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1/03/2016

Dear Sir

We wish to make a submission to the Public Inquiry into the January 2016 Waroona Fire.

At our recent Board of Management meeting it was brought to our attention that a previous client was one of the persons who perished in the fire. Mr Leslie Owen Taylor was a vulnerable person with both cognitive and physical disabilities.

Advocacy South West (Inc) is an incorporated body that advocates on behalf of and assists people with disabilities and people affected by mental illness.

When Advocacy South West ceased working with Mr Taylor, we understood that a number of community organisations were providing services to support Mr Taylor to remain independent within his own home. These services consisted Social Work Department at Harvey Hospital, providing case management, Silver Chain providing assistance regarding medication prompts, wound care and personal care, Home and Community Care providing assistance with domestic duties. It was understood that Mr Taylor was visited most days by these services and was well supported to live independently within his own home.

Our concern is based around the Terms of Reference points 1 (f) and (g). Although well supported by services and well known within the community of Yarloop, Mr Taylor's disabilities may not have been considered when evacuation plans were put into place in surrounding areas.

Advocacy South West believe that vulnerable people living within the community are at greater risk and require a greater level of assistance and support before, during and after disasters such as the Waroona/Yarloop fire. We therefore request a review of disaster contingency and evacuation plans for vulnerable people living in the community. This is to ensure the inclusion of a process for communication with such persons, as email, mobile phone and texting are not appropriate or in fact sufficient for such vulnerable people where lives could be at stake.

Yours sincerely

Carmel Sheppard

Chairperson
Board of Management
Advocacy South West



AERIAL FIRE DEFENCE WA SUBMISSION

Waroona Yarloop Fire Inquiry



Aerial Fire Defence
Western Australia

[Facebook.com/afdwa](https://www.facebook.com/afdwa)

Introduction

This submission is made to the Special Inquiry into the Waroona and Yarloop Bushfire, Conducted by the Public Sector Commission under the provisions of Sections 24h(2) and (3) of the *Public Sector Management Act 1994*.

Aerial Fire Defence Western Australia

Aerial Fire Defence Western Australia (AFDWA) is a community group of concerned West Australians, The founding members of AFDWA come from backgrounds in Firefighting, Aviation, Fire Suppression and Engineering. The group started as a Facebook page and is now involved with the operators of some of the largest and most effective Aerial firefighting platforms in the world.

AFDWA's mission is to 'instigate the WA Government's adoption of latest aerial firefighting practices from around the world, particularly including the use of Large Air Tanker (LAT) and Very Large Air Tanker (VLAT) aircraft.

In our publishing of information concerning the capabilities of Air Tankers, Aerial Fire Defence WA has sought input from the following organisations:

- 10 Tanker Air Carrier LLC, and President and CEO Rick Hatton. The developers and operators of Tanker 910, Registration N612AX as well as tanker 911 and 912 (currently in the USA).
- AG Aerial Services, and Managing Director Rob Boschen, the Australian Operators and Air Operators Certificate Holder for the DC-10
- Remuda Pty Ltd, and Director Mark Robertson, the Australian Agents for 10 Tanker in Melbourne, Victoria.
- Anonymous persons from the NSW Rural Fire Service, Department of Fire and Emergency Services WA and several US fire authorities.



Very Large Air Tankers and Large Air Tankers (VLAT and LAT).

Over recent years, several quantum leaps have been achieved in the field of Air Tanker capacity and delivery of water and retardant. These allow up to 45,000L of water to be applied to fire suppression activities with unmatched speed and control. While this submission only seeks to highlight those solutions that were available to, and deemed suitable for, the Waroona-Yarloop fire, significant background to these aircraft are available through many sources on the internet.

DC-10 VLAT Aircraft



The DC-10 air tanker was developed by 10 Tanker Air Carrier LLC, an American company. Over a period of 10 years, 10 Tanker developed the DC-10-10 and later the DC – 10-30.

AFDWA has requested the assistance of the owners and operators of the DC-10 VLAT, in the preparation of information in this report, and in the assessment of the effect of the utilisation of the DC-10 on this fire.

Performance and Key Features

- Capacity: 45,000L of fire suppressant
- Climb rate: 2000 fpm
- Cruise Speed: 378 Knots (700km/h) or greater above 12,500ft MSL

The DC10 aircraft was selected and modified by 10 TANKER to provide an aerial firefighting platform with extraordinary performance. DC10s offer range, speed and payload advantages making them safe, effective, and efficient air tankers. By operating the aircraft significantly below its certified design weight limits, the modified DC10 exhibits a very favourable thrust to weight ratio relative to aircraft operating at or near their certified MGTOWs.

10 Tanker Air Carrier selected the DC10 aircraft because its aerodynamic configuration utilizes highly refined design techniques. The DC10 features a wing with high operating efficiency and a wide range of lift devices. The energy efficient design employs high bypass turbofan engines and low drag engine/nacelle installations to produce a platform with outstanding flying qualities including:

- Low approach speed
- Engine installations that provide excellent performance and rapid spool up
- Excellent handling qualities, thrust to weight ratio and acceleration



Tanks



The external retardant tanks are designed to be filled from standard 3 inch cam-lock couplings. Utilizing one, two or three hoses, the tanks can be filled as quickly as base loading capabilities permit, typically 15-20 minutes on two hoses, or 8-10 minutes on three. The tanks are vented to atmosphere by a vent system installed on top of each tank to allow sufficient air into and out of the tanks during retardant drops and filling. The drop profile is computer controlled, allowing the managing agencies to pinpoint drop locations, line lengths and widths as part of a controlled fire suppression.





Manoeuvrability

The 10 can safely manoeuvre in even the most demanding of mission circumstances.

Despite its size, field experience has proven the plane's agility in ALL terrain and atmospheric conditions deemed suitable for fixed wing operations in a Fire Traffic Area (FTA).

Unlike most existing and proposed Large Air Tankers (LATs), The 10 arrives at an FTA weighing significantly less than its certified MGTOW (Maximum Gross Take-off Weight.) As a result:

- The 10 frequently dispatches at a takeoff weight 40% LIGHTER than its certified MGTOW.
- The 10 turns comfortably within the turn radii of smaller aircraft including SEATS and Lead Planes.
- The 10's improved thrust to weight ratio significantly increases vertical performance (climb), and greatly enhances safety margins in a failed engine scenario.
- The 10 enjoys a wide margin above stall at typical drop speeds and weights, even with a full retardant load.

Waroona Yarloop Fire



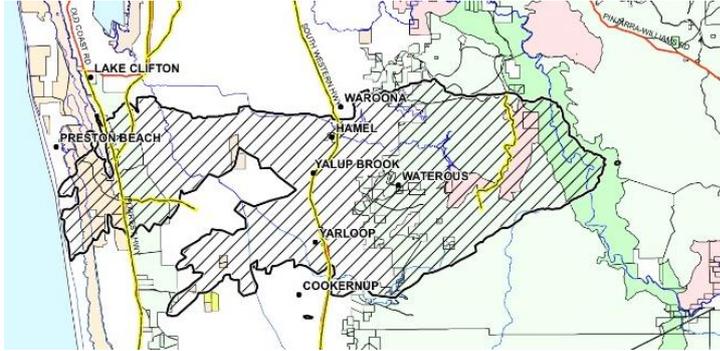
From the 6th to 23rd January 2016, the worst bushfire in Western Australia in over 50 years burned for 17 days and claimed the lives of two Yarloop locals. The fire all but levelled the small South West community of Yarloop, and threatened lives and homes for days in the shires of Harvey and Waroona. The fire burnt more than 69,000 hectares, and its perimeter was in excess of 392 kilometres. It destroyed 181 properties and vast tracts of farming land, including areas of the prime dairy and beef region of Harvey.

The fire was initially managed by the Department of Parks and Wildlife, and was handed over to the Department of Fire and Emergency Services on the 7th January. There was significant demarcation noted between aspects of the fire managed by DFES and DPaW, to the extent that agencies were told not to cross fences to fight fires on the other side of a fence or boundary. Reports from locals also suggest Yarloop failed to get significant support throughout the fire, including after the town had been burnt in which it took several days until home sites were cooled, in which time the town remained smouldering.



Fire Movement on the 7th January

The fire, which started at 7:25 on the 6th January, was burning in the area to the North and East of Yarloop on the 7th January, the day in which the town was destroyed. During this time, the fire

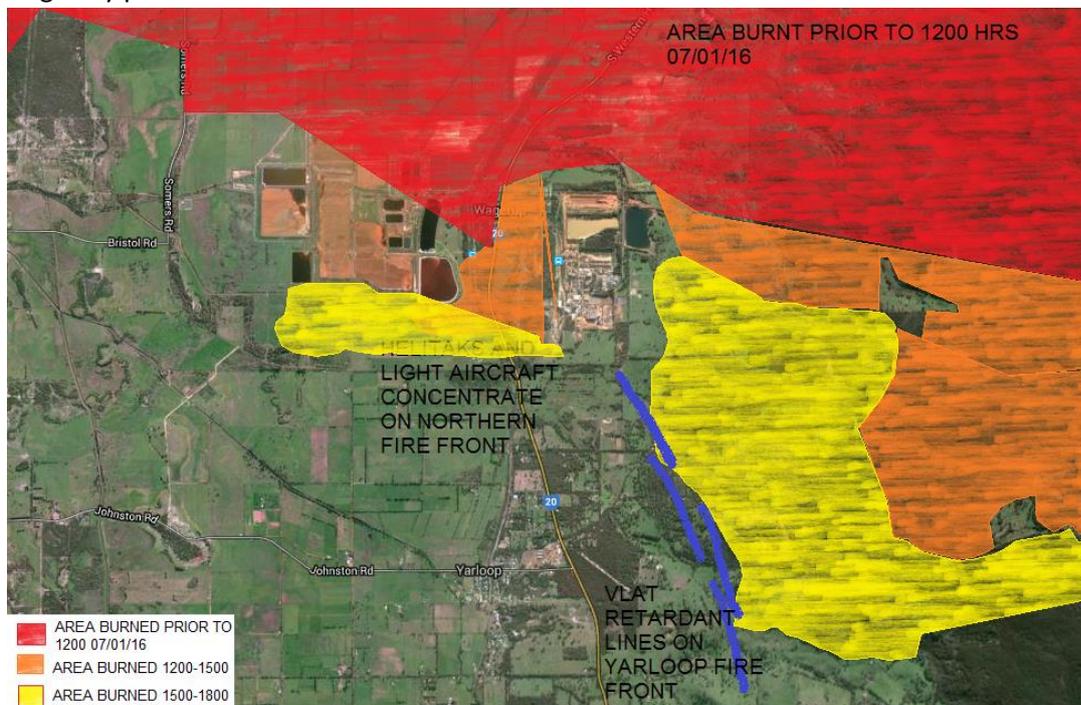


burned around the location of the Wagerup Refinery, and burned through the forested area to the east of Wagerup and Yarloop in a South Westerly direction, propelled by strong North Easterly winds which prevailed throughout much of the duration of the fire.

Map: DPaW 08/01 1001Hrs

Aerial Asset utilisation on the 7th January

According to locals who elected to stay and defend their homes on the 7th January, the Aerial assets along the South West Highway corridor were concentrated on defending the ALCOA Wagerup refinery, and only one aircraft was defending the Yarloop townsite. Had the offer of VLAT assistance to the state been accepted, AFDWA has planned a map of utilisation which could have sufficiently slowed, if not alleviated, the progress of the fire through to Yarloop on the afternoon of the 7th. From this it can be seen that the DC-10 could have significantly retarded, if not stopped the progress of the fire front on the afternoon of the 7th, had it travelled to WA on the morning of the 7th as originally planned.



Use of Resources

The managing Authorities on this incident utilised a number of resources in their attempt to control and suppress this fire. This submission specifically discusses the aerial resources deployed and their use compared to worldwide best practice.

Aerial Support Fleet Used

The Aerial fire attack fleet used consisted of those currently under contract in WA, with an additional two Helicopters (Bell 214) brought into the state from NSW.

Air Tractor AT-802

Capacity: 3,200L Retardant or Water

Cruise Speed: 190 Knots (350 km/h)

Filling Time: 5 minutes (single pump)



Erickson Aircrane S-64

Capacity: 7,560L Retardant or Water

Cruise Speed: 116 KTAS (210 km/h)

Filling Time: 6 minutes Hover filling



Bell 214 Big Lifter - Helitak

Capacity: 2650L

Cruise Speed: 130KTS (240 km/h)

Filling Time: 3 minutes (hover filling as shown).



Offer of Assistance – VLAT

On the 8th January, an offer of assistance in the form of aerial support, personnel and equipment was made to WA from the NSW Rural Fire Service. Whilst the offer of personnel was taken, the offers of Aerial Support in the form of the DC-10 VLAT and LL-100 Hercules was rejected.

