposed to catastrophic bushfire conditions and numerous towns are undefendable.

Keelty recommendations 4, 5, 13, 14, 15, 20, 23:

ESVA Response:

These recommendations by Keelty have not been fully implemented and require a lot more work by DFES and DPaW to ensure their effectiveness.

Bushfire Risk Management Recommendations

- DFES needs to ensure the Community Emergency Services Program focuses on the following areas:
 - a. The business plan must reflect a major commitment to bushfire risk management, planning and the implementation phases.
 - b. Development of an operational pathway for CESMs which will ensure DFES has a stream of experienced bushfire managers at their disposal that can be promoted into other positions in the future.
- DFES Bushfire Risk Management Officers need to be actively involved in prescribed burning and other mitigation strategies, not just planning, as there is an intrinsic link between hazard reduction and response, in that the hazard reduction programs provide invaluable training opportunities for response personnel both staff and volunteers.

- All government agencies need to focus more on ensuring bushland mitigation strategies are put in place to protect their infrastructure not just plans.
- DPaW needs to significantly increase its prescribed burning and scrub modification programs in high bushfire risk prone areas of WA. Their current burn programs are inadequate and are putting communities at risk. This does not mean another increase in budget, merely the use of funding they have already received and significantly increase their burning regime.
- Local governments need to ensure their firebreak notices compel land owners to manage the bushfire risk on their properties, of the 122 Local Government in WA that are required under the act to issue firebreak notices, no 2 notices are the same. This variance in fire mitigation practices mandated to the private land holder is ridiculous. Fire break notices should be compelled to meet a certain minimum standard, (there are many advantages to this, including volunteers from out of the district will have a better understanding of local conditions if minimum standards are met).
- Local Governments who do not have firebreaks bylaws in place should be compelled to have them in place, (often firebreak notices are subject to Shire Councillor direction), again shows a lack of consistency across the State.
- OBRM needs to keep a register of all fuel levels around town sites in WA and ensure high fuel load levels in bushfire prone areas are addressed in a timely efficient manner.

The DFES Commissioner needs the appropriate legislation in place to be able to direct all land owners to manage their bushfire risk in the correct manner, this should also include the ability to “Bind the Crown” to comply.

The effectiveness of emergency management plans and procedures.

The loss of the Yarloop town site needs to be examined carefully to determine what plans were in place for residents in terms of the loss of power and water supplies. It was evident during the course of the fire that the town ran out of water and lost power, therefore rendering those residents who choose to stay and defend their properties powerless.

Who is responsible for ensuring there is back up water supplies and power supplies for communities ?

Keelty Recommendation: 41: Western Power and Water Corporation have reviewed and reaffirmed their existing interagency communication and coordination processes, with risk assessments conducted in an ongoing manner.

SEMC Response Jan 16/2016: Complete: Western Power and the Water Corporation have reviewed and reaffirmed their existing interagency incident communication and coordination processes, with risk assessments conducted in an ongoing manner,

ESVA Response:

The Recommendation needs to be reviewed. This questions the oversight capability of the SEMC as this appears to be merely a paper shuffling exercise with no added value.

The effectiveness of the suppression strategies and tactics used during the fire

Volunteers have reported that the fire behaviour at different stages was the worst they had ever seen anywhere in WA. There is no doubt the rate of spread of the fire was considerable as it travelled in rugged terrain and open paddocks. The strong wind conditions when fire fighters did not have access to aerial support made it very difficult for firefighting strategies to be implemented with much confidence. Nonetheless all fire fighters gave it their all for the duration of the fire and probably saved a lot more lives and infrastructure than has been reported.

The ESVA volunteers have reported that the Waroona fire was split into two major divisions in the early stages with one division being managed by DPaW and the other by DFES. All agencies need to work together to ensure success at large incidents however, the variance in operational practices between these 2 agencies and the volunteers realistically precludes these agencies from operating together seamlessly

It should be noted that sending DFES career Fire & Rescue Scania, 2 wheel drive medium pump fire appliances in to manage and suppress bushfires is a waste of time,

effort and money. Primarily these vehicles are used for structural firefighting and are not built for off road firefighting.

It is evident from ESVA volunteers that a lot more resources were required to manage the fire in its initial stages, but they failed to arrive when requested. Undoubtedly, the decision not to support the early requests had dire consequences for the suppression activities in the early stages of the fire. Whilst they may look very good they carry limited water and cannot leave a sealed road.

It is very important for lead agencies to recognise the expertise among volunteers from local bushfire brigades and Fire & Emergency services when they are providing advice on fire behaviour and the resources required to attack a fire in their patch. Local knowledge is critical to the success of any incident and is also required in Incident Management Teams.

The effectiveness of incident management, including coordination of agencies, volunteer fire and emergency services and interstate assistance.

Western Australia has been the subject of numerous bushfire inquiries since the Keely Report in 2011. Despite the numerous recommendations from these reports bushfire risk management practices, principles and bushfire control methodologies are in a state of disrepair presenting the government with some difficult issues to resolve.

There are a number of reasons as to why WA is at the crossroads in bushfire management, however the time has arrived to recognise what the real issues are. It is also fair to say that the similar problems exist in other states of Australia where there have been significant house losses, critical infrastructure losses and loss of life despite countless fire reports being generated across Australia.

Cultural issues have plagued DFES for many years with the predominantly union based firefighters controlling the state in all aspects of emergency management. Experienced bushfire staff have left the organisation and their positions are being filled by Career Fire & Rescue Service personnel. This has created a vacuum in terms of experience, direction and policy making in all aspects of bushfire risk management,

bushfire operations and emergency management; which has left the state in a vulnerable position.

DFES has a policy whereby Superintendents (rank based) or above fill Level 3 Incident Controller positions. As a consequence, some very experienced Bushfire District Officers are not being given the opportunity to manage major bushfires. There is also a number of very competent volunteers who could easily fill IMT positions. To date there seems to be a reluctance by DFES to use these very experienced Bushfire Control Officers.

Clearly the incident management system was never developed to be rank based for any IMT position. DFES level three bushfire positions are all being filled by CFRS staff. Whilst it would be unfair to point the finger at individual cases in terms of competencies, it is incumbent on the organisation to use the bushfire expertise at their disposal regardless of rank. Incident controllers need to be deemed at a level in line with their experience, competency, knowledge and merit and not by Rank.

Volunteers, particularly in the Country Regions do not have the confidence in DFES to manage bushfires that have a duration of more than one day. This is extremely disappointing given the work that was done before the Keelty Report. As a consequence, DFES has fallen back into the old FRS culture that has little or no respect for volunteers from a bushfire background. Similarly, the relationship with DPaW is simply floundering with no sign of any resolution. DFES now require Incident Controllers to be trained and accredited. This is fine for them to expect their staff to attend long training sessions but an absolute impost to expect a volunteer to do this. The training is often an exercise in control with subject material often repeated. The availability of such training for non-DFES or DPaW staff is almost non-existent, but even if it were available volunteers from country areas would be reluctant to do this due to the travel and time. However, it is obvious that this restriction on volunteers controlling incidents loses authority with distance from DFES offices. In truly rural or remote areas the local volunteers are often the only responders to an incident and they do so with no bureaucratic based decisions.

It is also very unfair to expect Career Fire Rescue firefighters to manage all types of incidents across the state. The traditional roles that they fulfil such as road crash rescue, structural fire, HAZMAT etc. are all completed in a very competent, diligent manner.

The State Wide Operational Response Division (SWORD) VFES was set up to provide additional personnel at incidents, this requires an injection of heavy duty fire appliances. This would provide Incident Management Teams with extra resources at major bushfires. If the above was put in place Western Australia would be a lot safer place to live in. Where practical, preformed Incident management centres should be established, this would provide, without delay, the high level support such as Mapping, meeting facilities etc. that are required. Existing offices could be scaled up where possible.

Much was made in the media of Interstate firefighters being flown in as support. This looked good in the media, but to what aim? There were, within WA, MANY trained and available volunteer firefighters from the various agencies, BFB, VFES & VFRS who were not called upon. This again may be a cultural issue or it may have been that the ROC was overwhelmed and took the easy path.

Agency Interaction and Coordination

The Victorian Bushfires Royal Commission recognised the problems with control and command when separate organisations are responsible for fire management, finding serious deficiencies in top level leadership as a result of divided responsibilities and operationally was hindered by differences between agencies systems, processes and procedures.

The Commission noted many of the concerns identified related to operational matters such as control, interoperability and interagency standards, leading the Commission to conclude that a focus on improving operational capability is required. For many of the operational problems the Commission identified, previous attempts to improve coordination had failed. Typically, progress has been slow or incomplete or has not achieved the level of interoperability required.

The Commission stated that *“the absolute priority is to improve operational performance”*. In support of this, the Commission recommends modest and targeted organisational reform as a catalyst for change. This would involve improvements to common operational policy and standards. Stronger coordination and unambiguous command and control, greater interoperability, and strengthened capacity to provide integrated response.”

In the 2004 October report responding to Major Bushfires, the WA Auditor General noted that the authority for fighting bushfires is shared across each of the 122 local governments in regional Western Australia, the Fire and Emergency Services and the Department of Conservation and Land Management (renamed the Department of Environment and Conservation on 1 July 2006).

Authority is based on land tenure, according to the geographical jurisdiction of each organisation. While firefighting organisations generally work well together, major bushfires have exposed weaknesses in these arrangements, Changes are needed to establish a more cohesive firefighting structure and a sound authoritative basis for managing bushfire emergencies.

Authority is based on land tenure and so is response. The WA public, as well as fire responders are often confused as to who has the obligation to respond and who has the authority to act. Tenure based response and authority should be removed, after all who carries a land tenure map in a fire appliance?

The WA Auditor General recommended that the Government establish a state wide command structure across volunteer bushfire brigades for fighting major bushfires, to more effectively manage coordination of personnel and resources and to establish an emergency management legislation which clarifies State and Local Government responsibilities.

Since 2011 many reports have been completed and include:

1. 2011 Margaret River: 32 homes and 9 chalets destroyed. The impact on the community was immense.

2. 2014 Parkerville/Stoneville: 57 homes destroyed and 6 extensively damaged. No lives lost or serious injuries reported, but 1386 people were registered as evacuees.
3. 2015 Northcliffe: 98000 hectares burned. Complete destruction of a forest. The cost to the Government over 15 million dollars.
4. 2015 Jan & Feb Lower Hotham and O'Sullivan Fires: 147000 hectares burned.
5. 2015 Esperance: 4 lives lost, numerous livestock and 200,000 hectares burned. The impact on the community was significant.
6. 2016 Waroona/ Yarloop Fire: 2 lives lost, 125 structures burned, major disruptions throughout South West.

The above reports reflect the status of bushfire management in WA. In addition, there are many other major reports that have provided consistent themes with little changes being made by the key fire agencies. Lessons learned are being ignored.

What is clear in WA is that the current systems for managing major bushfires and other hazards, (cyclone, floods, search) leaves a lot to be desired and the bushfire risk management practices by all land owners is abhorrent.

Numerous volunteers are calling for major reforms to the way in which bushfires and bushfire risk management practices are applied in Western Australia.

Protection of essential services, infrastructure and access to essential services (power, transport, water, communications) by emergency service organisations and the community.

Critical infrastructure owned by Western Power, Water Corporation and Main Roads suffered major damage or loss during the Waroona bushfires. The cost burden to Government and the responsible agencies will run into millions of dollars. At the time of some of these critical losses to infrastructure, fires ravaged Yarloop inflicting significant structural losses and of life.

The loss of a major bridge on the South West Highway, south of Waroona, caused major disruptions to the access and egress of the fire. Similarly, a bridge was lost at the Roleystone fire and caused major disruptions. Following the Roleystone review,

Main Roads affirmed that all highway bridges were assessed and this item was signed off as completed. Obviously it was not.

Government agencies have a responsibility to manage their infrastructure against the threat of bushfires across WA. It is very apparent across WA that wooden Power poles are used in the bush with very little bushfire mitigation strategies in place to protect them. Therefore, leaving the power infrastructure vulnerable in the event of a bushfire, causing inconvenience to the residents and major costs to government agencies, private land owners and Insurance companies as well as endangering firefighters lives the damaged power infrastructure carries the significant risk of death or injury by electrocution. The volunteers are supposed to be able to work around this in hazardous situations.

Volunteers who raise these issues with the appropriate authorities are continually ignored.

In the majority of bushfires in WA, critical infrastructure is lost on a regular basis. This is evident in the many fire reports over the last 4 years. Agencies need to be held accountable for their actions or lack of.

Western Power and Horizon Power in partnership with local government should consider placing power lines underground in bushfire prone areas of WA, even though the costs will be significant, in the long term the costs benefits would be considerable.

Keelty recommendation 41: Western Power and Water Corporation continue to work collaboratively to assess options to better protect the power supply to water pumping stations in bushfire prone areas.

SEMC update Jan 2016: Complete. Western Power and Water Corporation have reviewed and reaffirmed their existing interagency incident communication and coordination processes and with risk assessments conducted in an ongoing manner.

ESVA Response: This recommendation needs an urgent review given the collapse of water and power supplies at Yarloop.

The effectiveness of public messaging including the adequacy and timeliness of emergency warnings to residents and visitors.

ESVA volunteers have reported contacting DFES at important stages of the Waroona fire requesting an upgrade to the public warnings that were being issued relating to the town sites of Waroona and Yarloop. The volunteers were advised by DFES that the fire was being managed by DPaW, therefore all warnings needed to go through their system. This caused a major time lag in presenting this information to the appropriate authority and the consequences need further investigation to ensure appropriate policies need to be in place to ensure an effective warning system is understood by everyone.

DFES is the lead fire agency in WA and surely when there is a level three incident in place the warnings should be managed by one agency. The general public are reliant on DFES to provide those warnings, not DPaW.

A thorough examination is required of the early warning systems and their effectiveness in particular at level 2 and 3 incidents. Residents have a right to know the warnings they are receiving are up to date and correct.

DFES needs to be responsible for and manage this process properly to eliminate confusion at future incidents. Community alerts are issued in accord with DFES SAP 3.1D, this requires the Officer who wants an alert raised to assess the incident against the alert criteria and then telephone the on call staff, recalling them and they will receive the request and initiate the warning. What if the responder does not have a mobile phone or the correct contact details, these persons are often volunteers not DFES staff? Mobile phones are not mandatory and many volunteers will not take their personal phones onto a fire ground. What if the mobile network is not available, a non-service area or the nearest base station is down?

The process is wrong and an alert should be able to be initiated on request, by radio to COMCEN.

Keelty Recommendation No 34: FESA in partnership with other emergency service agencies establish a one source: one message multi layered system similar to that recommended by the Victoria Bushfire Royal Commission.

ESVA Response:

This recommendation requires an urgent review.

SEMC Update Jan 2016: Complete: DFES, DPaW and the ABC have worked collaboratively to implement this recommendation, which has resulted in a number of measures including a numbered system for DFES alerts and warnings, and a review of the DFES Standard Operating Procedure for activating ABC emergency broadcasting.

ESVA Response: Volunteers and residents at Yarloop have indicated the warning notifications were inadequate and not timely. This warrants a major investigation to ensure the fire agencies are working in a collaborative manner with a ONE STOP SHOP for warnings. (The public also need to take some responsibility as well. They knew there was a fire)

Management of people seeking to return to their properties.

There were many complaints from volunteers about the impact of people who could not return to their properties in a timely manner. The delays caused a lot of stress to the local fire fighters who were receiving complaints from their community.

Volunteer fire fighters (farmers) who played a critical part in the suppression of the fire were very frustrated by the fact that they could not leave their property to procure fuel, food and other necessities to continue with the suppression of the fire. If they did leave they could not return to their properties. Given the delays and what appeared to be decisions made on the run many people who were fighting fires were disadvantaged by poor decision making.

The recovery process should be considered from day one of the incident and a review is required to examine whether recovery practices are being adhered to, given the amount of complaints that have been received.

TOR 2: Lessons learnt from previous bushfire emergencies

Since the Keely Report in 2011 Western Australia has had numerous well documented large bushfires that have caused a lot of destruction, major losses of infrastructure and loss of life in different parts of the state. Keelty made 55 recommendations of which a number have not been implemented to the satisfaction of volunteers. This situation needs to be reviewed.

The majority of the recent reports highlight the need for changes in numerous areas, but little changes have occurred since the Keelty report. Agencies are still doing their own thing with only minor improvements being addressed.

Climate change has been blamed for the severity of fire in bushfire prone areas. This has been well documented, the continuing focus by DPaW, DFES and some local governments on operations and paying lip service to bushfire risk management has seen towns burned down, farmlands and forests incinerated. The human, economic losses and the costs of firefighting and recovery have yet to be measured. No doubts the costs will be considerable when finally measured by the government.

Fire and Emergencies services in WA need major reform to enhance the State's capability to bushfire response, bushfire risk management and other hazards. Otherwise the situation will continue to worsen and the volunteers in general will become more disillusioned.

If the organisations are genuine in their attempts to implement the Keelty recommendations, then training should be delivered by one agency with the appropriate experienced bushfire skills and knowledge. This would ensure key IMT managers are trained at the same level and then should exercise together to further enhance their knowledge and skill sets. If this process is not adopted lessons will never be learned. DFES training centre has one bushfire manager at district officer level to deliver bushfire training; the rest is completed by CFRS.

What is obvious to the majority of volunteers is that the current bushfire suppression models and bushfire risk management processes clearly do not work in this state? DFES is clearly deficient in key bushfire experienced personnel. It is time for a change!

ESVA Comments

- *DFES is depleted of experienced bushfire and emergency management staff across the state,*
- *Collaboration between fire agencies in WA is very poor,*
- *There is too much focus on bushfire operations and not bushfire risk management,*
- *Rank based IMT do not work,*
- *Training for bushfire needs to be delivered by personnel with the knowledge, experience and competencies,*
- *There are too many fire agencies (124) in WA.*

Appreciating the Risk- Report of the Special Inquiry into the November 2011 Margaret River Bushfire (Keelty, 2012)

ESVA does not wish to pass any comments on this report.

Post Incident Analysis of the 2011 Margaret River and Nannup bushfires (Noetic Solutions, 2012)

The Noetic Solution reports are lack lustre and do not provide a major insight into the underlying problems associated with bushfire risk management and bushfire suppression.

Parkerville, Stoneville and Mt Helena Bushfire Review (State Emergency Management Committee (SEMC, 2014).

The Review of the above fire provided a number of options to improve procedures and processes at bushfires. Some of the key opportunities for improvement that were made relate to the following:

1. DFES should increase, develop and maintain bushfire skills and expertise through the establishment a dedicated bushfire command.
2. Appointment of senior volunteers within the command should include people with experience and credibility in bushfire firefighting and management.

ESVA Response: DFES has been depleted of senior bushfire expertise in the last 4 years to a point where there is now only one Assistant Commissioner and one Superintendent with bushfire expertise, experience and knowledge in the organisation. Given that the number one risk in WA is bushfire, the erosion of experienced bushfire staff from DFES has caused immeasurable problems that will take many years to fix.

The dedicated command has never been put in place. FRS Career staff have filled all the key positions of managing bushfire in the state.

3. Procedures should be established to monitor the use of heavy plant during a bushfire incident, including the tasking of support appliances. Procedures should provide for the appointment of a dedicated Machinery Supervisor.

ESVA Response: This item has not been addressed at large bushfires. Inexperience among staff members to manage the deployment of heavy machinery at bushfires is visible to many volunteers. Training alone will not solve the problem, experience in the field and mentoring is a process that is over looked by agencies.

The above role is critical when managing bushfires.

4. The SEMC should clarify, in policy, the approach to providing support and services to people who stay to defend their homes. Also need to identify the roles that the HMA, other agencies and organisations may have to adopt in capability planning, community engagement and information campaigns.

ESVA Response: Recovery is an issue that is constantly raised by volunteers and residents that flows through from most fires, in particular where there is a large fire area and exclusion zones are considerable. ESVA supports a review of the current recovery policies, to ensure there is scope for residents to defend their homes and

also return them to their homes in a timely fashion. Recovery processes should be considered from day one of an incident. There should be a section in the IMT that commences this process immediately.

O'Sullivan and Lower Hotham Bushfires Review (SEMC, 2016)

The above report reflects the issues that have been mentioned in previous reports on bushfires in Western Australia. The three recommendations made by the writers do not truly reflect the chaos that was portrayed by many volunteers at the fires. The poor planning processes that were put in place by IMT's had major impacts for volunteers that travelled across the state to assist at the fires.

The West Australian State Emergency Management Committee Preparedness Reports

ESVA has no comment to make on these reports.

The effectiveness of reforms implemented by the State since 2011 on the State's ability to prevent, mitigate and respond to major bushfires and the communities understanding of and preparedness for bushfire risk.

The ESVA acknowledges all the previous fire reports that have been written since 2011. As you read through those reports it is very evident they are all very similar in the themes of their recommendations.

Whilst the state has implemented some reforms to bushfire prevention activities, there is a long way to go to ensure communities will be adequately protected from bushfires.

DFES, DPaW and Local Government need to implement bushfire risk management strategies such as prescribed burning, firebreaks, chemical spraying, scrub modification and mulching to provide better protection for communities in high bushfire prone areas.

DFES and DPaW continue to focus on operational matters at the expense of prevention activities. This approach has been catastrophic for the state to date and

needs to change before next fire season. Greater emphasis must be given to bushfire risk management activities, therefore lessening the burden on communities under threat from large bushfires.

There still is a perception by the community that career fire fighters and volunteers will save their properties in the event of a fire. This is not always possible.

Token respect has been provided to the Keelty recommendations by DFES and DPaW in regards to bushfire risk management.

In terms of responding to bushfires the lessons learnt from previous bushfires is poorly documented and only minor headway has been made since the Keelty Report in 2011.

- Poor interoperability still hinders fire agencies,
- Agency cultures and lack of incident management experience at major bushfires and other hazards is a major concern,
- Differing training standards of key bushfire personnel from agencies,
- DFES managing IMT teams by rank, not competencies, experience and knowledge,
- The depletion of key bushfire personnel within DFES has had a dramatic impact on the agency's ability to manage large bushfire incidents,
- Interoperability between DPaW and DFES in operations is poor.

The above points have been highlighted in numerous reports with little action being taken by the key fire agencies to address the issues. Until they are addressed the same issues will continue to be raised by volunteers across the state, therefore putting the state at risk from the impact of bushfires.

TOR 3: The need for further reform

Any legislative, policy or functional reforms relating to bushfire risk management, emergency management and processes for review of major incidents to strengthen the States capability to efficiently and effectively manage bushfire related risk.

In terms of legislative changes, the DFES Commissioner needs to be empowered to be able to direct any agency to manage their bushfire risk in Western Australia.

This will enable a process whereby landowners who fail to manage their fuel load to the agreed standards can be directed to do so by the DFES Commissioner. Failure to do so should result in noteworthy penalties under the law. As a consequence of this change managing bushfire risk will be more effective, therefore increasing the safety of communities in high bushfire prone areas of WA.

Other Major Reform of Fire Agencies in WA

As previously stated, urgent change is required within DFES and other agencies in aspects of bushfire risk and bushfire management and emergency services. Previous reports have demonstrated there are a multitude of issues that the state faces in terms of a bushfire strategy. Lessons learned have not been heeded by any agency, hence a change that will address the differing cultures in WA bushfire management is needed urgently. The state can't afford to continue with the current practices otherwise there will be further dilemmas into the future.

The lack of collaboration between DFES and DPaW is unacceptable and probably will never change due to cultural issues from both agencies, however it is now time to remove DPaW firefighting from its current Department and relocate together with Local Government to form a Rural Fire and Emergency Service within DFES. Therefore, presenting the state with an experienced bushfire team to manage bushfires and bushfire risk management activities across the State. This can be achieved with a Commissioner for Fire and Emergency Services over the top of a Metropolitan based CFRS and the Rural Fire Service. This would include a greater focus on the management of crown land, National Parks and bushfire protection zones across WA.

Confusion, culture issues, lack of collaboration will be eliminated in time under the new model. The public/volunteer confidence will be restored if the model is managed appropriately. Greater accountability and scrutiny will be provided by a Commissioner overseeing the main State Emergency Service bodies in WA.

Cultural issues would be resolved with the advent of change. The organisation will work with communities to ensure their needs are met and not being told what to do as is the approach today.

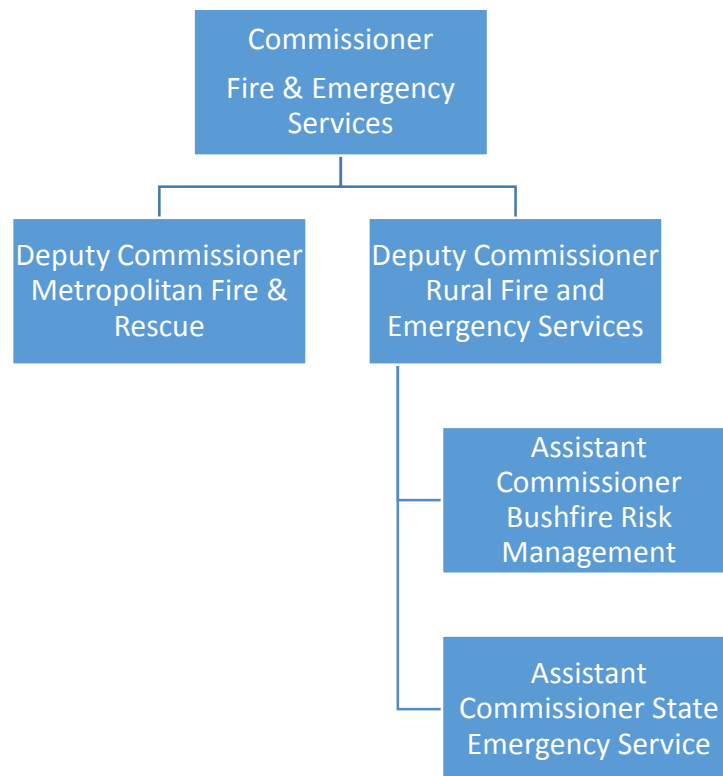
The Career Fire and Rescue Service would manage the Metropolitan area and provide assistance to the Rural FES when required. The CFRS would not be responsible for large bushfires in bushfire prone areas, Eg; Perth Scarp etc.

Community Centred Emergency Management

Agencies have walked away from community centred emergency management and placed more emphasis on a command and control approach to local government and their volunteers. This approach has broken a system that had great success and is now in poor shape leaving communities without a voice. The primary objective of community centred emergency management is to minimise the impact of emergencies by working with the community, trust and respect, and not simply telling communities what to do.

The practice in the past has been to tell communities what they will do and has not allowed them to take ownership for reducing risk within their areas. Community engagement can be described as the process of working in a unified and cooperative way with groups of people who have a common interest that requires action. This affiliation can be through:

Proposed Model



Outcomes of Proposed Reform

1. The layers of bureaucracy will be reduced from three agencies to one,
2. Bushfire Risk management will be managed under one umbrella across the state,
3. Cultural boundaries will be broken down in time,
4. A focus will be on community centred emergency management,
5. A single commissioner will be responsible for the agencies,
6. The Rural Fire and Emergency Services must be managed by an experienced bushfire team that have the competencies, knowledge and skills sets to deal with large bushfires across the state. This would also include natural hazards.
7. The accountability for bushfire risk management would be visible to government
8. Experienced staff would respond to all the hazards in WA,
9. The Rural Fire and Emergency Services would focus on Community Centred Emergency Management Practices.

10. Consideration would need to be given to CESMs/Chief Bushfire Control Officers to be one. Where there are CBFCO position in high bushfire prone areas they would be become paid staff. In smaller local governments there would need to be mergers to ensure their viability.
11. Bushfire Brigades in the Metropolitan area would remain with the Rural Fire & Emergency Service.
12. OBRM to be transferred from reporting to the DFES Commissioner to an independent area like SEMC.

Summary

Volunteers and the community have had enough of enquiries into incidents in WA. Lessons are not being learned by the key agencies and the bushfire strategy is not working, therefore putting the community at risk.

The fact there are 124 fire services in WA with differing cultures clearly indicates the need for a new model that focuses on community centred emergency management. This is a proven formula and one the community has been calling for some time.

Considerable radical change needs to be implemented so the volunteers and community will embrace the changes and reinstate confidence in Fire & Emergency Services across Western Australia.

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Acronyms

DFES	Department of Fire & Emergency Services
DPaW	Department of Parks & Wildlife (CALM & DEC)
ESVA	Emergency Services Volunteers Association Inc.
VFES	Volunteer Fire & Emergency
BFB	Bushfire Brigade
CESM	Community Emergency Services Manager
OBRM	Office of Bushfire Risk Management
CFRS	Career Fire & Rescue Service
SEMC	State Emergency Management Committee
FESA	Fire & Emergency Service Authority
IMT	Incident Management Team

January 2016 Waroona Fire

3. The need for further reform

Firewise
Western
Australia



Golden Valley Tree Park in Balingup, South West, Western Australia.

Submission from Peta Townsing of Firewise WA to the Public Inquiry into January 2016 Waroona Fire February 2016

Firewise
Western
Australia



The need for further reform

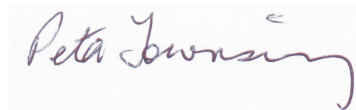
in Bushfire Risk Management

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To the Waroona Special Inquiry

I would like also to orally present my submission at a public hearing if that is possible. I can travel up to Perth quite readily - it's a two and a half hour trip each way, quite easy as long as the highways have not been closed.



Peta Townsing

26 February 2016

Front cover. Looking across to the Golden Valley Tree Park on the southern outskirts of Balingup, a small town in the South West, Western Australia. Planted here is a wide selection of mostly deciduous trees – poplars, willows, oaks, plane trees and many others – which, beside their educational and scenic value, do not support high-intensity fire and provide a low fuel buffer. The grassy areas are grazed by sheep thus helping to lower the risk of a very hot grass fire. This is one of several buffer zones around Balingup which help protect the town from bushfires. Orchards and several open and maintained grassed areas are part of the system.

See 4.5 A circle of safety around settlements.

Author: Peta Townsing, PO Box 189, Balingup, WA 6253. [REDACTED] Updated Version 2 with links that work!
Firewise Western Australia. Submission to Public Inquiry into January 2016 Waroona Fire. February 2016



Executive Summary

The problem of bushfire risk management is fundamentally a problem of land management and its effect on people.

We need to look at our continent with sharp eyes and a clear head. We need to apply scientific principles and make evidence-based decisions on how to best manage our harsh but beautiful land.

Above all we need to ensure that our citizens can avail themselves of the opportunities to be safe. No one should have to go through the ordeal of having their home destroyed, or worse, be killed by a bushfire.

Governments can only do so much, but at least Government can provide the basis for its citizens to be reasonably safe through education and having firesafe infrastructure such as roads, bridges, other assets and, indeed, Crown land. Federal, State, Authorities and local governments all have a part to play in maintaining Crown land and other lands vested in them in a condition of low bushfire risk.

Then it is up to the person to do what they can on their own properties and, at times, work with others to make their neighbourhood less at risk from bushfire.

Their home is their castle, it is their domain, and that is why homeowners are an integral part of bushfire risk management. Regrettably, they have not been seen as significant stakeholders to date.

List of Recommendations

Recommendation 1

That consideration be given to providing more resources to the Department of Parks and Wildlife to conduct prescribed burns to reduce the deficit of excessively old fuels so that the recommended lower levels for bushfire risk reduction can be achieved within the next two years.

Recommendation 2

That the Water Corporation take steps to ensure that bushfire risk warnings are included in material about waterwise plants and flammable mulch made from plant materials.

Recommendation 3. Bush either naturally occurring or in a revegetated form needs to be kept at a minimum distance of 100 m from houses to reduce the risk of bushfire attack.

Recommendation 4. Creating the 100 m buffer for existing homes may mean clearing of residual bush and regrowth. These actions need to take precedence over environmental regulations because life and property are paramount according to emergency management principles.

Recommendation 5

That Bunnings and other retailers be approached to feature products for retrofitting older houses and their surrounds to make them less vulnerable to ember attack.

Recommendation 6

That the promotion of bushfire awareness include mitigation messages and be done in a way that tries to get homeowners' support rather than the present negative approach currently favoured by authorities.

Recommendation 7

That DFES develop a group similar to a Customer Advisory Council that includes homeowners from RUI areas to ensure all stakeholders including homeowners in the RUI are represented.

Recommendation 8

That the ESL, if not already, be used to foster more mitigation projects including contributing to a Firewise Communities program.

Recommendation 9

That reforms be instituted to bring LGA planning and policies in line with sound practices for bushfire risk management and that the process be made simpler with fewer permissions required.

Recommendation 10

That a different type of ecology for settlements takes into account the bushfire risk to people and property and is promoted, implemented and supported.

Recommendation 11

That the nursery industry and the garden media people be encouraged to support firewise principles in choices of plants and garden design.

Recommendation 12

That garden expos in Sydney, Melbourne, Adelaide and Perth have a category of “Firewise Garden” and that there be prizes in this category to aid in promoting this safer concept.

Recommendation 13

As a matter of urgency review many of the “environmental” schemes, both Federal and State, with a view to directing the resources to bushfire mitigation works in the fire-prone areas. It will still have positive environmental outcomes based on good science, not romanticism.

Recommendation 14

That the concept of circles of safety be created and promoted around towns to ensure low fuel buffers are staged around towns to impede the progress of bushfires and keep residents safer.

1. Addressing the Terms of Reference

My submission addresses parts of the third category: Accordingly I am providing information and explanations on:

“Any ... policy or functional reforms relating to bushfire risk management ... to strengthen the State’s capability to efficiently and effectively manage bushfire-related risk.”

However, I would add to this a further aspect - about the State - for consideration which expands the Terms of Reference which, I hope, will be found acceptable.

There are limits to what the State can do. Some actions such as organizing to build major infrastructure only Government can do (although private contractors will often do most of the work), but there are many spheres of activities when better outcomes are achieved if left to the private sector or to individuals.

With bushfire risk management there is a case for involving residents and organizations as partners and stakeholders rather than passive recipients of Government help. The State has a role in facilitating residents becoming more independent when it comes to reducing bushfire risk, but the State does not have to do it all, or any of it, for them.

I know the term “shared responsibility” is used to imply that residents do have a role in making themselves safer from bushfires, but it has hardly been implemented and too few residents have become self-reliant when it comes to bushfire attack. This is an issue that urgently needs addressing if we are to minimize damage and avoid loss of life. There are potential solutions based on programs in other countries and in other spheres of activity that could be applied in reducing the risk of bushfire attack in WA.

Thus in the Terms of Reference I am using the term “the State’s capability” in the broadest possible sense.



2. My background and qualifications for making this submission

I live in a fire-prone area in the South West. I am one of a small group of likeminded people making up Firewise WA who live at the Rural Urban Interface in the SW or Perth Hills. I have a science degree in chemistry with botany and zoology and some years later completed a Dip Ed. The teaching qualification was useful in understanding how children and adults learned and that positive reinforcement was more powerful than negative reinforcement in changing behaviour. The carrot is mightier than the stick. I've taught Biology at senior high school level before working as a systems analyst in the WA state public service. I worked on projects involved in public sector reform including projects on outsourcing and competitive tendering and contracting whilst at the State Supply Commission.