Reasons for Refusal

A number of reasons were given for the refusal of the DC-10, each of which was very publicly disproven. However, to the date of this submission, no reasonable response has been given as to the refusal of this offer by the State Government or DFES.

There have been several high profile news reports concerning this issue, which have been published on the AFDWA page as well as many major newspapers.

According to the operators, the issues documented below were not presented or asked of them, and no solutions to any of the perceived problems were requested.

Table – reasons for refusal quoted by DFES and responses by the aircraft operators

Reason for Refusal	Response
The aircraft was unavailable to assist, according to DFES	The aircraft had not operated a mission for several days and was offered to WA to assist by the NSW Rural Fire Service.
The turnaround time was too long between retardant drops, quoted as 2 ½ hours by DFES	The effective time quoted by AGA Services for a complete turnaround was 68 minutes, which included the following: <ul style="list-style-type: none">· 30 minutes each way for travel time, including taxiing, takeoff and landing and circuit time.· 8 minutes for refilling the aircraft, based on three pumps and hoses.
No suitable runway was available for the aircraft	The aircraft can operate from a 2,100 metre runway with significant safety margins, this leaves Pearce Airbase and Perth International as two available airports. Pearce Airbase had prepared for what they expected was the imminent deployment of the DC10 and were already preparing infrastructure & equipment
The aircraft operation would take too long to set up	All equipment required to operate was either already in commission at Pearce, or loaded on the aircraft which was about to fly to WA.
The aircraft tanks would take too long to fill.	According to both the operators and Pearce Airbase, equipment was available to fill the aircraft tanks within 8 minutes.
The aircraft could not integrate with other aerial fire platforms, would get “in the way”	Both AGA Services and NSW RFS stated that, whilst the VLAT had been a learning curve in the beginning, the Authority has come to appreciate the enormous benefits of operating the aircraft and it now operates “like any other aircraft’ with far more versatility

The aircraft would take too long to get to WA

The aircraft would arrive in WA within five hours. In fact, the aircraft was already fuelled, crewed and loaded, with a flight plan prepared for the travel to WA on the morning of January 7.

The amount of water or retardant dropped would have caused structural damage to houses and buildings.

10 Tanker have advised that they have previously provided retardant drops up to the urban interface, and even onto suburban areas to prevent the spread of fire. The density and risk of structural damage for the VLAT aircraft has been assessed by 10 Tanker and many agencies as being as low as that of a SEAT.

The aircraft could not fly low enough to deliver retardant to the fire

The aircraft can fly safely down to 200ft in low wind conditions. Although the aircraft can fly lower than 200ft, the effect of water and retardant will be significantly reduced at lower heights as the forward momentum of the retardant will not have been stopped.

Dropping retardant at or near urban areas

A demonstration of the DC-10's ability to drop retardant both at the urban interface, and across suburbs. In this case, at the Weed fire in California, the DC-10 reached the fire before crews were able to reach the fire, and was able to provide two lines of retardant to the urban area, saving 68 homes which would have been engulfed within 10 minutes. The same strategy could have been adopted to drop retardant on the town of Yarloop, when it was known the town was in imminent threat.



"Thanks to the DC-10, our home was red and not black!" The owners of one of the homes above, June 2012

Setting up of pumps and equipment



The example above showed the setting up of portable equipment for the LL-100 Hercules deployed to Tasmania in February 2016. The Hercules was fully filled and operational 32 minutes after arriving in Tasmania, and went on to make a significant difference to these fires using equipment carried on board or procured from local hire companies.

Summary

From the information given and the result of these devastating fires, it can be seen that the response and management of this fire was lacking in many areas, and not sufficient to deliver a favourable outcome.

Firstly, from the advice of many contributors from Australia and the United States, Western Australia needs a single, unified firefighting strategy from a single fire management Authority. The current arrangement with Department of Parks and Wildlife and Department of Fire and Emergency Services having alternating responsibilities creates bureaucracy and confusion when the fire needs a single strategy. Fires do not stop to consider changes in jurisdiction, neither should the agencies responsible for controlling them. This change will allow more direct management of available resources, and a more timely dissemination of information leading to more accurate decision making and strategy execution.

It is certainly unfortunate that the significant offer of VLAT assistance was declined by the agencies responsible and this, in our opinion, is the single most significant aspect that should be investigated in this inquiry, along with the reasoning for the string of excuses which followed this decision. It is worth noting, this one aircraft would have **doubled** the capacity of the aerial firefighting fleet engaged on this fire. We would also ask the Inquiry to look into the contractual arrangements which exist between the agencies and the current fixed wing contractor, and whether any aspect of these arrangements contributed to the decision not to implement the use of the VLAT.

The experience of other Australian States over this fire season has shown the value of the LAT and VLAT aircraft. Whilst in Victoria and New South Wales there were no large scale fires this season, a significant number of fires were quickly brought under control whilst in an area of less than three square kilometres. Many US Agencies say that this is the time to control a fire of this intensity, as once the perimeter of the fire grows past 10km, agencies are fighting a losing battle attempting to control it.

The Agencies responsible in Western Australia keep fighting fires the same way and losing each time. The time has come to put reputations aside and take on board the advice, strategies and technologies being used successfully by other agencies across Australia and the world, the most significant of these being large capacity Air Tankers.

4 March 2016

WAROONA BUSHFIRE SPECIAL INQUIRY

Submission of

Alcoa of Australia Limited

Introduction

Alcoa of Australia Limited (**Alcoa**) owns and operates three alumina refineries (Kwinana, Pinjarra and Wagerup) in Western Australia. These refineries process ore extracted from the company's two bauxite mines (Willowdale and Huntly) in the Darling Range.

Bauxite from the Willowdale mine is transported by overland conveyor to the Wagerup refinery. Bauxite from the Huntly mine is transported by overland conveyor to the Pinjarra refinery. Bauxite for the Kwinana refinery is railed from the Pinjarra refinery to the Kwinana refinery.

Other refining inputs, including raw materials such as lime and caustic soda, are transported to the refineries by road and rail using major transportation routes, including the South West Highway.

Alumina produced at the refineries is shipped to customers via dedicated port facilities at the Bunbury port and Kwinana refinery. Alumina produced at the Wagerup refinery is transported by rail to the Bunbury port. Alumina produced at the Pinjarra refinery is transported by rail to the Bunbury port and the Kwinana refinery.

Each year Alcoa's integrated mining and refining system in WA produces approximately nine million tonnes of alumina which represents approximately eight per cent of the world demand. Alcoa's WA operations provide direct employment for approximately 3,900 people.

In addition to mining and refining operations, Alcoa owns and operates an extensive farming enterprise around the Wagerup and Pinjarra refineries, known as Alcoa Farmlands. Alcoa Farmland's Wagerup operation comprises approximately 4,200 hectares of agricultural land.

Alcoa also has significant rural and semi-rural landholdings in and around Yarloop.

The January 2016 Waroona Fire (fire) directly impacted the Willowdale mine, Wagerup refinery and Alcoa Farmlands (Wagerup). In addition, the fire caused disruption to rail services to and from the Pinjarra and Kwinana refineries.

Fire Impact

Willowdale mine

The fire first threatened the Willowdale mine on Wednesday 6 January. The safety and wellbeing of everyone involved in the fire response was paramount. Operations at the Willowdale mine were suspended at approximately 3pm. All employees were evacuated from site by approximately 8pm. A small number of employees returned to Willowdale mine on the morning of Thursday 7 January to assess the situation. At this time the decision was made to evacuate these employees.

There were no injuries sustained by people involved in Alcoa's fire response.

As a result of the fire, the Willowdale mine suffered damage to power infrastructure (which impacted core operations including the mine's conveyor and bauxite crushing capability), plant and equipment and non-essential infrastructure including an office block. The fire also damaged approximately 100 hectares of Alcoa's mine rehabilitation. Operations resumed at the Willowdale mine on Wednesday 13 January.

Wagerup refinery

The fire first threatened the Wagerup refinery on Wednesday 6 January. Specially trained Alcoa fire crews were deployed to protect major infrastructure and extinguish spot fires. Department of Fire and Emergency Services (**DFES**) fire crews fought the wildfire at the Wagerup refinery at various times during the emergency.

As a result of the firefighting efforts there was no significant damage to the Wagerup refinery infrastructure. Power distribution at the Wagerup refinery was interrupted for a short time on Thursday 7 January and this caused a disruption to refinery operations. The Wagerup refinery also incurred damage to plant and equipment, process and water lines and on-site rail infrastructure.

The safety and wellbeing of everyone involved in the fire response was paramount. Wagerup refinery's production was significantly reduced during the fire (the nature of the process means the refinery cannot simply be 'turned off') and only essential personnel required to ensure minimum safe operating conditions were deployed to the refinery. There were no injuries sustained by people involved in Alcoa's fire response.

Alcoa Farmlands

The Alcoa Farmlands offices, comprising two demountable buildings south of Hamel, were destroyed during the fire. There was extensive damage to farm fencing (approximately 350 km destroyed) and approximately 30 cattle were lost through the fire.

Alcoa houses

Forty-two of 114 houses owned by Alcoa in the region were destroyed by the fire on 7 January.

Inquiry Terms of Reference

1. The response to the January 2016 Waroona Fire

1a) The effectiveness of pre-incident bushfire prevention and mitigation activities

Alcoa understands that the build-up of fuel in Lane Poole Reserve may have made a notable contribution to the escalation of the fire emergency. Alcoa requests that the Waroona Bushfire Special Inquiry (**Inquiry**) consider the contribution Lane Poole Reserve made to the escalation of the fire emergency and in doing so review the timing of controlled burns of the Lane Poole Reserve.

1c) The effectiveness of the suppression strategies and tactics used during the fire

Willowdale mine

Alcoa has not yet received a detailed briefing on the fire response from the Department of Parks and Wildlife (**DPAW**) and therefore the following comments regarding the early firefighting efforts at the Willowdale mine are based on the observations of Alcoa's DPAW liaison officer on Wednesday 6 January.

Alcoa understands that in the early morning of 6 January DPAW was responding to two fires (caused by lightning strikes) to the east of the Murray River. The fire closer to Boddington was contained and controlled, while the fire adjacent to the Murray River (and closest to the Willowdale mine) was in difficult terrain from a ground crew perspective and proved difficult to manage.

The fire reached the mine pits in the Keats region of the Willowdale mine at approximately midday on 6 January. Initial suppression strategies used by emergency services at the Willowdale mine appeared to be limited to Helitack spot fire suppression ahead of the main fire front during the mid-afternoon, while ground crews worked at the rear and flanks of the fire on the eastern side of the Murray River. By mid to late afternoon the fire was well established at the Willowdale mine and appeared to be moving rapidly in a westerly direction towards Waroona. By early evening the fires

had spread to the eastern and southern edges of Waroona and it is Alcoa's understanding that at this time the emergency services firefighting resources were redirected toward private and public property asset protection in the Shire of Waroona, leaving no resources for asset protection at the Willowdale mine for the duration of the fire. This was confirmed by authorities during an interagency call at midnight on 7 January.

Alcoa can't comment on effectiveness of firefighting strategies used when the fire was east of the Murray River, but would appreciate feedback on the steps taken by emergency services during the early response and the level of resources allocated to fight the fire.

Wagerup refinery

Alcoa commends the firefighting efforts of DFES firefighting crews that attended the Wagerup refinery to defend against the fire. Effective coordination of Alcoa and non-Alcoa resources ensured response efforts were efficient and appropriately targeted. The combined efforts of the DFES and Alcoa resources assisted in protecting critical assets and resulted in minimal loss of infrastructure at the refinery. Furthermore there were no injuries sustained during the response.

1d) The effectiveness of incident management, including coordination of agencies, volunteer fire and emergency services and interstate assistance

Willowdale mine

Alcoa and DPAW have an interagency agreement which is designed to facilitate a coordinated fire response on the Willowdale mine and to ensure DPAW has access to Alcoa managed resources (eg bulldozers), as required. In line with the agreement, the DPAW liaison officer established early contact with the Willowdale Mine Manager on 6 January and communications were maintained throughout the afternoon. At the invitation of Alcoa, DPAW intended to establish a fire coordination centre at Willowdale mine Orion crusher region. Mobilisation of resources commenced on site at approximately 5.30pm on 6 January but, based on the fire behaviour, the decision was taken by DPAW to relocate the coordination centre to the Waroona football grounds at approximately 6.30pm.

Alcoa thanks DPAW for its cooperation during a very challenging day.

Wagerup refinery

Alcoa appreciates the level of interagency feedback and support provided throughout the incident which helped ensure minimum safe operating conditions could be maintained at the Wagerup refinery. This included gaining approvals to bus employees to and from the refinery and to transport essential raw materials, critical process chemicals and repair items to the plant.

Alcoa representatives worked alongside emergency response personnel from a range of agencies at the Waroona Co-ordination Centre from the outset of the emergency. This included participation in the Waroona Fire Incident Support Group (**WFISG**) and subsequently representation on the Waroona Shire's Recovery Steering Group. Alcoa's involvement in the WFISG helped facilitate and maintain effective two-way communication throughout the incident.

Alcoa representatives observed officers from various agencies including (but not limited to) DFES, DPAW, WA Police and Main Roads Western Australia, working together to coordinate their response to the fire. The dynamic nature and rapid escalation of the emergency appeared to result in some (not unexpected) challenges with the initial response management, in particular in terms of processes and agency responsibilities, however coordination improved as time progressed.

Alcoa acknowledges that the authorities were managing a significant number of responders during the emergency and that it can be particularly challenging to coordinate shift change. On the basis of its own experience, Alcoa recommends that consideration be given to staggering shift changes to ensure that properties being protected are not left in a vulnerable state.

1e) Protection of essential services infrastructure and access to essential services (power, transport, water, communications) by emergency services organisations and the community

Alcoa commends the emergency services organisations for recognising that the protection of rail infrastructure was a critical part of the fire response. Alcoa understands that preparation and defence of the rail infrastructure and then, subsequent assessment and restoration of rail capability damaged in the fire, was prioritised. Alcoa believes that this assisted in reducing the impact of the fire on each of Alcoa's three WA refineries which rely on the rail infrastructure to receive raw materials and transport alumina to port.

Safe access to Alcoa's operations was impacted by fire damage to the Samson Brook bridge on the South West Highway south of Waroona. Alcoa recommends that consideration be given to ensuring that all critical transport infrastructure in the region be designed to withstand any major natural disaster.

Alcoa notes that damage to communications infrastructure in the region caused a significant reduction in communication capability, essential during such an emergency. Alcoa understands that the extent of the crisis may have prevented the expedited repair of communications infrastructure but recommends that consideration be given to how repairs can be more timely in future.

1f) The effectiveness of public messaging including the adequacy and timeliness of emergency warnings issued to residents and visitors

Alcoa commends DPAW for the level of direct communication with its Willowdale Mine Manager from the onset of the emergency. Effective communication from a local DPAW officer helped to ensure Alcoa was equipped to make decisions about its operations, including the timely evacuation of employees.

Association of Volunteer Bush Fire Brigades of WA(Inc)

Diverse. Rewarding. Invaluable.

Representing the interests of 26000 community Bushfire Volunteer fire fighters & 560 Bush Fire Brigades

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Dear Mr Ferguson,

RE: Waroona Bushfire Special Inquiry Submission

Thank you for the opportunity to submit a submission from the collective Bush Fire Volunteers perspective. As has been acknowledged, we sought assistance with funding and resources via the Premiers Department on the 5th February 2016¹ recognising the short time frame, financial and resources constraints that is affecting our Associations ability to have our submission in by the 4th March 2016. We received a response denying our request on the 23 February 2016.²

We as a collective group of associations expressed our concerns³ via a joint associations statement issued on the 21 January 2016. Our Association is a volunteer based organisation that is reliant on the good will of the volunteers from across Western Australia to undertake many tasks and functions for no reward other than to have the voice of the volunteers heard and their community needs addressed.

Given this, the short time frame has made it extremely difficult to collate, investigate, validate and formulate all the information we have received from the volunteers, who by their nature have expressed most of their views verbally to association representatives. As a consequence there are a number of matters that have been raised that will require further investigation and validation.

Our outreach in this restricted time has been quite extensive with an overwhelming response from the community bush fire volunteers across the state. Our intent is to drill down to what the core issues are, that need addressing from their perspective throughout this review.

We thank you for recognising the important role that the volunteers' association plays in having their perspectives acknowledged as part of this review as they combined with their respective local Governments provide the most cost effective emergency service to this great state of ours.

If you need to discuss this matter any further, please contact me.

Yours sincerely,

D Gossage

Dave Gossage AFSM
A/President
Association of Volunteer Bush Fire Brigades of Western Australia (inc)
13 March 2016

¹ 2016 02 05 Request for assistance for volunteers for enquiry.pdf

² 2016 02 23 Response from Premier and Cabinet re funding support

³ 2016 01 21 Joint Statement Final on bush fire inquiry.pdf

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PUBLIC INQUIRY INTO JANUARY 2016 WAROONA FIRE

TERMS OF REFERENCE

Preamble

The association is of the position that any review should reflect on the past to enable the areas that support sustainable volunteer cultures to be applied, to build a more sustainable and resilient future for the community. The future needs to be one that the community has meaningful control that embraces sustainable volunteerism and community resilience at the local level.

Such a review takes time, with the review discovering areas that should be explored to enable a better future. It is acknowledged that the restrictive time frame and the narrow terms of reference to explore the past will potentially restrict the positive learnings of the past being overlooked and the potential for mistakes already identified, being repeated into the future which perceivably seems to be where we are today.

It is clear by the feedback that there is a real perceived cultural divide of the volunteer rural/bush fire brigades and the fire fighting technic's and behaviors being employed by the department, compared to the community needs and the sustainable community principles of building strong resilient communities. A simple analogy is, the more resilient a community is, the fewer incidents there will be, and the less paid services that would be required. This is a direct conflict between an industrial position vs a community position. (*Example:- since the installation of fire detection systems and an increase in building code designs there has been a noticeable decline in the building fire area*)

The cultural difference between a police/para military model and community based model is clear. One is based on "*Command and Control*" vs the other is based on "*Trust and Respect*", this cultural difference will always be there and it is noted that there is separate services around Australia that work more efficiently than the current model in Western Australia.

History has shown since the demise of the Bush Fires Board in 1998 there has been a steady decline in the ability of the local governments Volunteer Bush Fire Brigades to be heard and have their views and ideas embraced, not to mention their ability to continue to manage incidents that they are capable of. The original intent of the then FESA model was that the agencies would be preserved and for the Bush Fire Brigades the training structures, as one example, would be preserved because of the clear difference between the city and rural needs, this has not been honored to the point where the current training pathways has been designed to suit the career path of the paid staff making it difficult for volunteers.

There has been a noticeable increase of the number of large fires, which has been more obvious in recent years since the establishment of Department of Fire and Emergency Services. There is a real need for a complete restructure and recognition of the four services that are critical to the states future. That is the Local Government Volunteer Bush Fire Service and the State Emergency Service and the paid Park & Wildlife Fire Service and City based Fire & Rescue Services which is Department of Fire and Emergency Services. The fact, according to the auditor general report⁴, page 5, that the largest resource is being managed locally, by local government is a positive move in the context of empowered communities, local control and building resilient communities should be retained.

Government needs to recognise that centralised control models disempower community and has a direct impact on volunteer recruitment, community resilience. This point is highlighted in the auditor general report⁵, page 11, that shows since the inception of their FESA and the Department of Fire and Emergency Services centralised models, volunteerism has taken a downward trend. This is not sustainable and will affect the states resource and financial sustainability into the future, something this state can ill afford.

⁴ https://audit.wa.gov.au/wp-content/uploads/2015/08/report2015_17-Emergency.pdf

⁵ https://audit.wa.gov.au/wp-content/uploads/2015/08/report2015_17-Emergency.pdf

This has a direct impact on all tiers of government's budgets and resources when they have to pick up what was traditionally being done by volunteers in the community. Western Australia is protected by a vast network of Volunteers of approximately 30000 volunteers verse 1100 paid staff. This is something the state should celebrate, support and be very proud of. Given that volunteers are just that, there needs to be more effort and focus on supporting them and "going the extra mile" to look after them from all tiers of government, not put processes, procedures and bureaucratic red tape principles verbal and written that stifle initiative and practical common sense thinking/actions. This would encourage a more sustainable volunteerism culture.

In 1987 there was a document presented to the Bush Fires Board on the history of the Bush Fires Board and Local Government Bush Fire Brigades, its conclusion is relevant today as it was then and reads;

CONCLUSION

The highly decentralised system of fire control in Western Australia has proved its effectiveness by rapid attack on fire outbreaks which would be difficult to achieve by a centralised system no matter how efficient. It has depended mainly upon the involvement of a large proportion of the rural population in brigade organisation and activity over the years.

Since the Emergency Services Authority of Western Australia Act 1998 and the Emergency Management Act 2005 there has been a shift of responsibility. DFES has been given elements of responsibility removing more local control and disempowering the communities they are meant to support. Since the implementation of FESA and now Department of Fire and Emergency Services there have been a noticeable shift in behaviors from "liaison", to "coordination" to what we have today which is "command and control", a top down approach which is in conflict with the sustainable volunteerism culture needed to build community resilience.

Volunteers who are often less resourced, work to save their local area, they work on a relationship of trust and respect and do not respond well to being told what to do by a paid firefighter who has no connection to a local area.

The capacity we have is not operating at its best due to impediments within the current system. Some of the critical recurring problems are intractable within the confines of the current emergency services legal and organisational structures.

Several problems are highlighted to support of our view that major reform is required to create a single independent rural bush fire focused agency that can overcome the intractable problems that are exacerbating the bush fire risk for our communities.

Accordingly, the focus of our submission is with respect to the third Terms of Reference for the Inquiry looking at the bigger picture of our system and how it can be improved to better protect our communities from the ravages of bush fires. We offer some limited feedback in the other areas of the enquiry based on information received from volunteers in the other reference areas within the terms of reference.

Terms of Reference

The terms of reference for the Inquiry are to examine and report on:

1. The response to the January 2016 Waroona Fire

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

Comment:- It is not clear as to what was in place in this regard. The bush fire threat map for the state clearly shows that areas that were not bush fire prone were burnt? Critical infrastructures and

mitigation services work undertaken or not are not clear and for some services and infrastructures to fail would indicate that they were not effective?

(b) The effectiveness of emergency management plans and procedures;

Comment:- With an event of this scale it is not clear if there was any planning done in this regard and it is not clear if the plans were effective or not. Given no event is the same; this is when “community resilience” comes into play. An informed, inclusive community, who have ownership of the risks, understand them and deals with them at the time, they adapt to the changing situation as it evolves which was demonstrated to a degree in this fire when the volunteers had control. It is also noted that there has been elements that have been frustrated and believe the bureaucracy of the HMA prevented community reliance to prevail. State policies surrounding access to properties continue to fail the community especially those who make a living off the land who need to be able to tend to their livestock and businesses. Any state policies should be flexible enough to enable the community resilience to be prevailing and enacted in the context of community being affected. The support provided should be of coordination resource, and funding support to the local level.

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

Comment:- There has been concern expressed in regards to local knowledge allegedly being ignored and the inclusion of the local leaders in the decision making process overlooked? We have not had the time or resources to be able to investigate or validate these claims. The strategies and tactics were affected by the availability of resources and personnel to fulfil what was required. It is clear to us that all personnel and the community had to constantly readapt to the rapidly changing environment and they went well beyond what would have been expected by many. There is a perception and concern that rank based decision making at various levels may have led to some frustrations and people from out of area being put into roles, based on rank, rather than utilising local personnel with the capability?

(d) The effectiveness of incident management, including coordination of agencies, volunteer fire and emergency services and interstate assistance;

Comment:- The effectiveness is subjective as there were varying reports that say it was acceptable and some say there was a lot of room for improvement. There were views that the IMT was under resourced. There has been concern expressed as to why resources and personnel from the eastern states were brought in? Was the local state resources utilised to an acceptable level before the decision was made and what liaison was had in regards to the local government volunteer bush fire brigades?

The incident management teams seemed to be resourced extensively by Department of Fire and Emergency Services and Parks and Wildlife (*NB:- DPaW actively accept volunteers into senior roles in their incident management team structures*), there was a notable absence of experienced volunteer bush fire personnel. Department of Fire and Emergency Services annual report⁶ page 129 refers to a number of personnel being trained to level 2 and 3 in (Bushfire), we have not been able to validate how many of these personnel are Department of Fire and Emergency Services Fire & Rescue, vs Parks and Wildlife vs Local Government Bushfire Volunteers or non-government agency personnel?

We have had views expressed that fair and equitable access to training for volunteers is not being provided in favour of the state HMA agency? How many non-paid staff have had access to and been able to complete this training? It was contextually noticeable that respect for volunteers, by some in an agency, was not at an acceptable level when it came to people fulfilling senior roles. It would be interesting to see how many bush fire volunteers were appointed to divisional commander or above functions, throughout this incident?

⁶ http://www.dfes.wa.gov.au/publications/Annual%20Reports/DFES_Annual_Report_2014-2015.pdf

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

Comment:- This has clearly been highlighted in the media and by many in the community as a real issue. From an emergency service point of view concern has been expressed that this did initially cause some concerns in being able to protect the community and communicate with them, this will need further investigation to be able to clearly identify what needs to be done. Contextually critical infrastructure needs to be protected and have redundancy mechanisms in place to provide business continuity within community during times of emergency. This is something that could be incorporated into the local emergency management plans to ensure the community has had meaningful input into the issues.