Now semi-retired I have a 1.9 Ha property on a fresh water stream. I have been experimenting with ways to reduce overgrown vegetation. All trees and shrubs with volatile oils have been banished from that half of the block on which my house sits. However, my main qualification and motivation in writing this submission is the awareness that for six months of the year I, like others, face the threat of bushfire. I want to see that risk diminished, not only for myself, but for all of us who live in these fire-prone areas.

3. The South West areas of bushfire risk and issues arising

Bushfires are endemic to much of Australia and the South West is no exception. The South West Land Division as defined by the Bureau of Meteorology shows the area as beginning from north of Geraldton and then heading south in a broad arc from the coast to include Perth and its hinterland, then Bunbury and Margaret River, the inland towns of Katanning and Bridgetown and around to Albany. This is the area that includes sandplains to the north then extensive Jarrah/Marri forests with Karri forests nearer the South Coast. Within this area is the bulk of the population of Western Australia which is concentrated around Perth in the Swan Coastal Plain suburbs and in the Perth Hills.

Beyond Albany to the east the Land Division includes Esperance, though the forests give way to woodland and somewhat different fire regimes. The population is more scattered and considerably less dense.

The problem areas for bushfire are where the Coastal Plain vegetation or the Jarrah Marri forests intermingle with the outer suburbs of Perth, with the Perth Hills settlements and with the South West towns and their satellite housing estates or pockets of long subdivided farmland with houses, the lifestyle properties. There are some estates and small landholdings in the Karri country, eg around Denmark, Northcliffe, Pemberton and the southern parts of Margaret River, at risk, though with fewer people than further north.

The native vegetation is adapted to fire as are the animals. Fire is a naturally occurring phenomenon, that has many benefits, including the recycling of nutrients and generally removing the dead vegetation and encouraging new growth. It is an essential component of the ecology of the South West.

These areas where houses and bush are within a 100 m or so of each other have come to be called the Rural Urban Interface or RUI which is analogous to the US term for the same phenomenon, the Wildland Urban Interface, or WUI.

There are **four main categories of land or structure** where there is a risk that fire can occur and affect the landscape, property or people. These categories all need some type of management to reduce bushfire risk that varies with the category. Importantly if all categories have been treated in appropriate ways the risk to people and property is minimized. If only one category, say, that of the wider landscape has been treated, for example, by fuel reduction burning then there can still be a high risk to homes in the RUI because of lack of fuel management in the other categories. The categories are as follows:

3.1 Fire risk in the greater landscape

3.1 (a) General description

Bushfires occurring distant from settlements may not be seen as causing problems, but if burning too intensely, may kill trees and whole populations of native fauna. As well these days, unlike the old days of, say, 70 years ago, there is likely to be more infrastructure somewhere in the vicinity that can suffer damage.



An intense fire, such as the Northcliffe fire, can produce showers of embers that can start spot fires kilometres away which have the potential to effect more distant towns, in this case, Pemberton.

Thus, these days, I have been advised by Department of Parks and Wildlife (DPaW) officers that it is preferable if these distant blazes are managed to the maximum extent possible so that they do not become massive and capable of travelling many kilometres, burning everything in their path and spotting kilometres ahead.

3.1 (b) Management issues.

From about the mid 90s prescribed burning was being done at far less than optimal levels and many parts of forests have fuel ages of well over 20 years. If there are areas with these older fuels the scene is set for intense fires in the Jarrah forests. Pleasingly, last year extra funding of \$20 million was provided by the State Government to boost prescribed burning programs.



We are appreciative that DPaW did a recent burn last October in 2015 of 1000 Ha five kms to the north and east of us at Mullalyup, where there were areas that had not burnt for about 30 years. If left unburnt there was real potential for any fire coming out of that forest to become an inferno and take out several small towns, including Balingup where we live.

The pictures, taken four days after the burn show a little of the burnt area further along the road on which we live. (Top) Looking SW from corner of Grimwade Rd and Kirup Grimwade Rd and (below) looking in the opposite direction where smoke is still drifting up from burning logs. Some patches were burnt more intensely than others, eg in the top picture, whereas less in the lower picture. The fire was contained to one side of Grimwade Rd.



I have been told by DPaW that if fuels are younger than about eight years in our Jarrah forests then there is definitely a benefit in that any bushfire that may occur is more readily controlled. There is less fuel to burn. Beyond eight years or so the benefit decreases markedly. A patchwork of differently aged vegetation in the broader landscape with most patches younger than eight years ensures that

any bushfire that starts is more readily controlled and at less risk of getting away.

See Attachment A where a prescribed burn near Balingup conducted some months before the Ferndale Fire of February 2009, halted the fire on its northwestern flank.

The extra \$20 million for prescribed burning has enabled more burning, including the one just described at Mullalyup. I understand that with the extra funding more prescribed burning can be achieved but it will be some five years before the deficit - of not burning very much for many years - can be made up. It would seem to me, I know, a not disinterested observer, that the more quickly the deficit is reduced the better. Greater mitigation means less intense bushfires and lower costs for taxpayers, insurance companies, residents, etc.

Recommendation 1

That consideration be given to providing more resources to the Department of Parks and Wildlife to conduct prescribed burns to reduce the deficit of excessively old fuels so that the recommended lower levels for bushfire risk reduction can be achieved within the next two years.

3.2 Fire risks in the areas close to settlements and infrastructure

3.2 (a) General description.

These areas are very much a mixed bag with different ownership structures. Some are Crown lands vested in Local Government Authorities or in State utilities such as the Water Corporation and Western Power. They include road verges which may be under the control of Main Roads or an LGA, water catchments, reserves (often in small parcels of less than a hectare, but can be much larger), conservation reserves, municipal parks, river reserves, etc. These areas are often adjacent to private property, such as hobby farms, housing subdivisions, on the outskirts of town and sometimes even near town centres in the form of nature reserves or parks.

For the purposes of this submission I am concentrating mostly on RUI properties. Large farming properties, in the main, keep their properties at low fuel levels and are very much aware of bushfire risk.

3.2 (b) Management issues

Wildlife corridors that are made up of stretches of verges, river bank land, contiguous with reserves are often encouraged. They are meant to afford a means for wildlife to move from one area to another, but can equally serve as a conduit for bushfires unless fuel is reduced on a regular basis. These areas, often unmanaged, are a cause for concern, as they can be quite close to housing and infrastructure such as bridges.

I note from the Keelty Perth Hills Bushfire February 2011 Review pages 65 to 71 there are assessments of the state of verges and other reserves not only for the City of Armadale, but also for other LGAs. The Review clearly shows there is a problem of high fire risk and also the problem of lack of awareness of this risk, coupled with an alleged scarcity of resources to address the problem.

Five years on we appear to have advanced very little. Recent visits to Kelmscott and Roleystone indicate that verges and reserves have a large build up of litter. Ostensibly this build up is said to support wildlife but it could just as easily be said that the litter is at such levels that it harbours vermin and constitutes a fire hazard.

In Balingup we continue to have verges with large amounts of flammable material on them coupled with poorly maintained remnant forest trees that frequently drop branches or fall over entirely. The verges commonly are within 20 m or so of sheds or even houses and represent a fire risk.

A neighbour some 200 m along the road from us had to engage a contractor to chain saw the large trunk of a Blackbutt that had fallen from the verge and across his fence. He needed to be able to fix his fence to keep the sheep in that he has recently acquired to graze his paddock and reduce the fire risk. He had been advised by the Shire that making good the fence and removing that part of the tree affecting his fence was his responsibility. The Shire of Donnybrook Balingup has notes on its website about verges. Here is an extract:

Under the heading of: Trees across roads and fence lines – Who do we call?

Winter brings wet weather and storms; quite often we get trees falling into properties or across roads. The Shire will remove the tree from the carriageway to re-open the roadway to traffic as soon as practicable.

Where fallen trees do not present a roadside hazard they maybe left on the verge to encourage native habitat.

Where storms or other natural events cause trees to fall from road verges onto fences or into properties, the Shire may contact the landowner to advise of the damage and carry out any necessary works where the fallen tree presents a hazard to road users.

In this case it's the landowners responsibility to repair the fence and remove and dispose of the fallen tree in their land.

If however, the landowner is not contactable, Shire staff may carry out temporary repairs on the fence if there is stock in the paddock or cut the tree at the fence line.

If the tree falls across a main road along – South Western Highway, Goodwood Road, Boyup Brook Road, Preston Collie Road and Marmion Street (between South Western Highway & Emerald Street), please contact Main Roads on 138 138.

If the tree falls on all other Shire roads, please ring Works & Services on 9780 4200 or after hours emergency 0427 274 060.

Verge management is unsatisfactory and placing the onus on the neighbour to fix a problem emanating from Crown land seems back to front. Fires coming out of high fuel loads on Crown land is also an issue.

3.3 Fire risks in the area around the house

3.3 (a) General description

Many people have come to live in such places as the Perth Hills or near South West towns in the past 20 years or so. These previously urban-based people could be termed 'internal migrants' where they are moving to a different land for which they are not necessarily equipped, the RUI.

Some blocks will retain patches of remnant bush, others may have been totally cleared with the landowner deciding to develop a large garden or there may already be an established garden started by a previous owner.

3.3 (b) Management issues

Given the background of the owner there may be little or no recognition of bushfire risk either coming from nearby or adjoining bushland, or from vegetation on their own block.

For more than a decade the Water Corporation has staged a concerted campaign to encourage homeowners to cut their water use, especially around their house, ie in the garden or yard. This attitude is pervasive and is taken up by homeowners throughout the South West even if they are not on scheme water. In order to conserve water they are encouraged by the Water Corporation to plant waterwise plants, many of them native species, of which most contain volatile oils in their foliage making them highly flammable.

We are told to use mulch made from shredded plant material to conserve water. This is not at all suitable anywhere near the house as it is akin to forest litter and will support fire. Occasionally there will be a mention of using pebbles or other inorganic material, but this warning is rarely prominent.

Lately Water Corporation have become slightly more aware of bushfire risk and steer homeowners to their website page Landcaping for bushfire:

<http://www.watercorporation.com.au/save-water/waterwise-plants-search>.

This has links to the excellent online CFA Plant Selection Key,
<http://www.cfa.vic.gov.au/plan-prepare/plant-selection-key/>.

Nearly all the promotional material from the Water Corporation about being waterwise is without any warnings as to bushfire risk consequences. With the recent Bushfire Prone Area maps showing that a high proportion of the South West is deemed to be at risk of bushfire it is important that recommendations about what to plant and the use of mulch carry warnings as to how safe they are when planted or spread in areas at risk of bushfire.

Recommendation 2

That Water Corporation take steps to ensure that bushfire risk warnings are included in material about water-wise plants and flammable mulch made from plant materials.

The area that surrounds the house up to a distance of 100 m is an important factor in determining how safe the house and its occupants are in the event of a bushfire. The following is in the submission I made to the Productivity Commission in October 2014. I appeared before the Commission in Melbourne in late October 2014.

A study based on the analysis of several major bushfires has shown that the distance from bush is a key factor in whether a house burns down or not. The closer the house to bush the higher the risk of the house being destroyed. "Bushfire Penetration into Urban Areas in Australia: a Spatial Analysis" Bushfire CRC 2010.

The report states that *"It is very clear that about 85% of damaged buildings occurred within 100 m of nearby bushland, a very stable result and regardless of the exclusion or inclusion of Duffy samples (N = 206), which only accounted for 8.4% of all national samples analysed. In other words, if we were to avoid building structures within 100 m, of bushland boundaries, then the majority of building damage would be avoided."*

Updated link (28 February 2016):

<http://www.bushfirecrc.com/sites/default/files/managed/resource/bushfire-penetration-urban-areas.pdf>

This study has shown that clearance of 100 m or so from bush is one of the most effective ways of reducing the risk of a house burning down.

Additionally if the garden or yard has wide open areas of paths, lawns with shade provided by deciduous trees and no trees nor shrubs with volatile oils in their leaves (no gum trees nor melaleucas), nor dead material building up in the trees and shrubs then its risk is further reduced. All conifers are best kept well away because of the resins of the trees and the readiness with which pine tree needles and the leaves of other conifers build up.

Bringing bushland plants close to the house in an attempt to recreate the bush setting and have a haven for birds and other animals is not a good strategy in the light of these findings. 100 m distance to the house from any type of bush (either naturally occurring or replanted) is a major component of making a property safer.

Recommendation 3. Bush either naturally occurring or in a revegetated form needs to be kept at a minimum distance of 100 m from houses to reduce the risk of bushfire attack.

Recommendation 4. Creating the 100 m buffer for existing homes may mean clearing of residual bush and regrowth. These actions need to take precedence over environmental regulations because life and property are paramount according to emergency management principles.

3.4 Fire risks to the house

3.4 (a) General description

The Productivity Commission in its Inquiry into Natural Disaster Funding Arrangements in 2014 reported, “Land use planning and building regulations only apply to new properties and developments or significant modification to existing properties. This corresponds to only a small proportion of the housing stock each year (1.3 per cent for building regulations), so the impact of changes to these policies has a long lag time.”

This legacy housing is thus a major part of the problem with many thousands of houses built twenty, thirty even eighty years ago across Australia being susceptible to bushfire attack.

3.4 (b) Management issues

The principal cause of houses burning down in bushfires is due to ember attack which often occurs not with the passing of the fire front, but happens many hours afterwards when smouldering embers caught in the roof space, for example, or in corners under a veranda flare up and ignite the rest of the house.

Modern houses are usually designed to have good insulating properties which also means no gaps between roof and wall or nooks and crannies in the building which can harbour embers.

The older house can be retrofitted to prevent embers from entering through gaps in the structure. This can be done in a cost-effective way though it is not widely discussed and not promoted nearly to the extent it could be. It would be productive if stores such as Bunnings had a section that focussed on the retrofitting of older style houses. There are numerous candidate houses so it would be a profitable exercise. It seems at present that we homeowners at the Rural Urban Interface are very much on our own.

The article with the link below from an interview with Jack Cohen provides a useful insight to this topic in which homeowners are assured that simple techniques to reduce ember penetration can be effective and relatively inexpensive. The article also covers the topic of the need for careful selection of plants in or near the building protection zone, see **3.3 Fire risks in the area around the house**

<http://www.hcn.org/articles/the-loss-of-homes-to-wildfire-is-as-much-a-sociopolitical-problem-as-it-is-a-physical>

Recommendation 5

That Bunnings and other retailers be approached to feature products for retrofitting older houses and their surrounds to make them less vulnerable to ember attack.

4. Further ways of reducing the risk

Whilst the chance of any one resident at the RUI having their house burnt down is quite small each year, the consequences can be enormous. It is a situation of low risk, high consequence.

It's a very disturbing and difficult situation to have one's house burn down and if multiplied across a town like Yarloop, it can put such a huge hole in the town it may not recover.

I went through Parkerville nearly a year after its fire and the empty blocks, with nothing but the remains of a sand pad, were a stark reminder of the losses due to the fire.

Bushfires will continue to occur over the hot months - that is a given - but if the damage can be lessened by pre-emptive actions up front - years, months, days before - then they are worthwhile undertakings.

The bushfires that can cause the most damage to houses and infrastructure are typically at the RUI - not for farmers on the large holdings that know what to do - so it is the people in these RUI areas that are the critical ones to be involved. They may not know it but they can do a great deal for themselves that can make them and their neighbours considerably safer. If a house can be made more self-defensible or passively defensible then should a bushfire come, the house, even with no-one around, stands a fair chance of surviving. If firefighters do come then it is much easier to defend.

The hard part is for people to get to the stage when they can see it is in their own vested interest to take some relatively simple steps that will reduce their risk of bushfire attack. If this gaining of competencies can be organized in such a way that it is enjoyable and seen to be quite easy to do then there is a much greater chance of success.

The current approach by Government is one of what are predominantly scare tactics complete with cover pictures on the brochures of flaming infernos. The unintended consequence is that many people, perhaps newly arrived from the city or metropolitan area, and unaware of the dangers of nearby bush, may not do anything as it is thought to be either too worrying, too hard or a fire engine will be instantly at their front gate. Sometimes they are branded as apathetic or complacent. There is little value in blaming them.

One of the first lessons of how to teach children and adults is not to blame them for not learning. It is not their fault, rather the method of imparting the knowledge and understanding will need adjusting so that learning can take place. See **4.3 Educating Residents**.

When it comes to bushfire risk management what is needed is to engender a culture of self-reliance in homeowners and within communities and a willingness to share with government bodies the responsibility for fire safety. How? By becoming firewise.

The word "firewise" can be defined as being savvy about living with bushfire. See **4.1 Empowering residents**.

We'll continue to have bushfires; there will always be lightning strikes and human activity, either accidental or deliberate, that will ensure that forests and grasslands will burn. In fact fires are an essential part of the ecology of the mediterranean climate of the South West; a climate that is shared with just a few places on earth - parts of Chile, countries of the Mediterranean, southern California, small parts of South Australia and Victoria, and the Cape Province of South Africa. Many of the plants of these areas do well here and they are adapted to burn.

It should come as no surprise that fires will continue to be part of the landscape for years to come as they have been for millennia before us. Thus it makes sense to adapt to these fire regimes, use them to our advantage in regenerating the bush, recycling nutrients and generally renewing the landscape with, at the same time, not suffering destruction and damage to ourselves, our homes, our structures and local surroundings.

4.1 Empowering residents

How to get people in the RUI areas involved and wanting to retrofit their house and garden?

I have had experience of Bushfire Ready and I realize there are other schemes in different states. However, certainly in the case of Bushfire Ready which is promoted by DFES it is pitched very much at the point of "There's a fire down the road, what do we do?". Even the name "Bushfire Ready" suggests waiting for the imminent bushfire.

In the past two or three years I have learnt about and had contact with personnel from Firewise Communities, US, which is a national program run out of the National Fire Protection Association, NFPA (a not-for-profit organization). There is a strong emphasis on mitigation. Firewise Communities has towns and neighbourhoods signing up to form Firewise Community groups in each state.

We could model some of the aspects of mitigation on these programs which are specifically



designed to involve community members. <http://www.firewise.org/USA?sso=0> This is shown also in Attachment B.

Here is a link that summarizes the problem quite well not only for those living at the Wildland Urban Interface, but in terms applicable to the Australian scene.

<http://www.nfpa.org/newsandpublications/nfpa-journal/2014/sepember-october-2014/pov/first-word> See Attachment C which shows this statement from the President of NFPA.

Financial support and sponsorship is provided by US Federal and State agencies and insurance companies. Incentives are given, eg for a winning Firewise Community to be awarded a \$5000 prize to get chipping (shredding) done in a neighbourhood.

The following link is to a recent newsletter as an illustration of the type of encouraging material that NFPA produce. It has an interesting selection of topics, all designed to provide inspiration and helpful tips to homeowners. http://f.e.nfpa.org/i/30/2085900837/20160219_Fire_Break_B_version_allstaff.html

This is reproduced at Attachment D.

There is a template for each Firewise group to follow in order to enrol which includes developing a community wildfire risk evaluation. This is shown at Attachment E.

Here is the link. http://firewise.org/wildfire-preparedness/firewise-toolkit.aspx?order_src=C365&sso=0

4.2 Adopting a Firewise model

If we were to adopt something similar to a Firewise Communities program it would need to be determined as to what would be the umbrella or parent organization that ran the program. We do not seem to have quite the equivalent organization as the NFPA in Australia. In many ways it would work better through an independent organization that could receive funding from government sources, but also have sponsorship from insurance companies and organizations such as the Lotteries Commission.

Whether it would be better to be state-based or Australia wide is another consideration. Whilst the RUI is a common phenomenon across the country there are quite different fire regimes and attitudes (partly borne of the differences of climate and the nature of the forests - the eastern seaboard has rain in summer, for example) as to whether property is worth defending and that there should be early evacuations.

AFAC may be a candidate umbrella organization though it could be seen as too representative of the fire fighting forces and not of residents.

With Western Australia, once a leader in prescribed burning and having a very different forest fire regime, as well as being distant from the rest of Australia, in the first instance, it might be worth trialling such an initiative in WA especially the South West, at least as a pilot. I cannot see DFES being the umbrella body, it is more oriented to the fire fighting and regulatory aspects of fires.

It would need to be an organization with an existing community focus on doing worthwhile projects. Rotary may be just such an organization to take this on. I am a Rotarian and did a small project distributing 16 copies of the book, "Gardens of Fire" by Robert Kenny to South West libraries that included a poster display for five of the libraries about reducing the risk of bushfire attack.

Perhaps one of the disaster type organisations could be a candidate organization, though with a Firewise model the aim is to reduce the intensity and the frequency of disasters.

4.3 Educating residents

As mentioned in section 4. **Further ways of reducing the risk**, motivating people to be more self-reliant and encouraging them to be firewise can be difficult. Much of the current material tends to be admonishing. In the past week I saw banners at the entrance to two South West towns with flames in the background saying "Are your firebreaks compliant?" Well, no, probably not, because I have old sheds close to the boundary that have been there long before I bought the property. The tone is a negative way of achieving behaviour change and often is not very successful. A better approach is that used by advertizers and marketing people to sell goods and ideas such as cars, food, houses or shampoo.



A very good exponent of the art of selling a possibly difficult idea is the Water Corporation. They are in effect trying to sell the idea of using less of their product, water, with their waterwise message. They use focus groups, marketing consultants and engage marketing agencies to produce their campaigns.



The way the Water Corporation sold its waterwise message meant they brought users along with them. They used incentives, such as free shower fittings, free garden talks with a waterwise message and plenty of giveaways. They used print and other media to sell a message in a very positive way. See the example (left).

Recommendation 6

That the promotion of bushfire awareness include mitigation messages and be done in a way that tries to get homeowners' support rather than the present negative approach currently favoured by authorities.

I had an insight into their methods for promoting changed behaviour when I was a member of the Customer Advisory Council. The members were drawn from customers (both businesses and homeowners) from all over the state and representing different regions. We all had some sort of interest in water. The Council had something of a jury about it. It was also a reality check for Water Corporation initiatives and a sounding board. At times we acted as a focus group. I was impressed by their organization, its project-based working methods and the way it developed strategies for coping with changing circumstances. Nearly all of us on the Council became champions of the Water Corporation.

I did manage to convince them to be a little more bushfire aware when it came to recommending some plants. Later they put on a link from their site to the Plant Selection Guide on the CFA site.

Recommendation 7

That DFES develop a group similar to a Customer Advisory Council that includes homeowners from RUI areas to ensure all stakeholders including homeowners in the RUI are represented.

DFES has customers in a sense because of the Emergency Services Levy. Landholders are paying for a service. Should that service be only for emergencies or should some of the funds be used for mitigation programs?

Recommendation 8

That the ESL, if not already, be used to foster more mitigation projects including contributing to a Firewise Communities program.

4.4 The Environmental movement problem

When trying to educate residents in bushfire prone areas, there can be problems caused by conflicting views of the land and the way it is used. One view will be that the native bush is flammable and must be kept at least 50m or more from the house. Others will see the eucalypts and understory as habitat for native animals, regardless of its condition, as essential homes for birds and small marsupials.

Gardening TV programs, magazines and newspaper articles talk about planting native, especially local, species to provide habitat and to be waterwise. Rarely is there any warning included that this could be risky to those many people living in fire-prone areas. These areas have now been mapped and published and include extensive areas of the Perth Hills and South West Region, so there is now greater recognition of where these areas are.

Coupled with this advocacy from the media to 'plant native' is the fact that many Shires and Councils endorse this position. It is now entrenched in many of their policies and regulations. In effect if a property has native plants on them or they have regrown over time, landholders may face difficulties in removing this vegetation even on the grounds of reducing bushfire risk to their properties.

Residents can be excused for being confused about what to plant and where. Currently the pendulum has swung far too much to the romantic view that the local natural environment needs to be preserved at all costs and even enhanced without considering the risk factor of providing fuel for bushfire.

There has been an increasing interest in the environment and the science of ecology. However, to some of us the science has been hijacked by the Green movement in which much of the natural world is romanticized.

So called “wilderness” which is defined as the natural landscape that has not been modified by humans is prized by the Greens movement. To have genuine wilderness in Australia would be to deny that the Aboriginal people were human, because the first people on this continent had a profound effect on the land. Their burning regimes modified the landscape extensively for their own purposes. The book “The Biggest Estate on Earth” by Bill Gammage makes this case eloquently.

Dr Christine Sharp, who was an MLC for the Greens in the State Parliament, has introduced the concept of having another type of ecology. One that applies in and around human settlements, that puts human safety and property as the priority. Thus the ecology in and around a townsite might include Oaks, Plane Trees and Poplars and wide lawns instead of local eucalypts which would still be an essential component of the ecology of a local forest, perhaps five kms away. Another term for this concept would be the ‘homestead garden’ which is a garden with lawns and usually deciduous trees around the homestead with a fence and grazed paddocks beyond. It has the appearance of an oasis, a shady place in the midst of golden (or brown or green) paddocks. Early European settlers soon learnt that this was the safest way not to be burnt out.

Dr Sharp and her partner Andrew Thamo have written extensively on ways to live more safely in fire-prone areas. They live in Balingup and started the Small Tree Farm nursery which specializes in deciduous trees which are considerably less flammable than the eucalypts. They experienced Cyclone Alby and its aftermath in the South West where fires were extensive. <http://www.smalltreefarm.com.au/index.html>

Instead of native gardens being fashionable and marketed as almost the patriotic thing to do, it would be safer and less harrowing for those in bushfire prone areas to be able to have gardens that exhibited the settlement type of ecology. This new approach would need to be marketed and be widely recognized as being perfectly acceptable.

Unfortunately the nursery industry is almost silent on low flammability plants and firewise garden design. It would make sense that the nursery industry embraced this new ecology that supports human wellbeing.

Recommendation 9

That reforms be instituted to bring LGA planning and policies in line with sound practices for bushfire risk management and that the process be made simpler with fewer permissions required.

Recommendation 10

That a different type of ecology for settlements takes into account the bushfire risk to people and property and is promoted, implemented and supported.

Recommendation 11

That the nursery industry and the garden media people be encouraged to support firewise principles in choices of plants and garden design.

Recommendation 12

That garden expos in Sydney, Melbourne, Adelaide and Perth have a category of “Firewise Garden” and that there be prizes in this category to aid in promoting this safer concept.

The Green Army program supported by the Federal Government is an example of the degree to which the environmental movement has influenced government actions and expenditure. It offers opportunities for young people to undertake work in the field on various conservation projects.

See Attachment F. Priority to “conservation outcomes”.

Given that recent fires, including the Waroona Fire, have shown that we have a huge fuel buildup and we need to examine how to reduce the fuel load by both burning, thinning, pruning and clearing out undergrowth, it is surprising that funding is seemingly only made available to projects supporting “conservation outcomes”.

It would seem a better use of taxpayer funds to support fuel reduction in its various forms because not only would settlements, such as Yarloop, have been made safer, but the forests and woodlands would be renewed as a consequence of the burning and the clearing up.

Recommendation 13

As a matter of urgency review many of the “environmental” schemes, both Federal and State, with a view to directing the resources to bushfire mitigation works in the fire-prone areas. It will still have positive environmental outcomes based on good science, not romanticism.

4.5 A circle of safety around settlements

After the fire at Yarloop I checked out Google Street View to see if there was any clues as to what may have contributed to the fire or to have helped to reduce the effects. Not knowing Yarloop I could not reach any conclusions. However, the town I live in, Balingup, has some similarities with Yarloop. It is small, goes back over a century, used to have timber amongst its industries, etc.

I looked around to see if we had areas that had been set up to act as buffers against bushfire. I found numerous areas that would help catch embers or that would not support a fire as there was little to burn and it was well-watered, etc. Whether deliberate or not, these buffer areas could make a difference if we had a bushfire approaching. There are patches of scrub and bush that need remediation but on the whole we are better off than I realized.

Recommendation 14

That the concept of circles of safety be created and promoted around towns to ensure low fuel buffers are staged around towns to impede the progress of bushfires and keep residents safer.

We have two well-watered large ovals, a Village Green which is quite open. We have two large orchards in the vicinity which are well maintained and contain low flammability stone and pome fruit trees. Other areas are



grazed and to the north we have a golf course. The course is scrupulously kept at low fuel levels with little understory, trees pruned up and grass kept low. And then to the south there is the magnificent Golden Valley Tree Park which was founded by Dr Christine Sharp and Andrew Thamo. A picture of which is on the front cover.

To finish here is a picture of the Balingup Golf Course.

Ferndale Wildfire Final Community Information – 6am, 17 February 2009

Stable weather conditions and lower temperatures yesterday and overnight enabled crews to make good progress in consolidating the boundary of the fire without having to respond to any hoppers or breakouts.

The threat to the community has passed and the focus now is on “blacking out” around the perimeter of the fire and extinguishing all fires in trees within 100 metres of the boundary as well as putting out burning stumps within 50 metres of the edge. This work is being done to minimise the risk of flare ups and escapes as the weather warms up later this week.

Today crews will continue to mop up around the 3 km perimeter of this bushfire that has burned through almost 1800 hectares of pine plantations and rural properties in the Ferndale area of the Blackwood Valley south-west of Balingup.

The damage caused by the fire is still being assessed. One shed and its contents were confirmed destroyed and there was damage to some of the facilities at the Wrights Bridge recreation site, which will be temporarily closed until further notice.

Cundinup Road and the Nannup-Balingup Road have been reopened to all traffic, however motorists are asked to be aware of fire personnel and other vehicle traffic associated with the incident.

Smoke is still being emitted from the fire ground and motorists should drive with their headlights turned on.

Road Re-opening details:

Nannup- Balingup, Cundinup and Hawter Roads are **Open**
Please drive slowly, **headlights on** and look out for fire trucks and workers on these roads.

Road Closure details:

The following road blocks are still in place at:

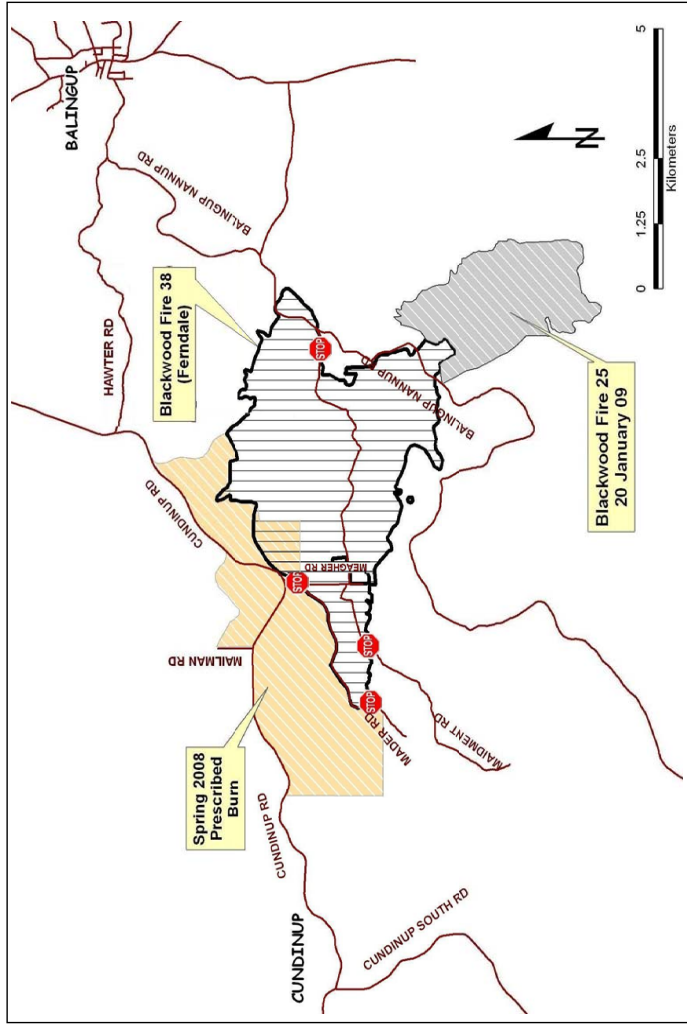
Maidment Road

Meagher Road

Mader Road

Today fire crews will continue clearing debris from and inspecting all closed roads for trees and branches made dangerous by the fire.

A bridge load limit of 8t has been placed on the bridge on a small track known as Crossing Road (near Wrights Bridge).



Thanks

The Incident Controller would like to acknowledge and thank everyone for their effort and support including the volunteer bushfire brigades, the Shires of Donnybrook-Balingup, Nannup, and Bridgetown-Greenbushes, the Bridgetown Volunteer Support Group, Donnybrook SES, Forest Products Commission, FESA, WA Police, ABC radio, St John Ambulance, Western Power, traffic management personnel, NAS Security all the local businesses and community members who assisted with the management and logistics of the incident.

Thank you to the community for the support and understanding during the Ferndale wildfire.

John Tillman

John Tillman



Government of Western Australia
Department of Environment and Conservation

This will be the last community information sheet issued for the Ferndale Wildfire.
For further information about this fire (and any other wildfires) ring the DEC Duty Officer on 9731 6232.
This number will divert to the Duty Officer after hours (for emergencies).



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- Program Criteria
- Program Benefits
- Firewise Communities map
- Firewise Communities List
- Talking to Your Neighbors About Firewise
- For Active Firewise Communities
- State Liason List
- Grants and Funding
- USAA Provides Policyholder Discounts in Four States

ONLINE COURSES AND EDUCATION

WILDFIRE PREPAREDNESS

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Firewise Communities USA/Recognition Program

Scientific research has shown the effectiveness and benefits of implementing wildfire mitigation concepts across individual property boundaries and throughout communities.

Since 2002, The **Firewise Communities/USA Recognition Program** has empowered neighbors to work together in reducing their wildfire risk. Join the growing network of more than 1200 recognized Firewise communities from across the nation taking action and ownership in preparing and protecting their homes against the threat of wildfire.

Using a five-step process, communities develop an action plan that guides their residential risk reduction activities, while engaging and encouraging their neighbors to become active participants in building a safer place to live. Neighborhoods throughout the United States are embracing the benefits of becoming a recognized Firewise Community – and you can too!



The following steps will get your community started and on their way to receiving their official Firewise Communities USA recognition status, and the honor of proudly displaying their own high-profile signage along with many other benefits.

Already a Firewise Community?

[Renew your recognition status for 2015](#) and share your community's success story.

The five steps of Firewise recognition

- Obtain a [wildfire risk assessment](#) as a written document from your state forestry agency or fire department.
- Form a board or committee, and [create an action plan](#) based on the assessment.
- Conduct a "[Firewise Day](#)" event.
- [Invest a minimum of \\$2 per capita in local Firewise actions](#) for the year.
- Submit an application to your state Firewise liaison.

Apply now

[Submit an application](#) to become a Firewise Community. If you have any questions, [contact NFPA](#) or your [State Firewise liaison](#).

Number of active Firewise communities by state

See a [list of all active communities](#), or reference our [interactive map](#).