Given that the operative part of emergency management planning has been taken away from the local level and given to the state HMA, issues such as this and more importantly the ability of the local knowledge to be recognised in this context, will mean that there will be continual and fundamental failures into the future. The loss of HMA status, the merging of wesplan bushfire with wesplan urban fire is a couple of examples of the disempowerment of community and contributes to local issues being missed. The state policies need to change to re-empower local communities. We also recommend that a state stock take be undertaken to identify and plan for the protection of critical infrastructure.

- (f) The effectiveness of public messaging including the adequacy and timeliness of emergency warnings issued to residents and visitors;

Comment:- It is clear, from the HMA perspective, that all notifications must come through them. We are of the understanding that messages did go out but the details of timings, we have no access to validate this or not. Feedback has indicated that there was smoke over the towns for days and it would be beneficial to understand the communities concerns in this regard?

What has been highlight is the vulnerability of such systems when the infrastructure goes down. One of the first things to be lost is the power, what redundancies are in place to compensate for this? If access and egress is cut, do the back systems, if any, have capacity to operate for a long period of time without human intervention? What is the capacity of the systems to withstand capacity/demand overload? How does the message get through if people don't have a mobile and landline? There are many situations that should be tested to see where the critical vulnerabilities are to enable better planning for the future.

- (g) Effectiveness of assistance to and management of those affected by the fire:
 - (i) Evacuation procedures
 - (ii) Communications with the community over the course of the fire
 - (iii) Provision of welfare support

Comment:- There was some concern expressed in regards to welfare in the field getting to the volunteers on the ground. Given the time frame we have not had the resources or capability to investigate this further. Feedback has been received that the volunteers where happy with the level of support the shires provided them.

- (iv) Management of people seeking to return to their properties,

Comment:- There was concern expressed in regards to access and egress during and post fire especially from the farmer response brigades who needed to keep their farms running and move livestock and fodder around. We would support the review of the policy in this regard as traffic management is a real issue and great cause of frustration. Statistically most buildings assets are lost pre and post fire and owners need to be able to return or stay to defend their properties. The need to source fuel and welfare supplies to maintain protection is critical and the management of road blocks impedes the effectiveness of this being able to be achieved. Another side issue to this is identification cards, our association has been in discussions with WALGA and Department of Fire and Emergency Services and they are supportive of working with us to resolve this issue with us.

(h) Livestock and companion animal management and welfare issues.

Comment:- With the afore said, it was mentioned by many volunteers, the great work various community members did in taking care of and moving livestock around pre fire impact, during and after fire impact. This ranged from getting them out of the path of the fire, transport, veterinary services and feeding and watering of stock which is still continuing. In simple terms, this is community resilience in action and written processes and procedures of agencies are disconnected from community common sense principles that apply to those who understand the land and affect the ability of this to be fulfilled to its full potential as the community have to work around the bureaucracy.

2. Lessons learned from previous bushfire emergencies

- (a) The extent to which the findings and recommendations of the following Western Australian bushfire reviews undertaken since 2011 have been implemented:

General comment:- With all these reviews the volunteers association are at a distinct disadvantage. The departments are able to through people onto the tasks required and are fully supported by the agency as a whole with the recommendations being able to be influenced by the capacity of those who have the resources and backing. There have been recommendations of the past enquiries that the respective departments have not implemented which will be clear when this review investigates the recommendations. We have made comment in areas where volunteers have raised issues or expressed concerns.

- (i) A Shared Responsibility – Report of the Perth Hills Bushfire February 2011 Review (Keelty, 2011)⁷;

Comment:- recommendation 2 – Per the general comment above, the general view is that there is nothing wrong with the bush fires act in its current form. The current bush fire act was written by wise men who understood the rural community and to lose its intent or disempower community will be detrimental to the community.

Recommendation 6 - Needs to be revisited, local government have community development officers who are connected with their communities. This resource does not seem to have been recognised during this review. There are opportunities to move the funding and resources to the local level to re empower the community to develop local level programs that will give more targeted and connected messages and outcomes into the community.

Recommendation 10 - Needs to include the local volunteer bushfire brigades if they have the capacity to do so. By the department doing this in isolation creates disconnect at the community level especially in the rural communities and starts to affect community resilience.

Recommendation 11 - Is still a common issue that needs to be revisited. There is a perception of confusion between the messages going out in regards to bans and what can and can't be done.

Recommendation 13 - It is noted that some funding has been released to parks and wildlife, however the level of direct funding to local governments needs to be addressed and supported.

Recommendation 14 - Still requires adequate resourcing and funding, the City of Wanneroo is a good example of what can be achieved at the local level.

Recommendation 15 - Is restrictive and needs to be open to all volunteers. The training packages and access to such training, needs to be addressed to enable local government volunteer's to achieve the level they need to protect their communities.

Recommendation 21 - Requires more funding and resourcing to build capacity in this area.

Recommendation 23 - We are not clear as to any progress in this regard?

Recommendation 24 - We are not aware of any progress in this regard and would welcome feedback and the opportunity for volunteers to have equitable access to training?

Recommendation 26 - Volunteers continually share their frustration in regards to the amount of paperwork that has to be done now and the fact that when you are trying to combat a fire, your focus is on putting out the fire. There needs to be a balance in this regard. The common question is what does this achieve? What or who is it for? Is it to get ticks in the boxes to demonstrate process has been achieved, or is it just to make other people look good in the media? The true value and resource vs

⁷ <https://publicsector.wa.gov.au/public-administration/sector-performance-and-oversight/reviews-investigations-and-special-inquiries/special-inquiries/perth-hills-bushfire-inquiry>

capability vs outcome to suppress fire needs investigating? Legislation needs to be in place that ensures protection to those, whether paid or volunteer, who do their best under extreme duress and crisis management.

We have not encountered anyone that doesn't go beyond the call of duty during emergencies to help others and this needs to be recognised. There have been strong views expressed that "trial by media" and "looking for someone to sack" or "hang out to dry" has to stop! This is having an impact on those willing to step up and give it a go and do their best for the community and is destroying the resilience and depth within all paid and volunteer organisations.

Recommendation 28 - The community capacity to respond with private fire units needs to be recognised and procedures and processes should not be restrictive of when there is fire the community coming together to put the fire out in the most effective and efficient means available. Concerns are continually being raised that very good low kilometer fire trucks are not being retained and/or available for local communities to purchase. Policy change enabling this will build capacity for when major events occur.

Recommendation 30 - This was exposed during the fires with the main highway bridge being burnt.

Recommendation 32 - The issue of bona fide resident access has not been adequately addressed as this was a major concern during the fires.

Recommendation 35 - Is still an ongoing issue with being able to access radios for bona fide volunteers and contractors. The capacity of people to respond efficiently and effectively is dependent on good communications. People working with local governments or who are contractors who support emergency operations on a regular basis should have access to the emergency network, to not do this is eroding community resilience and stopping people stepping forward and providing equipment and resources and in communities until recent times, for free.

Recommendation 41 - Needs to be addressed as this was an issue during the fires. Where practical to do so in high risk areas, infrastructure should be put underground or protected from fire.

Recommendation 46 - There is a view of a conflict of interest with the state emergency management committee being under Department of Fire and Emergency Services, we support the option to move the department under the department premier and cabinet to ensure there is clear separation and accountability. The current model is perceived as the state emergency management committee that set strategic state policy being subservient to a department, who's head is a person that sets the policy for that department?? This perceptively implies an ability to influence policy so it would not be detrimental to a particular departments operations??

Recommendation 47 - We are not clear if there has been any resolution to this at this point in time.

Recommendation 48 - This is a very strong issue amongst volunteers and the local governments. There is a perception that the rules are different for Department of Fire and Emergency Services who are now in control and distribution of the funding. There is a strong sense of conflict of interest that the body administering the levy is the main beneficiary of the level⁸ funding to which they receive? There needs to be clear separations and the rules revisited to ensure volunteers and local governments have access to funding to enable bushfire mitigation to occur and fairer access to equipment and resources funding. There is a need to revisit state policy that is allegedly preventing local businesses from being utilised to provide goods and services? This needs further investigation to ensure incentives and the stimulation of the local business communities.

Recommendation 52 & 53 - The issue of what is the best model has been raised in the context that the original intent has again been changed under the current command and control model. When discussing what the issues are for local government, it is clearly financial and resourcing. With the ESL being moved to an independent body, local governments should be entitled to seek ESL funding for dedicated roles and they being funded without any third party interference. That is the same rules that apply to the Department of Fire and Emergency Services apply to local government and parks and wildlife, who should also have access to funding for mitigation and suppression activities. This would assist with the stimulation of local employment and capacity building at the local level. Furthermore it would open the door for more community based collaboration between adjoining local governments.

Recommendation 54 - We express our strong disappointment that the volunteers have been sidelined with any opportunity to be at level 3 through the Department of Fire and Emergency Services system, which is perceptively viewed as being internal rank and career advancement based. Those who want to advance their skills have had to go externally or through park and wildlife who welcome volunteers into their IMT's. Again because volunteer bushfire brigades, who are the biggest fire suppression

⁸ AVBFB response to Department of Fire and Emergency Services proposed legislative change, page 5 section 1.1.3

group, do not have a seat at the IBMC table, decision making is perceived as being bias towards the city based organisation.

Recommendation 55 - This is something the enquirer will need to determine as to where or not this has been implemented?

(ii) Appreciating the Risk – Report of the Special Inquiry into the November 2011 Margaret River Bushfire (Keelty, 2012)⁹;

The Report on the Post Incident Analysis of the 2011 Margaret River and Nannup bushfires had this to say about the complex inter-relationship between the different legislative instruments: *“The legislative complexity reinforces the need for emergency management agencies to develop and maintain systems, policies and procedures that create the best conditions for optimal fire management outcomes and the efficient and effective use of finite fire management resources.”* There is opportunity for the state to revisit its policies that restrict external opportunities in all areas of operations that would increase efficiencies and effectiveness of service delivery.

The report continues at paragraph 1.3 to refer to the Margaret River PIA Lessons that included: *“The most consistently identified issue within this capability area is the need for early, targeted and appropriate engagement with the local government authority, and the use of local expertise, to provide support to the Incident Management Team.”* This demonstrates how the current models are failing and disempowering and disconnecting from volunteers and local communities, compared to our NSW counterparts who are integrated throughout the entire structure in a sincere and meaningful manner.

The report identified: *“FESA has appointed additional Community Emergency Service Officer to improve relationships with local government and has established liaison positions during incidents to facilitate local volunteer engagement in incident management. FESA is continuing work in response to the Keelty Special Inquires to enhance fire capability for bush fire brigades in larger town sites, along with initiatives to improve preparedness in the Perth Hills and Capes region. This will include exercising across local government, DEC and FESA, to embed the practice of engaging local expertise, in preparation for the 2012/13 bushfire season.”* Whilst this sounds positive, a key point that affects local community resilience is empowerment and local control.

Appointing state based/controlled personnel traditionally reflects external and remote control and a clear disconnect with the local community. If the person in this role is put in a position that they have to make a decision between a local government position that suits the community needs or a Department of Fire and Emergency Services position based on a directive from head office, because the department controls the funding and the perceived consequence, the department view will prevail even if it is not in the communities interest. Why does the position need to go through the state? Is it all about control? Is it about giving more indirect resources to the state? There are views that this needs to be independently reviewed and the participating parties should have no connection to the current systems of operations to ensure true independence. The focus should be on how can we provide resources at the local level to address risk and build capacity.

The report continued to note: *“There is, however, scope for further clarification of the opportunities for local engagement, including in state emergency management policy and to clarify that it can be valuable to engage with locally based agency staff.”*¹⁰ The point is, why does it have to be agency staff? Locally employed staff through local government is more cost effective and provides the necessary community respect that supports resilience into the future. The state agency key focus should be liaison and support, not control.

Over the last 10 years volunteers have become increasingly concerned about the command and control approach of FESA and more so under the recent structure of Department of Fire and Emergency Services to fighting rural fires where local expertise is overlooked, and an increasing emphasis is placed on city based firefighters. Any proposed new legislation providing Department of Fire and Emergency Services with the total firefighting responsibility in rural areas will further

⁹ <https://publicsector.wa.gov.au/public-administration/sector-performance-and-oversight/reviews-investigations-and-special-inquiries/special-inquiries/margaret-river-bushfire-inquiry>

¹⁰ <https://www.dpc.wa.gov.au/Publications/Documents/State%20Emergency%20Management%20Committee%20Advice%20re%20Noetic%20Reports.pdf>

undermine the trust and respect of volunteers who often know their local patch better than any paid person external to the area.

Legislative amendment giving total power to Department of Fire and Emergency Services for rural fires will further undermine a coordinated approach to firefighting. It is a model that will not promote volunteer responses to rural fires where local knowledge and the collective and early response by farmers and community are imperative.

Reality of our situation with respect to bush fires demands an effort that creates and sustains a capable and well equipped pool of resources available for the biggest bush fire challenges; this is not a pool of permanent paid firefighters located in a central area, but of locally embedded sustainable and resilient volunteers. Rural fire suppression has traditionally been the domain of volunteers and it should continue to be. If there is a paid resource need at the local level, outside of the box ideas need to be explored with local government and the private sector to ensure the most efficient and effective models are considered to benefit the community.

Recent fire efforts have been paid fire fighters arriving at fire scenes without the required local knowledge who take a superior approach to fire fighting and apply methods and techniques from an urban environment which continues to cause tension.

(iii) Post-Incident Analysis of the 2011 Margaret River and Nannup bushfires (Noetic Solutions, 2012);¹¹

Comment:- This report like the others mainly focuses on two of the three fire agencies. There are clear themes throughout the documents relating to training, capacity and funding which need to be considered seriously if it is the government's intent to address the community's vulnerability of fire. What we must strongly represent is the lack of recognition of the local government bush fire brigades who play a key role in mitigation and prevention, suppression and in some cases the recovery activities. This holistic connection with community empowers and embraces community resilience and a sustainable culture into the future.

Again it is highlighted the number of suitably trained level 3 incident management team members, the current culture of a rank based system is and will continue to erode trust and respect given the difficulty for non-paid staff to access the courses require.

Effective access to maps continues to be a concern for volunteers on the ground. Concerns have been expressed that due to budget cut backs, emergency services directories have not been updated or areas that need this resource not being able to progress.

Perceptive views have been expressed that the introduction of the webeoc system is exclusive of volunteers and questions the relevance in the context that it doesn't put out the fires? How do volunteers or other agencies get access? How many resources is this system taking to keep it up to date when resources are needed to assist with the suppression of the fire? Is there better and more efficient systems that could be utilised that could be incorporated into vehicle tracking and communications systems that would be more effective and efficient?

The vehicle control point and there management continues to be an issue at all incidents and needs to be addressed to enable common sense to apply and flexibility in how it is managed.

(iv) Parkerville Stoneville Mt Helena Bushfire Review (State Emergency Management Committee (SEMC, 2014)¹²;

Comment:- Key themes continue throughout this report that highlight and question are we improving or just following process?

Bush fire mitigation, training, funding, communications, vehicle location/tracking and resourcing need to be to be addressed as pre previous comments.

¹¹ <https://www.dpc.wa.gov.au/Publications/Documents/State%20Emergency%20Management%20Committee%20Advice%20re%20Noetic%20Reports.pdf>

¹² Parkerville Stoneville Mt Helena Bushfire Review (State Emergency Management Committee (SEMC, 2014)

Comments in regards to the independent review and door knock undertaken highlights a common theme of how the agencies approach to communicating with the community is not reflective of how this particular community works. It clearly shows there was a poor response to the activity and the report reflects the survey was undertaken during office hour during the working week. This is the time when the community is way at work and hence the data demonstrating low participation.

(v) O’Sullivan and Lower Hotham Bushfires Review (SEMC, 2016)¹³; and

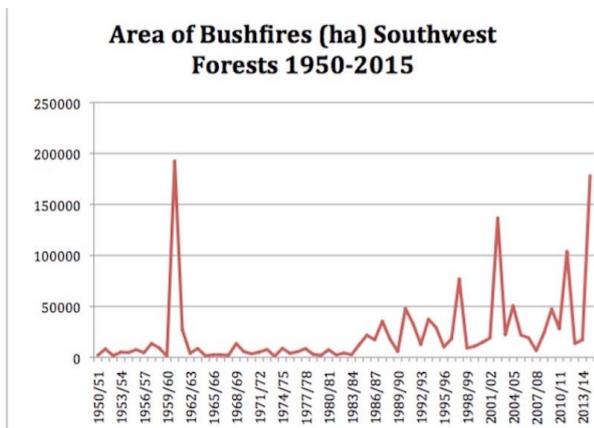
Comment:- Volunteers expressed the view that this report did not truly explore all of what actually occurred at the incident and practices employed. Notable comments such as “*Why was there fire vehicles parked up protecting Quindaning pub when the fire is 20kms away?*” “*Why were farmers and volunteers threatened by people in uniform that if they put a back burn in their property to give a wide fire break that they would be arrested and charged?*” These practices have been previously employed with great success, yet under the new regime they can’t? Whilst we haven’t had the time or resource to further explore the issues we ask that the review looks at the whole picture and get a real understanding of who was really at the fire beside the state agencies and seek to interview contractors, community members including those affected to ensure the real picture is reflected. Bush fire mitigation, training, funding, communications, vehicle location/tracking and resourcing need to be to be addressed as pre previous comments, to name but a few.

(vi) The Western Australian State Emergency Management Committee Preparedness reports¹⁴.

Comment:- We have not had sufficient time to fully investigate this report and will endeavour to if time permits to put a supplementary comment in.

(b) 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 community’s understanding of and preparedness for bushfire risk.

Comment:- The number and size of fires is increasing and more so in recent years. If there is no fuel there is no risk. For fires to be getting to the size they have been, would indicate that mitigation works is not being undertaken or has reduced since the Dwellingup fires in the early 1960’s. This is further highlighted in a chart seen in a bushfire front publication which clearly identifies that there has been a dramatic increase in fires which is a worrying trend that needs addressing.



Is a major contributing factor the disempowerment of volunteers and community at the local level and or the disparity of funding and resources allocations to local governments and community brigades? Has a fear or perceptive culture been created that is causing people to walk away and not want to be a part of their own safety prevention because they perceive there is too much bureaucracy in today’s

¹³ <https://www.semc.wa.gov.au/about/mediareleases/Pages/LowerHothamandO’SullivanFireReview-12May2015.aspx>

¹⁴ <https://www.semc.wa.gov.au/Publications%20and%20Resources/2015%20SEMC%20Emergency%20Preparedness%20Report%20-%2031%20October%202015%20Interactive.pdf>

world? What is certain by the feedback to our association is the current model is broken and not reflective of sustainable volunteer culture that supports strong resilient communities into the future.

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 strengthens capability to efficiently and effectively manage bushfire-related risk.

Emergency Services levy Funding

Many enquiries to date have made it clear that the emergency services levy fund needs to be separated away from the department that is the main beneficiary of the fund. Whether real or perceived there is conflict which is allowing different rules to be applied to local governments vs the department. We refer to a previous submission¹⁵. One area of this is vehicle and equipment funding where the department has total control of this area. The system that works well is when there is a 5 or 10 year plan in place. This planning needs to be done at the local level and when it used to be, it worked well because the community and volunteers had direct development of it to ensure the local risks have been addressed. It allowed local governments more autonomy to enter into vehicle changeover plans that were more cost effective and efficient than the current system. These need to be revisited to ensure out the box opportunities are fully explored. Local governments have advanced in recent years and have strategic planning obligations in place and they are audited accordingly.

Focus on bush fire management has dissipated

The emergency service framework has been subjected to a series of reforms since the abolition of the Bush Fire Brigades Board in 1998.

Problems in our bush fire fighting efforts have emerged over that time that may be contributors to the worsening outcomes of major bush fires in the past decade. The current structure is intractable and without structural changes will continue to affect volunteer sustainability. Such changes require authoritative direction from government and Parliament to ensure that community protection is paramount and in times of emergencies, regular sectional interests and differences will be subservient to the needs of the emergency with the right person for the lead role being supported in doing so regardless of outcome.

The necessary changes to improve our capacity to protect the community must begin with a clear AIIMS structure that has the authority, under emergency conditions, to over ride disparate agencies' policies and procedures to ensure best possible operations.

The necessary changes must also create an independent system in which there is a singular focus on bush fires covering all aspects that include prevention, preparedness, response and recovery and include strong community volunteerism focus. It will restore the much clearer focus on bush fires holistically and get the required focus within agencies.

There is also a diffused focus on bush fires within the DFES structure whereby bush fires come to the attention of most areas of the department yet no single area has a clear responsibility for bush fire management. The department closed down the local government liaison branch and bush fire mitigation branch. The mitigation now seems to be getting some attention, at the cost of major fire impacts, with the requirement to undertake bushfire mapping as a consequence of the planning legislation changes. Bush fires are one of many emergency classifications that DFES have to prepare for and thus are not given the clear singular focus required.

¹⁵ AVBFB response to Department of Fire and Emergency Services proposed legislative change, page 5 section 1.1.3

The Association believes the most suitable mechanism for creating a singular system for bush fire management is the establishment of a Bush Fire/Rural Fire Service as an independent agency. A Bush Fire/Rural Fire Service can bring all the disparate bodies in the outer metro, per-urbans and rural communities, into a single, coherent structure for managing the bush fire risk to our communities. The organisational focus of a Bush Fire/Rural Fire Service will be at the local level to ensure local government and their communities are resourced, supported and empowered to the greatest extent possible to protect themselves and build resilience.

Need for an independent structure

It has been well established by previous reviews that our capacity to protect the community from the ravages of bush fires is hampered by the current centralised model. That structure creates its own problems and makes their resolution intractable under the current emergency services system. An insight into the problem with the multi authority system is gleaned from the following excerpt out of the DFES Major Incident Review of the Lower Hotham and O'Sullivan Fires, 2015.

"... difficult to plan how best to utilise resources, as there was no single record of the different circumstances, deployment durations and fatigue management policies for all resources from different agencies and volunteer associations."

The same source informs us that the system is disjointed to an extent that authorities have trouble with the starting task of acting expeditiously and in concert to mobilise resources.

"Previous MIRs have recommended..."

...that all agencies engaged in bushfire response should develop expeditious procedures for the mobilisation of resources in support of other agencies (Parkerville).

This recommendation was made in response to a finding of the Parkerville review that the system to mobilise resources from other Local Government areas is cumbersome and could cause delays in mobilising inter-agency support. The absence of an integrated inter-agency system to identify and coordinate resource deployments for the Lower Hotham and O'Sullivan incidents meant that this continued to be an issue. At the regional level, the ROC did not have a single system to identify and mobilise resources from Local Government or P&W."

The repetition of phrases such as "single system" is common to reviews of the major bush fires in recent years and given this has been influenced by the departments resources capability to develop submissions that would support such a model, it is expected that this would be the outcome. This model is not in the interests of strong resilient communities.

It is a clear recognition of the problem inherent in our centralised control structure and its very real adverse effect on our state's capacity to protect the community from bush fires.

The overt need for a separate single chain of command has been veiled for some years by reports of progress toward greater interagency integration. There needs to clear understanding of the difference between a "Command and Control" model verses a community based "Trust and Respect" model.

Reports of such progress belie the reality that in very critical matters, progress has been unacceptably slow and some problems are not going to be resolved through voluntary actions by relevant authorities.

Despite assurances over a number of years that there is progress on this front, the recent SEMC report into the 2015 fires highlights the lack of progress on even basic matters.

"A common understanding of implementation of AIIMS should be agreed upon ... Inherently inefficient departures from AIIMS, such as more than one logistics unit, should be addressed immediately, and any residual differences in approach between agencies should be made explicit."

“DPAW and DFES to agree on the role and function of an Incident Controller ... and even on minimum duration that IC serves at an incident.” In regards to this point, the report as with the other reports, fails to recognise the existence of the bushfire services within local government and their expertise and ability to be a part of the decision making process. This is degrading and further demonstrates disconnect between that state agency and the largest fire fighting resource of the state. This further fuels the perception that volunteers and community are not valued.

Problems with the current system are further acknowledged in the same report as being:

- ineffective, inconsistent and confusing communication between agencies and with the community;
- agencies follow different procedures in declaring incident levels and issuing community warnings;
- staff capability variations due to different quantity and quality training;
- trust deficit between parts of agencies.

Another example of what further brings perception and fear is when comments made by the commissioner in Hansard , 25th June 2015, pages 3 and 4 in relation to disciplining volunteers and changing legislation, clearly demonstrates the commanding intent to demand control. This behaviour is contrary to community volunteerism and demonstrates the lack of respect for volunteers. Volunteers don't respond well to intimidatory behaviours, respect is something you earn not something you command!

Other matters can be found in past reports and do not require further repetition to make the point that a separate unified system under a single structure is required.

The problems identified through previous incidents are an indictment of the fundamental flaws in our system at present.

The problems are rooted in the current system, including the fact that the two key government agencies have different purposes, methods and cultures not amenable to readily being brought together into a single unified system.

“DFES is primarily an emergency services agency. It manages emergencies, including developing the capability of its workforce to respond to emergencies and supporting communities to prevent and mitigate hazard risks.