Related Information

- > [Program Criteria](#)
- > [Program Benefits](#)
- > [Firewise Communities map](#)
- > [1,000 Safer Places: the Firewise Challenge](#)

More Firewise around the Web:



Attachment B. Introduction to Firewise Communities

Author: Peta Townsing, PO Box 189, Balingup, WA 6253. [REDACTED] Updated Version 2 with links that work!
 Firewise Western Australia. Submission to Public Inquiry into January 2016 Waroona Fire. February 2016



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>> **FIRST WORD** BY JAMES PAULEY, NFPA PRESIDENT

Getting Proactive

Fighting the wildfire problem before the fires even start

. Author(s): James Pauley. Published on September 3, 2014.



LET'S TALK NUMBERS. How about \$453,700,000 and \$113,700,000—those figures represent the direct property dollar loss from two of the three largest loss fires in 2012. Both were wildland fires. What about 67,704 and 9,326,238—the number of wildland fires and the number of acres burned in 2012, respectively. That's the equivalent of burning an area larger than New Jersey, Connecticut, and Delaware combined.

Why am I focusing on all of these numbers? Because they show with clarity that our job as outlined in the NFPA mission—"To reduce the worldwide burden of fire and other hazards on the quality of life"—is not done. Our changing environment and living conditions provide continual challenges that need to be addressed. In decades past, the wildfire problem was thought of as a "California problem" or an "Oregon problem," but that isn't true today. From Florida to Texas to the Western United States, the incidence of wildland fires continues to grow. As I write, there are 112 active wildfires taking place in six states. Drought conditions and rising temperatures contribute to a broader geographical concern, and are transforming what used to be known as a "wildfire season" into a year-round concern.

Wildland fire is an environmental reality, but home destruction and the devastation of whole communities need not occur. To change the situation, we need more action before the fires happen. According to reports, the U.S. Forest Service spent \$1.3 billion fighting wildland fires in 2013, compared to \$26.6 million spent on programs to help communities adapt to fire and to clear fire-prone areas.

NFPA strongly supports education, individual initiative, and continued policy advancement. On the education front, we are making progress with our [Firewise Communities](#) and [Fire Adapted Communities programs](#). By the end of this year, we expect to have 1,200 communities designated as Firewise Communities/USA sites. Through these education programs and other incentives, individuals are being motivated to take action. In May, NFPA launched the first national [Wildfire Community Preparedness Day](#), inspiring people in more than 100 communities in 21 states to take part in activities to reduce future fire risks. This spring, USAA became the first major property/casualty insurer to step up to the plate and offer homeowner insurance policy savings to its members living in recognized Firewise Communities/USA sites in California. I commend USAA on its leadership and encourage other insurers to consider taking Firewise into account for their policyholders.

In the policy arena, NFPA offers information and resources to help state and local governments make sound decisions when it comes to planning, siting, constructing and maintaining infrastructure, businesses, and housing in areas at risk to wildfire.

We're working with our fire service members and with our partners in federal land management and firefighting not only to call for the appropriate resources to combat the fires when they break out, but also to direct more resources to prevention, education, and mitigation in order to better protect people and property before fires ever start. It is going to take all of this to change these numbers for the better, and NFPA will continue to be a strong voice and advocate in the wildfire arena.

Attachment C. Identifying problems similar to Australia with respect to wildfire/bushfire

Author: Peta Townsing, PO Box 189, Balingup, WA 6253. [REDACTED] Updated Version 2 with links that work!

Firewise Western Australia. Submission to Public Inquiry into January 2016 Waroona Fire. February 2016

Firewise
Western
Australia





FIRE BREAK

Saving lives and property from wildfire

TakeAction

Firewise Communities

Courses & Training

Catalog

February 2016



Firefighters: free tuition/travel to WUI course

This year, 175 U.S. fire service members will be awarded scholarships to attend NFPA's two-day Assessing Wildfire Hazards in the Home Ignition Zone course, thanks to a grant from DHS/FEMA. Learn the science behind wildfire property loss and how to advise property owners about effective mitigation measures they can take to protect homes. Apply for a scholarship today.

[Read More](#)

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Three steps to building a safer Firewise home

A new e-book from Green Builder Media and NFPA provides information for building and designing homes that are both safer from wildfire and environmentally friendly. Find videos, links to resources and more. Download your free copy and start using it today.

[Read More](#)

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Wildfire mitigation award winners announced

Find out more about this annual award and who earned the highest commendation in 2016 for their innovation and leadership in wildfire preparedness and mitigation.

[Read More](#)

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Plan your Firewise activities today!

FIREWISE TOOLKIT



WILD FIRE LEARN THE FACTS



WUI conference seminar offers education credits

Attending the IAFC WUI Conference in Reno? Then don't miss NFPA's pre-conference wildfire seminar. Get the latest research to help you identify hazards before a wildfire starts, and reduce risks in the home ignition zone. Educational credits are available when you complete the course.

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Sun City Firewise

Blog series points to Firewise community successes

Communities across the U.S. have made great strides in reducing wildfire risk and promoting resiliency in the event of a wildfire. A new blog series highlights these great achievements. Learn who is making a Firewise difference and keep an eye out for stories in your area.

[Read More](#)

Share this story: [f](#) [t](#) [in](#)



Ten days left to apply for Prep Day funding awards

Planning on organizing a project for national Wildfire Community Preparedness Day? Receive funding to help cover your expenses on May 7. Apply by February 28 to be considered for one of 125 funding awards of \$500 each. Submit your application today!

[Read More](#)

Share this story: [f](#) [t](#) [in](#)



Grant writing for Firewise communities

Grants are a great way to receive money to help fund your community wildfire projects, but it's not always easy to know how to start the process. From federally-funded grants to online opportunities, find out what strategies work best for your community's needs.

FREE Firewise materials

SHIPPING INCLUDED



Landscape and construction guide for around your home

Attachment D. Screen print from NFPA, US based not-for-profit, of "Fire Break" online newsletter containing material designed to help homeowners and communities to be safer from wildfire. Emphasis is on adaptation and mitigation.

To find this online go to:

http://f.e.nfpa.org/i/30/2085900837/20160219_Fire_Break_B_version_allstaff.html

Firewise Western Australia



Updated Version 2 with links that work!



Firewise Communities / USA® Recognition Program checklist

BY WORKING WITH NEIGHBORS, individual residents can make their own property – and their neighborhood – much safer from the flames and embers of a wildfire. [The Firewise Communities/USA® Recognition Program](#) provides a series of steps so you and your neighbors can act now ahead of a wildfire threat.

Ready to begin? Follow these steps on your way to becoming an official Firewise community.

1. Talk to your neighbors.

You may be surprised to learn that other residents are just as concerned as you are about wildfire, so make a pledge to get started ... now.

2. Recruit interested community members.

These people will form a diverse Firewise® board or committee. The group should include homeowners and fire professionals, but may also include planners, land managers, urban foresters and members of other interest groups in your community.

- Choose a group leader/representative. (This person, often known as the “sparkplug,” will serve as the spokesperson and take the lead on Firewise initiatives.)

3. Contact Firewise.

Have the community representative complete an on-line request form on the [“contact us”](#) page on the Firewise website (www.firewise.org), or call the [Firewise Communities Program](#) office at 617-984-7486. A Firewise representative can answer your questions, and help you get started.

4. Schedule a site assessment visit.

This is the first step of the process of achieving Firewise Communities/USA recognition status.

- Have the community representative contact your state’s Firewise Communities/USA liaison, a specialist in wildland/urban interface (WUI) fire, to inquire about a site assessment and evaluation of your community’s current wildfire readiness. Your [state liaison’s contact information](#) is available on the Firewise website.

- Schedule a time to meet with the state liaison or his/her designee to provide a community wildfire risk evaluation. Plan on at least one full day for this activity.
- At the same time, contact your local fire official who will accompany the state liaison for the evaluation.
- A site assessment is **not** a Community Wildland Protection Plan (CWPP). It is a wildfire risk evaluation of the potential Firewise Communities/USA site that is applying for national recognition.

5. Review the site assessment and evaluation document.

The assessment does not have a specific format, but the program endorses an assessment style that:

- Includes a simple document for homeowners/residents to review the potential community site.
- Familiarizes the homeowner/resident with the way ignitions are likely to occur and how homes are likely to be lost in the event of a wildfire.
- Explains and illustrates common strengths and vulnerabilities with respect to this site’s wildfire risk.

Upon completion of the evaluation, the state liaison or designee will schedule a meeting with your local Firewise committee to review the findings of your community assessment. At this time, your committee will determine whether they accept the findings or reject them. If you accept the evaluation, the process continues; if you don’t, the process is terminated.



FIREWISE TOOLKIT

»»» FIREWISE COMMUNITIES / USA® RECOGNITION PROGRAM



6. Create a plan.

Based on the evaluation and assessment, your Firewise committee develops a plan to tackle problem areas. In your plan, remember to include deadlines and a schedule to keep you on track. Record your action plan, and have all members of your committee sign it. Your plan should include:

- One day during the year that is designated as "Firewise Day." Whether it's a "chipper day" that gathers equipment and volunteers to chip up brush and tree limbs, a state fair exhibit or a community clean-up day, the Firewise Day helps you get the work done to make your community safer.
- Firewise mitigation activities that amount to a community investment of more than \$2/capita/year of 'in-kind' volunteer contribution or grants.
- Once the plan is finished, share it with your state liaison.

7. Implement your plan.

Tackle the items in your plan. Designate the party responsible for each action, including who will take the lead on Firewise Day. Remember, everything you do should be documented, so you can send the paperwork in with your application form.

8. Apply for recognition in the Firewise Communities/USA Recognition Program.

You've completed your plan; now it's time to receive the recognition you deserve. Not only is your community safer from wildfire, you will now be able to celebrate your official status as a nationally recognized Firewise community. Remember to:

- Fill out the [application form](#)
- Attach your completed Firewise community plan
- Attach the Firewise Day document that lists names of volunteers, the hours involved and activities you've accomplished
- Attach any photos that illustrate your great work

- Send your completed application and attached documents to your state liaison for review
- Your state liaison will forward the application to the NFPA Firewise program headquarters. You can expect to receive your recognition materials (sign, plaque and other items) within 2-4 weeks after NFPA receives your application.

9. Renew your application each year.

The work of a Firewise community is never done. To maintain active status in the program, you must continue the work throughout the year, documenting all activities, including your Firewise Day, the hours involved, and the volunteers. The information is easy [to report through the Firewise website](#).

10. Celebrate your success!

We want to hear from you! Share your story with the Firewise Communities Program family. We'll include your photos and activities on the Firewise website, feature your community in our [blog](#), and promote your hard work through our [social media platforms](#).

Questions?

[Contact](#) the Firewise Communities Program. More information can be found on the [Firewise website](#).

To find this online go to:

http://firewise.org/wildfire-preparedness/firewise-toolkit.aspx?order_src=C365&sso=0

Author: Peta Townsing, PO Box 189, Balingup, WA 6253. [REDACTED] Updated Version 2 with links that work!
Firewise Western Australia. Submission to Public Inquiry into January 2016 Waroona Fire. February 2016



Green Army breathe life into 'lungs' of State

THE Green Army's restoration of threatened species at Manjimup's Mottram Street reserve is underway.

The environmental action program is a Federal Government initiative for Australians aged 17-24 years and interested in conservation.

Manjimup shire president Wade DeCampo said the Green Army was "very important" to ensuring reserves were in pristine condition.

"As the Amazon is the lungs of the world, our shire is essentially the lungs of WA," he said.

"I have the utmost respect for the Green Army and its contribution."

The Green Army's five Manjimup "soldiers" are focusing



Project supervisor Julien Sharp is coordinating the restoration of the Mottram Street reserve with Manjimup's Green Army. PICTURE: TAEOR PELUSEY

their efforts on restoring the habitat for threatened species.

Participants are being trained to national qualification standards to receive cer-

tificate-level competencies.

Conservation Volunteers Australia will be looking for more recruits when stage two begins toward the end of 2015.

Cr DeCampo said local residents familiar with the area congratulated the Green Army for the on-ground work that had already been achieved.

Manjimup Bridgetown Times, 15 July 2015

No mention of fuel reduction.

Green Army to help bird project

PROTECTING our national and world heritage icons and key threatened species is the major focus of hundreds of new Green Army projects to be rolled out across Australia in coming months.

One of these projects is the South West Collaboration (SWC) for a biodiversity hotspot, which will bring the Green Army to assist with the Blackwood Basin Group's Waterbird project, which annually plants thousands of seedlings to restore habitat for waterbirds, as well as various works in the Bridgetown-Greenbushes area.

O'Connor MP Rick Wilson said the Green Army was first and foremost an environmental programme aiming to support practical environment and heritage conservation projects.

"The Green Army program not only benefits the environment, but also provides participants with skills and experience they can use elsewhere in the workforce," he said.

"Many of these new projects will undertake important revegetation, seed propagation, fencing, weeding, site monitoring and heritage conservation work.

"I congratulate this group of organisations on collaborating to secure a Green Army project that will cross many jurisdictions and electorates to achieve conservation outcomes for the benefit of South Western WA."

Donnybrook Bridgetown Mail, 19 January 2016

Revegetating, but no fuel reduction.





Unit 1, Abridge House
5 Turner Avenue, Bentley WA 6102
Phone: (08) 9472 3055 Fax: (08) 9472 3155
Email: info@fifwa.asn.au
www.forestindustries.com.au

Submission

Public Inquiry into the January 2016 Waroona Fire

Introduction

The Forest Industries Federation WA (FIFWA) is the association for the timber industry in Western Australia. FIFWA is representative of almost all the major companies and businesses that operate in the WA timber industry, including commercial plantation growers, harvest and haul operators, and processors in both the native and plantation sectors.

The States native regrowth forests and the public and private plantation estates are valuable assets and the foundation upon which the Western Australian timber industry is built. Protecting these assets from fire is of utmost importance to our industry as the timber supplied from these forests supports significant integrated local processing and manufacturing and generates over 5,500 direct jobs, most of which are regionally based.

One active division within our association is the FIFWA Plantation Fire Co-operative. The Cooperative is comprised of plantation growers and managers who participate in active fire suppression and mitigation to protect their estates and respond to calls from both DPaW and DFES for support in fires that threaten plantations.

We appreciate the opportunity to provide input into the 2016 Waroona Fires Public Inquiry and provide feedback itemised against the specific Terms of Reference. The losses in plantation estate from the Waroona fires were particularly calamitous and have lead our industry to identify several key areas where changes in fire suppression, mitigation and response may significantly reduce the severity of future fires in WA. We have also taken this opportunity to offer some recommendations and suggest areas of more general reform for consideration in the review process.

Terms of Reference 1. - The Response to the January 2016 Waroona Fire

(a) Bush Fire Prevention and Mitigation Activities.

Evidence from 55 years of history is that the managed reduction of forest fuels, through prescribed fire, has delivered to the people of Western Australia a huge dividend through minimisation of asset losses and suppression costs. Until the late 1990's fire crews attended 300 or more fires in the forest per year, but 90% were extinguished before they reached 10 hectares in size¹.

There is a clear link between the decline in area treated annually under benign conditions for fuel reduction, and the increase in area burned annually in destructive and costly wildfires (see Figure 1).

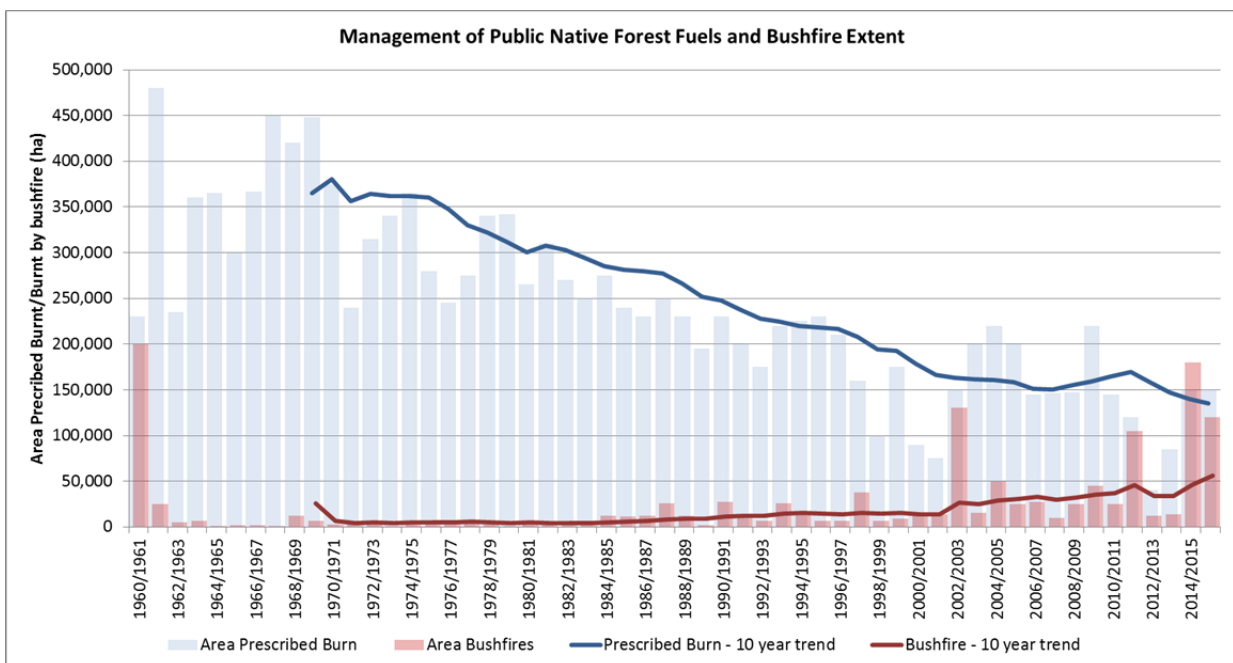


Figure 1: Prescribed burn area treated annually and area of uncontrolled bushfire annually

The intensity of a fire, and thus its ability to be confronted and fought by firefighters, is directly proportional to the quantity of fuel per hectare. Fires in long unburnt fuels are impossible to fight, and this conclusion has been drawn time and time again.

Since the area treated has dropped below 250,000 hectares per annum, the area of uncontrolled bushfires has increased inexorably.

¹ Sneeuwjagt and Higgs (1995) "Fighting Wildfires; breaking the triangle" *Landscape* 10 (4): 43-48

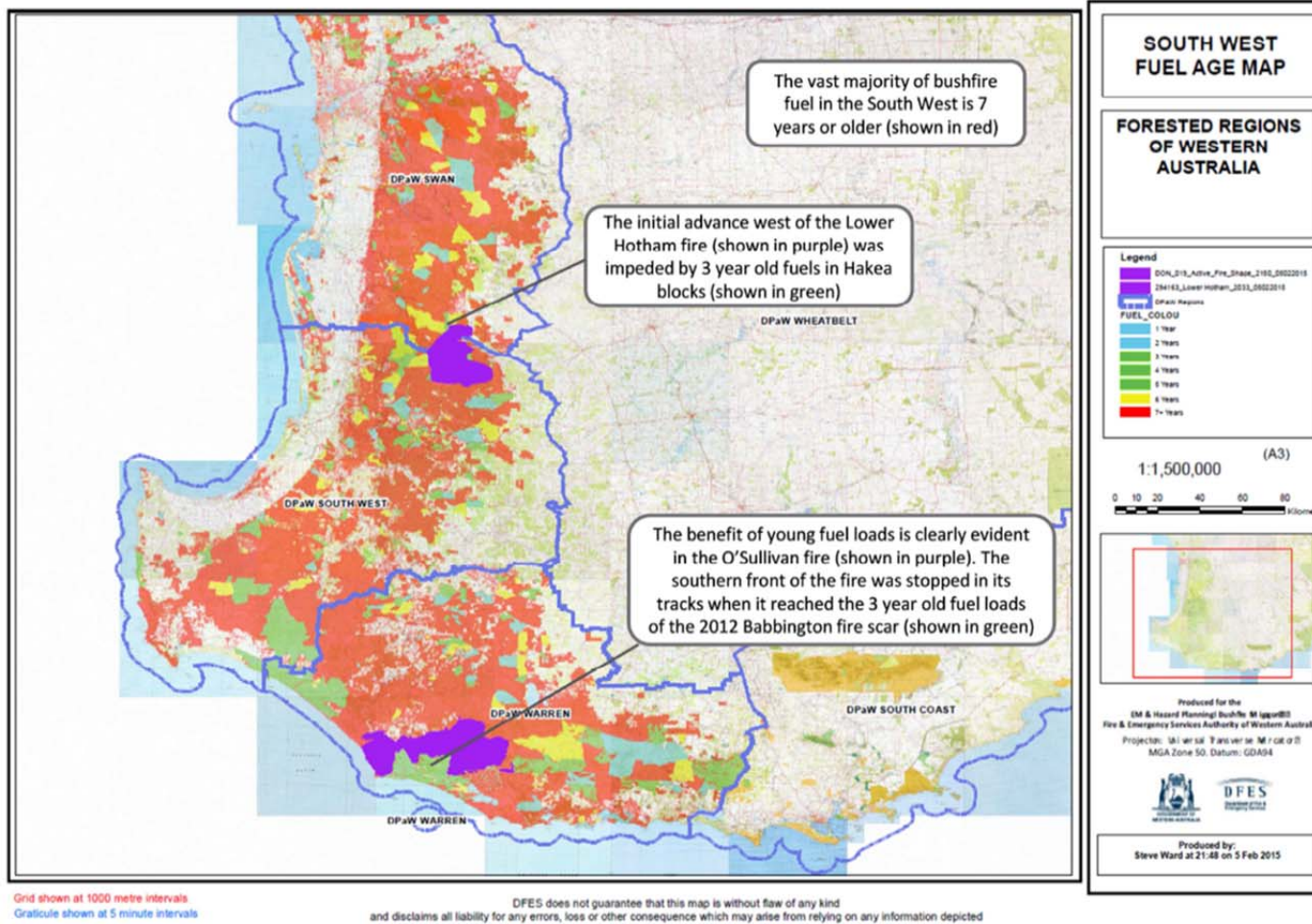
Fuel loads in the jarrah forest at the point of ignition and the areas to the west where the 'Waroona' fire ran were well above what would ordinarily be considered manageable in the event of a wildfire. Whatever the fire weather conditions may have been, the situation was undeniably exacerbated by the level of accumulated forest fuel in the fires path.

The below map, reproduced from the Major Incident Review of the Lower Hotham and O'Sullivan² fires illustrate clearly just how bad the current situation is. The red colour indicates land that has not been prescribed burned in more than 7 years.

However the situation is not unrecoverable. It has been done before, in the wake of the similarly destructive Dwellingup fires in 1961. Although the reduction in annual rainfall in the South West and other changes in climatic factors make the task more difficult, it does not diminish society's responsibility to strive, both for the sake of our assets, but also for the health of the forests and forest dependent ecosystems, to help adapt to a new climatic reality.

² "Major Incident Review of the Lower Hotham and O'Sullivan Fires" – Department of Fire and Emergency Services, 24th December 2015.

Figure 9: South West fuel age map showing Lower Hotham and O'Sullivan fire area



There must be an absolute focus on fuel reduction works by whichever agency is deemed responsible. The status, recognition, reward and career advancement of public servants engaged in fuel reduction should be such that the opportunity for involvement with the fuel reduction program is attractive to new recruits, and the skills are not lost to retirement.

Fuel reduction programs are critical. Public education is important to ensure ongoing support for fuel reduction programs irrespective of occasional errors and escapes.

Recommendation 1: The level of prescribed burning that occurs in public native forest areas must be restored to the levels of the 1980's as a minimum; specifically, maintaining an average of 250,000 treated hectares per year. There should be no discrimination against the prescribed burning of national parks.

Native State forest dedicated to timber supply, softwood and hardwood plantations are assets. The timber generated from these forests support significant local manufacturing industries and regional employment. However there is growing indignation within the industry that working forests, particularly plantations are not being valued fairly at the planning stage through Wild Fire Threat analysis. FIFWA holds strongly that plantations in particular are not being recognised or treated as the highly valued assets that they are.

The losses being suffered by the forest industry through fire are increasing at a far faster rate than would be expected based just on area affected by bushfire in the landscape (as demonstrated in Figure 2 below). Left unaddressed this trend could severely hamper future investment in plantations, at a time when Western Australia is already facing future timber supply shortage.

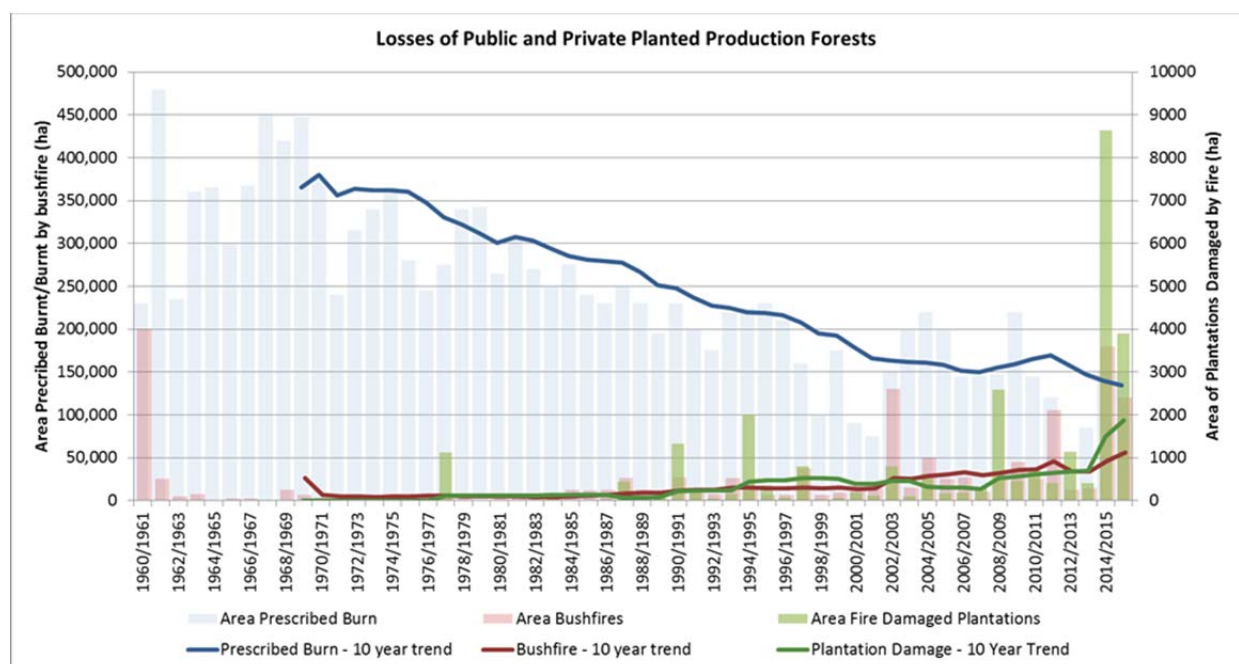


Figure 1- Fire Losses of Planted Production Forests

Ninety percent of plantation fire losses are a result of fires that originate from outside the plantation. The majority of plantations are surrounded by State owned native forests with +>7 year fuel loadings, putting them at extreme risk of loss through bushfires.

The limited amount of prescribed burning being carried out appears to be focussed on heavily populated areas (town site protection), power infrastructure, recreational and conservation areas. The Wildfire Threat Analysis needs to value plantations for their return to the state, downstream processing values, domestic market sales, exports and ultimately the flow on value to the WA economy.

Recommendation 2: Timber supply areas in native forests and commercial plantations must be recognised for their economic and social value to the State and given adequate consideration in fire prevention planning. This can be rectified by the Wildfire Threat Analysis process being modified to take into account the true value of plantations to the sector and state.

Recommendation 3: The role of Forest Industry Liaison Officer should be created within the senior levels of the incident management team. Our industry can provide this officer to work in within the “pre-formed” team. During active firefighting, where forest industry assets are threatened, the FILO will be incorporated at the control centre.

(b) Effectiveness of the Emergency Management Plan and Procedures.

The effectiveness of the Emergency Management Plans were compromised by the fact that forest fuel loads grossly exceeded what is generally considered standard forest fuels and fire shape modelling did not adequately consider the ferocity and fire forward progression with burning ember material which culminated in spot fires well ahead of the head fire.

(c) Effectiveness of Suppression Strategies and Tactics

In reference to the Waroona Fire, fire strategies were compromised from the onset with fire suppression resources unable to contain or suppress forward rates of fire spread. Water bombing aircraft become less efficient as the fire intensity and energy ratings increase. Intensity and energy ratings are directly connected to elements required for fire.

The overall approach to fire suppression in WA seems to have developed into a ‘wait and see’ approach rather than aggressively trying to suppress the fire.

While we understand the need to manage access to the fire ground for safety and security purposes, it has often been at the expense of preventing control point fire equipment onto the fire ground which has delayed suppression responses. A better system of suppression equipment management onto the fire ground is required. In respect to the Waroona fire and fires in general, we note the heavy reliance on water bombing activities at the fire face.

While we accept that water bombing plays an integral part in fire suppression, the current management techniques are having a significant influence on when ground forces can disembark from their vehicles or return to the fire front and begin suppression work. This approach is risk averse and only allows the fire to spread further while the ground resources are idle.

Eye witness evidence provided to FIFWA from this fire (from staff directly involved in both of the significant fire runs) and first hand FIFWA member experience in the 2015 O'Sullivan and Lower Hotham fires is that suppression strategies and tactics are unduly risk averse which ultimately leads to greater, and unnecessary losses being sustained. There is a need for calculated aggressive fire suppression in our view.

Direct involvement of FIFWA members in the O'Sullivan and Lower Hotham fires and numerous other fires of a smaller scale have highlighted our concerns. Repeatedly our industry fire crews return having said they were held at the control point for hours or were in a waiting pattern along with other crews, whilst assets were lost in very manageable conditions on the fire ground.

There is an urgent need to reconsider the risk appetite in aggressive fire suppression, a need to protect fire suppression personnel from litigation, and to engage all fire suppression resources supplying agencies in a co-ordinated effort.

Finally it appears that the decision making processes are rarely if ever made at the local level. Almost the instant a fire starts the region or state headquarters take over the decision making processes. Whilst the regions and state headquarters have a 'support role' to play the decisions are best made locally.

(d) Effectiveness of Incident Management

The State would benefit from the better coordination of both State and private resources in the response to a fire threatening private property, plantation assets and State managed land.

This was highlighted in the Waroona Fire where a forest harvesting contractor was within 5 kilometres of the ignition point of the fire and could have responded to contain the fire at its critical early stages but was not called upon. Response time to fires is a significant issue that can be addressed by the allocation of resources. Forest Industry crews should be considered in the early stages of fire suppression given the heavy equipment capability that can be made available at reasonably short notice.

The plantation industry participates in industry training and resources sharing however find it difficult to be accepted into the DFES fire suppression system.

DPaW and DFES need to be aware of plantation assets in their areas as plantation managers are capable of providing resources for fire suppression to assist in asset protection.

Industry should have the ability to respond to a fire that threatens their asset as a part of a DFES response or individually.

Recommendation 4: In relation to strategic planning, a State level advisory committee should be formed, that includes representation from the forest products industry, to provide advice on asset protection and ways in which the industry can contribute to the broader fire prevention and mitigation effort.

Recommendation 5: Using the Victorian CFA model, legislation should be amended to allow, subject to minimum levels of training and equipment standards, Forest Industry Brigades (FIB) to be formed, that have the same status, legal protection, and powers to suppress fires (on and off their own land) as Bush Fire Brigades (turn-out is at the brigades discretion). Once they have joined a fire, they are under the command of the incident controller, but should preferentially be deployed to sectors with forest assets at risk.

Recommendation 6: During a fire a decision making authority is to be devolved to the lowest level practicable.

(e) Protection of Essential Services

We have nothing to contribute against this item.

(f) Effectiveness of Public Messaging

We have nothing to contribute against this item.

(g) Effectiveness of Assistance to Management of those affected by fire

The industry offers anecdotal information against this item. In the management of evacuation, it appears that this is now DFES best practice for removing people from within perceived harm's way. While the option to stay and defend remains, it is less practiced, often at the peril of property assets that are damaged post the fire front passing. More education and a 'standard' local authority fire protection notice with strong enforcement would ensure that property assets are less exposed and more defensible.

Terms of Reference 2 - Lessons Learned From Previous Bushfire Emergencies

Prescribed Burning

Most crucially, the recommendations in the listed reports for an increase in prescribed burning does not appear to have been implemented to a point where you could consider there to be an imminent turnaround in the current fuel reduction area treated annually. Impediments still exist within DPaW staffing levels, funding and the will to implement an increased prescribed burning program.

Throughout the *2015 Major Incident Review of the Lower Hotham and O'Sullivan Fires* there are numerous references to significant changes to fire behaviour, rate of spread and eventual boundaries, related to the presence of recently prescribed burned areas. This is consistent with a preponderance of scientific studies on the subject.³

Alternatives to Prescribed Burning

- Keelty Review Margret River (2012) recommendation 4 – CALM to explore alternatives to burning.
- Keelty Perth Hills (2011) Recommendation 20 - FESA, DEC and local governments to closely monitor the R&D of alternative fuel reduction techniques to ensure that the most efficient and effective programs are adopted [the following was announced <http://www.abc.net.au/news/2015-03-27/federal-funding-for-bushfire-prevention-trial-seen/6353608> but there has been no action in WA despite the Forest Products Commissions (FPC) willingness to participate.

FIFWA is supportive of a range of methods to reduce forest fuels to complement the prescribed burning programme, including undertaking mechanical fuel reduction trials and seeking expanded residue market opportunities to make full use of this material where possible.

While reinforcing that prescribed burns should be the State's primary response, mechanical fuel reduction methods have a supporting role to play, with potential to increase their impact with scale⁴. With the right government policy it is possible that much of the excess fuel in the forest could be collected and used to make electricity (potentially co-firing opportunities), for liquid fuels or even for export.

Whilst making use of residues is efficient, it is incidental to the imperative of reducing the fire risk to plantations from unmanaged native forests.

³ Tolhurst and McCarthy (2016) "Effect of prescribed burning on wildfire severity: a landscape scale case study from the 2003 fires in Victoria", *Australian Forestry*, Volume 79, 1, March 2016.

⁴ Proctor and McCarthy (2015) "Changes in fuel hazard following thinning operations in mixed species forests in East Gippsland, Victoria", *Australian Forestry*, Vol 78, 4.

Recommendation 7: Alternative fuel reduction methods should be investigated and embraced in a complimentary fashion to the prescribed burning program. Residue markets should be sought to make full use of this residue material from the native forests.

Responsibility for Fire Management

2015 Major Incident Review of the Lower Hotham and O’Sullivan Fires suggests that DFES are not by nature the best organisation to manage native forest and plantations fires. Their expertise is more aligned to urban rural farmland fire co-ordination.