The role of P&W is quite different. It is a land management agency, primarily concerned with protecting and conserving the state's natural environment. Fire management is only one aspect of its land management responsibilities, including prescribed burning, working with the community to ensure bushfire preparedness, and responding to fires on P&W-managed land.”

(From page 61, DFES Major Incident Review of the Lower Hotham and O'Sullivan Fires, 2015)

This further highlights the cultural differences between Department of Fire and Emergency Services which works on command and control model bound by rules processes and procedures, and parks and wildlife who work with community and has fully integrated volunteerism into all their activities on a trust and respect model as volunteers are a critical part of their business.

An emergency situation demands a singular chain of command operating with a single set of rules for all those under their management. People engaged in an emergency situation must have clear lines of responsibility and communication to maximise operational efficiency and safety of all involved.

In a high pressure, limited resources situation, management teams must have the benefit of common rules for all to maximise resource effectiveness and hence our support for the AIIMS system to which local government bush fire brigades were one of the first to adopt in WA.

To achieve it in reasonable time requires a single structure that can make decisions that have not been made by agencies in a voluntary manner.

The most effective way to achieve the necessary outcome is for an independent Bush Fire/Rural Fire Service body with the power to manage agencies into taking the required steps similar to that of the NSW rural fire service.

How long can we wait for agency collaboration?

Despite many reviews over a number of years stating the same position on the need for a more unified system for tackling bush fires, and albeit progress in some aspects has been noted, overall progress has been slow in achieving such an outcome through voluntary collaboration between agencies.

“There were many examples of DFES and DP&W working well together, particularly where relationships were already established. DFES and P&W personnel commented that inter-agency relationships have improved over recent years. However, differences in the agencies’ culture, expertise and approaches constrained collaboration in some instances. Less than optimal collaboration sometimes impacted the effectiveness of the response to the incidents. It is difficult for organisations to find the optimal point of collaboration, but there are some positive examples that DFES and P&W can draw on.”

“WA does not have an integrated multi agency resource management system. There is no integrated way of identifying and tracking resources As a consequence, resource deployments were not always optimal and personnel on the fire ground were sometimes put at risk.”

(From page 56, DFES Major Incident Review of the Lower Hotham and O’Sullivan Fires, 2015)

It is unlikely that the overall aim will be achieved under current arrangements. Some of the problems in bringing about the desired level of inter-agency collaboration, inter-operability and co-ordination appear to be intractable under the current authority system.

This was effectively acknowledged in the SEMC report on the 2015 fires:

“Some improvements proposed by previous reviews are inherently difficult to achieve, not least because they require the participation and co-operation of parties other than the two principal state fire combat agencies.”

“Complex issue of organisational remit and culture have also to be confronted.”

The reality is that the two main government agencies admit that they are incapable of creating the system that will maximise our capacity to protect communities from bush fires. The involvement of local government adds to the complexity but should not be used as a scape goat for failure by the two government agencies, rather than seeing this as an opportunity to empower them at the local level and deal with the issues at hand.

Attempting to bring the two agencies together through the Interagency Bushfire Management Committee will not work as the Committee has no ultimate authority to impose requirements on the agencies. It is also noted that the largest agency that provides the state with approximately 80% of its bushfire resources, Volunteer Bush Fire Brigades via their association do not have any representation on that committee, so there is no “buy in” with the decision making process.

Overcoming these problems can only be achieved by a single bush fire command structure such as a Rural Fire Service authorised to enforce requirements upon agencies for the greater public interest and thus over ride sectional interests that are impeding our current bush fire management capacity. This requires action at the political level by the government and Parliament, action that has not been taken up to now to the detriment of our bush fire management capacity.

Community safety demands that such action is taken immediately rather than allow our bush fire fighting capacity to continue to be diminished in favour of organisational industrially controlled interests.

Prescribed burning effort must increase and be sustained

Prescribed burning is an essential element of bush fire mitigation and risk management. The need for large scale prescribed burning on an annual basis was established long ago and has been duly acknowledged in all prior reports. There was a period post Dwellingup fires that great work was undertaken in this space resulting in a decrease in large fires. As the prescribed burning reduced as a consequence of funding and resource cuts the number and size of fires have increased.

The benefits of prescribed burning in fighting a large bush fire are acknowledged in reports, including the most recent DFES MIR into the 2015 fires.

The report noted that the fire went into the Hakea forest where prescribed burning had taken place three years ago and that the fire stalled in that area. Conversely, the bush fire breakout escalated quickly through unburnt fuel areas that had not been burnt for more than 20 years.

It is acknowledged within the DFES MIR report that:

“Fuel loads are a key determinant on the incidence and intensity of bush fires.”

“Prescribed burning is the most effective preventative measure to manage loads and mitigate bush fire impact.”

“Prescribed burning is recognised as an effective method to manage fuel loads and reduce the size and intensity of bush fires.”

“The benefit of young fuel loads is clearly evident in the O’Sullivan fire. The southern front of the fire was stopped in its track when it reached the 3 year old fuel loads of the 2012 Boddington fire scar.”

Despite the wide spread recognition of the necessity for prescribed burning, our efforts have been on a downward trend since the 1970s. The annual prescribed burning effort is approximately half of what was done until the 1980s and half of what is required.

The point is adequately illustrated by a graph on page 17 of the DFES MIR into the 2015 fires. It shows the annual prescribed burning effort has roughly halved since the 1970s, a situation that is likely to be contributing to the large scale of bush fires experienced in recent years.

The graph shows that annual burning averaged around 300,000 hectares through the 1960s and 1970s. This period followed the Royal Commission into the 1961 Dwellingup fire that was strong on the need for prescribed burning. The decline in effort begins in the 1980s with the annual burning falling to roughly 200,000 ha by the 1990s and continuing to fall further since then to around 150,000 ha on average since 2000.

This state of affairs is not acceptable as it produces an unnecessarily higher level of bush fire risk for our communities. DPAW is the key state agency with responsibility for prescribed burning in our vast state forest and other conservation areas.

It has a poor record over recent years with respect to meeting its annual prescribed burning target, a target that is already too low which could be contributed to the decrease in resources and funding over the years.

In 2013-14, it undertook this task on less than 80,000 ha and was pleased to report that last year, in 2014-15, it had almost doubled the effort to nearly 150,000 ha. This performance is not good enough and cannot be allowed to continue and needs to be resourced appropriately. DPAW’s regular failure to meet its annual targets has seen an announcement made by government to inject funding from royalties for regions this year to see if this trend can be reversed?

DPAW’s prescribed burning must be made accountable by way of reporting to a higher authority that will ensure that targets are met, or very close to it, and that funding is spent on that task. There is

opportunity for government to revisit their policies to ensure that other measures can be utilised outside of traditional internal management systems to boost capacity to get more resources of the ground. This principle could also be used in the suppression area which would also boost capacity.

Such an authority could be a Rural Fire Service that could monitor and direct DPAW's effort to ensure this critical task is undertaken properly every year to maximise community protection.

IMTs – insufficient resources and local participation

Problems with Incident Management Teams have been established in prior reviews and further restated in the recent reports into the Lower Hotham and O'Sullivan fires.

It is most unlikely that all the problems recognised in those reports had been overcome by the time of the Waroona fires.

The DFES MIR 2015 Fires report states clearly and alarmingly that with respect to managing the firefighting effort that:

“Ultimately, the state did not have sufficient resourcing to manage two large concurrent fires.”

This is recognition of a very critical problem that already exists. Warnings of hotter and longer summers in the future, creating longer and more dangerous bush fire seasons, means our resources may be stretched even further. This is supported by the constant complaints from local government personnel and bush fire volunteers that they are not given equal opportunity to obtain the training required to support this void in the system.

As previously stated there is also opportunity for the state to step outside the box and look at other opportunities that exist to build capacity in the response area across the state in partnership with local government and the private sector.

The DFES report states that the O'Sullivan fire was managed better and operations were run more efficiently due to the full IMT contingent that was in place. By contrast, management of the Lower Hotham fire was less effective and encountered various problems due to insufficient resourcing of that IMT with personnel numbers at less than half of what was operating at the O'Sullivan fire. Is this due to the current “rank based approach” rather than the capable and competent community up model?

The inadequate resourcing of the Lower Hotham IMT meant that problems were encountered in many aspects including co-ordination of the response, managing the response in a reactive manner as there was not enough resourcing to undertake forward planning, poor management of crews and resources contributing to a negative experience by those involved in that fire fight, including the volunteers.

This situation also meant that BFBs were operating on a semi-independent basis, taking the initiative in the absence of direction from IMT. The situation also created communication problems between crews and IMT, as well as IMT communication up the chain of command.

Other problems encountered due to the under resourced IMT included volunteers arriving without command being aware of their presence, crews waiting for hours for briefings, sector commanders unaware of all deployed crews, and volunteers having to manage their own logistics, including catering. Nonetheless, all those in the Lower Hotham IMT should be applauded for doing their best and ultimately managing the operations well with limited resources.

The report also noted:

“As has been acknowledged in previous reviews of major fires, it is critical that key local personnel are involved within the IMT for the duration of the incident.”

Local knowledge can make a significant difference and thus must be embedded in IMTs in a genuine, functional leadership role. Local personnel, both career and volunteers, must get access to training including participation in multi-agency IMT exercises.

To ensure we have a sufficient pool of personnel prepared for IMT roles, and to include local personnel in the IMTs, we have to increase the pool of trained personnel amongst volunteer, career, local government and private sector to ensure we can manage multiple large fires if that case should arise.

Agencies have focussed largely on their own internal resources which has left the state short of resources overall. A Rural Fire Service will have the wider focus to ensure that resource planning looks at the outcome for the state, not just for individual agencies.

Harmonising personnel rules for emergency situations

Another source of operational inefficiency and an impediment to improving our fire fighting capacity is the divergence in human resource management rules amongst the various employer groups involved. IMTs face significant challenges in managing the fire fight to which is added the complexity of having to incorporate different HR requirements amongst the crews and even the IMT itself. Harmonising rules around the management of people fighting a major bush fire will make the overall management task less cumbersome and create operational efficiencies.

We cannot allow the situation to continue whereby personnel in a fire fight, even within IMTs, are compelled off the job because they work under different shift rules to their peers, even where the individuals are willing to adopt their peer's standards and stay on a shift longer.

People who happen to be union members, including their representatives, understand the bush fire risk like anyone else. They understand that the urgent need to protect communities in emergency situations, where lives and property are at risk, must over ride rules that work well at other times but are an impediment in times of an emergency.

The Association is confident that unions covering people in the emergency services sector will do their best in helping create the best bush fire fighting capacity we can build together as a community. A new Rural Fire Service, without any entrenched interests or past legacies, can develop a unified system delivering a more efficient, unified personnel management system to apply under emergency circumstances.

Emergency effort contingency and recovery fund

An emergency situation is a time of great risk to people or property. It is time when great effort is dedicated by emergency service personnel to protecting those at risk be it an individual in danger or a whole region with multiple communities threatened by raging bush fires.

Emergency situations like a large bush fire do not require "*on site bean counters*" to inject financial implications into our firefighting effort. The task is to throw whatever resources are available to defeat the fire and protect the community; sadly in recent years this philosophy has been lost and could be a contributing factor to why we are getting larger fires and also why the restoration of damage done in the fire suppression effort is not being reinstated as traditionally has been the case. The Waroona shire oval is a recent example of this.

Financial considerations cannot be permitted to hinder a firefighting effort. There is a need to review state policies around the access to the wildfire account by local governments and rules that have been causing unnecessary duress which is resulting in the community resilience being eroded at the local level. The cost of damage from an out of control fire will always be far greater to the government directly, as well as to the affected communities, than the cost of a fire fight.

In order to avoid the bureaucratic trap of inaction for fear of a budget blow out, in a situation where no such fear should ever exist, government should have an Emergency Contingency Fund of \$30 million to cover the added costs due to an emergency situation and assist the local governments in any restoration works as a consequence of the fire and to assist in the recovery phases with activities that

are not supported by any other grant systems. This is and continues to be an issue that the community needs support with.

Such a fund would provide assurance for all involved in an emergency that people managing the situation are providing whatever resources are needed without any denial of resources driven by financial considerations.

It is likely that only a small portion would be used in any year meaning. The annual topping up of the fund would become part of ordinary costs after the government allocates the initial sum.

Going in harder, earlier with a single command structure

The establishment of a contingency fund would make it clear that government and the community expect management to tackle fires harder earlier to minimise the risk of small fires turning into major catastrophic events such as those we have seen.

Currently the practice is to fight fires with a managed effort until such time as the fires require greater effort and are escalated to the next tier of emergency. There is a perception that our firefighting efforts are even hampered by internal agency deliberations over what level of fire emergency should be declared in a situation.

Our collective aim should be to minimise, if not eliminate major bush fires that emerge from smaller fires that are tackled for an extended period by limited resources. Under the single management of a Rural Fire Service, incidents will be reported up the chain of command immediately and updates provided frequently. Fires that are not contained and controlled in a short time frame will be tackled with an increased level of holistic community resources and effort more quickly thus minimising the risk of a minor fire turning into a major fire with devastating consequences for the community. There is an opportunity to rebuild the community resilience model that worked effectively and efficiently in the past that embraced the whole of community.

It may well be argued that the Waroona fires could have been contained to a smaller scale with either more prescribed burning or a greater response undertaken more urgently. Whilst those points may be seen as debatable by some, it is surely clear that the current system of allowing a fire to be fought with limited resources until it is out of control cannot be allowed to continue.

It will continue if we persevere with the current centralised system for managing bush fires and again underline the need for a consolidated system under a Bush Fire/Rural Fire Service structure.

Facilitating better volunteer representation

DFES, DPAW and Local Government make a good effort to engage with volunteers. However, due to the official links between those governmental authorities and volunteers, there are aspects to their relationship that require an intermediate representative body to ensure the interests of the volunteers is protected.

The Association of Volunteer Bush Fire Brigades has undertaken that role for 30 years. The reforms that have impacted emergency services over the recent past, including BFBs, have resulted in significantly greater demands on the Association as a partner in the state's emergency services network and a representative body for volunteers.

The very modest government support for the Association puts a severe limitation on our capacity to meet all demands thoroughly. The continuing process of reform and greater volunteer engagement will stretch the Association's capacity even thinner under current levels of support. The government and its agencies place high demands and expectations on the Association, they duly note the importance of volunteer engagement through representative bodies such as the AVBFB yet their financial support for the Association invites doubt over their position vis a vis the Association.

It has been a routine matter for several decades for governments to provide reasonable funding to community groups to undertake representative roles in almost every area of activity with a government linkage. Funding for such organisations is generally commensurate with the level of importance given to their sector by governments and their agencies. Funding would also be expected to reflect to some extent the task they are undertaking for the benefit of their sector and the community at large, including the government.

The current level of support for the Association, equivalent to funding one part time mid tier government employee and modest overheads, without an office space, does not by any measure reflect reasonable support for an organisation representing an estimated 26,000 volunteers in more than 560 brigades spread across the vast distances of our state in a sphere as critical as emergency services.

The government's stated support for volunteer BFBs and respect for their contribution needs to be demonstrated by increased support for their representative body, the AVFBB. The increased support should be agreed to and provided immediately thus allowing the Association to initiate its own processes to establish a new structure with an improved representative capacity.

The Association envisages that a minimum of four times the amount of the currently inadequate annual funding would be the minimal amount that would constitute a respectful level of support. This would enable the Association to employ much needed additional staff, establish a suitable office and meeting space, increase membership engagement through more regional visits and Association supported activities, and improve our contribution as a stake holder in the emergency services sector.

Conclusion

There is an immediate need for clear reform and issues raised throughout this report need to be given very serious consideration to halt a concerning trend in the volunteer and community resilience fields that will have a major impact on the triple bottom line principles of all tiers of government into the future. The following key recommendations should be given priority in conjunction with the other issues raised in this document.

We recommend that the ESL funds are managed by an independent body or a board that has equal representation from all those who benefit from it. That the funding rules be expanded to enable local governments to have access for the full prevention preparedness response and recovery elements. That strategic planning and five year vehicle and equipment program plans be developed by local governments at the local level to ensure community risk and capacity is addressed and this is used as the basis of the state risk profile.

The creation of a separate Western Australian Local Government Rural Fire Service (RFS), preserving the Bush Fire Brigades history and image, and responsible for all fire management in rural and peri-urban areas where bush fire brigades currently prevail. This body is managed by a board of management and chief executive officer that has a community volunteer background and an understanding of community resilience with a holistic approach to emergency management prevention, preparedness, response and recovery.

That adequate funding and resources be redirected from the ESL to enable the body to develop fit for purpose vehicles and equipment in a meaningful and engaging consulting manner with bushfire volunteers and tailor training to suit the end user in the field along with all necessary support services at the local level in partnership with local government.

The aim of the RFS will be firstly, as far as possible, to prevent large, damaging bushfires on private land and secondly to provide a cost effective and efficient fire fighting service in rural areas that works in liaison with Local Governments and builds local capacity who's values are built and based on trust and respect with their key role being liaison and support to volunteers, local governments and their communities.

Key responsibilities of the RFS will be to ensure the responsible management of land vested in various government agencies.

Government must ensure that changes to the Bush Fires Act currently being contemplated do not proceed and separate acts be retained to ensure that services are not compromised or complicated. That any amendments to the bushfires act, are reflective of the key focus areas of the new body and enable the service to attend and deal with any community emergency and risks identified through the local emergency management process. The need for a quick and effective resolution of the crisis in an emergency, in particular the creation of a Rural Fire Service needs to be upheld.

Government must provide sufficient financial and resource assistance to DPaW to enable them to meet an annual fuel reduction target of about 250,000 ha. This will require more permanent field staff and resources across the state.

That state policies be reviewed with the wesplan fire being split to rural and urban fire. Policies around emergency expenditure are review. Procurement and operational policies be reviewed that embrace outside the box innovation and resilient with a whole of community approach to all business areas.

The state policies are changed to re-empower local communities and resilience and develop state capacity in partnership with local government and the private sector.

That a funding and resources grant be allocated to the association of volunteer bushfire brigades wa(inc) to enable the development of identification and benefits card in consultation with WALGA and Department of Fire and Emergency Services.

That grant funding support for the association of volunteer bushfire brigades wa(inc) to increase capacity to represent the volunteers of Western Australia be increased by four times the current amount.

The association will work with government through this process to develop a community based, volunteer culture model that embraces sustainable volunteerism into the future.

Australian Manufacturing Workers' Union

(Registered as AFMEPKIU)



16 February 2016

Euan Ferguson
Special Inquirer
Waroona Bushfire Special Inquiry

Via email: WaroonalInquiry@semc.wa.gov.au

Dear Mr Ferguson

SPECIAL FIRE INQUIRY SUBMISSION

Thank you for the opportunity to make a submission to the Waroona Bushfire Special Inquiry. The Australian Manufacturing Workers' Union represents many members who live and work in and around the fire zone.

We would like to draw your attention to an incident where Alcoa bussed 80 employees through a restricted fire zone to the Alcoa Wagerup refinery. We believe our members' safety was recklessly and needlessly put at risk and sheer luck prevented a potential tragedy.

The details are included in the attached press release. We have also attached a video that was taken covertly by a member fearful for their safety while travelling on the bus through flying embers just metres from roadside flames.

To date we have had very little success in getting to the bottom of this matter. We respectfully suggest that this incident deserves thorough investigation under section 1 of your Terms of Reference, particularly subsections (b) and (d).

In particular we believe our members and the Western Australian public should know at least:

1. Who within Alcoa was responsible for the decision to order the bus to proceed through the restricted fire zone;
2. Why was the bus allowed to proceed through a police roadblock and who, if anyone, from the WA government emergency services authorised this;
3. What was the interaction between Alcoa and WA government emergency services leading to the incident, what factors were considered and what decision-making process was used to arrive at the decision to allow the bus to proceed;

4. Has Alcoa breached any laws, health and safety related or otherwise, by requiring non-essential personnel to attend work in a fire zone; and
5. What should be done in future to ensure private companies do not feel as though they can justify putting production and profit ahead of the lives of employees?

I would be happy to attend the inquiry in person on behalf of our members. I can also contact members who may give accounts of their experience. However, we are very wary of retaliatory action towards our members from a company that has a record of antagonism toward union activities, so request at the outset that any evidence from workers currently employed is taken on a strictly confidential basis.

We strongly believe this incident deserves a thorough investigation. We must know if human error or systems failure was responsible. Alcoa's management and the State emergency services must be held accountable for any respective failures.

We are fortunate we have the opportunity to review this incident without injury or loss of life; however we also must seize the chance to learn from what could have been a catastrophic mistake.

We thank you for considering our submission and stand ready to assist in whatever way we can.

Yours sincerely



Steve McCartney

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Public inquiry into January 2016 Waroona fire

Submission from the Australian Veterinary Association Ltd



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Public inquiry into the January 2016 Waroona fire

Submission from the Australian Veterinary Association Limited

4 March 2016

The Australian Veterinary Association (AVA) is the national organisation representing veterinarians in Australia. Our 8500 members come from all fields within the veterinary profession. Clinical practitioners work with companion animals, horses, farm animals, such as cattle and sheep, and wildlife. Government veterinarians work with our animal health, public health and quarantine systems while other members work in industry for pharmaceutical and other commercial enterprises. We have members who work in research and teaching in a range of scientific disciplines. Veterinary students are also members of the Association.

Executive summary

This submission relates primarily to the following specific terms of reference:

1. (b) The effectiveness of emergency management plans and procedures
1. (h) Livestock and companion animal management and welfare issues
3. The need for further reform

Veterinarians consider animal management and welfare issues in disaster extending beyond companion animals and livestock to wildlife. Dealing with injured wildlife is an essential component of any animal welfare emergency response, particularly in relation to bushfires that tend to destroy large tracts of wildlife habitat.

The Waroona bushfire which began on Tuesday 5 January 2016 clearly highlighted the inadequacies of the planning and preparation arrangements for managing the animals affected by this disaster. Veterinary practices in and around the fire affected areas responded immediately to meet the needs of affected animals and displaced people who had animals with them that required veterinary attention. However there were problems for veterinarians and others trying to access animals in need, and returning to the area after obtaining necessary supplies to assist animals. There were coordination and communication problems among those responding to animals' needs, no responsible agency to manage the response, and a free-for-all approach by some voluntary responders that went unchecked.

There is a clear need for Western Australia to catch up to all the other Australian states, which have established effective emergency plans for animal welfare that are now tried and tested. There is no excuse for continuing to ignore this important aspect of emergency planning. The *National planning principles for animals in disasters*¹ set out the rationale for including animals in disaster planning:

- More than half of the Australian public own pets. Previous disasters have shown that animals must be accounted for in order to ensure human safety. The Royal Commission into the 2009 Black Saturday bushfires in Victoria found that people returned to the fire zone to attempt rescue of their animals. The Queensland Flood Commission of Inquiry found that pet owners were reluctant to evacuate without their animals.
- The direct cost of livestock losses in the Black Saturday fires is conservatively estimated at more than \$18 million. In addition to direct economic losses, the psychosocial wellbeing of individuals and entire farming communities is severely undermined by the loss of animals and livelihoods.
- The community has a strong interest in the fate of wildlife in disasters. After being rescued from the fire ground following the Victorian fires, more than 1.3 million people watched the video of Sam the Koala being cared for. The Victorian Association of Forest Industries estimates that millions of native animals and birds

¹ National Advisory Committee for Animals in Emergencies. 2013. National planning principles for animals in disasters. Available: http://www.ava.com.au/sites/default/files/AVA_website/FINAL%20National%20Planning%20Principles%20for%20Animals%20in%20Disasters.pdf

were killed during the 09 Victorian fires, either in the event itself or from starvation or predation following the event. Integration of wildlife into disaster management planning (including threatened species) would enhance community and environmental recovery post-disaster.

The *National planning principles for animals in disasters*¹ also provide a complete set of achievable, best-practice guidelines for animal welfare emergency plans that take into account the experience of multiple jurisdictions in the past 20 years, and aligns with the 2011 National Strategy for Disaster Resilience.

Any planning process requires adequate resourcing, and plans must be periodically reviewed. The WA Government must ensure that the planning process takes place, and is adequately resourced over time.

Recommendations

1. The WA government establishes a statewide plan to manage animals and their welfare in emergencies following the *National planning principles for animals in disasters*, that:
 - establishes a lead response agency (preferably the Department of Agriculture and Food WA)
 - is prepared in consultation with supporting and cooperating organisations
 - addresses the welfare needs of companion animals, livestock, horses and wildlife
 - includes veterinary input and addresses the need for veterinary participation in responses, and
 - is adequately resourced and maintained.
2. All local government emergency response plans include details of how animals will be managed in emergency scenarios.
3. A veterinary emergency response reserve is established by the Department of Agriculture and Food WA (DAFWA) to maintain readiness in the event of the animal welfare response plan being activated. This readiness must include emergency response training for volunteers and regular updating of veterinary skills such as treating burnt wildlife. The work of the veterinary reserve must occur in close cooperation with local veterinarians and practices in disaster-affected areas.
4. Arrangements are put in place to ensure authorised veterinarians and other animal welfare officers can access injured animals as soon as possible to minimise suffering.
5. The state animal welfare response plan includes contingency planning for warehousing and distribution of donated goods including S4 medications (which have specific regulatory controls attached), animal feed, and pet care accessories.
6. The WA government establishes an education program for animal owners to help them understand the need for planning and preparation for their animals as well as their human family in the event of a bushfire or other disaster.