Figure 25: Differences between DFES and P&W in cultures, expertise and approach

	DFES	P&W
Organisational remit	<ul style="list-style-type: none"> Emergency response Multi-hazard 	<ul style="list-style-type: none"> Land management Single hazard - fire
Culture	<ul style="list-style-type: none"> Clear lines of command to support a rapid response, resources are coordinated centrally through COMCEN 	<ul style="list-style-type: none"> Bottom up approach to coordinating resources through district and regional offices
Areas of expertise	<ul style="list-style-type: none"> Combat and support services to respond to multiple hazards in urban and rural environments 	<ul style="list-style-type: none"> Prescribed burning program means that expertise in forest fire is embedded across P&W
Approach to IMTs	<ul style="list-style-type: none"> Centralised approach with some AIMS functions fulfilled at the state and regional level Preformed IMTs of 11 people in the metro area IMT capabilities recognised through training and endorsement 	<ul style="list-style-type: none"> Decentralised approach with AIMS functions fulfilled at the incident level Preformed IMTs of ~50 people in the regions IMT capabilities recognised through red card certification

This accords with the findings of the Ferguson Review 2010 where it was concluded that DEC (now P&W) was the most capable for managing fire on its own estate, and the FPC warned at the time that “extreme caution should be exercised before reducing DEC’s involvement in bushfire command and control in the short to medium term”.

It is manifestly evident that the regional community in general and the forest industry in particular has been very poorly served by the decision to grant DFES all incident control for all bushfires.

Recommendation 8: Outside of Gazetted Fire Districts, the department of Parks and Wildlife or alternately a dedicated Rural Fire Service should be in command of fire response and management.

Recommendation 9: There should be succession planning and opportunities for career advancement in the fire mitigation and suppression agencies, as well as adequate funding for permanent staff and the provision of equipment. New positions should be managed regionally, focusing exclusively on prescribed burning preparation, firebreak construction, prescribed burning and suppression activities. The new positions should be reinforced by a traineeship program to deliver a steady flow of operationally ready new recruits.

Terms of reference # 3 – Need for Further Reform

As discussed above the Forest Industry would like fast track whatever approvals or legislative amendments are required to allow industry to form Forest Industry Brigades (FIBs) in their own right. This will accord status, and acknowledgement of capability, integration with fire management structures and command, and bringing a wealth of experience in native vegetation and plantation fires.

Currently the FPC's charter is aligned with wood production and sales, and specifically excludes any role in fire suppression or prevention. This should be modified, to allow the FPC to form its own Forest Industry Brigades to protect forestry assets.

Recommendation 10: The FPC should have capacity to form and join industry brigades with a special focus on being despatched to protect forestry assets. This would include the ability to second, commandeer or contract heavy equipment resources as they may see fit to combat fire threatening forestry assets.

Recommendation 11: A strategic fuel reduction plan should be established that focuses on broad scale prescribed burning and complementary mechanical fuel reduction activities around valuable assets including forestry assets such as native timber reserves and plantations.

Private landholders have a role to play in managing forest fuels. There is significant 'Green Tape' that discourages private land-owners managing their fuels responsibly.

Recommendation 12: There should be another class of exemption to the WA clearing regulations, enabling clearing for fire mitigation within a specified distance of a recognised asset.

While FIFWA respects the role of the Office of Bushfire Risk Management (OBRM), it feels that this office has not fulfilled its role and may have hampered the process through regulation. FIFWA is mindful of OBRM's role to consult with stakeholders and believe that OBRM have failed to engage FIFWA in the management of risk with respect to forest assets.

Recommendation 13: OBRM to review its communication and consultation policy with stakeholders particularly in the areas of risk management associated with state managed hardwood and softwood resources and private plantation estate.

We remain at your service to provide any further explanation of the above points that you may request.

Contact: Melissa Haslam
FIFWA
Email: m.haslam@fifwa.asn.au

PUBLIC INQUIRY INTO JANUARY 2016 WAROONA FIRE FOREST PRODUCTS COMMISSION SUBMISSION

12th March 2016

The Western Australian timber industry is dependent on forest and plantation assets that take many years to mature. These assets are highly vulnerable to damage from wildfire. The recent extent and intensity of wildfires have resulted in a level of damage that has had a significant impact on the future value that can be delivered by the industry. The long term sustainability of the timber industry will be affected if these assets are not adequately protected.

The role of the Forest Products Commission

The Forest Products Commission (FPC) is a statutory authority governed by the *Forest Products Act 2000* (the Act) and sections of the *Forest Management Regulations 1993*. It is responsible for the sustainable management and development of Western Australia's forest and timber industry using native forest, plantation and sandalwood products on land owned or leased by the State.

The FPC works with the forest industry to deliver economic and social benefits in regional communities. The West Australian forest industry provides direct employment for more than 5,000 people working in timber-related industries including those of forest management, harvesting and primary processing. The industry makes a substantial financial contribution to the State's economy, particularly regional areas. Ongoing industry development and associated investment opportunities will further contribute to regional employment and deliver downstream economic and social benefits.

FPC maintains fire management and suppression resources to protect its assets and to support state-wide fire priorities. Our staff are trained in fire suppression and form part of the Department of Parks and Wildlife (Parks and Wildlife) Fire Availability and Pre-Formed Team Rosters. This enables the State to access additional qualified and experienced firefighting personnel on a needs basis. The FPC also has trained staff that can manage fire in areas outside of Parks and Wildlife response zones.

The agency also makes a significant financial contribution (approximately \$6 million) to the Parks and Wildlife fire management strategies of detection, detention, planning and fuel reduction as well as in the suppression of wildfires. This contribution is in excess of that which is provided in other States by the private sector timber industry, where the State plantations have been privatised.

The Waroona bushfire burnt substantial areas of native forest, including three current and proposed harvesting coupes. A coupe in Driver Forest Block, to the south east of Waroona, where harvesting was underway had to be evacuated by the contractor. In these coupes a substantial level of preparatory and operational work had been commenced and was destroyed by the fire. The losses borne by FPC included tree marking in advance of harvesting, and the felling, skidding, and preparation of logs for delivery to customers. In McLarty and Myalup Plantations, west of Waroona, 3,300 ha of pine plantation owned and managed by the FPC was destroyed. This was the agency's

biggest single loss of plantation assets due to fire. The plantations were not insured and there will be a direct cost of approximately \$8.3 million associated with replanting the affected area. Of the total plantation area impacted, 500 hectares were on private land and those landowners will also be affected.

The FPC is a key agency and contributor to the State's fire management. Its role in managing the State's forest and plantation resources mean it is well-placed to be a part of the strategy for future reforms and capability enhancements to efficiently and effectively manage bushfire-related risk.

The response to the January 2016 Waroona Fire

(a) The effectiveness of pre-incident bushfire prevention and mitigation activities

To mitigate the risk of fire resulting from FPC operations, the agency undertakes strategic fire prevention and mitigation activities.

FPC has worked with Parks and Wildlife to develop guidelines for the application of operational restrictions in both native forest and plantation harvesting operations. The guidelines identify actions that are commensurate with predicted Fire Danger Index (FDI) for the day and take into account machine type, operation type and terrain. Parks and Wildlife district offices send advice of the daily FDI to FPC work centres each morning for the FPC to determine what restrictions are required. The FPC then advises its staff and contractors of any operational restrictions to be imposed.

In the McLarty and Myalup plantations affected by the Waroona fire, firebreaks had been established and maintained in accordance with The Code of Practice for Timber Plantations in Western Australia. The code of practice references the requirement to adhere to the firebreak requirements of the Local Government Authority which the plantation is located within. The Shire of Harvey requires a 15m firebreak on the external boundaries of plantations. The McLarty and Myalup Plantations have firebreaks that exceed this requirement and are maintained to an average width of 30m and in some cases up to 50m. Fire break maintenance was undertaken from August to November 2015 in preparation for the heat of summer. Needle bed burning in the plantation is also undertaken in the winter/spring of each year. Several water points and water tanks, combined with access to the Harvey River and the Myalup irrigation pipe provide adequate water for fire suppression for small to medium fires or during initial attack until bulk water tankers arrive.

Within the plantations strategic access roads are pruned of vegetation that limits accessibility and site distance to ensure safe access and unimpeded access. Plantation road surfaces have also been well maintained to allow safe entry and exit. Vegetation pruning was undertaken in August and September 2015 in preparation for the summer of 2015/16.

The mitigation activities outlined above provide adequate plantation protection for small to medium fires. However, the fire conditions on 7 January 2016 were of an intensity that firebreaks and reduced fuel areas within the plantation were not adequate to prevent spread of the fire. It has been observed that within the plantations, areas that were needle bed burnt in 2015 had less fire impact and damage.

FPC's native forest operations maintain a strategic haulage network and constructs in-coupe roads that allow access into areas that might otherwise have limited access. Post harvesting, the FPC

contributes funding and human resources to approximately 12,000 ha per annum of silvicultural burning, which assists with the overall fuel reduction mosaic across the landscape.

(b) The effectiveness of emergency management plans and procedures

The FPC keeps DPaW advised by weekly notifications of the location and type of operations occurring. This notification ensured DPaW was aware of the harvesting operation in Driver Forest Block with advice of the fire being delivered to the FPC's Harvey office. The FPC were then able to advise the contractor of the fire so machinery and personnel could be evacuated.

(c) The effectiveness of suppression strategies and tactics used during the fire

The FPC is not have adequate information to form an opinion of the suppression and tactics used during the course of the fire. These details would be provided to the inquiry by DPaW and DFES. The FPC may be able to provide comment on this once the strategies and tactics tabled to the inquiry.

(g) Effectiveness of assistance to and management of those affected by the fire

(i) The process of DPaW advising the FPC of the fire was effective and allowed for the evacuation of contractors.

(ii) For the duration of the fire FPC forests operations communicated the impact of the fire on FPC plantations, status of staff safety, involvement of FPC personnel with fire suppression activity and provided fire maps directly to the Forestry Minister's office. The Minister's office in turn communicated this information to relevant Members of Parliament's electorate offices to assist them responding to constituent enquiries about the fire situation. Given the direct involvement of FPC staff in the firefighting effort, the relay of information was slightly delayed. FPC did not communicate directly with the community as this lead was taken by DFES and the emergency incident control team. The FPC liaised directly with DPaW for information pertinent to forest operations and assets.

2. Lessons learned from previous bushfire emergencies

The FPC is continually looking to improve its response to fire emergencies and its ability to plan and manage bushfire risk. No recommendations from previous bushfire reviews have been specifically directed to the FPC.

After the 2011 Margaret River fires, the Department of Environment and Conservation was directed to review the way that fire risk is analysed, measured and mapped against International Standard ISO 31000:2009 for Risk Management. Around the same time, FPC was requested by the Minister to review its fire preparedness systems and procedures, and to operationalise key changes ahead of the 2012/13 fire season. The Guidelines and associated Administrative Procedures for implementing a Parks and Wildlife daily Fire Danger Notification were major focus points of FPC's review given the use of fire as a prevention tool largely fell outside the FPC's legislative jurisdiction.

Since these changes, FPC has been able to demonstrate that its fire preparedness and prevention measures are sufficiently effective for the Department of Fire and Emergency Services (DFES) to consider forest operations as an agricultural activity under the *Bush Fire Regulations 1954*, allowing operations to continue during Total Fire Bans.

Key to DFES' advice was the Guidelines continuing to be annually reviewed on a collaborative front between FPC and Parks and Wildlife. Although in place prior to 2011, the FPC has been increasingly proactive in ensuring the Guidelines are recognised within all relevant tender processes resulting contracts and associated contractor procedures.

The attention to Guidelines ensures continued focus on fire safety and risk of wildfire in FPC operations. They have been successful in preventing any significant fires escaping from operational areas.

3. The need for further reform

(d) Policy Reform

Acknowledging that climate change and a drying climate is intrinsically linked to greater fire risk, the State will need to create a policy framework to foster greater cross-government collaboration between agencies. To address the risks posed by landscape-scale fire an unprecedented level of collaboration is required across a range of jurisdictions and tenures, encompassing several State Government agencies, local government and landowners.

Where intense wildfires, such as those experienced at Waroona, are able to spread more than 50 kilometres in length, they are likely to severely damage many community assets and property, as well as threaten lives. The level of damage caused by such fires is enormous. FPC has estimated that the losses to the timber industry from this fire exceeded \$50 million. In the last seven years FPC has lost an average of 1,000 hectares per year of softwood plantations to fire. This industry will not be sustainable unless there is adequate protection of its assets.

Similarly the O'Sullivan fire in Northcliffe resulted in long term losses to the native forest timber industry of more than 1 million cubic metres of timber.

A key focus for planning and preparation for fire suppression should be based on the capability to bring wildfires under control within specific area/time parameters. This will require a high level of co-ordination across the landscape. There are some specific policy areas where FPC may be able to directly contribute to managing the fire risk.

Reduce fire risk through mechanical fuel reduction

The reduction of fuel loads across a forested landscape is an important strategy in reducing the intensity of bush fires and slowing fire spread to increase effectiveness of early intervention.

Currently, fuel loads on State land are managed through fuel reduction burning carried out by Parks and Wildlife. It is widely recognised that these fire strategies are effective when they establish a mosaic of fuel ages that assists the control of wildfires when they run into more recently burnt, low fuel areas. In a mosaic of land tenures these strategies need to be planned and applied across tenures. It is suggested that with limited resources and increasingly difficult climatic conditions, fire control strategies should not only rely on prescribed burning as a means of achieving fuel reduction.

There is an opportunity to complement this activity with fuel reduction through mechanical means. This method is particularly effective in areas of younger regenerated native forest and plantations.

FPC is able to do this effectively in pine plantations and karri forests where there are sufficient markets to commercially drive thinning activity, but not in jarrah forests. The thinning of the jarrah forests is consistent with guidelines set by the Conservation Commission through the Forest Management Plan (2014-23) and is considered desirable to for environmental health.

An industry study was undertaken by the Australian Forest Products Association by Deloitte Access Economics, on the opportunities around mechanical fuel reduction for bushfire mitigation. This study can be accessed at the AFPA website: <http://ausfpa.com.au/publications/other-publications/deloitte-access-economics-scoping-study-on-a-cost-benefit-analysis-of-bushfire-mitigation/>.

The Commonwealth Government has made available funding for trials in mechanical thinning of forests. These trials “aim to establish whether mechanical thinning of forests can reduce bushfire risk in an economical, socially acceptable and environmentally sound manner around key assets, such as conservation areas or townships, where prescribed burning is undesirable for a range of reasons.”

Further details of these trials can be found on <http://www.agriculture.gov.au/forestry/national/nbmp>.

Multiple benefits have been identified:

- A reduction in the volume of forest fuels, lessening the frequency and severity of bush fires;
- Reduction in risk of escape of a controlled burn;
- Less smoke released reducing community concerns with controlled burns;
- An increase in people and machinery in the forest environment that would be available and well located to respond to bush fires;
- Further investment in road infrastructure allowing quicker and safer entry and egress from the forested estate in emergency situations.
- Improved growth of crop trees in commercial forests. The Forest Management Plan 2014-23 requires an increase in the level of native forest residue harvest if the sustained yield of sawlogs is to be met;
- desirable to for environmental health, particularly in post-mine site rehabilitation areas, and supported by the Forest Management Plan and Conservation Commission.

Systems of mechanical fuel reduction are already applied successfully in younger karri regrowth where these forests have such heavy fuels that prescribed burning can only occur after a thinning operation. There are vast areas with similar fuel loads in forest that has been rehabilitated following bauxite mining and in jarrah regrowth.

There are significant environmental and fire management outcomes that could be generated from mechanical thinning. The removal of large fuel loads, particularly in the ex-Alcoa regenerated northern jarrah forests would also provide significant environmental benefits in addressing the even-aged forest. Parks and Wildlife is supportive of both the environmental and fire benefits. The environmental management framework exists. The Forest Management Plan approved by the EPA provides the basis for the thinning activities.

The Forest Products Commission suggests that the Inquiry consider the potential for mechanical fuel reduction to complement existing controlled burn regime and undertake trials, in line with the Commonwealth proposals.

(c) Functional Reform

Improving opportunity in first attack

In the last two years, large wildfires have originated from lightning strikes that spread from conservation reserves. Access for equipment and heavy fuel loads in these areas affected the capacity to control the fires under difficult weather conditions. As a result of control not being achieved while fires were small, there was a rapid escalation of the size of the fire and suppression task.

The threat to forest values and communities increased as these fires grew in size and intensity. These fires then absorbed fire-fighting resources and limitations were placed on forest harvesting operations for an extended period because of the inability of crews to respond to any new outbreaks. This had a compounding effect of reducing the number of workers in the bush, who could then be available to detect and suppress new outbreaks.

These large fires originated under conditions where multiple lightning strikes had caused ignitions and the FPC has no evidence to suggest that firefighting crews did not do everything possible to stop the spread of the fires. Parks and Wildlife has dedicated machines equipped for fighting forest fires. Machine operators are trained and experienced and assisted by a regimented structure of fire trucks that support machines to ensure staff safety and effective containment of the fire line. These machines, when combined with experienced fire-fighting support from both the ground and the air are very effective in rapidly containing the majority of fires that occur in a forested environment.

The FPC believes that the infrastructure and resources available to respond to fires in the early stages could be improved, leading to fewer landscape-scale fires.

There is potential to improve access into forest areas where there has been limited resources to maintain this infrastructure.

There is also the opportunity to use a greater number of people employed within the forest industry who are familiar with the conditions of operating in this environment. Forest industry employees could be trained and more widely deployed to suppress outbreaks. They have particularly valuable skills in using heavy equipment in forests.

It is also important that investment in dedicated firefighting equipment, including heavy machinery, is increased to ensure rapid availability and experience when fighting fires in regional forested environments. Sourcing private contract machines at short notice can sometimes lead to delays in response times, machines that may not be equipped sufficiently for fighting fires (radio communications, lights for night work, ROPS, FOPS), inexperienced operators and firefighters that are not familiar with machine capabilities or awareness of how to support machines for safe and effective fire containment.

The Forest Products Commission recommends that the Inquiry consider options to increase the State's capacity for first attack. These options should include:

- Improvements to forest access, including roading infrastructure and strategic firebreaks;
- Training of harvesting crews and other industry workers and engaging them to assist with first attack, particularly when the capacity of front line resources are stretched; and
- Improving the resources available to DFES and local government brigades to fight forest fires.

Friends of Fire

Supporting controlled burning

Waroona Bushfire Special Inquiry
Level 6 Dumas House
2 Havelock Street
WEST PERTH
Western Australia 6005

Dear Sir,

Friends of Fire is a group of individuals living in south west communities who are concerned about the heavy and increasing fuel loads in the SW forests and the fire hazard that this represents to the forests and to local communities. All of the members have long experience of working in these forests including active engagement in prescribed burning and fire suppression.

We wish to make a submission addressing the following terms of reference:

The effectiveness of pre-incident bushfire prevention and mitigation activities

Our principal concern is that mitigation in the form of prescribed burning is inadequate. Prescribed burning programs have been starved of resources while increased and seemingly unlimited resources are being directed towards suppression.

The fires of January 2016 and those of 2015 have clearly demonstrated that the current policy of reliance on suppression is not working in the presence of heavy fuel loads despite massive increases in suppression resources and bureaucracy. This is hardly surprising as has been repeatedly demonstrated in the USA and in other Australian states. The nation's total fire fighting capacity is not enough to stop fires under these conditions. It has become a common mantra to blame this situation on climate change and with it a sense of inevitability. While low rainfall has promoted dry fuels, it is no drier than it has ever been, albeit being dryer earlier in the season. Nor have the weather conditions been unusual – they occur every summer and often with more lightning ignitions than have been experienced in the last two years.

Climate change cannot be allowed to be used to as an excuse to accept these losses, but rather a reason to increase mitigation efforts.

There have been two responses by the government to this situation.

The first is to accept that holocausts of this nature are inevitable and second to provide ever-increasing funds and resources for fire suppression despite the demonstrated fact that it will make little appreciable difference to the outcome while fuel loads remain high.

While a limited amount of additional funding has been made available to DPAW for more prescribed burning, mainly in the form of overtime and casual employees, there has

been no real increase in permanent resources that are necessary to maintain a sustained prescribed burning program. The resources available to DPAW for this work are in the order of 50% of what it was in the past.

Local authorities have virtually no resources to carry out adequate prescribed burning and private owners have neither the expertise nor resources to do it. Reliance on volunteers to do this work is unworkable.

The situation now exists where DFES acknowledges that it cannot contain these fires under severe weather conditions and heavy fuels, argues for more fuel reduction, recognises it has no responsibility for fuel reduction but at the same time is bleeding resources from agencies that do have responsibility for mitigation.

A shortcoming of the focus on suppression is that success is regarded as stopping the fire and minimising loss of lives and houses. Little regard is given to the other damage caused by wildfires, in particular to forests. For example while there has been reporting of damage to Western Power infrastructure there has been no public reporting of damage to forests in either the 2016 or 2015 fires – damage that would have been much less with mitigation practices that reduced fire size and intensity. This situation is likely to continue while the principal fire agency (DFES) is responsible only for stopping the fire and has no responsibility for the fuel or for the resources at risk.

The cost of this failing policy is carefully hidden.

We urge the inquiry to determine and make public the total cost of:

- Aerial suppression activity
- Other suppression activity by DFES, DPAW, shires and other government agencies
- In kind work of volunteers
- Damage cost to public utilities and forest
- Estimated insurance claims of private owners.
- The above to include additional emergency funds made available beyond normal budgets.

This should be compared to the cost of the annual prescribed burning program by DPAW and other agencies.

Prescribed burning strategy.

Limited resources and a vocal anti burning lobby has resulted in calls to abandon broad-scale forest prescribed burning and limit it to burning around townsites. This strategy ignores the fact that limited buffer burning is inadequate protection from high intensity fires that have built up in heavy fuels and ignores the need to protect the forest itself from damaging fire. While DPAW is primarily responsible for the management and protection of forests in the southwest its limited resources are increasingly being directed towards fire suppression for the protection of private assets.

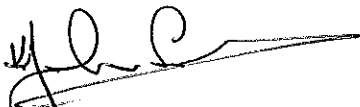
We urge the inquiry to emphasise the need to increase broad-scale prescribed burning of forests.

The need for further reform

We believe that policy changes are required to:

- Shift fire management focus away from suppression to a greater emphasis on fire mitigation and re-allocate funding accordingly.
- Allocate sufficient resources to DPAW to undertake an adequate and sustainable program of prescribed burning across all of its lands for which it is responsible. An adequate prescribed burning workforce and resources will add considerably to its suppression capability as well as limiting damage to forests and other values.
- Create a Rural Fire Service with the authority and capacity to undertake prescribed burning for shires, private owners and other government agencies that do not have the capacity to do the work at a cost to the owners of the land, according to fuel load policies determined by Shires. Suppression funding to be provided for from State budgets with the support of volunteer brigades.
- Encourage and support adequately resources and trained private fire management companies to undertake prescribed burning for land owners.

Thank you for the opportunity to comment.



John Sanders

For Friends of Fire

PO Box 650

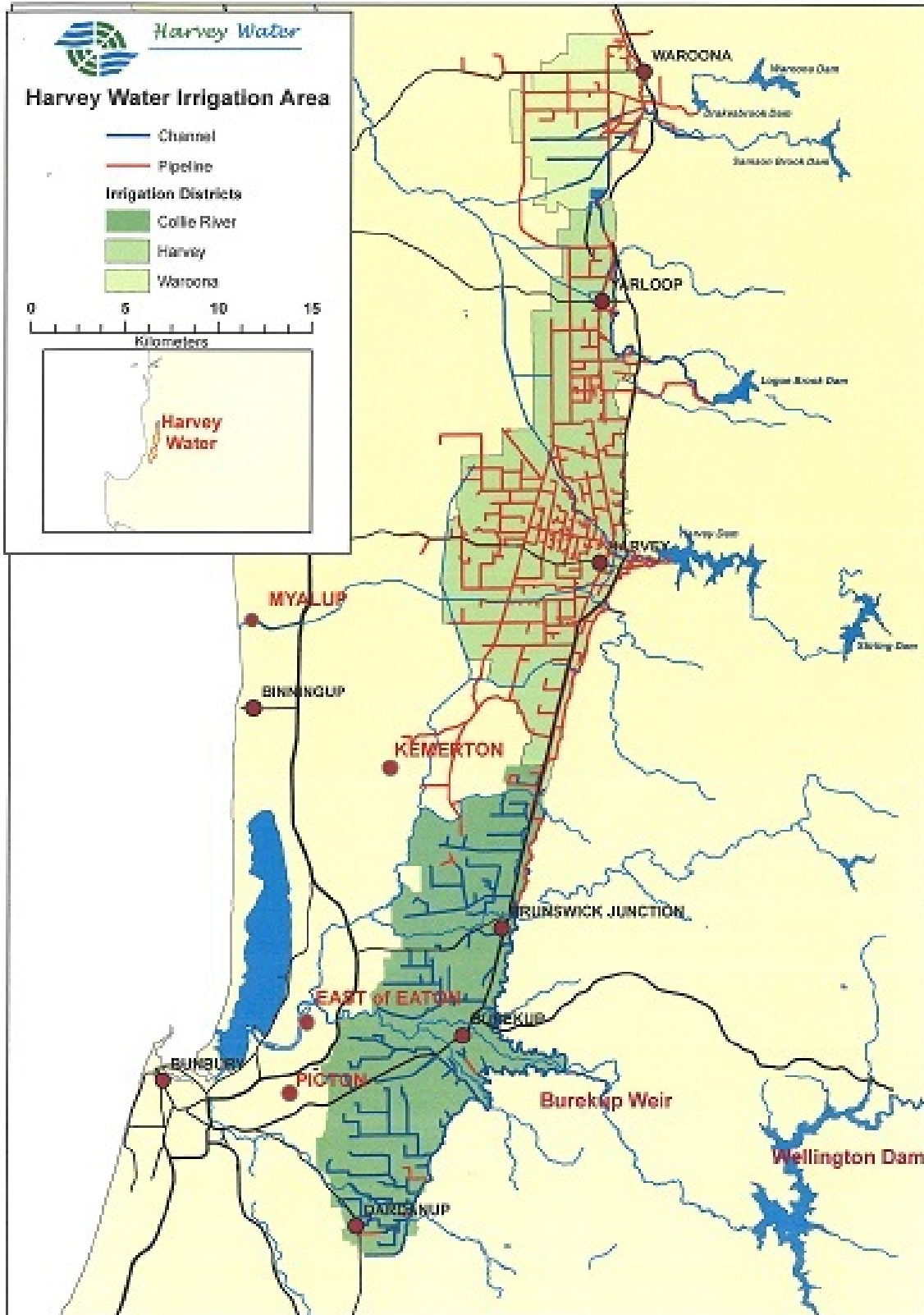
Manjimup, WA 6258

[REDACTED]

1 March 2016

HARVEY WATER

**RESPONSE TO PUBLIC INQUIRY INTO
JANUARY 2016 WAROONA FIRE**



MAP 1: THE HARVEY WATER IRRIGATION AREA

WHO IS HARVEY WATER?

Harvey Water is a cooperative, irrigation water supply utility which provides water delivery services to 485 irrigator members and to 232 non-member Rural Water Service (RWS) customers in the Waroona and Harvey Irrigation Districts (WHID) in the Waroona and Harvey Shires. (See Map 1). Harvey Water is a private entity run by Directors elected from and by the members along with an external Director appointed by the cooperative.

Harvey Water also supplies water to a small number of industrial customers in the shires. In addition it provides the same irrigation water delivery services to cooperative members in the Collie River Irrigation District (CRID). All water supplies are non-potable.

The water supplies are drawn from the Waroona, Drakesbrook, Logue Brook and Harvey dams for the WHID and from the Wellington dam for the CRID. (See Map 1)

In the mid 2000s Harvey Water converted the previous WHID open channel water delivery system to a 450 km piped system using HDPE pipelines. A significant benefit of this project is that all irrigators and RWS customers now have access to water under gravity pressure at their supply point on a 24 x 365 basis. The average static pressure at a WHID Supply Point ranges from 200 to 300 kPa although this can vary up or down by 100 kPa depending on the time of day and the volume of supply being provided in the near vicinity. Photo 1 shows the benefits that gravity pressure brings to the system.



Photo 1: Water under gravity pressure in the WHID Pipe System

THE RELEVANCE OF HARVEY WATER TO THE FIRES.

In addition to the 717 gravity fed supply points for members and RWS customers, Harvey Water also installed 42 Community Supply Points (CSP), which, as the name suggests, were provided for the benefit of the community at Harvey Water's expense of \$126 000. For example, there are four CSP for schools and four for golf and bowling clubs. (See Map 2). More CSP are now planned as a result of the fires.

The locations of these CSP were decided using the advice of a member of the local fire brigade (Gary van Burgel) and those details were provided to the Shires at the time of their installation to be used as they wished.

The Shires may also use these CSP when they and their contractors are doing local road works and similar tasks that require water.

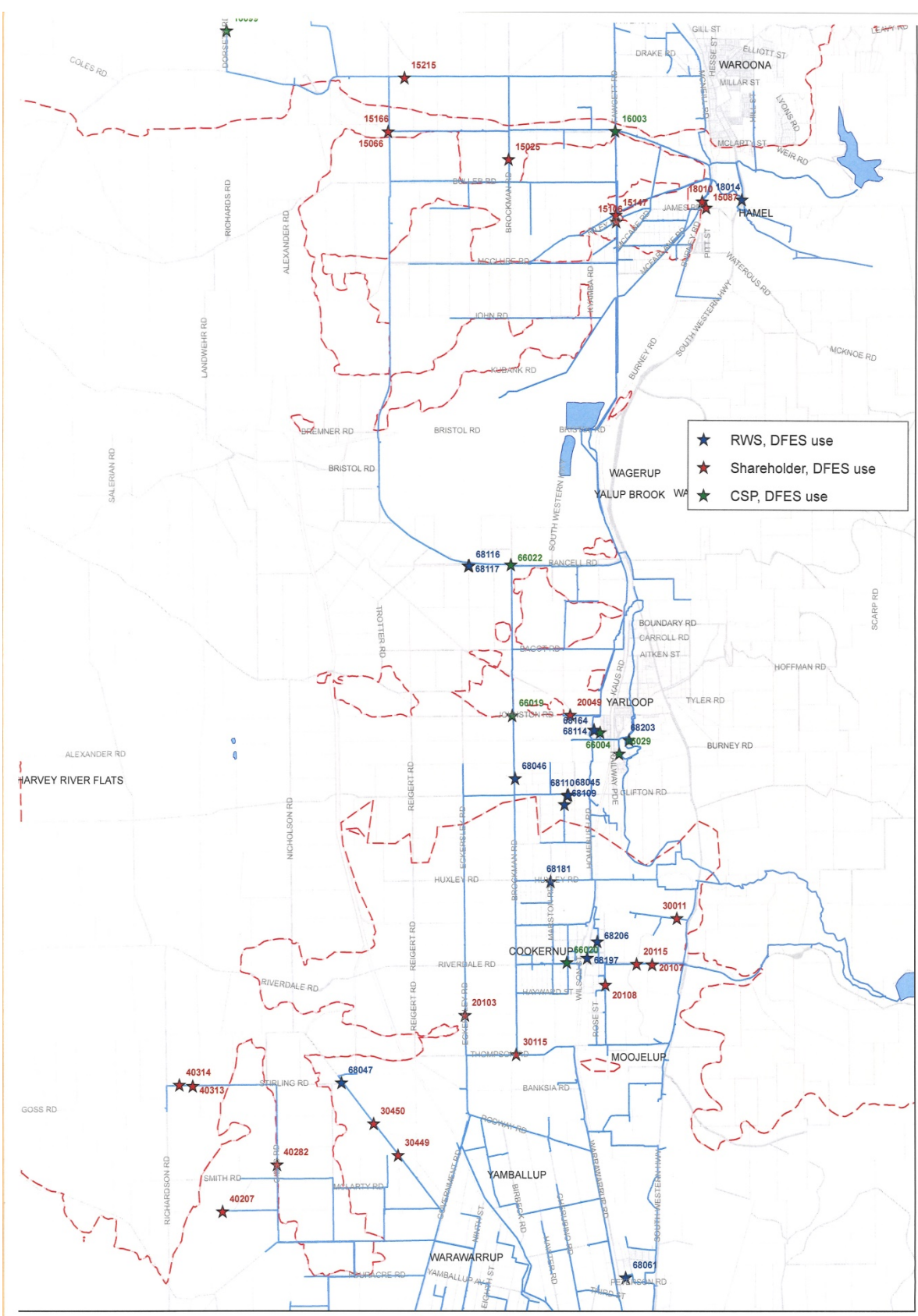
But the primary purpose of these CSP was to provide easy access to a pressurised, rapid fill water supply in the event of an emergency, especially fire.

Of particular relevance to the Yarloop fire, there are six CSP in and around Yarloop - at the Cookernup and Yarloop Fire Stations, the Yarloop Primary School, in Railway Pde Yarloop, the Yarloop Workshops and on the corner of Johnston & Brockman Roads. In addition there are two 250 mm irrigation SP that supply the Yarloop Bowling Club and the Yarloop Oval.

Each of these CSP was fully operational and available for use during the fire emergency. For example, it was stated by one member of the community that they survived by sheltering on the Yarloop Oval with the sprinklers providing them with protection from the heat and the flames. The usage at these CSP, and Waroona CSP, during the fires is shown in Table 1 below.

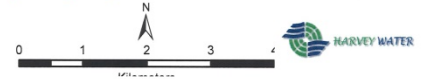
CSP Number	Address	Locality	Use (KL) 5-18 Jan 2016
66003	Fawcett Rd Drain	Waroona	2870
66004	21 Teesdale Rd	Yarloop Oval	1730
66005	21 Teesdale Rd	Yarloop Bowling Club	Nil
66006	Lot 10 School Rd	Yarloop P.S.	Nil
66019	338 Johnston Rd	Yarloop	449
66020	Lot 153 Riverdale Rd	Cookernup Fire Stn	840
66021	Lot 1 Clifton Rd	Yarloop Workshops	Nil
66022	Cnr Bancell & Brockman	Wagerup	382
66025	Lot 16 Railway Pde	Yarloop Fire Stn	Nil
66029	Lot 16 Railway Pde	Yarloop	1493
66099	Dorsett Rd	Waroona	800
TOTAL			8564

Table 1: Water use (KL) at the Yarloop and Cookernup Community Supply Points from 5 to 18 January 2016



Active Fire Extent
 Data source: Active Fire Extent
 Dept. Fire & Emergency Services

**Waroona Fire - DFES Water Use
 from the Harvey Water System**



Harvey Water has not charged for the use of this water which was costed at \$4025.08.

Some members (20) and RWS (11) customers allowed the fireys to access their SP to obtain water supplies of 13.15 and 3.25 ML respectively. So the total volume of water supplied by Harvey Water and used by firefighters during the fires was 24.964 ML (24,964 KI) from 39 SP.

Harvey Water is very pleased to report that its water delivery services to all SP remained fully functional, before, during and after the fires.

A number of our cooperative members have reported to us that if the new pipe system had not been installed, they would most likely have lost everything and they were very grateful for that fact.

Figure 1 shows the increase in the rate of draw from the Harvey Dam as many people turned on their SP to use the water in different ways to protect themselves and their properties from the fire. For example, many members irrigated dry paddocks to stop or slow the progress of pasture grass fires. Some RWS customers turned on their sprinkler systems around their homes and stayed to fight the fires or took the prudent step of evacuating. In each of these cases, their properties were saved.

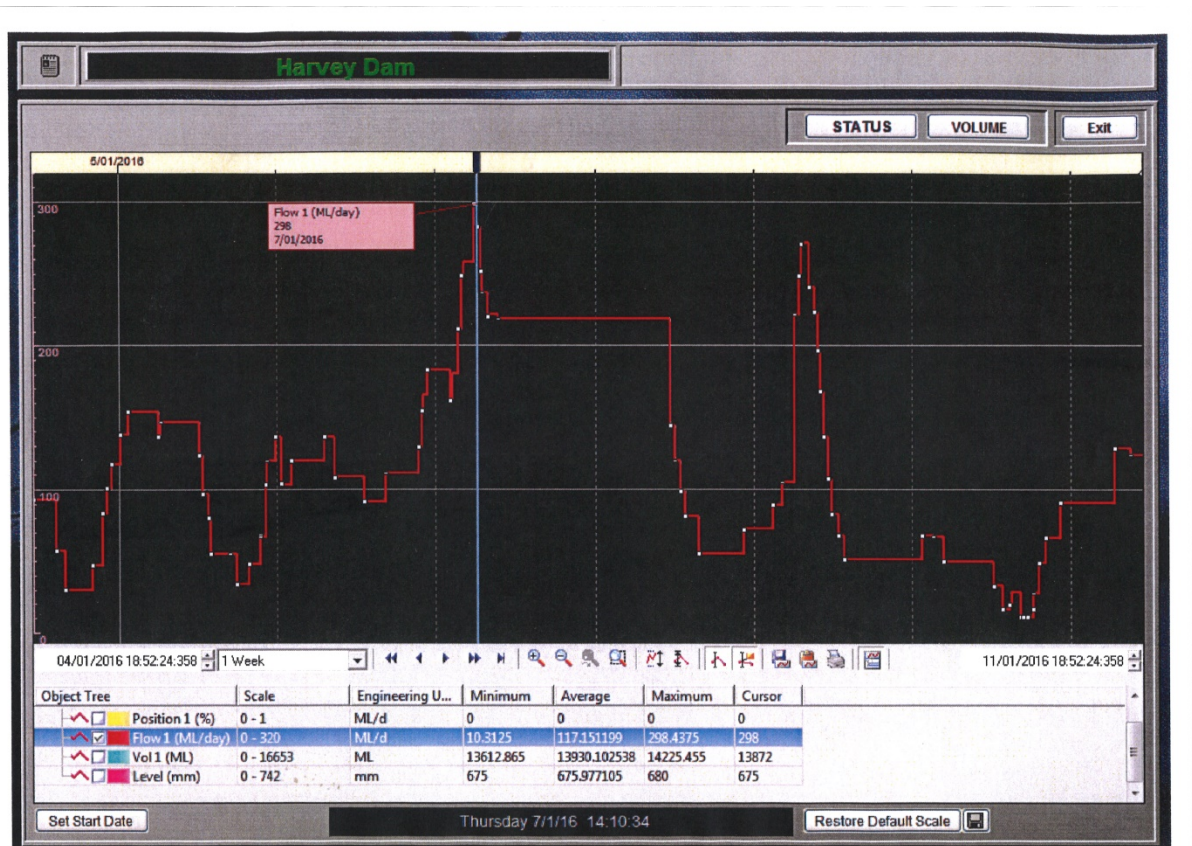


Figure 1: Draw of water from Harvey dam between 1800 hours on 4 and 11 January 2016.

The peak rate of draw of 298 ML/day occurred at 14.10.34 on 7 January which was before the Yarloop fire occurred. This rate of draw is the maximum that can be supplied and compares to the normal rate for the time of year of about 125 ML/day.

The second peak was on 9 January which was when the fire started to threaten the land to the immediate west of Harvey.

Harvey Water's data loggers were used to confirm this use and those people were not charged for that water supply. The data loggers provide real time water use data whenever the meter on the SP is active

Figures 2 & 3 show how the data loggers tracked the use of water where a member/customer allowed their water to be used to fight the fires.

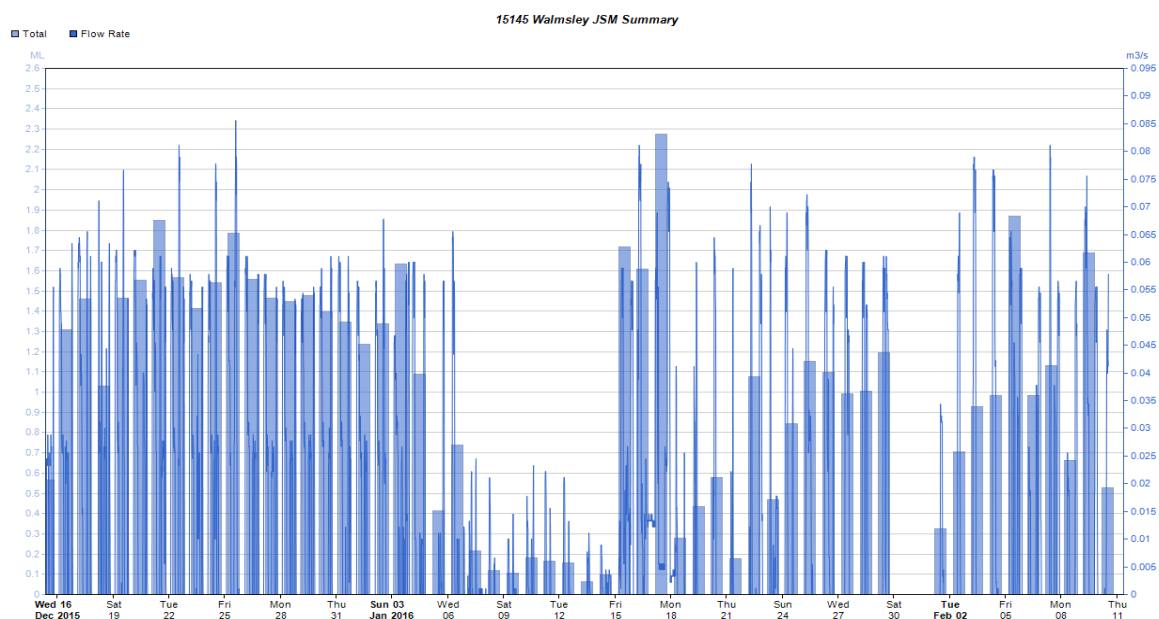


Figure 2: Example of increased water use (ML) from supply provided to fire fighters by an irrigator.

(Note: the thick blue lines are the volume supplied and the narrow blue lines are the flow rate)

In this example, the irrigator was growing a vegetable crop along Coronation Rd east of Waroona and converted his irrigation supply point on Tuesday 5 Jan so it could provide water to fire fighters. This continued to about 15 Jan supporting mopping up operations. He then went back to full bore irrigation on about Sat 16 to make up for what he had missed out on. The period Sat 30 Jan to Tue 2 Feb was when it was raining. The irrigator was not charged for water used between 5 to 15 Jan and the volume used re-credited to him.

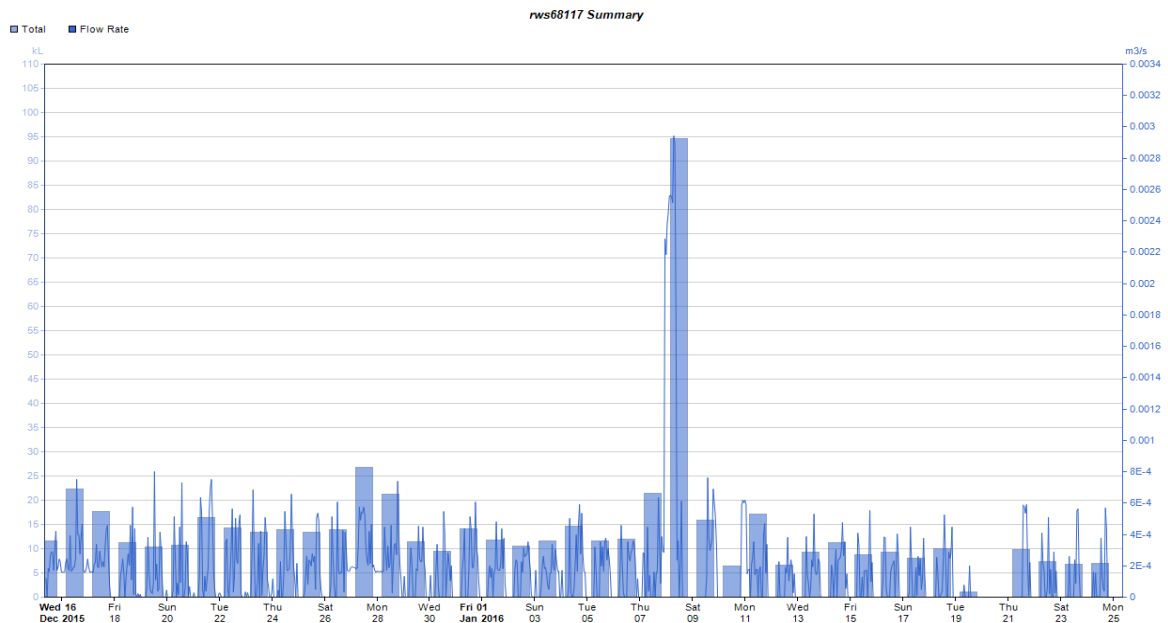


Figure 3: Example of increased water use where water was supplied by an RWS customer.

In this case the base line use is clear and the extra water supplied to fire fighters on Friday 8 Jan is the large spike. The customer was not charged for this water.

On Map 2, the locations of the CSP that were used by the fireys are shown as a green star; the locations of shareholders' SP and RWS SP that were also used to supply fireys are shown as red and blue stars respectively. CSP that were not used are not shown.

Harvey Water hopes to also pipe the CRID and will install CSP there too.

What did we learn?

Harvey Water is very pleased that our piped water distribution system withstood the challenges of a serious fire event and did not let our members, customers and the community down.

The use of water from the seven CSP accessed was mixed, with some being heavily used and others, which might have been expected to be used, were either sparingly used or not used at all. For example, when the fire moved down to the north east of Harvey town site, no CSP there were accessed at all.

That suggests a lack of knowledge of their locations. To help overcome this situation, Harvey Water has:

- Provided updated maps to the shires and the local fire brigades
- Provided a copy of the details to DFES as it appeared that one of the limitations was that although the local fire brigades knew where the CSP were and used them, other brigades from around the state or interstate may not

have been aware of them. With the CSP information now with DFES, it is an opportunity for that agency to use the CSP as a resource to assist in better top-down management of the crews on the fire ground.

- Plans to provide marker posts next to the road verge near the CSP which will be blue to signify “water” along with reflective red tape to indicate a fire point and to make it easier to pick them up in low visibility conditions.
- Plans to put in place more CSP on the advice of the Chief Fire Officers of the Waroona and Harvey fire brigades.
- Fabricated a special fitting for each brigade in the area that will enable the firefighters to convert air valves on the pipelines into emergency water supply points. Harvey Water will provide training on how to operate these.
- Decided to suggest to the local fire brigades that they hold training courses to familiarise themselves on how to access and operate the CSP, quickly and easily.
- Learned a lot about our own deficiencies in preparedness in relation to:
 - a. data security,
 - b. contingency response planning,
 - c. response team formation,
 - d. responsibilities and
 - e. communications.
 - f. We will also provide better identification methods for our staff who need to move around the irrigation area to check on the system.
 - g. We will fuel up our vehicles when there is a realistic chance of there being an emergency.

SUMMARY:

Harvey Water is satisfied that the water delivery systems that were put in place about 10 years ago, met the demands that were anticipated and remained fully operational during the emergency.

The apparent deficiency in awareness of the CSP locations, and therefore usage, has been addressed by updating and submitting the information to the relevant authorities.



Our Ref:

Enquiries: 11 April 2016

Email:

Mr Euan Ferguson AFSM
Special Inquirer
Waroona Bushfire Special Inquiry
2 Havelock St
WEST PERTH WA 6005

Dear Mr Ferguson

Request for Information – Bushfire Mitigation Activities.

Thank you for your letter of 8 April seeking information on Harvey Water's authorities and responsibilities in relation to the open channel water delivery system, previously operated by Harvey Water, over the last 6 year period.

To answer this question fully and properly it is necessary to provide some history and context.

The open channel system was constructed by and for the operation of government managed irrigation schemes in the early to middle years of last century. The open channels are technically channels which supply water in summer from the dams in the hills to the east to irrigators' properties and then in winter drain water from the catchment to the estuaries to the west. The dividing line between the two types of assets is where the water supply function ceases. The channels and drains are of both concrete lined and earthen types.

The channels therefore service the two different functions of water supply and water drainage, although in most instances the summer supply channels also operate as drains in winter. Separate licences are issued by the Economic Regulation Authority for these functions. Presently Harvey Water holds the licence to supply irrigation (and other) water and Water Corporation holds the licence to carry out the drainage function. The water supply assets and drainage assets are held on their separate asset registers by South West Irrigation Asset Cooperative (SWIAC) and Water Corporation respectively.

Various government agencies carried out both these functions until 1996 when Harvey Water was privatised from Water Corporation such that it now operates as a fully private, two cooperative structure whose members are the irrigators in the Harvey Water irrigation Area (HWIA). SWIAC is a mutual that owns the channel assets. South West Irrigation Management Cooperative (SWIMCO trading as Harvey Water) operates the water delivery service and the asset management under agreement with SWIAC.

As part of the privatisation, Harvey Water was provided with powers similar to Water Corporation under the Water Agencies (Powers) Act of 1984. As far as we are aware there is nothing in that Act and the transfer of powers that

specifically requires Harvey Water to be responsible for bushfire mitigation in respect of the channels.

The transfer of assets necessary to allow Harvey Water to run as a fully private entity took place on 1 May 1998 by means of an Asset Transfer Deed between Water Corporation and SWIAC & SWIMCO.

Apart from a Section on Environmental Indemnities & Insurance which is mostly about protection of Water Corporation interests resulting from the transfer, there is nothing that specifically or even tangentially refers to bushfire mitigation.

From 2003 to 2007, Harvey Water undertook a self funded project in the Waroona and Harvey Irrigation Districts that replaced the open water supply channels with buried HDPE pipe at a cost of \$85 million such that all irrigators and other customers have access to a 24 x 365 gravity fed water supply point on their property boundary.

This has meant that the channels are no longer in use for water supply. In cooperation with Water Corporation, we are a long way through the process of handing over to them ownership of channels that are needed for the drainage function. The redundant supply channels are now being filled in with soil with that program being now approximately 80% complete.

Normal management of the channels used to be to spray them to reduce the weed burden that affected water flow. Weeds such as blackberry are subject to ongoing spraying for control and eradication. Access to the channels and drains was frequently achieved by clearing a one vehicle wide path along the edge of them but this was not specifically for bushfire mitigation.

Without it being a specific management policy, Harvey Water has always accepted the bush along the channels/drains as being an important wildlife asset. The channels and drains mostly run along road verges combined with ribbons of bush, so whatever management was needed for those corridors was handled mostly by the shires, to the best of our knowledge.

In summary, Harvey Water has not carried out any specific bushfire mitigation along the channels in the last 6 years, as it has not been conscious of whether this was an obligation, the presence of vegetation has a protecting and stabilising effect on the banks of earth channels limiting possible damage from cattle traffic and the benefits to wildlife were assumed.

Water Corporation may be able to shed further light on this matter.

Please contact me if you would like further information.

Yours sincerely

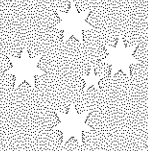


Geoff Calder
GENERAL MANAGER



Alannah MacTiernan

Federal Member for Perth



Mr Euan Ferguson
 Waroona Bushfire Special Inquiry
 Level 6 Dumas House
 2 Havelock Street
 WEST PERTH WA 6005

22 February 2016

Dear Mr Ferguson,

Thank you for the opportunity to make a submission to the public inquiry into the January 2016 Waroona fire.

My submission relates to Term of Reference 1(d), regarding the effectiveness of incident management, including coordination of agencies, volunteer fire and emergency services and interstate assistance, as well as policy or functional reforms relating to bushfire risk management, emergency management and processes to strengthen the State's capability to efficiently and effectively manage bushfire-related risk.

My submission concerns whether Western Australia's emergency management agencies are properly utilising the skills and physical assets of the Australian Defence Force, and in particular the Army Reserve, that are based in Western Australia.

I attach my submission.

Best regards,

Alannah MacTiernan MP
 Federal Member for Perth

- Ashfield
- Bassendean
- Bayswater
- Bedford
- Beechboro
- Dianella
- East Perth
- Eden Hill
- Embleton
- Highgate
- Inglewood
- Kiara
- Lockridge
- Maylands
- Morley
- Mt Lawley
- Noranda
- North Perth
- Northbridge
- Perth
- West Perth



SUBMISSION TO THE PUBLIC INQUIRY INTO THE JANUARY 2016 WAROONA FIRE

My submission concerns whether Western Australia's emergency management agencies are properly utilising the skills and physical assets of the Australian Defence Force, and in particular the Army Reserve, that are based in Western Australia.

The question of whether Western Australia is properly utilising the skills and assets of the Australian Defence Force during emergency situations has been raised with me by reservists, by career service personnel and by fire victims.

The Australian Government and Australian Defence Force have established protocols under COMDISPLAN as to how Defence Aid to the Civilian Community can be utilised in emergency situations. The provision of aid is triggered by a request from the State or Territory Government.

Other States appear to be active in seeking Defence assistance – Queensland requested assistance on five occasions between 2011 and 2013 for Category 3 tasks. i.e. when there was no direct threat to human life. The Federal Government has discretion as to whether it will charge for Category 3 services.

The Australian Defence Force was heavily involved in recovery work following the Victorian Black Saturday bushfires in 2009 – more than 600 personnel were deployed on Operation Vic Fire Assist, including reservists from Western Australia.

It does not appear that any request for assistance was made during or after the fire under investigation, notwithstanding how clearly the resources of professional and volunteer firefighters were being stretched.

One of the defining images of the Yarloop fires was of firefighters passed out on the ground from exhaustion.

In a separate fire in the South West just weeks later, the local State member of Parliament ended up calling triple zero to beg for food for the exhausted volunteer fire-fighters, who returned from a full day on the front line to no basic provisions.

The length of time taken to mop up because of limited resources, exacerbating stress and economic loss, as roads were closed for longer period than would have been necessary if more human resources and capital were available.

While we understand that a senior Defence member was part of the State Operations Centre team responding to the Yarloop fires, that does not appear to have translated into assistance on the ground – even though there are a multitude of ways in which Defence could have helped.

Defence has a wide range of assets sitting idle in Western Australia that could be utilised during bushfires:

- Earthmoving equipment like tractors and excavators that could be used to establish firebreaks;
- Water tankers that could be used as a refill point, ending the need for two-hour round trips to refill trucks;
- Heavy-duty trucks that could be used to move personnel and equipment through the fire zone.

In the case of the fires under investigation, the Army depot in Bunbury, less than an hour from the fire-zone, is home to wide range of assets that could have been utilised.

Defence would not be fighting fires, but providing the logistical support needed to free up fire fighters' time

Reservists could be available on four hours' notice, have years of training for this emergency logistics work and have been deployed to assist over east in previous years.

Defence could establish forward bases within hours, providing the basic relief of a bed, water and food for our fire fighters.

Defence could also help with the mop-up – getting roads cleared and critical infrastructure back on track. Thousands of litres of milk were dumped around Harvey because farmers could not get their product to market. I understand the WA Reserve has the capacity to build temporary bridges, which may have seen South West Highway reopened sooner.

In 2011, WA did request Defence assistance in the form of tents during the Margaret River fires – which may have contributed to the mindset of the Department of Fire and Emergency Services officials we heard from in Australind, who suggested to Yarloop fire victims that provision of tents was the extent of Defence capabilities.

The deployment of reservists would improve their operational capabilities, given them practical experience in rapid mobilisation. Therefore, it would be mutually beneficial to the Defence forces and to the state's firefighting capacity to have an entrenched process for engagement of the Army Reserves.

The Climate Council's 2015 report 'The Heat Is On: Climate Change, Extreme Heat and Bushfires in Western Australia' found:

- Climate change is increasing the intensity and frequency of heatwaves in Western Australia and driving up the likelihood of very high fire danger weather;
- The concept of a normal bushfire season is rapidly changing as bushfires increase in number, burn for longer and affect larger areas of land; and

- By 2030, the number of professional firefighters in WA will need to more than double to meet the increasing risk of bushfires.

This tells us this is a problem that will only get worse.

We have to question how WA would cope if there was a Yarloop, and Esperance and a Margaret Rive all burning at the same time – and we need to ensure we are fully utilising all available resources to fight these fires.

Alannah MacTiernan MP
Shadow Parliamentary Secretary for Western Australia
22 February 2016



DR CHRISTOPHER BACK
Liberal Senator for Western Australia

PERTH
Unit E5, 817 Beeliar Drive
Cockburn Central WA 6164

PO Box 3468
SUCCESS WA 6964

Telephone: (08) 9414 7288
Facsimile: (08) 9414 8819
Freecall: 1300 301 846
Email: senator.back@aph.gov.au

CANBERRA
Parliament House
Canberra ACT 2600
Telephone: (02) 6277 3733
Facsimile: (02) 6277 5877

15 March 2016

Mr Euan Ferguson AFSM
Waroona Bushfire Special Inquiry
Level 6 Dumas House
2 Havelock Street
WEST PERTH
Western Australia 6005

Dear Mr Ferguson

This submission is a brief summary of the points I would like to make for your consideration. The legislative program in the Australian Parliament currently precludes me from presenting a more comprehensive submission. I am happy to discuss any element in greater detail.

Attached at Attachment 1 are the recommendations of a Senate Inquiry into the "Incidence and Severity of Bushfires in Australia" which I instigated in 2009/10. This report was tabled following an extensive consultation with interested parties around the country. I believe the report and its recommendations are relevant to the terms of reference for your inquiry.

Background

I was the last Chief Executive Officer of the Bushfires Board of WA (BFBWA) in 1997. Thereafter the BFB was effectively subsumed into the then Fire & Rescue Service (FRS) which subsequently became the Department of Fire & Emergency Services (DFES) of WA.

The extent of these evolutionary moves was to effectively diminish the status, role and effectiveness of the Bushfire organisation:

This has impacted adversely on many rural communities and local councils, volunteer bushfire brigades and the professional officers who staffed the BFB.

In brief the experiment to absorb the rural fire service into the metropolitan dominated service has not been successful.

A return to the establishment of an organisation which would focus on provision of services, advice and equipment for rural firefighting based around well trained and resourced volunteer brigades with local government involvement is indicated.

There is a strong argument for continued close cooperation between urban and rural services and the Department of Parks and Wildlife (DPAWS) in the prevention, mitigation and suppression of bushfires on lands for which they have legislative responsibility.

I urge you to address in your report the vexed issues of evaluation, cooperation and hierarchy of responsibility for bushfire management by the respective services. I don't propose to add my views in this brief submission but would be happy to discuss these issues with you.

Fire Suppression on Publicly owned Lands

I urge you to consider, report and make recommendations on an issue of continued importance to volunteer brigade members in rural and regional areas of WA.

It relates to the legal liability a brigade member may face if they enter publicly owned land to suppress a bushfire or undertake mitigation activities such as back burning or establishment of fire breaks on publicly owned land for the purpose of protecting life and/or property on adjacent privately owned land.

By publicly owned land I mean any land owned or controlled by an agency of Federal, State or local government. It may include allocated or unallocated Crown Land.

I am aware of the text contained within the Bushfires Act but believe this does not extend to ALL publicly owned land.

I urge that your report strongly recommends that a bona fide bushfire brigade member could NOT be subjected to the threat of litigation if they are conducting fire mitigation or suppression activities on publicly owned land in the face of direct threat to life and property.

Roles and Responsibilities

I am confident you will address the complex issue of the respective roles and responsibilities of the parties starting with control of a minor bushfire incident progressing to a catastrophic event which may encompass different jurisdictions with risk to human life and extensive property assets.

While I have no specific advice in this matter, I do urge that the voices of very experienced and competent bushfire control officers, foresters and bushfire brigade members are heard and respected in your report.

As our common friend and past colleague, Len Foster informed me in relation to competence of fire officers early in my time as CEO of BFBWA:

“Never refer to a volunteer as an amateur and a paid officer as a professional. If a paid officer and a volunteer are equally trained, equipped and resourced, they are equally capable of controlling a major incident”.

This has been my experience. The concern expressed to me by volunteer brigade members, including senior volunteer officers is that they are being treated in a patronising and often derisive manner on fire grounds.

Fuel Reduction Strategies

There is ongoing controversy around Australia of the effectiveness of fuel reduction techniques including prescribed burning to protect communities, lives, built and natural environmental assets.

The issue is settled amongst the community of people charged with responsibility of protecting the community against the threat of devastating bushfires. However it continues to be the subject of argument amongst environmentalists and activists.

This issue is directly relevant to the communities so severely affected in the areas under scrutiny within your terms of reference. I trust you will address this question with recommendations in your report.

I apologise for the brevity of this submission but feel compelled to record my deep interest in the subject of your Inquiry. The issues are complex and deserving of comprehensive review. I wish you well in your considerations.

Yours sincerely

A handwritten signature in black ink, appearing to read 'C J Back', written in a cursive style.

Dr C J BACK

Senator for Western Australia

**Mr Euan Ferguson AFSM
Special Inquirer
Waroona Bushfire Special Inquiry
Level 6 Dumas House
2 Havelock Street
WEST PERTH
Western Australia 6005**

Submission by Hon Dr Sally Talbot MLC, Member for South West Region, Legislative Council, Parliament of Western Australia

4 March 2016

Dear Mr Ferguson

Thank you for the public invitation to make a submission to the special inquiry into the recent fires that affected the Shire of Waroona, the Shire of Harvey and the town site of Yarloop in January 2016, all of which lie within my electorate.

The fires have devastated a significant area across the shires of Harvey and Waroona and I fear that the effects of the shock and loss experienced by a large number of residents will be felt for years to come. I must say at the outset, however, that I have been extremely impressed by the effectiveness of the response by the two shires both during the emergency and in the aftermath. I have seen and heard reports of some exceptional teamwork, innovative thinking and a cool, calm resilience that merit the highest commendation as we continue to look for ways to reduce the risk of bushfire and improve our capacity to respond to serious incidents. As community leaders, both Cr Tania Jackson, Shire President of Harvey, and Cr Maree Reid, Shire President of Murray, have earned the deepest respect of their communities and thoroughly deserve the heartfelt thanks of us all.

I know that you will receive some very detailed and insightful submissions from those who were involved with the responses coordinated by the two shires. I would urge you to give those submissions very close and careful consideration as I am confident from my discussions with the shires that the insights and observations they will provide will be of inestimable value as you formulate your recommendations and findings.

There is one specific incident that I would like to draw to your attention and request you to investigate further under your first and third terms of reference which require you to examine and report on the response to the January 2016 Waroona fire and the need for further reform. This incident relates to the decision to facilitate the transport of workers to the Alcoa's Wagerup Refinery on Friday 8 January. The sequence of events was outlined to me in the days after the bushfire by several workers who had been directly involved in the incident.

I realise that decisions taken by Alcoa about management of its workforce are beyond the scope of your inquiry. My concerns, however, relate directly to the involvement of emergency service agencies and the decisions made and advice given by people in those agencies in relation to the transport of workers to the Wagerup Refinery on that day.

This was, of course, only a matter of hours after the townsite of Yarloop had been destroyed. The fire was still categorised as out of control, and a significant number of people were unaccounted for. Local residents throughout the shires of Harvey and Waroona who were being housed in evacuation centres on Pinjarra and Leschenault could not ascertain whether their properties had been destroyed, saved or were still under threat.

Workers who were due to report at Wagerup on Friday 8 January were advised by Alcoa late on Thursday 7 January that they should not attempt to drive to the refinery and should instead report to the Pinjarra hub by 5.30am the next day. My understanding is that two buses were provided to take the workers to the worksite and, sometime around 9.00am, approximately 80 people boarded those buses. A much smaller group met in Bunbury and were also provided with a bus to take them to Wagerup.

At some point on the journey south from Pinjarra, the buses were met by one of the Alcoa managers who was driving private vehicle. His advice was that he had come from the refinery and the road was clear. The buses proceeded, and at some point were joined by an emergency services escort vehicle. According to the people on the bus, their progress was halted by the collapse of the road bridge (presumably the bridge at Hamel), at which point the buses had to reverse and search for an alternative route which involved driving through the fire-ground for some distance on unbituminised tracks.

According to the driver of the Bunbury bus, he had been promised an escort from the checkpoint en route to Wagerup. When he reached the checkpoint, however, he was told no escort was available and waved through.

What I heard from the accounts given to me was that for all these workers the journeys south from Pinjarra and north from Bunbury into the worksite were extremely frightening. Fire fronts were actively burning on all sides of them and they were clearly being driven through fire-grounds where the fires had yet to be brought under control.

I understand that the return journeys, which took place at about 9.00pm that night, were equally hazardous and that no emergency service escort vehicles whatsoever were provided for any of the buses.

I think it is also worth drawing your attention to the fact that the workers who were transported to their shifts on this day were not emergency workers, or critical incident managers or first responders of any description. Had this been the case, I think a different assessment of the situation might have been possible. Critical incident managers clearly undertake particular and specific duties in an emergency situation and are trained accordingly. I emphasise that these were not essential staff, in the sense that such a category becomes relevant in an emergency situation.

This is an important point, because the second element of this incident that seems to me to warrant further detailed investigation is the risk to which the workers were exposed once they reached the worksite. As these conditions were reported to me, there is certainly a serious question which needs to be answered by emergency response managers about whether allowing these workers into the refinery exposed them to an unacceptable level of risk. According to the witness reports I have received, the worksite perimeters were surrounded by fire and the whole site was blanketed by smoke. It should be borne in mind that there are live gas feeds at this site, yet workers were provided with no safety briefing at any point during the day, and there were no evacuation procedures in place. There

were also no communication facilities at the worksite with phone and internet connections having been cut as a result of the fire.

Since the fire, I have asked several questions in Parliament in an attempt to clarify how decisions were made that resulted in the workers being transported to and from the worksite and spending many hours in what appear to be unacceptably hazardous conditions. I have attached the questions and answers for your information. As you will note, the answers have not shed light on the matter.

I would summarise the questions that remain to be addressed as follows:

1. What advice was sought by Alcoa from any of the emergency service providers in regard to transporting workers to the refinery on Friday 8 January and at other times when the bushfire was out of control?
2. Who provided the advice?
3. Did the advice include arrangements for the issuing of any permits, authorisations or permissions to pass through emergency service checkpoints or roadblocks?
4. What escort arrangements were in place on the inward and outward journeys between Pinjarra and Wagerup and between Bunbury and Wagerup on Friday 8 January?
5. On what basis were these escort arrangements sought?
6. Who authorised these escort arrangements?
7. What policies or protocols are in place or were referenced by (a) the employer and (b) emergency service providers regarding the transport of non-essential staff to a hazardous worksite during a bushfire emergency situation such as that which occurred in the Shire of Waroona, the Shire of Harvey and the town site of Yarloop in January 2016?

When I spoke to some of the people who had been on the buses and at the worksite on 8 January, they were clearly very shaken by the experience. I am prepared to state categorically that nobody who contacted me saw their reporting of this incident as part of an industrial campaign, and I would ask you to take into account the reluctance of individual workers to have their personal details disclosed publicly because of the risk of their employment being jeopardised. I understand that the Australian Manufacturing Workers' Union has made a submission on behalf of their affected members and I fully support the efforts of the union to inquire further into the situation.

I have included my full contact details below, and would welcome the chance to present this submission orally at a public hearing.

Yours sincerely



SALLY TALBOT

Hon Dr Sally Talbot MLC
Member for South West Region
9 Cassowary Bend
Eaton WA 6232
Phone (08) 9725 3711
Mobile 0409 339 039
sally.talbot@mp.wa.gov.au

YARLOOP BUSHFIRES — ALCOA WORKER TRANSPORT

8. Hon SALLY TALBOT to the minister representing the Minister for Mines and Petroleum:

I refer to reports that Alcoa workers were driven by bus from Pinjarra and Bunbury to Wagerup through the firegrounds of the Yarloop bushfires in January.

- (1) Can the minister provide details of the escort arrangements used on both the inward and outward journeys between Pinjarra and Wagerup and between Bunbury and Wagerup?
- (2) Who authorised these escort arrangements?
- (3) Is the minister intending to conduct an inquiry into the circumstances surrounding these reports?
- (4) If yes to (3), when will we know the outcome of the inquiry?
- (5) If no to (3), why not?

Hon KEN BASTON replied:

I thank the honourable member for some notice of the question. On behalf of the Minister for Mines and Petroleum —

- (1) The Department of Mines and Petroleum is carrying out preliminary investigations into these matters to establish jurisdiction and the sequence of events that transpired during the emergency. At this stage, it would appear that the issue raised by the honourable member relating to the journeys undertaken to and from the refinery does not fall under the jurisdiction of the Mines Safety and Inspection Act 1994.
- (2) Management of the roads and access during the fire was under the control of emergency services and not the Department of Mines and Petroleum.
- (3)–(5) Refer to the response to (1). An investigation is ongoing.

YARLOOP BUSHFIRES — ALCOA WORKER TRANSPORT

31. Hon SALLY TALBOT to the Minister for Commerce:

I refer to yesterday's advice from the Minister for Mines and Petroleum that investigation of reports that Alcoa workers were driven by bus from Pinjarra and Bunbury to Wagerup through the firegrounds of the Yarloop bushfires in January appears to lie outside the jurisdiction of the Mines Safety and Inspection Act 1994.

- (1) Can the minister advise whether WorkSafe will conduct an inquiry into the circumstances surrounding these reports in the absence of action by the Minister for Mines and Petroleum?
- (2) If yes to (1), when will we know the outcome of the inquiry?
- (3) If no to (1), why not?

Hon MICHAEL MISCHIN replied:

I thank the honourable member for some notice of the question.

- (1) WorkSafe is aware of the event, due to media reports on 15 January 2016 in relation to the matter that indicated that travel was only undertaken after permission was granted by the authorities and that buses taking workers in and out were escorted by Department of Fire and Emergency Services personnel. No complaint has been made to WorkSafe, therefore, no investigation has been conducted. However, WorkSafe will make contact with the Department of Fire and Emergency Services and the Department of Mines and Petroleum to determine whether an investigation is necessary.
- (2)–(3) Not applicable.

YARLOOP BUSHFIRES — ALCOA WORKER TRANSPORT

125. Hon SALLY TALBOT to the Minister for Commerce:

I refer to the minister's advice in question time on 17 February 2016 that WorkSafe would make contact with the Department of Fire and Emergency Services and the Department of Mines and Petroleum to determine whether an investigation was necessary into reports that Alcoa workers were driven by bus from Pinjarra and Bunbury to Wagerup through the firegrounds of the Yarloop bushfires in January.

- (1) Who advised the minister that buses taking workers in and out were escorted by DFES personnel?
- (2) Is the minister now aware that this advice is wrong?
- (3) Has WorkSafe made a decision about whether to conduct an investigation?
- (4) If so, when will it start and how long will it take?
- (5) If no to (4), why not?

Hon MICHAEL MISCHIN replied:

I thank the honourable member for some notice of this question.

- (1) I was advised by the WorkSafe division of the Department of Commerce. As I indicated during question time on 17 February, WorkSafe based this advice on media reports of the incident as no complaint had been made to WorkSafe.
- (2) The detail of what occurred is still being established and as such I am not in a position to comment at this point in time.
- (3) Yes.
- (4) WorkSafe has commenced an investigation. The duration of the investigation will depend upon the information received and how long it takes for the issues to be examined.
- (5) Not applicable.

THE HON. WILSON TUCKEY
77 FAUNTLEROY AVE ASCOT

PERTH WESTERN AUSTRALIA 6104

PHONE +61 8 92773076.

Email wilsontuckey@westnet.com.au

Waroona Bushfire Special Inquiry
Level 6 Dumas House 2 Havelock Street West Perth WA 6005

The Secretary

Please find enclosed my submission to the above inquiry to which I am prepared to give further explanatory verbal evidence if required

I further have no objection to the publishing of this submission and the attachment

Thank you Hon. Wilson Tuckey

Wilson Tuckey
24/02/2016

THE HON. WILSON TUCKEY

77 FAUNTLEROY AVE ASCOT

PERTH WESTERN AUSTRALIA 6104

PHONE +61 8 92773076.

Email wllson@tuckey@westnet.com.au

Submission to Waroona Bushfire inquiry

The Hon. Wilson Tuckey ret. Minister For Forestry

During my term as Federal Forestry Minister I was responsible for the conclusion of a number of Regional Forestry Agreements (RFA) between the Commonwealth Government and the States including the one which was signed by the then PM John Howard and the then Premier Richard Court in the year 2000

These agreements were based on a significant body of scientific assessment which attempted to balance the needs and services of the Forest Products Industry and the demands of a general public whose mentality had been swayed to the belief that old trees in particular were worthy on those grounds alone to be preserved notwithstanding the evidence of the history of millenniums of the resilience of the forest to survive and prosper under a regime of regular planned harvesting and burning which above all opened land, water and access to sunlight necessary for the germination of the new trees Few had read scientific papers identifying old growth forests as net emitters of carbon as demonstrated during each wild fire season

I also instituted the process to introduce the now established Australian Forestry Standard (AFS) which took some years to get through due to the opposition of Green Activists not because it was good and they were involved in its creation but because it would compete with the latest revenue stream of the NGO sector which was to become self appointed Standards Bodies another of which has featured heavily in WA Legal proceedings including rejection for an Appeal in the High Court which was based on the belief that a self appointed GM free regulator could prevent a neighbour from growing a GM crop on the grounds it could result in the loss of the endorsement of that NGO

The NGO relevant to this Inquiry is The Forest Stewardship Council(FSC) which notwithstanding a \$500,000 grant from the Australian Govt. has yet to be endorsed by the Standards Association but still exerts influence and a veneer of respectability but shares a common failure which as I recollect was an omission in the RFAs and AFS of a Fire Prevention and Suppression Strategy which however would have only applied to the industry which needed no such requirements it being commercially driven to the protection of its asset the

forest and the Plant and infrastructure it had provided about which I will write Further

THE POINT I WISH TO MAKE HERE HOWEVER IS THAT WHILST SUCH RESEARCH AND CONDITIONS IN THE RFAs AND AFS WOULD HAVE BEEN AN IMPROVEMENT I AM SURE THAT BY INQUIRY UNDER YOUR POWERS OF SUBPEONA OF WITNESSES YOU WILL FIND NO RECORD AND MORE PARTICULARLY ADVANCE RESEARCH INTO BUSH FIRE RISK OR PREVENTION OR SUPPRESSION STRATEGY ASSOCIATED WITH ANY OF THE DECISIONS FOR THE CREATION BY THE STATE GOVERNMENT OF THE NUMEROUS NATIONAL FOREST PARKS AND RESERVES THAT BECAME THE THOUGHT BUBBLE OF VARIOUS POLITICAL LEADERS AS ELECTIONS CAME AROUND AND IN THIS REGARD YOUR REFERENCE TO THE YARLOOP DISASTER MUST INCLUDE THE 2001 ELECTION CAMPAIGN OF THE THEN GALLOP OPPOSITION WHICH DECLARED THE RESERVATION OF THE JARRAH FORESTS ADJACENT TO YARLOOP IN DIRECT CONTRAVENTION OF THE RECENTLY SIGNED WA RFA AND I CONSIDER BOTH GALLOP AND THE PRESENT PREMIER AND LEADER OF THE OPPOSITION ALL OF WHOM WERE INVOLVED AT THAT TIME AS MPs IN THIS DECISION SHOULD BE CALLED TO GIVE EVIDENCE AS TO THEIR FORWARD PLANNING TO ENSURE THAT THE RESERVES THEY CREATED REPRESENTED AND WERE MAINTAINED AS A 'SAFE ENVIRONMENT' NOT FIRE TRAPS AND ALSO THOSE MINI FIRE TRAPS RELATING TO THE COURT GOVT'.S URBAN BUSHLAND PROGRAM

THEY SHOULD ALSO BE QUESTIONED UPON THEIR TOLERANCE OF OR ADMINISTRATIVE CHANGES TO THE HIGHLY SUCCESSFUL FIRE PREVENTION PROGRAM THAT WAS IMPLEMENTED FOLLOWING THE YARLOOP LOOKALIKE DESTRUCTION OF DWELLINGUP IN 1961

MIGHT I SUGGEST THE COVER OF YOUR REPORT MIGHT CARRY PHOTOGRAPHS OF THE ALMOST IDENTICAL CORRIDORS OF BRICK CHIMINEYS THAT WAS ALL THAT SURVIVED BOTH FIRES WITH SOME COMMENT RELATING TO 'WHEN WILL WE EVER LEARN' NO SYMPATHY SHOULD BE EXTENDED TO THE APPROX 2000 'PROTESTORS' WHO MARCHED IN ST GEORGES TCE IN 2001 DEMANDING THE CREATION OF THESE NEAR NUCLEAR EVENTS

In this regard I attach a booklet I prepared whilst Minister of which the historical Quotations in the rear sector clearly define the Australian forest NOT AS A WILDERNESS BUT AS OPEN PARKLAND by observations made separately over 200 years COMMENCING IN 1642

My experience regarding near nuclear events includes my latter role as Minister for Territories of which Canberra was one and to where I flew the following day after the similar result of a wildfire commencing in INACCESSIBLE NSW FOREST RESERVES which by the time it reached Canberra had reached temperatures equivalent to the Nagasaki Nuclear attack (Coroners inquiry)and simply blew brick houses away whilst as occurred in Nagasaki leaving an odd one standing and where one of the deceased who was packing belongings into her car

returned inside for some extra items and never came out as her house suddenly exploded around her

In subsequent discussion with a junior Counsel assisting the Coroner he expressed surprise as to the total lack of skilled machinery operators with Forestry experience within the region to which I replied "well when you destroy the Forest Products Industry how do you expect the human skills to hang around or as they did ,go north to the mines "

When I raised the issue of the creation of necessary access and fuel reduction publicly a Senior NSW Public servant responded publicly that It was my desire to "Bitumise the NSW Forests" A Parliamentary Inquiry into these and associated fires for which a report should be available in the Commonwealth Parliamentary Library discovered in fact that access roads and fire breaks created to fight the NSW/Canberra Wild fire had been deliberately destroyed to make sure that no one could use them in the future be it for Fire prevention or suppression

The creation of these Parklands large and small were all seen as el cheapo election fodder as it was assumed they would take care of themselves into the future and require no Government expenditure

When this was proved untrue in WA at least there was no funding for Prevention other than from the Consolidated Revenue but there was ample money for suppression due to an accident of history which was the Metropolitan Fire Brigade Levy charged originally upon Fire Insurance Policies for the purpose of financing a professional fire suppression service for erected buildings but in fact much of its efforts were directed to grass fires on vacant land in and around the Metropolitan Area Some rural centres also received this service but otherwise relied upon volunteers operating urban type subsidised suppression equipment usually Garaged in buildings provided by the Local Govt. Authority

There was also a separate Bush Fire Board which coordinated an extensive volunteer service manned by and equipped by the local Farmers /orchardists / and Forest Products Industry

As the Fire Brigade levy was often avoided by the simple act of purchasing Insurance cover overseas it was decided that the relevant Local Govt Authorities would add a set charge in the Dollar levy later described as The Emergency Services Levy to all rate Notices which reportedly now raises approx. \$350 million after some almost doubling of the rate and the property valuations upon which it is based

Such a funding sum which can be increased without much attention from the Public has skewed activity to Suppression to the neglect of Prevention and Suppression infrastructure and such is the influence within the Department of Parks and Wildlife where an ingrained culture of anti prevention or for that matter human access or intervention in forested areas prevails that no serious pre planning is undertaken and such is the process for approval of Prescribed

burning that targets are generally not achieved or achievable with some burns so delayed as to become a threat in themselves

Another distorting factor is the State /Commonwealth NATURAL DISASTER AGREEMENT (NDA) whereby the Commonwealth agrees to meet up to 70% of the costs involved as a result of any Natural Disaster being fire, flood and cyclonic to name the most utilised As I understand it the declaration is made by the relevant State Premier and it is not hard to calculate the incentive towards Suppression over Prevention arising from this Scheme as to put it bluntly there is no money in preventing such Natural Disasters

I proposed during my term as regional Development Minister that a new agreement be agreed that 'RISK RATED "such disasters and monitored States asset management and regulatory regimes that lowered the destruction arising from Natural Disasters and have proposed it privately lately

Some separate schemes were introduced where the Commonwealth offered matching funding in terms of Flood mitigation which included financial assistance to home owners to raise where practical the floor level of their residence above known flood levels the irony of which was that while this scheme was in progress Town Planning Laws in the Brisbane flood basin had height restrictions such as to prevent the construction of the historic Queenslander Architecture Which by coincidence I have recently used to comply with the WA 100 year flood requirements and I remember a media quote from an owner of such a house during a local flood that all he had to do was take out the 'Tinne' to do his shopping

At a Conference of State/Commonwealth Ministers I suggested that new subdivisions include Flood Mitigation/Storm Water Lakes which could also operate as a secondary water supply for gardens etc. which whilst agreed as a good idea has never been implemented

Whilst I know that flooding is not in the terms of reference a Flood and storm water Dam adjoining the Yarloop township would have been of significant assistance for fire suppression particularly were that supply reticulated through underground poly piping and pressurised with an back up diesel generator

Opposition to Forest fuel reduction became the cause celebre of the Green movement once they had destroyed the best protectors of the Forest which was the Forest Products Industry and its University trained professional Foresters and transferred the decision making particularly in terms of Prescribed Burning to the City where both the hands on experience was lacking and the working hours totally incompatible for the task where for instance it was necessary to be out setting fires in the very early am. when weather conditions were most compliant

I have already mentioned Dwellingup which in 1961 could not be blamed on China's coal fired emissions but was accepted as the result of incorrect Forest management and the new regime which was a Partnership between the Forest

Products Industry and THE FORESTRY DEPARTMENT was created and delivered a SAFE AND PRODUCTIVE FOREST ENVIRONMENT FOR THE NEXT 50 YEARS until the deniers came along to dispute the reasons for this success

The alleged negativity of the Parks and Wildlife Department in Esperance regarding a tardy response to that firestorm that originated in the National Park when Heavy Machinery was refused entry or delayed for pre cleaning and available aerial equipment not called upon to address the fire in its infancy is all evidence of the culture and the deliberate disconnect that exists whilst suppression is not married to prevention or the suppression bureaucracy is legislated the senior partner with power to instruct such Government Departments to meet the same requirements as that are applicable to the private sector

Notwithstanding that this disconnect has been the subject of previous Recommendations nothing is done particularly while the Government of the day can utilise its Emergency Services levy funds to put on a Media show of water Bombing and dedicated Volunteers totally ill equipped with appliances designed to suppress urban grass and scrub fires

Whilst your terms of reference may not extend to all these areas I provide the evidence in response to the Premiers announcement in which he referred to a "Wide Ranging Inquiry" and I also note your background in Fire Suppression

However there is no fire suppression solution to these Yarloop Type fires nor can they be efficiently implemented in lesser events unless there exists a well maintained access infrastructure and Public communications system and readily available equipment such as heavy bulldozers and their transporters that can be directed to Bush fires whilst in their infancy and construct access and containment lines during the Winter season and yes this is expensive and should be funded by an Urban valuation based universal 'Prevention Levy' which by its nature would fall most heavily upon that sector of the community who reside in the high value residential property areas most dedicated in the past to the creation of todays problems

It should not be included on Council Rate notices but addressed to every Household by the State Taxation office with the clear advice that this is the cost of your votes for wilderness

In promoting the establishment of the machinery bank there is no better time considering the Yards full of suitable equipment now redundant from its Mining duties

The better alternative to this taxation funded solution is the reestablishment of the Forest Products Industry based upon Forest area Leases in which the lease holder had the proscribed Harvesting rights and fire prevention responsibility the choice of which could be decided by a plebiscite in which the voter had the choice of the significant Prevention levy charge and Emergency levy or a return to managed Harvesting and a consequently reduced Emergency levy

Probably the most difficult task associated with this second option is finding the investors who were prepared to put their trust in the Political classes but it is the best solution which creates productivity instead of expenditure and destruction

In regards prevention for the built environment some simple solutions apply which can be best designed in response to a CSIRO research program conducted in the early 2000s which unfortunately ran out of funding but by the simple act of placing cameras in the Path of a bush fire were able to measure the time period of the heat effect as the fire moves through, which is in fact surprisingly short Its findings should be included in this report

Put simply if a building can be kept damp and cool for this relatively short period it will escape but to do so it must be equipped with a roof top and eaves fine jet sprinkler system based on adequate water storage (a swimming pool) and engine driven automatic well maintained pressure pump with other technical issues to be addressed I am reasonably confident if properly designed and installed that it could be managed safely by an onsite operator during the passing of the fire

Another simple requirement and or modification to existing installations is to locate evaporative air conditioners on the ground instead of on the roof Top discharge models are readily available and such positioning allows for simple general maintenance and ease of fire proofing when necessary I have installed many during my time in Carnarvon and have a large one operating UNDER my present home

Naturally the choice of construction equipment and management of the curtilage as presently promoted is a given and the absence of guttering and other leaf and flammable material receptors are best left out In other words a simple roof design might be less attractive but much safer

In closing I wish to comment on cause and effect

There is plenty of evidence of ambient temperatures sufficiently high to generate wild fire conditions since 1961 until 2000 yet they did not occur nor were there evidence of wild fires being commenced by ARSONISTS OR CARELESS CAMPERS OR WORKERS and this is not because they did not exist, because they did, the difference was that there was insufficient fuel in the vicinity for the fire to 'GET AWAY ' and such fires as were lit deliberately were so easily put out they hardly ever made the headlines

PUT SIMPLY YOU CANT LIGHT A BARBECUE WITH CIGARETTE BUTT NOR A MATCH WITHOUT SOME KINDLING

A major contributor nevertheless was also the suppression capacity ,preparedness and physical supervision provided by the Forest Products Industry

I approve the publication of this submission only Hon. Wilson Tuckey

Wilson Tuckey
24/02/2016



The Hon Wilson Tuckey MP

Minister for Forestry and Conservation
Minister Assisting the Prime Minister

January 2001

Re: CONTEMPORARY FOREST ISSUES

As a person I know who has a genuine interest in forest protection I believe you will be interested in the attached media coverage of the contemporary view of politicians and green activists in the United States. These refer to the now visible deterioration of their forestry reserves arising from the long accepted principle of protection through neglect. Also included is some coverage of research done in Australia which highlights striking similarities.

Let me stress nevertheless that neither the Americans nor the quoted Australian scientists favour the reduction of the forest reserve system nor does my Government.

The issue is how to manage such reserves to guarantee their ecological integrity and in some cases public safety.

The US Government solution supported by both Presidential candidates is to spend nearly \$50 billion (Australian) over 15 years harvesting and removing trees from these national parks and reserves.

This enclosed information is not being debated in the Australian media and if I as Minister were to respond only to that source of information I would be ignoring the evidence of history and the publicly expressed concerns of leading vegetation based academics contained in these attachments.

When it comes to making the serious judgements that effect our forests I believe I should listen to the appropriate academic rather than a rock singer, football coach or the many other apparently self appointed persons who never publish a balance sheet, membership lists or electoral return.

The matter of fire is of course fundamental to the problem. Leading botanists argue simply for disturbance and state that fire is the necessary historic but uncontrollable source of forest regeneration. They advise however that their research indicates that a harvesting event, properly managed will also provide equal regeneration without the forest or property devastation so evident in NSW last Spring when over one million acres of principally reserve forests were burnt.

The irony in this case is that the same forests were recently reserved from harvesting with many job and economic losses only to be destroyed at a rate no forester or logging contractor would contemplate.

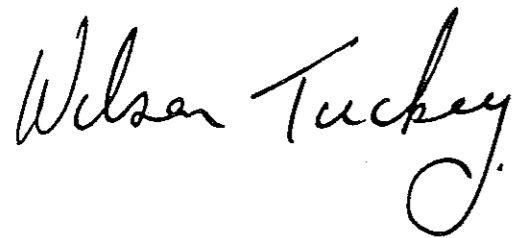
The situation becomes farcical when authorities are obliged to burn additional large areas to stop the original fire.

The articles included are as follows:

- **Forest Trump: prune the trees**
Sourced from the *Washington Post* (William Booth) and published in the *West Australian Newspaper* (9/10/2000; page 10)
- **Unclogging the forests**
ABC News.com (6/11/2000)
- **Risen from the ashes**
Kay Ansell reports on the work of Professor Peter Attiwill (University of Melbourne)
(*The Age* Tuesday 16 February 1993)
- **The Original Forest** *Australian Forest Grower Special Liftout Section No 26 Summer 1993/94 Vol 16, No 4*

As the cover sheet states is saving the trees destroying our forests.

Yours sincerely

A handwritten signature in black ink that reads "Wilson Tuckey". The signature is written in a cursive style with a large, looping initial 'W' and a decorative flourish at the end.

Wilson Tuckey MP

Forest trump: prune the trees

WITH the embers of this year's wildfires still smoldering across the west of the United States, plans are being made for radical changes in forest management.

A coalition of highly politicised interests appears ready to push the federal government into restoring great swaths of public forest by thinning out billions of trees and returning a more-natural cycle of prescribed burning to the land.

After the pruning is done — some time around 2015 if Congress and the next administration agree with the plan — millions of hectares of dry, pine forests in the west would look far different.

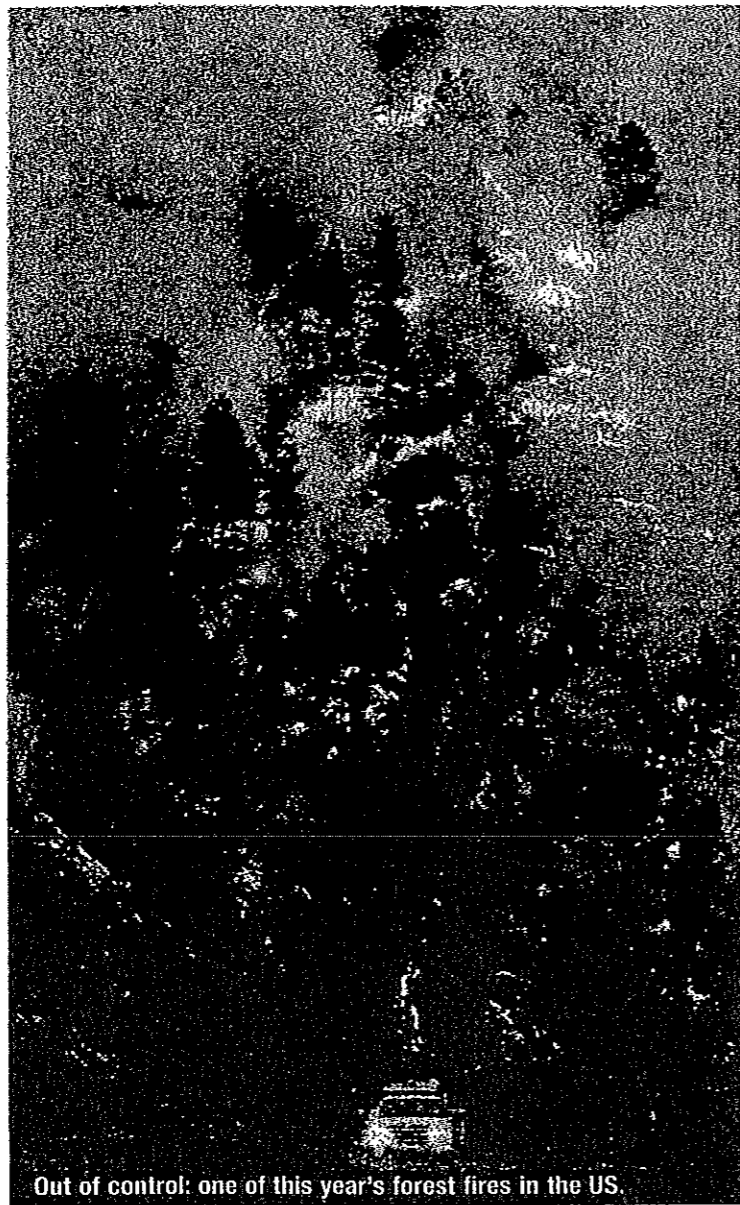
Entire landscapes would be transformed from crowded stands of trees, which can fuel catastrophic fires, into more-manicured, open settings of tall, older trees scattered here and there, with grasses and shrubs underneath.

It would look, as the foresters describe it, more "park-like" and would burn more gently.

The forests last looked like that when the first European settlers arrived to displace the indigenous people, who themselves managed the forests with fire.

"This is just a huge challenge," said Harry Croft, deputy director for fire and aviation at the US Forest Service, who wrote a 1995 internal report that laid bare the need to address forest health and the heavy fuel loads in the woods. "These ecosystems are so out of whack."

Many Americans, who have grown accustomed to dense green forests, might not admire the appearance of the more heavily managed but more "natural" forests. Forest service officials privately



Out of control: one of this year's forest fires in the US.

fear a backlash against the plan. Yet the hope is that after so much effort, the forests would return to a more fire-resistant state. They would still burn but not in the out-of-control manner they did this summer. Instead, officials hope the

woods would burn more or less as nature intended — fire as cleansing force, not holocaust.

The broad outlines of the Clinton administration restoration plan were endorsed last month by Republican and Democrat governors from western States, who met in Salt Lake City with Interior Secretary Bruce Babbitt and Agriculture Secretary Dan Glickman.

Western governors have been complaining for years that the administration has not given forest health the attention it deserves.

The plan also has the cautious support of mainstream environmental groups and is backed by a general scientific consensus that certain forests need to be thinned.

If supported by federal lawmakers and the next president, the restoration effort over time could cost more than \$21 billion and take decades to complete, according to a report last year by the non-partisan General Accounting Office.

Vice-President Al Gore has signalled his support for the restoration effort. Texas Governor George Bush, however, has been more critical, charging the Clinton administration with neglect and vowing to put America's forests "back to work" — a

phrase many environmentalists consider code for a return to the heavier logging of the 1980s.

William Booth

THE WASHINGTON POST



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InterActive click

Unclogging the Forests

Cutting Down Trees May Save Forests, Say Ecologists

Firefighter Greg Berry races up a smoldering hillside near Hamilton, Mont. The wildfires scorching the West have ecologists working on ways to protect forests in the future. (Elaine Thompson/AP Photo)

By Joseph Verrengia
The Associated Press

Aug. 18 — With wildfires raging out of control in 13 Western states, Rex Wahl has seen enough. Like a peace-loving homesteader who finally reaches for his six-shooter, the influential environmentalist has unholstered his chain saw.

Wahl is ready to cut down trees to save the forest. The executive director of Forest Guardians, an activist group based in Santa Fe, N.M., had long opposed the removal of any tree for profit or for managing nature.

Then he watched helplessly from his yard as a small, planned fire raged out of control at nearby Los Alamos in May. It charred 48,000 acres, destroyed 200 homes and caused an estimated \$1 billion in damage.

"Wildfires are getting bigger, burning hotter, and the effects are more devastating," Wahl said. "It's clear we'll have to take mechanical steps like thinning before we can use fire to restore these forests to a more natural regime."

The Worst Year in Decades

As of Thursday, 85 major wildfires were burning from Washington to Texas. More than 4 million acres have been blackened this summer, and eight firefighters have been killed. It is perhaps the worst fire season in the past 50 years, rivaling 1988 and the great Yellowstone blaze.

The wildfires are being blamed in part on a

Related Stories

- [U.S. Firefighters Reject Big Russian Jet People Partly to Blame for Fires](#)
- [Dry Storms Spread Fires Across 11 States](#)
- [Military to Help Fight Western Wildfires](#)

century of conflicting land management policies that researchers say have misunderstood or ignored fire's purpose in nature:

- A longtime practice of putting out all fires instead of letting them burn has allowed flammable brush, dead wood and other fuel to accumulate waist-deep in some forests.

- Ranchers have let cattle overgraze meadows that could otherwise make fires burn slow and cool.

- Commercial loggers have removed many large, fire-resistant trees. At the same time, environmental restrictions in many areas have prevented timber companies from thinning out overgrown forests and removing dead wood.

- Some homeowners as well as environmentalists who are worried about endangered species have opposed "controlled burns" that could remove the brush.

As a result of the devastating wildfires of recent years, however, some environmentalists are rethinking their opposition to cutting trees. Among them is Forest Guardians, which had been one of the most vocal "zero-cut" groups.

Wahl, a biologist, suggested that old environmental dogmas must be abandoned. He is not embracing clear-cutting. Unlike loggers, he wants to save the big trees that are fire-resistant and readily seed new growth.

"Judicious cutting of smaller trees is what's needed," he said.

Some Fire Is Good

Other environmental groups have endorsed the concept of forest thinning but have been unable to come to terms with the government on the details.

"I'm still waiting to see a thinning project where they will take only the trees that are causing the problem," said Sharon Galbreath, a Sierra Club spokeswoman in Flagstaff, Ariz. "They want to take large trees, too."

Wahl's conversion reflects the crisis facing the West's sickly forests.

A century ago, before federal agencies adopted a military approach to suppressing fires, healthy conifer forests sprouted 25 to 70 mature trees per acre. Lush meadows filled the gaps.

Little fires swept through the grass and seedlings, but thick bark protected the large trees for hundreds of years. An added bonus: The fires' heat melted the resins in fallen cones, releasing their seeds.

Lightning ignited many of these fires. But tree ring records and other sources suggest many fires were set by Indians to flush game and encourage

plant regrowth.

"Fire is a land management tool that they learned to use well," said Don Despain, an ecologist for the U.S. Geological Survey in Bozeman, Mont.

Today's forests stand in cadaverous contrast. After a century of fire suppression, as many as 850 spindly trees per acre clog the same forests. More than half stand dead, starved for sunlight and strangled by insects that bore into them.

On the ground, overgrazing by cows has compacted the soil and stripped away the green grass. Brush and dead limbs have piled up.

In a dry year, a careless camper, a hot muffler or lightning can spark a catastrophe.

Unclogging the Forests

In 1988, the Yellowstone fire was out of control within 20 minutes and burned for four months. Temperatures reached 2,000 degrees, melting steel culverts and glass bottles.

"All of those smaller understory trees allow the fire to jump into the crown of the forest," Wahl said. "If you get wind, it's hard to save any of them."

What happens after a blowup depends on the landscape and the weather.

Twelve summers after the Yellowstone blaze, surveys suggest plant diversity in the burned areas might be 10 times higher than pre-fire estimates.

But in other locations, the heat from large wildfires has penetrated nearly a foot into the soil, roasting roots and seeds.

The heat also caramelizes sap and resins into a waxy layer known as hydrophobic soil. Rain beads up and rolls off the blackened surface. Plants cannot sprout, and a single thunderstorm can flush away topsoil that took 2,000 years to accumulate. The sediment, in turn, clogs streams.

After a fire in 1989, Oregon's Grande Ronde River — including spawning grounds for the endangered spring Chinook salmon — remained dead for 35 miles until the mid-1990s.

Arizona State University biologist Steven Pyne and others fire recommend fundamental changes in the nation's wildfire policy: Mechanically thin forests and remove dead litter. Stop cattle grazing. Tighten zoning and building codes. Combine fire suppression and prescribed burning in a single program.

"I don't see many people who like the forests as they exist today," Pyne said. "They are not the forests that people want." ■

FEATURES

Risen from the ashes

ON an observation tower at the Britannia Range, near Warburton, Peter Attiwill is suspended between earth and leaf canopy, surrounded by eucalypt scents, bird calls and slim mountain ash trunks thrusting towards the sky. Dr Attiwill, a reader in botany at the University of Melbourne, has witnessed first-hand the record growth of this very young forest of mountain ash (*Eucalyptus regnans*). He has measured its progress from seedlings to saplings to trees that quickly outstripped the tower, growing by three metres a year — which makes it one of the fastest-growing places on the planet.

Ten years ago today, the 800 degree centigrade heat of the Ash Wednesday bushfires swept through this 22-hectare logging region, eighty kilometres east of Melbourne, reducing all but the biggest trunks to charcoal and leaving sections of the ground baked red.

While the fires devastated lives and property consuming 87,000 hectares of public land, they also provided a once-in-a-lifetime opportunity to study the regeneration of forests of mountain ash, the world's tallest flowering plant, after massive disturbance. The only comparable devastation to Ash Wednesday was the 1939 Black Friday fires, and the recovery of forests was not well documented. So in 1983 Dr Attiwill seized his chance, beginning to record the aftermath of the fires while the ground was still smoking.

Since then, research by Dr Attiwill and his botany students has established that this area is growing faster than a tropical rainforest. Dr Attiwill says the growth has been "astoundingly rapid". Increasing by 36.4 tonnes per hectare per year, it is among the most productive ecosystems in the world, including agricultural regions. And from the fires has come information about forest recovery rates and nutrition that have important implications for the sustainable management of forests.

Almost every week for the past 10 years, Dr Attiwill and a changing group of students have visited the

10 years on, vast new forests have grown where the Ash Wednesday fires had left only charcoal.

KAY ANSELL reports

Britannia Range forest and measured the changes in plant species and factors that could affect growth, including temperature, rainfall, radiation and nutrient levels in the soil.

To Dr Attiwill, field work is one of the most satisfying aspects of being a botanist. Although he enjoys teaching classes, he says, he looks forward to getting out in the forest and getting results. Drawn to botany 30 years ago by the emerging knowledge of how soil nutrients are used in ecosystems, at 57 he is still learning, along with his students, with each field trip. "The lab never has an ageing population—except for me! I find that stimulating."

He finds the forest awesome and also (although reluctant to use the word) spiritual. He rejects the trend by "deep green" ecologists to impose spiritual values on nature, seeing it as locking up resources rather than taking the best information available to use them wisely.

The use of fire illustrated his concern. Protecting a forest from fire had as great an ecological impact on it, and on how it looks in 200 years, as using fire conservatively as a management tool, he says.

Among the first plants to recover from the Ash Wednesday fire were the delicate tree ferns. Hundreds of years old, they put forth their first green fronds from blackened trunks after only two weeks. It took more than six months for the first mountain ash seedlings to appear—hundreds of thousands of stems per hectare.

The successful regeneration of *Eucalyptus regnans* is a matter of sensitive timing. Their tough seed pods can only withstand a minute or



two of fierce heat, he says. After the fire has passed, the pod dries, opens, and the seeds drop out.

Any young trees that spring from the seeds are in a fierce competition for life-giving sunlight, and mortality rates are high. After two years, about 100,000 stems per hectare had survived at the Britannia Range; after 10 years, about 2000 stems per hectare remain. By comparison, he says, 250 year old ash forests in Melbourne Water catchments have about 20 or 30 trees per hectare and are up to 100 metres tall.

FUNGAL and algal populations and plant diversity, as far as possible, were also recorded by Dr Attiwill's team. With in three years, everything had returned to pre-fire levels. Dr Attiwill concludes that the diversity now present is not

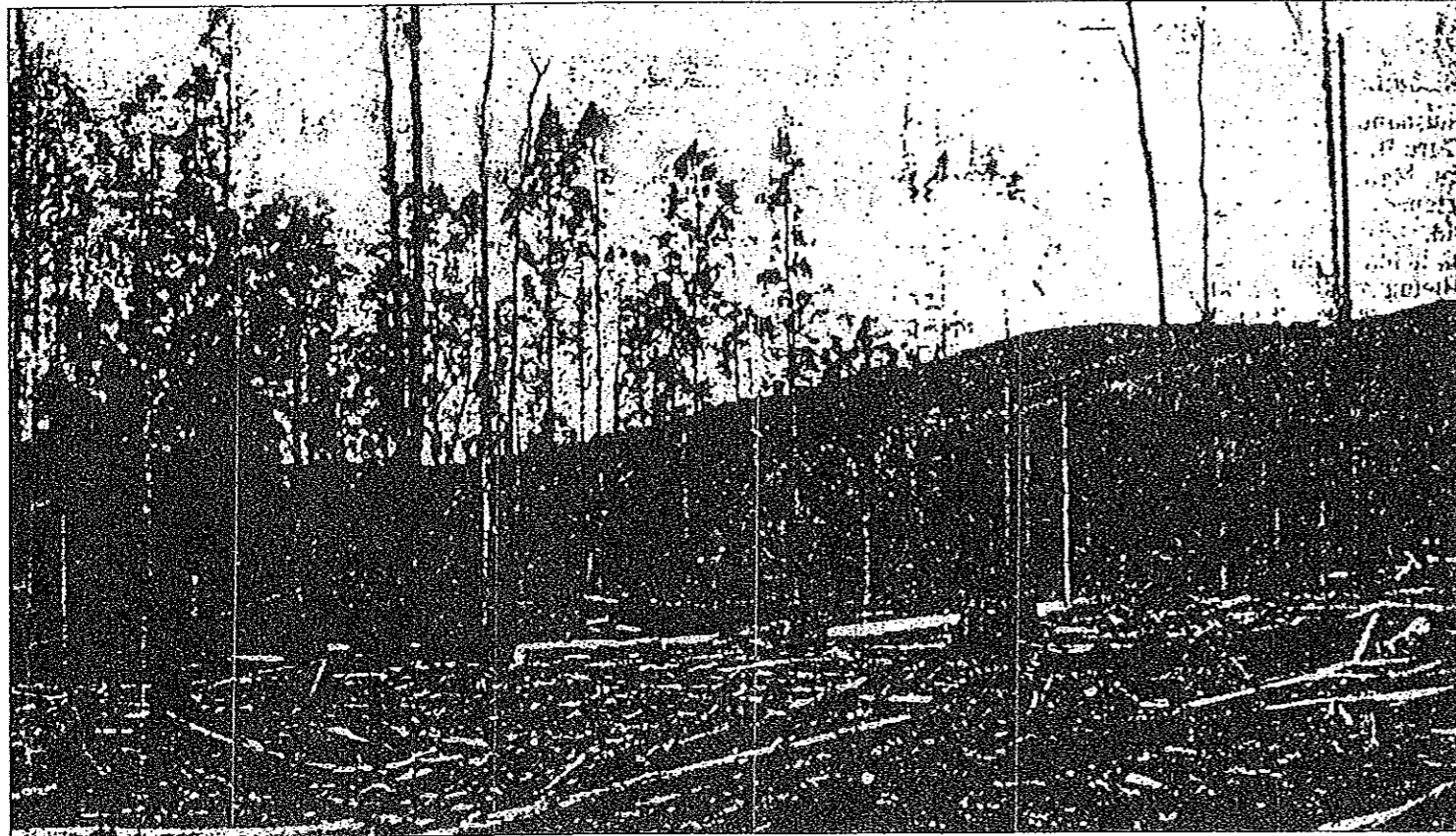
ordained: "It's just a consequence of the history over tens of thousands of years. From Aboriginal fires, lightning fires, our fires. It's a natural forest."

The researchers overturned a previously held belief that massive disturbance causes a loss in soil nutrients, either through being leached out or turned to gas in the intense heat of fire. If this were true, the regeneration rate of trees that replace the forest that burned could be expected to be lower.

To test this, they conducted a "reverse depletion experiment" adding substantial amounts of nitrogen and phosphorus and all other important elements. The rate of regeneration did not increase but it might have resulted in fewer, bigger trees; in

another year this could be confirmed. Their work found that massive disturbance, such as an intense bushfire, created the right conditions for the rapid "uptake" of nutrients by the regenerating trees. The intense fire also helped promote the immobilisation of nutrients by soil micro-organisms. In other words, Ash Wednesday's inferno ensured that the nutrients were not lost. This is evident in the forest's rapid recovery.

FEATURES



Rebirth of forest: above an apparently devastated area of the Britannia Range immediately after Ash Wednesday fires and, on previous page, the thickly forested region today.

Dr Attiwill's team is still seeking answers to explain why mountain ash grows more slowly in winter and summer. The answer to the first was found to be an obvious solution, probably due to less sunlight. The latter is less straightforward. Solar

sunlight in photosynthesis, thereby slowing growth. Sunlight above and below the canopy is being measured and they are building a computer model of forest growth to simulate their results.

clearing in small areas, are not natural in mountain ash, he says. "If we are to have timber production, they should be managed within the framework of the ecology of disturbance." Logging regions of about 10 hectares or more are

new burning techniques are being explored.

The knowledge that clear-felling and burning does not reduce productivity has convinced him that if the natural fire-regeneration regime is reproduced, mountain ash forests can be logged sustainably, as part of a management plan that allows for all beneficial uses, including water catchment. "I think there is an argument for accepting that parts of the forest are going to be clear-felled for timber without wrecking the whole resource."

impressed by the view from the tower "Even though I know the biochemistry of the whole process I still find it remarkable. All the material can be built from a trace gas-carbon dioxide-filtered through microscopic holes in the leaf surface, where it is fixed photosynthesis."

Research by Dr Attiwill and his botany students has established that this area is growing faster than a tropical rainforest. It is among the most productive ecosystems in the world.

radiation or sunlight is high in summer and rainfalls in the last two years have been high, ruling out lack of water as the cause of slower growth. Their research suggests that since some leaves drop off in summer, perhaps to reduce loss of water via transpiration, less canopy area is left to make the most of

Dr Attiwill's team has confirmed that the ecology of disturbance for mountain ash forest is massive: "Whether it's fire or massive disturbance by bulldozing or whatever, it has to be on a scale large enough to allow forests like this to redevelop." Small "gap" size disturbances, such as burning or

sufficient to produce the right conditions for regeneration, he says.

Dr Attiwill acknowledges that this creates a dilemma for those managing the state's forests - in order to reproduce the optimum regeneration conditions is to risk another Ash Wednesday. He says that

High-quality timber is in demand overseas and Australia still imports a large volume of timber products: "I think we should be looking for meeting our demands for high quality timbers from our own resource"

After 10 years of studying this new forest, Dr Attiwill is still

Time to cut forestry critics down to size

FORESTERS in WA sometimes despair at the denigration of their profession by metropolitan residents and also some of the absurd statements on forestry made by unqualified extremists from the environmental movement.

That this is so should not be a surprise because the community has been subjected to a constant stream of antiforestry material for the last 30 years.

The Institute of Foresters would be the first to admit there is considerable room for improvement in the way our forests in the South-West are managed and some of these concerns should be acted on. But the "disasters" we have been led to believe are often no more than a beat-up.

Many of the statements on forests made by extremists in the environmental movement are wrong. That some extremists continue making incorrect statements (when it has been clearly explained to them why their statements are wrong—and often they have admitted they were wrong) indicates they have little respect for the truth.

Let's look at a few facts as opposed to myths about South-West forests:

1. Despite more than 100 years of logging, all streams and rivers arising in State forest remain fresh. Algal blooms are unheard of. By comparison, two million hectares of cleared agricultural land has become highly salt affected and all rivers and streams in the Wheatbelt are now extremely salty. Most rivers such as the Blackwood and Swan suffer algal blooms every summer.

2. In the past 150 years, only two species have disappeared from forest areas. The disappearance occurred before logging began and the feral fox was probably the cause. In the same time, 69 species from agricultural areas, outside the forest, have become extinct.

Another 495 species are predicted by animal scientists to disappear from the Wheatbelt this century because of increasing salinity. The area of salt-affected land in the Wheatbelt is predicted to rise this century from the current two million to about six million hectares but salt-affected land in the forest is not seen.



□ **The truth on forest management has been obscured, argues DON SPRIGGINS, who seeks to expose environmental myths.**

3. Despite the claims that "old-growth forest" contains a wealth of species not found anywhere else in the forest, every forest dwelling species found in old-growth is also found in regrowth forests. — ones that have been clear-felled or logged over in the past.

4. of the 346,000ha of "old-growth forests" in the South-West, most is already in reserves. For the karri forest, where protests about old-growth forest are intense, 86 per cent is already reserved. The new Government says it will increase this to 99 per cent. By world standards this is an extremely high rate. In California, home of the tallest tree in the world (the coastal redwood), the area of old-growth coastal redwoods in reserves is 38,982ha, or about one-tenth the area of old-growth forests in WA.

5. There is a considerable area of "old-growth forest" coming on in the SouthWest. The Boranup National Park, west of Margaret River, is regrowth after heavy clear-felling more than 100 years ago and there are many similar beautiful

areas of now old forest, which was clear-felled in the past. Most people would not know they were clear-felled years ago.

6. Karri trees do not live for thousands of years. Scientific studies indicate karri trees on average do not live much more than 250 years. After that age they die and fall over. The important thing is to ensure we have new stands of "old-growth forest" coming on for future generations and we have, witness Boranup National Park, Big Brook, etc, etc, all of which were clear-felled in the past.

7. The community is constantly told by extreme environmentalists that good quality logs capable of producing sawn timber or furniture are being burnt as

firewood or converted to woodchips. No one can guarantee that no sawlog ever has been burnt as firewood or turned into woodchips but the percentage would be very small as it would be economic absurdity to do so.

ALTHOUGH disappointed that over the past 30 years, the community has ignored and denigrated our views on forest management, we take comfort that it took 50 years for our predecessors' warnings on salinity in the Wheatbelt (due to excessive tree removal) to be widely accepted.

It took governments 26 years to act on these concerns and finally introduce clearing controls in 1976 when the evidence could no longer be ignored. only in the past two years has the media "discovered" that increasing salinity, not forest management, is the biggest environmental problem in WA.

For those who want to find out some more "facts" about forests as opposed to myths, might I respectfully suggest readers get a copy of our recently published book, Conservation & Use of WA Forests, available around Bunbury for about \$10 a copy.

—Don Spriggins is the chairman of the WA division of the Institute of Foresters

SCIENCE & TECHNOLOGY

Edited by SIMON GROSE

Can't saw the wood for the trees? Look again.

IT IS time that the philosophy behind the national forest debate moved beyond arguments about preservation towards scientifically based sustainable forest management. Some of the current debate on the use and management of native forests lacks a scientific balance. We have a philosophical clash between conservation and preservation.

In order to resolve the conflicting views on our native forests, the Commonwealth Government set up the Regional Forest Agreement process in the 1990s.

More than \$320 million of Commonwealth funds, plus substantial amounts from state sources, has been spent in a major forest allocation process between protected areas and those in which multiple use, including wood production, is permitted.

The comprehensive RFA assessment process created world-class forest reserves which encompass approximately 15 per cent of all major forest types judged to be present in 1750; those missing have been lost to agriculture or urban development.

About 67 per cent of existing old-growth forest is in these reserves, plus most wilderness areas and substantial tracts of forests at various successional stages.

A very large body of scientific

The view that if left alone forests will remain in their present state without management ignores forest dynamics, says GLEN KILE.

information was assembled and used in the decisions behind Regional Forest Agreements. The agreements also took into account the needs, aspirations

and desires of the many voices and interests in the lead-up to the signing of the agreements. So where do we stand now?

■ We have a world-class reserve system.

■ We have set high standards for sustainable forest management.

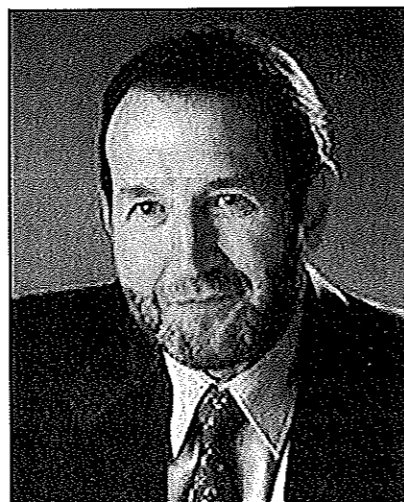
■ We have management which allows continuous improvement based on new scientific information as it comes to hand.

So why the continuing debate?

The rational scientific answer is that, overall, the picture is very good, but this ignores the emotional psyche.

Terms such as old-growth forest create restful, peaceful images which contrast with those created by terms such as clear-felling and wood-chipping. We have been bombarded with images of what appear to be devastated landscapes which have been burnt following clear-felling.

Unfortunately we never see the same landscape a few years later when the forest is emerging again. We live in a society divorced from primary



production the milk comes from the fridge and not the cow. It is hard to be rational about forests when the emotional strings are continually being plucked. It would surprise some to know that woodchips were the original raw material from which this newspaper was made.

The view that forests should be left completely alone in the belief that they will remain in their present state without management ignores forest dynamics. The notion that preserving a forest will save it often leads to developments that might use wood from native forests being opposed, even though such proposals may be both sensible and sustainable.

There is little acknowledgement of the human communities embedded in forest ecosystems. Australia's native forests produce conservatively in the

order of 60 to 80 million tonnes of new biomass each year. Currently we harvest less than 10 million tonnes. Clearly, wood production is not a dominant use. In addition, native forest harvesting and management is scientifically based and highly regulated.

A substantial representative network of reserved forest areas such as Australia now has is essential to protect biodiversity, but careful management allows for the use of other areas for timber harvesting. Biodiversity values can and have been managed in forests subject to timber harvesting. Many of the forests that have been allocated to reserves for biodiversity conservation in the RFA process have been previously logged, in some cases on a number of occasions.

There is an important distinction, not always made evident in the public debate, between forest harvesting and land clearing. Harvested forest is regenerated and remains as forest with the regrowth progressing through the various stages to maturity. Land clearing, for agriculture or other purposes, on the other hand, destroys the forest ecosystem.

The current forest debate also tends to focus on old-growth forest. While these are a very important stage of forest succession, age of course does not guarantee permanence.

In many forest types, old growth will eventually be replaced with a new regrowth forest, typically as a result of high-intensity wildfire.

Regrowth forests have their own beauty and conservation values, and across the landscape we need a range of forest age classes to maintain the full suite of values that forests provide.

As a nation we need to move on to a better understanding of environment, people, communities and the economy. We need to focus on sustainable forest management on all land tenures. If any timber is removed from the forest it must be done in a sustainable way, irrespective of the end use of the wood.

For the rapidly expanding protected areas we will need to consider approaches to such issues as fire management, control of feral pests and weeds, and how we maintain habitats for endangered species.

Conflicting philosophies are also clouding the use of wood for other purposes. Recent regulations released on the use of wood as fuel for the production of green electricity disallow its use from native forests in certain circumstances. They conflict with the Regional Forest Agreements that have defined requirements for sustainable forest management in these regions.

This is unfortunate because the

utilisation of biomass from a renewable resource for carbon storage in long-life wood products and the use of process residues for energy is an environmental positive in terms of greenhouse gas balance. Carbon dioxide is recycled by the growing forest and there is no net emission to the atmosphere.

Reducing greenhouse emissions can be achieved by reducing the use of fossil fuels for which wood is a partial, practical replacement. It seems sensible to maximise the benefits from harvested wood.

'The rational scientific answer is that, overall, the picture is very good, but this ignores the emotional psyche.'

We can be certain that if we experience the type of climate change over the next 100 years predicted by the latest global assessment reports, Australia's forests will be dramatically affected by drought, dieback, fire, pest and disease and ultimately bear little resemblance to their current ecological state.

We will have more endangered species than we care to contemplate. Clearly we need to look beyond the short term in the overall management of our forest estate.

We should not shy away from using wood-based products in our daily

lives. If taken from a managed forest they are far more sustainable than products made from steel, aluminium or plastics. Wood is a solar product. We should not write off wood heating or energy from biomass or other uses for wood because it comes from a native forest. Using more wood in place of other energy-intensive products can help the global environment.

Across the globe about 70 per cent of the wood used by society comes from natural forests. Australia imports \$2.2 billion worth of wood products. Certainly some of these are from wood obtained from forests not in any way managed sustainably.

Australian plantation wood supply is increasing and there are great opportunities to expand plantations to help make our degraded rural landscapes more sustainable. At the same time plantation wood cannot necessarily replace all native-forest timbers.

We need to look at our forests as a continuum from conservation reserves to intensively managed plantations and seek ways to maximise the social, environmental and economic benefits to all Australians and the global community.

Dr Kile is chief of CSIRO Forestry and Forest Products.

E-mail: Glen.Kile@ffp.csiro.au

URL: www.ffp.csiro.au

SCIENCE & TECHNOLOGY

Wrong to put emotion first in forest debate

IT IS Democrats Senator Brian Greig who "misses the point" in his call to place emotion ahead of scientific research and historical evidence in his critical response (*The Canberra Times*, March 22) to CSIRO Forestry chief executive Dr Glen Kile's courageous call for a common sense and scientific approach to saving Australia's forests (*The Canberra Times*, March 1).

I interpret Dr Kile's contribution as saying that saving the trees in the short term can mean harming the forest in the long term. I also reject Senator Greig's call for emotion over all else. If our emotions are leading to the ecological and material destruction of our forests, they are not good emotions.

Exploiting human emotion is the cruelest tool in the politicians' armoury. Senator Greig would of course counter that his type of emotionalism is of the good variety as did all the rest who have gone before him. It takes a lot of political courage to defy the 87 per cent opposed to logging (registered in a West Australian opinion poll last year). No-one I know, myself included, wishes to destroy Australia's forest estate. To the contrary, the issue of grave concern to those most experienced at the academic and practical level is how best to deliver its protection. More importantly, is our current response in fact jeopardising our forest's longevity?

After 100 years of forest protection, generally akin to those operating in Australia, the American people at the political, environmental and community level have admitted they got it wrong.

The 85,000 wildfires in the United States last year and the destruction of the iconic Yellowstone National Park in a four-month wildfire have led to a rethink.

US political leaders have responded by promising to cut down trees in national parks not for additional wood supply, but to save forests from destruction through overpopulation and subsequent wildfire (*Washington Post*, September 24, 2000).

Wildfire events in Australia, such as the 1939 Black Friday and 1983 Ash Wednesday fires, have passed into history, but last year more trees in forest reserves were burnt down than were cut down in designated production areas.

Some might claim that Australian and US forests are different, but the written word identifies great similarities. Of great concern is the refusal of Australian media, with the exception of *The Canberra Times*, to inform Australians of these circumstances, of the historical

The Democrat's Brian Greig misses the point in belittling the scientific viewpoint on sustainable forestry argues WILSON TUCKEY.



Forests are highly visible, and while a snapshot of a clear-felled forest is disturbing, the progressive regeneration over time is the virtual story of life itself. Dr Kile explained that it was absolutely necessary to provide the mosaic of species that constitute a forest. If it is to be all old-growth tall forest, then its occupants will need the necks of giraffes.

I am also disappointed that while Senator Greig and others will bring to the attention of the media any even accidental act of destruction within a forest reserve, they ignore and refuse to comment regarding wildfires.

The fire that recently destroyed the Nuyts Point Wilderness Reserve at Walpole, in Western Australia the heartland of that states tall forests is an example. Senator Greig and others were notably absent from the ranks of firefighters.

Senator Greig is also wrong to say he and others "discovered" that the Western Australian Regional Forests Agreements included areas of forest inhabited by other than tall and aesthetically pleasing trees, encompassing existing gravel pits and low scrub in some instances. Such information appeared on web sites and in pre-RFA publications for months. The information was not hidden from anyone, nor was it considered wrong.

His gravel pit argument and the small piece

issue, which is that Senator Greig and his tall-tree-centric colleagues quite honestly do not consider other types of native vegetation like "swamps, sand dunes and rocky outcrops" part of the pre-1750 forest biodiversity. This is at odds with the National Forest Policy Statement and criteria that promised all biodiversity would also be reserved under the RFA process.

In one breath he laments the loss of tall-tree habitat, but criticises attempts by the Federal Government to reserve the species that form the food source for the majority of our indigenous animals. Does he know that some of Australia's oldest forest flora species are to be found surrounding "rocky outcrops", where they survived the Aboriginal burning regime because of the regular water shed from the rocks? Frogs of course need swamps.

'Leaving the forest to its own devices is not an option and never has been in the life of the eucalypt forest.'

Senator Greig asks where wildlife go after a 100ha or smaller forest clear fell? Well, of course, they go to the surrounding forest: a choice not so easily available when, for example, 33,000ha was destroyed this year by wildfire in Western Australia's Stirling National Park.

A call for the recognition of scientific research and historical evidence as the basis of forest protection is not a call for forest destruction. To the contrary, our trees are the temporary residents of our forests and it is the forests that matter.

Forests in all their diversity and dynamism have adjusted over the millennia to respond and benefit from temporary disturbances. It is Senator Greig's residential-based supporters who kill forests to create subdivisions for housing.

The alternative provided by Senator Greig and his colleagues, of leaving the forest to its own devices, is not an option and never has been in the life of the eucalypt forest. I challenge anyone to bring forward evidence contrary to that.

I believe that Dr Kile asked no more than that we take a whole-of-forest approach with a multi-use management regime that spreads the burden of all the National Forest Policy Statement criteria across the entire forest estate.

Mr Tuckey is the federal Minister for Forestry and Conservation.

E-mail: W.Tuckey.MP@aph.gov.au

ENVIRONMENT

By GRAEME O'NEILL

EARLY EUROPEAN EXPLORERS entering Victoria's mountain ash forests last century marveled at colonnades of pale trunks reaching 100 meters into the mists of the central highlands. But aesthetics did not figure in the rough-hewn equation of colonial survival and axemen soon toppled the world's tallest trees. Now, with a new generation of giants rising in those same highlands, new priorities contend with the clear-feller's chainsaw: a resurrected possum, a city's demand for clean water, the rise of ecotourism, and an unbending conservation lobby. These demands have seemed irreconcilable, but a new study of the mountain ash challenges the notion that ecosystems can only be conserved by leaving them alone. In some ecosystems, disturbance may actually be the wellspring of biodiversity.

Melbourne University forest ecologist Peter Attiwill has found that mountain ash, *Eucalyptus regnans*, regenerates as rapidly and completely after clear-felling as after the great wildfires essential to its renewal. He concedes that a study of one eucalypt species cannot sustain any broader claim that clear-felling would benefit all commercially logged eucalypt forests, but he is using the mountain ash to air an issue that has smoldered in the philosophical heartwood of the conservation debate for more than a decade. Through the long, polarized debate over Australia's native forests, the conservation movement has depicted ecosystems as stable but fragile entities that resent disturbance, and convinced many people that logging represents change at its most alien and destructive. To conservationists like Fennella Barry, Victorian forests campaign coordinator for the Wilderness Society, any claim that logging mimics wildfire is anathema. "Forests are more than trees," says Barry. "They are very complex ecosystems, of which we have very little understanding."

Attiwill's paper, "Disturbance of Forest Ecosystems: A Scientific Basis for Conservative Utilization," distills the findings of more than 500 international studies on the role of natural disturbance in ecosystems. His premise: conservation has failed to keep pace with advances in ecological science since the late 1970s. Ecologists now recognize that sudden, destructive change is not only a natural force in environments as diverse as forests and coral reefs, but may actually invigorate ecosystems and generate biodiversity. Attiwill nominates a host of natural disturbances that can influence the structure and composition of plant and animal communities: wildfire, a change in fire frequency, cyclones and windstorms, cold snaps, avalanches, lava

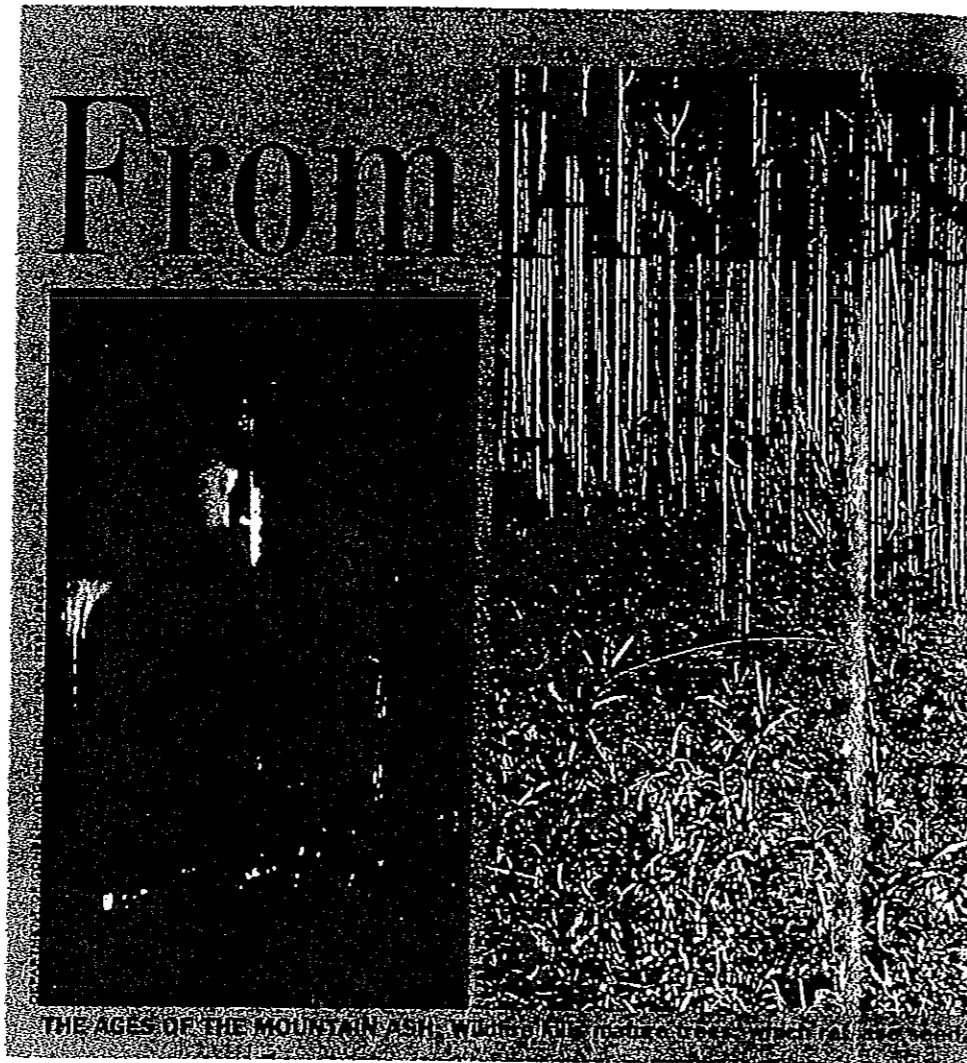
flows, dune movement, flash floods, freak rainstorms in arid areas. He adds living agencies such as insect attack, fungus disease, browsing or grazing, weed invasion—and the hand of humankind.

For 16 years, Attiwill has taken his students to Britannia Creek, 70 km east of Melbourne, to study a young mountain ash forest regrowing in an area clear-felled in 1932. In 1982, loggers recut an area bordering their study site; within weeks, the Ash Wednesday wildfires of February 16, 1983, set both sites back to zero. Attiwill's group had a rare chance to compare adjacent tracts of mountain ash—one regenerating after natural wildfire, the other after clear-felling. Some of the millions of seedlings now stand more than 30 m tall and Attiwill can detect no difference between the two sites. On both, the young trees are exhibiting the prodigious vertical growth rate, about 3 m a year, that makes mountain ash the fastest-growing of the world's great trees. Only a decade old, the forest on the logged site at Britannia Creek has the same community of plants as the wildfire-born forest. Both young forests are also recruiting an identical community of birds, insects and mammals from nearby 50-year-old forest that escaped burning in 1983.

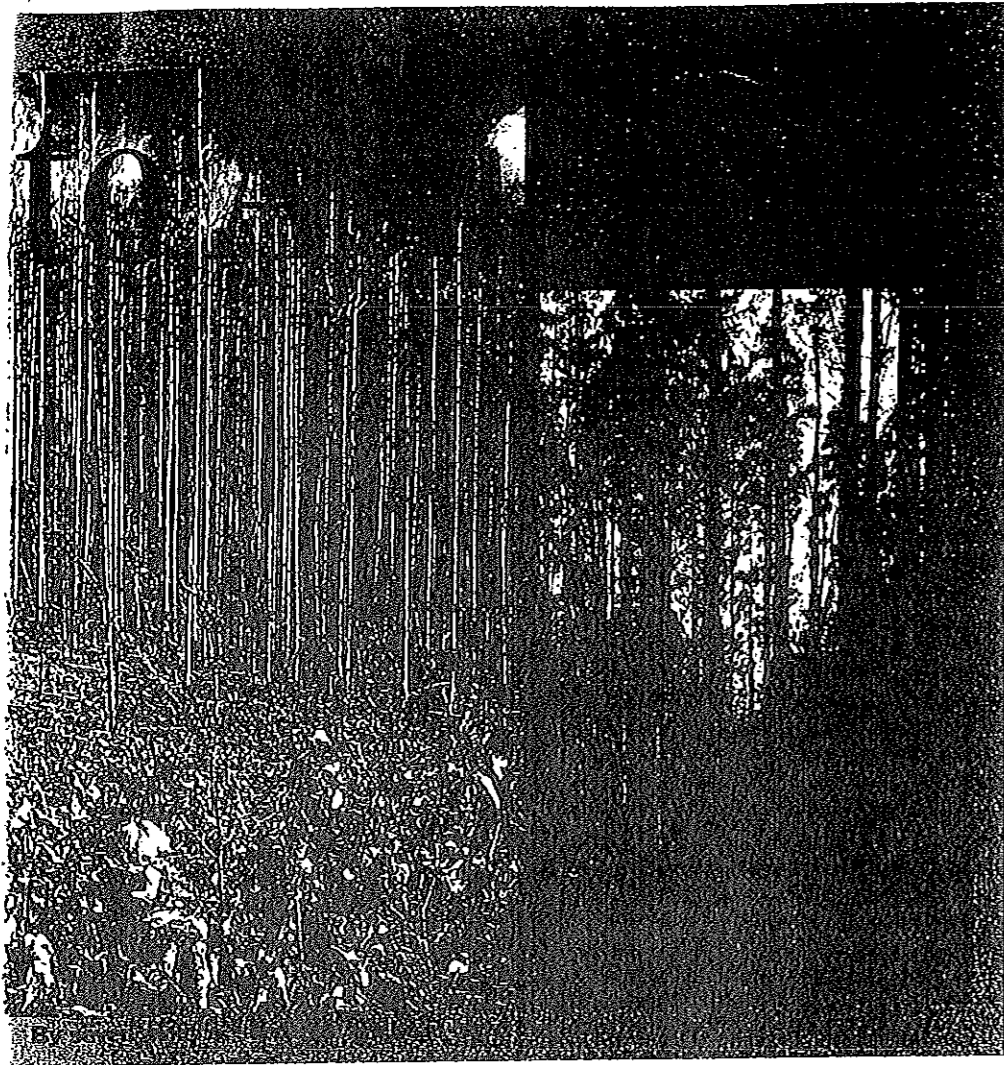
Attiwill knew that his findings would be contentious, but his philosophy is that if you want to work in forest ecology, contro-

versy goes with the patch. The forestry industry and the conservation movement have long disputed whether clear-felling replicates the effects of episodic wildfires. Attiwill's study offers the clearest evidence yet that it does—at least for mountain ash. But for the Wilderness Society, preservation of the ash forest is but one element of a larger agenda: it wants a complete halt to logging in all native forests by 1995, with the demand met from pine plantations on already cleared land. Responding to a report on Attiwill's study in the *Canberra Times*, Wilderness Society campaigner Stephen Taylor wrote: "It is no wonder that our native forests are so mismanaged, given the apparent ecological incompetence of the forest industry's self-proclaimed ecologists... They (the forest industry) should learn some basic animal ecology before making such ridiculous claims as those of Peter Attiwill."

Attiwill says he is no hired gun for the forest industry, and rejects the charge that his research is ecologically incompetent. Since 1977, his work has been funded almost solely by prestigious, peer-reviewed grants from the Australian Research Council. Until he received a \$5,000 grant from the Victorian Forest Industries Association this year ("I applied for \$30,000," he says ruefully), the timber industry showed scant interest. "I



THE AGES OF THE MOUNTAIN ASH WILDFIRE



would never make an unqualified claim that logging doesn't harm diversity," he says. For Attiwill, it is all a question of scale and timing—how much forest is logged and how often. The art is to learn from nature. "What I am saying is that within a framework of total forest management, you can maintain a mountain ash forest while managing it for timber production."

ATTIWILL'S BRITANNIA CREEK study has shown that mountain ash forest is the world's most productive forest ecosystem—astonishing for a non-tropical environment. It accumulates biomass at the rate of 40 tonnes of dry matter a hectare a year, compared with 25 tonnes for tropical lowland rain forest. Another surprise: in 1986, wondering if nutrient depletion after wildfire might be limiting the young trees' growth, Attiwill fed some seedlings with copious amounts of nitrogen and phosphate fertilizer. It made no difference. Even humans cannot induce the ash to grow faster. The experiment contradicted claims that logging operations result in a loss of nutrients.

For conservationists, the problem lies in a clash between timescales: nature versus the forestry industry. Young ash forest grows so fast that it can be profitably cut 50 to 80 years after fire or logging—mere adolescence for a tree that may live 400

years. Logging is now concentrated in 53-year-old forest regenerating after the Black Friday firestorms of 1939. Since mountain ash forest does not mature for 150 years, and only then begins to senesce and decay, a 50-to-80-year rotation excludes an entire cohort of mammals and birds adapted to old-growth forests. A few of those older areas, and the animals they host, survived Black Friday. Foremost among the survivors is a marsupial that has come to symbolize the conservation debate surrounding the ash forest, just as the spotted owl has done for the old-growth Douglas fir forests of America's Pacific northwest. Leadbeater's possum, *Gymnobelideus leadbeateri*, had been presumed extinct until its rediscovery in the central highlands near Marysville in 1962 after a six-decade absence. While still endangered, the possum is locally common in areas where new forest sprang up around the dead stags of mature trees killed in 1939.

Black Friday renewed the ash forest on a huge scale, unknown since white settlement. As a post-fire opportunist, Leadbeater's possum prospered: ecologically, it straddles the border between the new and the old, foraging in younger forest with an acacia understorey, but nesting in the hollow trunks of mature trees killed by the preceding fire. The possum's boom presages a bust: as decay and wind topple its nesting trees, the species again faces

extinction—unless areas of prime habitat can be preserved. Attiwill argues that managed commercial logging is not incompatible with that aim. Some areas of prime possum habitat are already secure within Melbourne's water catchment areas. The former Melbourne Metropolitan Board of Works successfully argued in the 1940s that water, not wood, should be harvested from the forests closest to the city's northeast. Old growth forest produces much higher water yields than vigorous young forest. The green 1980s saw another claimant emerge: ecotourism. Each weekend day-trippers and tourists stream into the forests to drink in their grandeur and get close to their plant and animal life.

These competing demands for the forest's resources are not easily reconciled. But Attiwill believes an ecological concept called patch dynamics, which emerged in the early 1980s, offers a way out of the impasse. Patch dynamics is nature's own strategy, and is already mimicked to some degree by current management practice. It would mean creating a patchwork of tracts of forest of different ages, so that, overall, no species is disenfranchised. But Attiwill says this requires conservationists to accept the modern scientific view of how ecosystems develop and function.

The science of the 1970s viewed ecosystems almost as plays: a fixed cast of players working to a familiar script, developing through a succession of acts to an inevitable climax—the mature community. Running through these ideas was a reassuring theme: predictability. Attiwill and other ecologists now argue that these concepts are simplistic. The stability of many ecosystems, especially complex communities like tropical rain forests and coral reefs, may be illusory, no more than an artifact of the scale and interval at which they are observed. The relationships between the players are often dynamic, opportunist and transient, and natural catastrophe broods over the stage, intervening intermittently to rewrite the script. Attiwill says the so-called "deep ecology" element within the conservation movement believes humans have abused nature, and that humans should learn to see the world from nature's perspective. "My view is that we should go back to the traditional meaning of 'conservation,' which means the wise use of resources. Conservation doesn't necessarily mean locking the forest up."

The essence of his paper is that, from nature's own perspective, the difference between human and natural change is meaningless—asked by science to differentiate between fire and logging, the mountain ash does not discriminate. Says Attiwill: "It's okay for the Wilderness Society to argue on spiritual or philosophical grounds that you shouldn't log the forest. But the science says you can." ■

SPECIAL LIFTOUT
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THE ORIGINAL FOREST

In this special liftout, Chris Borough, Technical Editor of the Australian Forest Grower has invited Dave Ryan, from Boambee Forestry Services to concentrate on the impact fire had in shaping the natural forest prior to European settlement.

Dave Ryan is a specialist in fire management and operates his consultancy business from the north coast of New South Wales near Coffs Harbour. Through methodical research, Mr Ryan has found that the forests at the time of first settlement were very different from the forests of today, where fire is excluded. It is for forest growers to appreciate the impact fire has had in shaping vegetation patterns and understanding the substantial role of regular control burning in managing fire risks.

THE ORIGINAL FORESTS

Contrary to what is often stated, dense forests did not cover a large part of Australia and the first settlers did not set to and ringbark huge areas. There was no need to. Most of the country was woodland, grassland, savannah or open forest. Grazing was plentiful and there for the taking.

Josephine Flood states in her book *Archaeology of the Dreamtime*:

"One of the Aborigines' most important artefacts was one that is largely invisible to the archaeologist: fire. Much of the vegetation encountered by early white settlers in Australia was not natural but artificial: an Aboriginal artefact created by thousands of years of burning the countryside . . . Aborigines never put out their fire."

Aborigines did not just burn now and again, or only in autumn, or when birds were not nesting. They burnt all the time. Thousands upon thousands of fires were lit on a daily basis and apparently none were put out.

To Aborigines fire was seen as necessary to clean up the country. They regarded unburnt grassland as being neglected. Apparently for most, if not all groups, every part of grassland, savanna and eucalypt woodland of their territory would be burnt regularly, at least once every three or four years. It was seen as doing their duty by their land.

Nearly every early explorer commented on the amount of smoke seen. Matthew Flinders refers to some in the introduction to his book *A Voyage to Terra Australis*; . . . in . . . *The Investigator*, for example, Pieterz Pietersen, a Dutch commander on the yacht *Wesel*, during 1636:

" . . . discovered the coast of Arnhem land . . . and sailed along the shore for 123 miles without seeing any people, but many signs of smoke."

Also Abel Janz Tasman in December 1642 at the north end of Storm Bay, Tasmania, observed:

"Amongst the trees, two were remarked whose thickness was two, or two and a half fathoms, and the first branches from sixty to sixty-five feet above the ground . . . the country was covered with trees; but so thinly scattered, that one might see every where to a great distance amongst them . . . Several of the trees were much burnt at the foot . . ."

and the next day after leaving Storm Bay;

" . . . and during the whole day smokes were visible along the coast . . ."

William de Vlamingh, commander of the Dutch ship *Nijptang*, during January 1697 at the Swan River:

"No men were seen but they observed many smokes . . ."

and a few days later south of the Geraldton area:

"Fires upon the land were seen from all the ships . . ."

It seems much of the tall mixed eucalypt forest with a developed understorey, of common occurrence these days, did not exist.

Captain James Cook, during 21-4-1770 -- one day's sailing north of Cape Howe [Bega area?]:

"In the afternoon we saw smoke in several places by which we knew the country to be inhabited"

During 1-5-1770, at Botany Bay's southern shore, an indication of the Aborigines' burning activity. A description that fits a vegetation type that was burnt almost annually:

"After this we made an excursion into the country which we found diversified with woods, lawns and marshes; the woods are free from underwood of every kind and the trees are at such a distance from one another that the whole Country or at least part of it might be cultivated without being oblig'd to cut down a single tree; we found the soil every where except in the marshes to be light white sand and produceth a quantity of good grass which grows in little tufts about as big as one can hold in ones hand and pretty close to one another, in this manner the surface of the ground is coated in the woods between the trees."

Also two days later, on 3-5-1770, at Botany Bay:

"In the AM I went in the Pinnacle to the head of the Bay [near Sans Souci?] . . . We found the face of the country much the same as I have before described but the land much richer, for instead of sand I found in many places a deep black soil which we thought capable of producing any kind of grain, at present it produceth besides timber as fine meadow as ever was seen."

Joseph Banks in his journal gives observations similar to Cook's. Between 13/17-5-1770 he notes fires burning from Smokey Cape to the Glasshouse Mountains, including one probably on Mt. Coramba near Coffs Harbour. While at Botany Bay he noted:

" . . . very barren place without wood . . . very few tree species, but every place was covered with vast quantities of grass . . . the trees were not very large and stood separate from each other without the least underwood."

Europeans had problems with fire from the very early days. There was problems with smoke on the day the first fleet sighted Australia. John White, Surgeon, during 7-1-1788, on the first sighting of Tasmania by the first fleet, could not see clearly:

" . . . as a large smoke was seen close to the innermost height."

On the evening of the same day:

" . . . we saw a large fire on the east point of land which forms this bay [Storm Bay], made by the natives, . . . nor did we

perceive any other indication of it being inhabited but this fire, and the smoke mentioned to be seen on our first falling in the land."

Many of the early accounts and journals of the first settlers in NSW commented, similar to Cook, on there being only scattered trees and very little shrub understorey beneath the tall forests but rather grass and fern. White gives an example, on 5-4-1788, at Port Jackson:

"We rounded this lagoon [Dee Why], and proceeded four or five miles west-ward, along the banks of a small fresh-water river, which emptied itself into it and had for its source only a swamp or boggy ground. After we had passed this swamp we got into an immense wood [French's Forest], the trees of which were very high and large, and a considerable distance apart, with little under or brush wood. The ground was not very good, although it produced a luxuriant coat of a kind of sour grass growing in tufts or bushes, which, at some distance, had the appearance of meadow land, and might be mistaken for it by superficial examiners."

On 22-4-1788, at the head of the harbour [S-W of Homebush Bay?]

" . . . we proceeded for a mile or two, through a part covered with enormous trees, free of underwood. We then reached a thicket of Brush-wood, which we found so impervious as to oblige us to return . . ."

And on the 24th, probably in the Parramatta area, they discovered what was to become known as the distinctive Australian woodland, which could be grazed and more importantly, ploughed without the need to clear:

"The banks of it were now pleasant, the trees immensely large, and at a considerable distance from each other; and the land around us flat and rather low, but well covered with the kind of grass just mentioned."

Governor Phillip wrote regularly to Lord Sydney, the Colonial Secretary. During 1788

" . . . and they [the aborigines] are seldom seen without fire, or a piece of wood on fire which they carry with them from place to place, and in their canoes . . ."

Also:

"The natives always make their fire, if no before their own huts, at the root of a gum tree, which burns very freely and they never put a fire out when they leave the place"

During September 1790:

"The weather now being very dry, the natives were employed in burning the grass on the north shore opposite Sydney, in order to catch rats and other animal, whilst the women were employed in fishing: this is their constant practice in dry weather."

and on 16-11-91:

"The natives so very frequently setting the country on fire . . ."

So it was quickly realised that the countryside was regularly, probably almost annually burnt and that such burning was carried out by the aborigines, who carried fire sticks at all times, set fire to land whenever conditions were dry and/or windy, summer or winter, and apparently never put a fire out.

Captain John Hunter in 1788 had similar stories to tell:

"... they also [the aborigines] . . . set the country on fire for several miles extent; this, we have generally understood, is for the purpose of disturbing such animals as may be within reach of the conflagration . . . We have also had much reason to believe, that those fires were intended to clear that part of the country through which they have frequent occasion to travel; of the brush and underwood, from which they, being naked, suffer very great inconvenience . . ." and of clearing land:

"... we were here in the middle of a wood, in which were trees from the size of a man's arm to twenty-eight feet in circumference . . . The wood is so exceedingly heavy, that when a large tree was cut down, in order to clear a piece of ground, it would sometimes take a party of men three or four days to dispose of it."

but clearing was not necessary:

"... and at the head of the harbour, there is a very considerable extent of tolerable land, and which may be cultivated without waiting for its being cleared of wood; for the trees stand very wide of each other, and have no underwood; in short, the woods on the spot I am speaking of resemble a deer park, as much as if they had been intended for such a purpose . . . The grass upon it is about three feet high, very close and thick . . ."

The aborigines did not burn only in summer. During July 1788 Hunter noted:

"Large fires were frequently seen in this season upon some of the hills, and . . . we then conjectured that these fires were made for the purpose of clearing the ground of the shrub and underwood, by which means they might with greater ease get at those roots which appear to be the greater part of their subsistence during the winter. We had observed that they generally took advantage of windy weather for making such fires, which would of course occasion their spreading over a greater extent of ground." In summer, during February 1791:

"The weather was very close and sultry, and the natives having fired the country for several miles around, the wind, which blew strong on the 12th, was heated to a very extraordinary degree, particularly at Rose Hill [Parramatta], where the country was on fire for several miles to the northward and southward."

George Bouchier Worgon, First Fleet surgeon (*Sirius*), giving further evidence of regular burning and utilising windy conditions, recorded at North Head in 1788 (on the 28 May!):

"The wind was blowing very fresh today and perhaps this might favour their designs . . . Indeed we have remarked that, whenever the wind blows strong, there are a number of these kinds of fires about the country."

David Collins (Judge Advocate) records urban-interface problems in 1792:

"The weather during this month was very hot. The 5th [December] was a day most excessively sultry. The wind blew strong from the northward of west; the country, to add to the intense heat of the atmosphere, was every where on fire. At Sydney, the grass at the back of the hill on the west side of the cove, having either been caught or been set on fire by the natives, the flames, aided by the wind which at time blew violently, spread and raged with incredible fury. One house was burnt down, several gardens with their fences were destroyed; and the whole face of the hill was on fire, threatening every thatched hut with destruction . . ."

During December 1798 (Annual bush fire warnings have a long history in NSW):

"... and the country, as happened generally at this season of the year, [was] every where on fire, those who were engaged in farming were reminded of the necessity of their exerting themselves by every practicable means to secure their crops . . . against accident by fire."

But in January 1799:

"The country was now in flames; the wind northerly and parching; and some showers of rain, which fell on the 7th, were of no advantage, being immediately taken up again by the excessive heat of the sun."

Watkin Tench (Captain of Marines) noted how it all started:

"Their method of procuring fire is this: They take a reed, and shave one side of the surface flat; in this they make a small incision to reach the pith, and introducing a stick, purposely blunted at the end, into it, turn it round between the hands (as Chocolate is milled) as swiftly as possible, until flame be produced. As this operation is not only laborious, but the effect tedious, they frequently relieve each other at the exercise. And to avoid being often reduced to the necessity of putting it in practice, they always, if possible, carry a lighted stick with them, whether in their canoes or moving from place to place on land."

The burning activity was not confined to the Sydney area. It was carried out on the mountains, further to the west and up and down the coast.

Most of the early travellers over the Blue Mountains commented on fire, some had to contend with bushfires. Gregory Blaxland noted fires once he saw the Megalong valley and the open country to the west of the mountains.

George Evans (Assistant-Surveyor) on his return journey on 29-12-1813:

"... at the [western] foot of the mountains . . . The Natives seem to be numerous; there are fires in many parts not far from us."

And on the 3-1-1814, 19 miles further east in scrub country:

"The Mountains have been fired; had we been on them we could not have escaped; the Flames rage with violence through thick underwood, which they are covered with . . . The marks in the Trees [from the outward journey] are burnt out; therefore am obliged to go over them again . . ."

The next day:

"The Mountains are as yesterday; fired in all directions; . . . all objects eastward are obscured by thick smoke . . ."

and on the 6th:

"... the flames have consumed the foliage from the highest Trees. The Ridges continue as usual until the latter part of my journey which is forest land for 1/2 a mile [Springwood] . . . there are small patches of grass left that the fire missed."

The next day:

"The forest land continues a mile farther; afterwards the brushy Ridge commences again, the thickest of it is consumed . . ."

Evans reached Emu Plains the next day, the 8th.

Henry Antill (A.D.C. to Governor Macquarie) at the Campbell River in May 1815:

"... the country we rode over this day . . . was beautiful and open, large tracts of land, without timber or underwood . . . At present we saw it to great disadvantage, the greatest part of the herbage of the plains having been destroyed by fire . . ."

Mm. Jean Quoy, Charles Gaudichaud and Alphonse Pellion (of Freycinet's expedition) during 1819 commented on the results of the regular burning:

"In the neighbourhood of the second military depot (Spring-wood), grow the most beautiful trees that we had seen in these parts [a wet sclerophyll forest]. The road to it opens in the midst of vast forests where you walk beneath very pleasant domes of verdure. We noticed that all these were blackened right up, a circumstance due to the fact that, the natives liking to set alight the grasses and brushwood obstructing their way, the fire often catches the fibrous bark of the largest trees, which then burn without their trunk being in any way damaged by it and without injuring the vegetation of their tops."

Charles Darwin (of the *Beagle*) in 1836:

"The extreme uniformity of the vegetation is the most remarkable feature in the landscape of the greater part of New South Wales. Everywhere we have an open woodland; the ground being partially covered with a very thin pasture."

and:

"In the whole country I scarcely saw a place without the marks of fire; whether these had been more or less recent — whether the stumps were more or less

black, was the greatest change which varied the uniformity, so wearisome to the traveller's eye.'

The open forest or woodland, with its abundant grass, that covered vast areas, was easily traversed. The occasional scrub area or brush or rainforest patch was not.

John Oxley at the Hastings River on 29-9-1818:

"The country we passed is what is generally known in New South Wales as open forest land . . . The whole face of the country was abundantly covered with good grass, which, having been burnt sometime, now bore the appearance of young wheat. Six miles down the river it was joined by a fine stream from the southward, apparently watering a spacious valley. We crossed this, and named it Ellenborough River . . . We proceeded about three miles farther before we halted at the edge of a thick detached brush . . ."

Allan Cunningham — with Oxley's first expedition, on 25-4-1817, beside a swollen Lachlan River near Forbes, beckoned to a troop of 13 natives on the opposite bank:

"Although they swam across the river, in which they had to contend with a strong current, they had brought fire in their hands . . ."

During 1824, on burning at Tuggeranong, south of Canberra:

"These interesting downs had been burnt in patches about two months since . . . It was common practice of the aborigines, to fire the country in dry seasons where it was wooded and brushy; to oblige game of the kangaroo kind to quit their cover and subject themselves to be speared . . ."

Peter Cunningham — 1827 describes the upper Hunter Valley:

" . . . one of the richest natural prospects that can well be witnessed presents itself, the flat alluvial lands spread out before you being matted with luxuriant herbage; branching evergreens scattered singly or in irregular clumps; the river winding through the midst; whilst dark-foliage swamp-oaks, bordering with a deep-green fringe its steep and grassy banks, and the gently rising hills beyond, thinly clothed with wide-spreading forest-trees, extend in diversified magnificence as far as eye can reach . . . In all these luxuriant plains there is scarcely a superfluous tree to be seen, not often above a dozen to the acre; and patches of acres are here and there met with destitute even of one, and only requiring the instrumentality of the plough to produce an abundant crop. It is this freedom from superfluous timber which among other things, gives so decided a preference to New South Wales over America, where your capital is often exhausted in making the land fit for the plough . . ."

of the Hastings valley:

"The soil on the margin [of the river] is, generally, rich alluvial, thickly timbered with cedar-trees, and matted with vine

brushes, while the hills behind partake of the open forest description of country in other parts of New South Wales."

the Macleay valley to the north:

"A great extent of open pastoral forest hills, with alluvial untimbered plains, were found to lie along its banks . . ."

and the Brisbane River valley:

"The country on either side consists of rich brushy thick-wooded flat, toward the river, with open hilly forest land extending backwards, rather stony but well coated with grass."

and in summary:

"The grass here seems all to grow in detached tufts, without any of that continuity we observe in the pastures at home [England] . . . The old withered grasses are usually burnt off in the spring and often at other periods of the year . . . and it is astonishing to see how quickly and how luxuriantly the new grasses will push up after these burnings, if a shower of rain should happen to follow them."

Charles Sturt in the introduction to his book comments on the lack of accumulated vegetable matter on the Australian ground:

"There is no part of the world in which fires create such havoc as in New South Wales, and indeed in Australia generally. The climate, on the one hand, which dries up vegetation, and the wandering habits of the natives on the other, which induce them to clear the country before them by conflagration, operate equally against the growth of timber and underwood. . . . it has been obvious to me . . . that in New South Wales, the fall of leaves and the decay of timber, so far from adding to the richness of its soil, actually destroy minor vegetation . . . Thus it would appear, that it is not less to the character of its woods than to the ravages of fire that New South Wales owes its general sterility."

Sturt, during his journeys through western NSW mentions fire almost on a daily basis. Eucalypt woodlands, open plains, acacia scrubs or the marshes had been burnt or were being burnt. On 31-12-1828, north of Warren:

"I had observed a dense smoke arising, . . . Passing through a wood, at the extremity of the plain, I found myself at the out-skirts of an open space of great extent, almost wholly enveloped in flames. The fire was running with incredible rapidity through the rhagodia shrubs with which it was covered."

and on the return journey:

" . . . the natives continued to fire the great [Macquarie] marshes, and as the element raged amongst them, large bodies of smoke rose over the horizon like storm clouds . . ."

Thomas Mitchell (Surveyor General) on his first journey in 1831/32 also had to deal with fire almost on a daily basis (for about two months!) even though seemingly conditions were generally calm.

On 28-11-31 at lower Wollombi [Blaxland's property]:

" . . . the lower country being open, and lightly wooded . . . The grass was every where yellow, or burnt up, and in many parts on fire, so that the smoke which arose from it obscured the sun . . ."

A number of the explorers, including Mitchell, commented that surprisingly the fires apparently burnt into the wind. On the 30-11-31 near Muswellbrook:

" . . . we camped on a small water-course near Mussle Brook . . . In the evening the burning grass became rather alarming, especially as we had a small stock of ammunition in one of the carts. I had established our camp to the windward of the burning grass, but soon discovered that the progress of the fire was against the wind, especially where the grass was highest."

On 9-12-31 north of Willow Tree:

"During the last three days of our journey, the woods were burning before us, but fortunately the fire was one day's march in advance of our party [note that it was not moving all that quickly], and thus the flames had cleared everything away before our arrival, so our camp was not exposed to danger. This evening, however, the country seemed on fire all around us. The weather was calm and sultry, particularly when the day closed in, and a very heavy storm . . . broke over us in the night."

And the next day:

" . . . the rain . . . soon checked the progress of the flames . . . it afforded providential relief to us, for the hills we were about to cross had been all in a blaze during the night."

On the 17-12-31, south of Boggabri:

"The whole country was on fire . . . The country smoked around us on all sides . . . By the 23-12-31, still in the Boggabri area "All the country beyond the river [toward the Pilliga scrub] was in flames, an indeed, from the time of our arrival in the parts [8 days!], the atmosphere had been obscured by smoke, that I could never obtain a distinct view of the horizon. The smoke darkened the air at night, so as hide the stars, and thus prevented us from ascertaining our latitude . . . Fires prevail fully as extensively, at great distances in the interior, and the sultry air seemed heated the general conflagration."

and on the 7-1-32, well north of Narrabri:

" . . . this incessant high temperature . . . nourished the fires, that covered the country with smoke . . ."

There have been comments by others that the country, from the mallee in the south to the northern tablelands, might have been burnt fairly regularly, more or less by one

Ludwig Leichhardt, in a letter dated 26-10-1842:

"During my excursions in the bush interest in bush fires has often been aroused . . . Others ascribe them to entirely to blacks . . . who light fires all over the plain to cook their food but leave them unex-

guished. During the hot summer the grass dries out and becomes highly inflammable, and the leaves of the mytaceous plants, which are full of essential oils, also get very dry. The consequence is that bushfires quickly spread over enormous areas, though without becoming a danger to human beings . . ."

and in 1842, gives definitions of "forest", "bush", "brush" and "scrub" and describes part of the New South Wales north coast:

"... "Bush" generally means the cultivated country in general, the virgin world; but they [the local] also distinguish between forest land, scrub and brush, according to the character of the vegetation. The last consists of low bushes that reach a man's height. [From margin: Scrub, a rich thicket on alluvial ground.] The [true] bush (forest land), on the contrary, consists of tall, strong trees with low undergrowth between them. I have never seen dense forests like those in the Harz and in Switzerland here, and I don't think that there are any. The trees [here] stand far apart, like they do in many of the oak forests in northern Germany. All the same, where shade and moisture of narrow valleys and ravines favour the vegetation, vines cling to the trees and creep from one to another, forming a dense, almost impenetrable network . . ."

In a letter dated 8-11-1843, of the Brisbane River/Mary River area:

"The forest ground resembles at present one uninterrupted oat or rye field in harvest time [Kangaroo grass] is almost the only predominant grass . . . grows here about three to four feet high . . . In a few weeks it will be burnt, to have fresh shoots . . ."

and in 1844 of the Morton Bay District:

"When you consider how few different kinds of trees go to make up our German woods and indigenous forests, you'll no doubt be astonished when I say that about 120 of these trees are to be found within a radius of a quarter of a mile. 100 of these belong to the dense, rich mountain and river brushes, whilst 20-25 form open forests . . . The ground under the trees, which would be covered with blueberry and whortleberry bushes in our oak forests, is mostly covered with kangaroo grass here . . . This grass ripens in October and November, when the ground under the trees looks like an even, sweeping field of oats. In November and December the weather gets dry and bushfires break out . . . It starts where the blacks have been camping for the night, as all they do when moving on is to pull a burning stick out [of the fire] and keep it smouldering against a piece of bark, so that they can light a fire at the next camp . . . The blacks know how to produce fire by friction . . . but it takes too much trouble, so they prefer always to carry fire sticks with them."

Mitchell later (1848) gives the first reference to the regeneration that occurred over much of the country during the latter part of the 1800s:

"Fire, grass, kangaroos, and human inhabitants, seem all dependent on each other for existence in Australia; for any one of these being wanting, the others could no longer continue. Fire is necessary to burn the grass, and from those open forests, in which we find the large forest-kangaroo; the native applies that fire to the grass at certain seasons, in order that a young green crop may subsequently spring up, and so attract and enable him to kill or take the kangaroo with nets. In summer, the burning of long grass also discloses vermin, birds' nests, etc., on which the females and children, who chiefly burn the grass, feed. But for this simple process, the Australian woods had probably contained as thick a jungle as those of New Zealand or America, instead of the open forests in which the white men now find grass for their cattle. . . The omission of the annual periodical burning by natives, of the grass and young saplings, has already produced in the open forest lands nearest to Sydney, thick forests of young trees, where, formerly, a man might gallop without impediment, and see whole miles before him. Kangaroos are no longer to be seen there; the grass is choked by underwood; neither are there natives to burn the grass, nor is fire longer desirable there amongst the fences of the settler."

The beautiful open forest lands started to disappear. Also, the tufted grasses, that responded so positively to fire and the associated duff soil, quickly disappeared from much of the continent. This may have been the prime cause of the large declines in numbers of many native fauna species. Their basic habitat disappeared.

E.M. Curr (a Victorian squatter) noted about the same time:

"Turning to the vegetable kingdom, we find the changes more marked than in the animal. As regards the grasses for instance. In the greater portion of Australia, indeed nearly all over it, the grass originally grew in large tussocks, standing from two to twenty feet apart, according to circumstances. It bore no resemblance to a sward, and when we drove over it in a dog-cart, a succession of bumps was experienced from its lumpy way of growing . . . Then again throughout the continent the most nutritious grasses were originally the most common; but in consequence of constant over-stocking and scouring the pastures, these, where not eradicated, have very much decreased, their places being taken by inferior sorts and weeds introduced from Europe and Africa . . ."

Curr goes on to state:

"... it seems to me that its [Australia's] condition, when we took possession of it, was largely attributable to the customs of its aboriginal inhabitants. Small in numbers — a few hundred thousands —

their existence, at first glance, would seem to have been most inconsequential. Mere hunters, who absolutely cultivated nothing — the spear, the net and the tomahawk — could have produced no appreciable effect on the natural products of a large continent. Nor did they; but there was another instrument in the hands of these savages which must be credited with results which it would be difficult to over-estimate. I refer to the fire-stick; for the blackfellow was constantly setting fire to the grass and trees, both accidentally and systematically for hunting purposes. Living principally on wild roots and animals he tilled his land and cultivated his pastures with fire; and we shall not, perhaps, be far from the truth if we conclude that almost every part of New Holland was swept over by a fierce fire, on an average, once in every five years . . .

A.W. Howitt in 1890, in his publication *The Eucalypts of Gippsland* describes the regeneration process:

"It dates from the very day when the first, hardy pioneers drove their flocks and herds down the mountains from New South Wales into the rich pastures of Gippsland.

Before this time the gramminivorous marsupials had been so few in comparative number, that they could not materially affect the annual crop of grass which covered the country, and which was more or less burnt off by the aborigines, either accidentally or intentionally, when travelling, or for the purpose of hunting game.

These annual bush fires tended to keep the forests open, and to prevent the open country from being overgrown, for they not only consumed much of the standing or fallen timber, but in a great measure destroyed the seedlings which had sprung up since former conflagrations . . .

The increasing number of sheep and cattle in Gippsland, and the extended settlement of the district, lessened the annual crop of grass, and it was to the interest of the settlers to lessen and keep within bounds bush fires which might otherwise be very destructive to their improvements.

The results were twofold. Young seedlings had now a chance of life, and a severe check was removed from insect pests. The consequences of these and other co-operating causes may be traced throughout the district, and a few instances will illustrate my meaning.

The valley of the Snowy River, when the early settlers came down from Maneroo to occupy it, . . . was very open and free from forests . . .

. . . After some years of occupation, whole tracks of country became covered with forests of young saplings . . . and a present time these have so much increased and grown so much, that it is difficult to ride over parts which one can see by the few scattered old giants were at one time open grassy country.

Within the last twenty five years many parts of the Tambo valley, from Ensay up to Tongio, have likewise become overgrown by a young forest, principally of *E. hemiphloia* and *macrorhyncha*, which extend up the mountains on either side of the valley . . .

Similar observations may be made in the Omeo district, namely, that young forests of various kinds of *Eucalypts* are growing where a quarter of a century ago the hills were open and park like. In the mountains, from Mount Wellington to Castle Hill, in which sources of the Avon River take their rise, the increase in the *Eucalyptus* forests has been very marked. Since the settlement of the country, ranges, which were then only covered by an open forest, are now grown up with saplings of *E. obliqua*, *E. sieberiana*, and others . . .

In the upper valley of the Moroka River, which takes its rise at Mount Wellington . . . I observe one range, upon which stood scattered giants trees of *E. sieberiana*, now all dead, while a forest of young trees of the same species, . . . which may probably be twelve years, growing so densely that it would not be easy to force a passage through on horseback. Again at the Caledonia River, as at the Moroka, the ranges are in many parts quite overgrown with forests not more than twenty years old. The valleys of the Wellington and Macalister Rivers also afford most instructive examples of the manner in which the *Eucalypt* forests have increased in the mountains of east Gippsland since the country was settled . . .

Such observations may also be made in Western and Southern Gippsland, but, of course with reference to different species of *Eucalypts* . . .

I might go on giving many more instances of this growth of the *Eucalyptus* forests within the last quarter of a century, but those I have given will serve to show how widespread this re-forestation of the country has been since the time of when the white man appeared in Gippsland . . .

Bush fires, which swept the country more or less annually, kept down the enormous multiplication of insects life, destroying myriads of grasshoppers and caterpillars, which now devastate parts of the Gippsland district, spoiling the oat crops, and eating the grass down to the ground."

E.H.F. Swain, District Forester, stating in 1912 of the hardwood forests of the Bellingen valley:

"The original forest, according to the Bellingen pioneers, was almost park-like in

its growth, and low lateral branching was thereby permitted . . .

Since the advent of settlement, however, several agencies have operated to clear the forest floor of its dominating carpet of native grasses, and allow of the upspringing of hardwood seedlings, many of which are now in the sap stages, and because of greater density are of much better timber quality than was produced by the primeval forest. The boles average 60 feet in length, and are straight, non-tapering, and generally free from white-ant unsoundness. Josephine Flood writes:

"regular, light burning was the pattern all over Australia at the time of first European contact. The fires were of low intensity, which meant that they consumed the litter of leaves and branches on the forest floors but did not burn down the trees. Without such regular burning, forest litter accumulates at a fast rate. This litter accumulation leads to disastrous wild fires, such as that of 7 February 1967, which threatened Hobart."

"It is ironic that the Australian parklands and open woodlands so admired by the early settlers should have been created by the Aborigines they regarded as ignorant nomads. Yet when Aborigines were driven off their land and the regular, light burning ceased, the old grass turned sour, scrub invaded the parkland, and the settlers' fine houses, fences and sheep became the victims of occasional uncontrollable bush fires. It has taken over a century for the European settler to learn from such mistakes, and now a system of controlled, regular burning has been instituted . . ."

Geoffrey Blainey, in his book *Triumph of the Nomads* reviews the use of fire by the Aborigines and states:

"Fire was central to their way of life, affecting nearly every activity. Fire should be ranked as the greatest of man's conquests, and in the way of life of the aborigines fire had no rival. It was the core of their technology though, like the core of our advanced technologies, it was sometimes master as well as servant."

Blainey adds:

"The variety of uses of fire possibly explains more than any other reason, why aborigines carried it everywhere as if it were their prized possession.

and:

"In Australia every day for millions of days countless fires had been lit or enlarged for countless purposes . . . The practice of carrying fire sticks on journeys increased the amount of unintended burning. When

the firestick seemed likely to smoulder it was placed again in inflammable grass or bark in order to create a flame from which the firestick could lit again. The fire so started was left to burn itself out . . .

There was rarely a reason why nomads should have put out a fire. They had few possessions. What they owned was portable, and in an emergency could be carried away . . .

The burning of large areas of Australia at least once in every few years was simply the result of breakaway fires. In many regions the hunters seem to have used fire to grasslands for the same reason that farmers plough and fertilize the soil. They were cultivators, using fire in the hope of producing lush grass for the game when next showers fell."

Blainey concludes:

"Thousands of years of burning could not fail to affect the landscape and all that lived on it. The sheep-owners who came from Britain did not have the faintest idea of how long the aborigines had occupied the land but they had a sound idea of the botanical effects that came within a few years of cessation of burning. If five or ten years that experienced few fires could alter the vegetation of Australian forests and grasslands, it would not be surprising that thousands of years of fires had also altered the previous vegetation . . .

Without those fires the grassy woodlands that occupied much of the fertile crescent in south-eastern Australia would have been scrubland or forest. A period of fifty years was probably sufficient to change the character of that savanna country if no fires burned . . .

. . . Fire was also an emblem of the collapse of their [Aboriginal] society, helping to create many of the grasslands. In the south-east, fire indirectly attracted Europeans and their sheep and cattle to the interior and so quickly led to the extinction of a way of life which was essentially pastoral."

The widespread ringbarking that was carried out around the turn of the century occurred in the regrowth. The landowners were attempting to re-establish the original grazing capacity.

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A full bibliography/reference list can be obtained from:

David Ryan, Boambee Forestry Service, RMB Bligh Drive, Boambee, NSW 2450.



3rd March 2016

Waroona Bushfire Special Inquiry
Level 6 Dumas House
2 Havelock Street
WEST PERTH WA 6005

Dear Mr Ferguson

The Livestock and Rural Transport Association of WA (LRTAWA) represents the majority of WA livestock transporters and a large number of transporters involved in transporting grain, feed, fertiliser and other commodities essential to primary industry. This submission is made on the basis of our member's experience during the Waroona fires and the collective experience of those who have worked through previous emergencies.

Comments are provided only on those Terms of Reference (ToR) considered to be most relevant to our experience. The comments cover several ToR and are therefore not grouped according to the ToR.

Heavy Vehicle Access

Commercial transport in and out of fire affected areas is critical to enable animal welfare to be attended to with minimal delay. The process for transporters to obtain access permits so animals could be transported out, and feed could be transported in, appeared to be ad hoc and not follow any particular process. There was more than one occasion where transporters followed the process they had been advised to follow only to arrive at the police checkpoint to be told the permit was not valid and access would not be allowed. There were inconsistencies that were not explained such as trucks carrying pellets being allowed in but not trucks carrying hay whereas on the previous day hay was allowed in. There had been no change in conditions during this time. These circumstances created frustration for both parties.

Another source of frustration was the intransigence of officers at road blocks where common sense was not applied. For example milk tankers were denied access to a property less than 1 km from the road block, forcing the driver to take back roads to gain access whilst the fire was still 30 kms away i.e. access was gained to the property but not in the quickest way possible.

On the 11th January the LRTAWA became aware via another association that the Department of Agriculture and Food had established a hotline that was being used to assist people to gain access to the fire zone for the purposes of transporting feed and removing livestock. The hotline had already been operating for several days but it was not well publicised and strangely the LRTAWA as the body representing livestock transporters had not been advised of its existence. Had the industry known about the hotline at least some of the frustration about access would have been reduced.

Heavy Vehicle Network

During the fire many people came together to provide assistance to people and animals. Transporters were no exception and in fact were at the forefront of doing what needed to be done. It is reasonable to expect that government agencies would be similarly seeking to help wherever possible. Unfortunately this was not the experience with regard to Main Roads transport inspectors. Rather than helping to co-ordinate transport and consequently helping to alleviate the distress of farmers and animals, transport inspectors took the opportunity to issue infringements to transporters who were urgently removing animals or delivering feed. As professional transporters we understand the importance of protecting road assets, however all

too often we find that in emergency situations common sense is not applied to allowing heavy vehicle access to address a short term, urgent need.

It is also understood that police officers were directing transporters on to roads that were not on the heavy vehicle network. The vehicles were therefore 'off-route' and Main Roads inspectors positioned themselves strategically to apprehend drivers whilst on these roads.

Road closures

The road closure perimeter was not proportionate to the fire zone. Whilst acknowledging that the fire zone was rapidly changing as it spread south and south-west, there was a period of time when access was denied to the northern perimeter and the danger in that area had long passed. Again this caused unnecessary inconvenience and frustration with authorities.

The closure of the Forrest Highway effectively cut the south west from the remainder of the State. Although there were alternative routes the authorities understandably requested that traffic be kept to a minimum. News that the Forrest Highway would be re-opened was anxiously awaited once the public was aware the immediate danger had passed. For commercial transporters there is significant planning necessary to mobilise heavy vehicles therefore as much notice of the potential re-opening of the road would help return services to normal as early as possible. Midway through the 11th January, the LRTAWA received word via another network that the Forrest Highway would be re-opened early the following morning. At 5.10 pm on the 11th January, Main Roads issued a broadcast advising the transport industry that Forrest Highway remained closed and there was no timeframe for reopening. On the 12th January a traffic broadcast was received at 6.23 am to say that Forrest Highway had been reopened. It seems likely that at the time of the 11th January broadcast there was a timeframe for reopening that was not shared with industry. Whilst an observer may say this is a small issue, it helps demonstrate the reason for a certain amount of cynicism that the needs of industry are not well understood and are relegated to a low priority during emergencies.

The following recommendations arise from the comments outlined above and from discussions with members involved in transport through the fire zone.

Recommendations:

1. A protocol is agreed with regard to approving access permits that is state wide and well understood by transporters and others with a need to enter exclusion zones, as well as the regulatory authorities;
2. The Livestock and Rural Transport Association of Western Australia should be included in emergency contact lists particularly those in rural areas;
3. Main Roads Western Australia and the Police Department develop a protocol for allowing heavy vehicles access to un-permitted roads in emergency situations;
4. In developing the recommended protocols, the Livestock and Rural Transport Association of Western Australia should be consulted together with farmers, feedlot owners, meat processors, local government, volunteer fire brigades, Main Roads, Police, DFES, DAFWA and DoPW.
5. Road closure boundaries are revised frequently throughout a fire event with the express intention of re-opening roads as soon as possible;
6. Traffic broadcast information provided to industry is current.

The LRTAWA is pleased to make this submission and hopes that the outcome of the Inquiry results in improvements in response to emergencies in WA. Whilst recognising that human safety is and should be the paramount consideration, there is scope for common sense.

Transport is a critical service during emergencies, particularly fire emergencies and we respectfully seek a greater involvement in planning for future events.

Yours faithfully



Stephen Marley
President