What happened

There has been substantial involvement of local veterinary practices in caring for animal welfare during and after the Waroona bushfires. Much of this work was completed on a pro bono basis with practices meeting the cost of staff and veterinary supplies where necessary. Both Waroona Veterinary Clinic and Murray Veterinary Services were supported by significant crowdfunding and donations in their efforts to work pro bono, mostly arising from Facebook communication. More than a month after the crisis, practices were still treating burns on pets, livestock and wildlife, and still seeing new untreated cases.

Waroona Veterinary Clinic remained undamaged throughout the incident, and was the home base for many of the response activities that took place from the outset – caring for pets left behind when owners were evacuated, euthanasing or treating livestock, wildlife and horses. Other veterinary practices such as Murray Veterinary Services also became involved, as did volunteer shooters and other volunteers.

On Friday 8 January, emergency supply delivery arrangements were made with Provet, WA Veterinary Emergency Responders and various other groups and hospitals. The volume of donations arriving at Waroona Veterinary Clinic from a wide range of sources soon became challenging to manage.

The issue of well-meaning donations of S4 drugs through non-licensed channels created a number of problems at sorting and collection points. On 13 January, veterinarians were called to the donations collection centre to remove S4 drugs, which can only be legally handled by veterinary and medical personnel, out of general donations. AVA members also heard about a self-declared veterinary nurse offering non-steroidal anti-inflammatory drugs (NSAIDs), enrofloxacin (an antibiotic) and Lethabarb (euthanasia solution) to volunteer carers without veterinary consultation.

By 8 January, there was discussion on Facebook and via email about setting up at least 3 pet triaging stations on the oval or in the veterinary clinic carpark. They were convinced that it was a waste of time to duplicate services when there was a functional veterinary hospital in town that was fully operational.

DAFWA were planning their response on 9 January but were still unable to access the lockdown zone. The following day, DAFWA coordinated with local veterinarians and the government response to animal welfare began. RSPCA WA responders were allowed into Waroona on 11 January, and also coordinated with the local veterinarians. It became apparent that there were many instances of duplicate calls for help between Waroona Veterinary Clinic and RSPCA. A special application needed to be made to allow RSPCA responders to visit Yarloop on 12 January.

By 13 January, veterinarians were assessing cattle to issue fitness-to-travel certification to Harvey Beef which had offered to support salvaging injured cattle via slaughter. Unfortunately, these injured cattle were delayed from reaching the abattoir for a significant period of time due to road closures and roadblocks. This caused a major animal welfare concern through distressed injured cattle being contained in close quarters unnecessarily.

A number of instances were reported to the AVA where members expressed concerns about access restrictions impeding efforts to deliver animal welfare services. These are rightly established to protect human safety, but there needs to be a pre-planned and structured approach that clarifies responsibilities and procedures to address both human safety and animal welfare needs.

DAFWA has a response strategy in place for livestock in emergencies. DAFWA provided this assistance for the Waroona fires as it had in previous fires where significant numbers of livestock were affected. Once the response teams arrived, this worked reasonably well, and there was close liaison between DAFWA officers and local veterinarians to respond to the needs of livestock

The treatment of horses was undertaken mostly by local veterinarians. It was unclear which organisation was caring for them, and so horses were taken to local veterinary practices for treatment.

Pets were cared for by RSPCA and local veterinarians, while rescue organisations and veterinarians attended to injured wildlife.

There was considerable confusion among the many organisations involved in responding to animal welfare, and also in the official emergency management response agencies, about who was responsible for what. Many government response agencies had not even considered animal welfare until contacted by a local veterinarian.

The moment the fires started there was a social media groundswell of interest in knowing what was happening with burnt and injured animals. Veterinary practices received many calls from members of the public wanting to make donations to injured animals, but there was no organisation to accept and remit these donations. By Monday 11 January, Murray Veterinary Services and Murdoch University Veterinary Hospital had 10 horses in care, and it was calculated that the cost of treating these animals in medication, feed, consumables and bandaging alone (without accounting for veterinary time or services) would be close to \$45,000. The owners were not in a position to pay, but there was an overwhelming community expectation that the horses would be given the care they needed. Within two and a half days, crowdfunding was established and had reached the \$45,000 target. This gave rise to administration problems for Murray Veterinary Services as the donated money needed to be handled separately to the working account to avoid accusations of profiteering or misappropriation. In the end, the local MLA Murray

Cowper, agreed to co-sign for the establishment of a new account, 'Yarloop Fire Equine Survivor Fund'. Murray Veterinary Services and Murdoch University Veterinary Hospital then submitted invoices for services rendered to Mr Cowper, allowing a complete audit trail of the expenditure of the donated funds. There is now a question about what to do with any remaining funds in the account after all invoices have been paid.

Veterinary hospitals found dealing with donation of medications and supplies a time-consuming and stressful task, and one that resulted in large amounts of wastage. There were a number of organisations on social media claiming to be accepting supplies from the public. The best and most coordinated response was by practices working directly with the veterinary wholesaler Provet. This meant that the exact supplies that were needed were supplied. Veterinary clinics and drug companies wanting to donate contacted Provet, discovered what was needed, and donated these supplies via Provet (which has a highly efficient distribution network already in place). This prevents the large amount of wastage and unnecessary staff time taken up to manage donated goods.

With the level of care required by burnt animals, veterinary services rapidly found themselves under-resourced. Willing volunteers proved easy to find, and it was a matter of coordinating them effectively and ensuring each volunteer had a proper safety induction. The main insurer of the veterinary profession, Guild Insurance, provided cover as soon as the request for help was made. The local hospitals then had to develop a waiver form, safety induction process and volunteer information sheet.

Lessons learned

State emergency plan for animals in emergencies

The AVA participated in the WA 'Animals in Emergencies' working group' hosted by DAFWA between 2012 and 2014. Unfortunately this process stalled after that, and there is still no plan to address animal welfare in emergencies in WA.

Ensuring there is adequate planning and preparedness for disaster management is clearly a responsibility of government, and in the case of bushfires, it is a state government responsibility. Non-government agencies can play a designated support role, providing that resources are available to fulfil the role. The availability of resources is a matter that should be dealt with in the preparation of emergency management plans.

There is now a clear rationale from research and emergency responses in recent years for the welfare of animals being critical to emergency management plans.

Livestock losses in a selection of ten disasters in Australia between 1967 and 2011 are conservatively estimated at approximately 1.6 million animals². Improving disaster preparedness is likely to significantly reduce animal casualties resulting in improved animal welfare outcomes.

In addition to the avoidance of economic losses associated with livestock losses in disasters, interviews with survivors of a South Australian fire found that the loss of livestock represented a "severing of a link between the family and its farming history"³. This underlies the risks to community resilience from failure to integrate animals into planning.

The loss of pets in Hurricane Katrina in the United States of America was found to be a greater contributing factor in human psychopathology than the loss of homes⁴. This suggests that failing to recognise the interdependency relationship between humans and animals can result in significant human welfare impacts.

Of the witness testimonies provided to the Royal Commission into the Black Saturday Victorian bushfires, over one-third included reference to animals. Testimony included references to residents who died when they attempted evacuation with animals. Following the Royal Commission's recommendation that animals be integrated into

² Coll, E, *The Case for Preparedness: Quantification of Production Losses due to Livestock Deaths from Disasters in Australia*, Prepared for the World Society for the Protection of Animals, 2013.

³ Background briefings on emerging issues for fire managers from AFAC and Bushfire CRC, *Fire Note / Exploring the Bushfire Experience from a Domestic Perspective*, Issue 40, October 2009.

⁴ Hunt, M, Bogue, K & Rohrbaugh, N, Pet Ownership and Evacuation Prior to Hurricane Irene, *Animals* 2012, 2, 529-539.

emergency management planning in order to promote human safety, the Victorian Emergency Animal Welfare Plan was developed.

There are several state emergency plans in Australia that have been tested in real emergencies, and have proven their value. The Victorian and New South Wales plans are both good models to follow.

The responsibility for the overall response for management of animals in disaster emergencies should fall to one government agency. In relation to animals, DAFWA is well placed in terms of experience and emergency response planning and management for animal diseases. DAFWA already has the responsibility to coordinate the response for farmed livestock, along with considerable experience doing so. DAFWA also administers the *WA Animal Welfare Act 2002*. It makes sense that DAFWA is the lead agency for coordinating the overall response for animals affected by bushfires or other disasters.

Disasters and emergencies are usually managed by one of the Hazard Management Agencies prescribed in the *Emergency Management Act 2005*. For fires and floods this agency is the Department of Fire and Emergency Services supported in most cases by local government, which may provide evacuation accommodation and other services even in a state-managed emergency like a bushfire. Local government emergency planning must also take animals into account to respond adequately to community expectations.

Recommendation 1. The WA government established a statewide plan to manage animals and their welfare in emergencies following the *National planning principles for animals in disasters*, that:

- establishes a lead response agency (preferably the Department of Agriculture and Food WA)
- is prepared in consultation with supporting and cooperating organisations
- addresses the welfare needs of companion animals, livestock, horses and wildlife
- includes veterinary input and addresses the need for veterinary participation in responses, and
- is adequately resourced and maintained.

Recommendation 2. All local government emergency response plans include details of how animals will be managed in emergency scenarios.

Veterinary volunteers

The management of veterinary volunteers is often problematic during natural disasters. The WA state plan to manage animals and their welfare in emergencies must include provisions to secure and manage the services of veterinary volunteers. As demonstrated by the Waroona bushfires, local veterinary infrastructure and expertise are very important to an effective response. Any formal arrangements relating to veterinary volunteers and state plans must take these resources into consideration.

There are currently no arrangements for veterinary volunteers in WA response plans. There is a grassroots movement called WA Veterinary Emergency Responders set up in December 2015 legal entity structure. There are a number of different approaches to how veterinary volunteers are incorporated into state emergency response plans:

- In New South Wales and Victoria, the Australian Veterinary Association is a supporting organisation listed in the plan. The association's role is to facilitate communication with the veterinary profession, primarily to gather and share information with response agencies on veterinary volunteers willing to participate in the response. These volunteers are contacted, assigned and managed by official responding agencies as 'authorised volunteers'.
- In South Australia, the lead agency with responsibility for animal welfare is the Department of Primary Industries. The Department has outsourced veterinary response to a dedicated entity, SA Veterinary Emergency Management (SAVEM). The government funds the training and maintenance of a dedicated veterinary reserve through SAVEM, which is managed by veterinary officers employed by the Department.
- In Tasmania, the Department of Primary Industries, Water and Energy, has just established a veterinary

reserve that is managed by the Department. Some initial training for veterinary reserve volunteers in bushfire response has recently been funded by the Department.

An advantage of an ongoing veterinary reserve is that the reserve could also then easily be mobilised in the event of an emergency animal disease outbreak. This model could work well in WA providing DAFWA has the resources available.

Recommendation 3. A veterinary emergency response reserve is established by the Department of Agriculture and Food WA (DAFWA) to maintain readiness in the event of the animal welfare response plan being activated. This readiness must include emergency response training for volunteers and regular updating of veterinary skills such as treating burnt wildlife. The work of the veterinary reserve must occur in close cooperation with local veterinarians and practices in disaster-affected areas.

Access to animals

AVA members have often reported access problems to emergency-affected areas. There needs to be a system whereby authorised veterinarians and others able to address animal welfare concerns are able to access these areas as soon as it is safe to do so. This needs to be set out in all the relevant emergency plans. It requires a common understanding with the frontline responders about the system in place, who is responsible for what, and who has authorisation (and potentially the appropriate training as well) to access affected areas. It needs to be included in emergency response training for all agencies.

Recommendation 4. Arrangements are put in place to ensure authorised veterinarians and other animal welfare officers can access injured animals as soon as possible to minimise suffering.

Donations

In the AVA's experience, the management of donated veterinary supplies, including prescription drugs, is a key consideration for an adequate state animal welfare response plan. This is often a recurring theme that needs good planning ahead of an emergency, and effective communication during it as to where to send donations, and how to gain access to goods for those responding to the emergency. Special care needs to be taken in relation to donations of prescription medication. The best approach would be to determine and set out arrangements for this in advance in the state animal welfare response plan.

Recommendation 5. The state animal welfare response plan includes contingency planning for warehousing and distribution of donated goods including S4 medications (which have specific regulatory controls attached), animal feed, and pet care accessories.

Owner responsibility

The ultimate responsibility for animal welfare lies with the owner. This is a message that is often forgotten by citizens thinking about planning for disasters like bushfires, but good planning and execution in the event of an emergency will mitigate the need for government and non-government interventions to protect animal welfare, at least for owned animals.

Recommendation 6. The WA government establishes an education program for animal owners to help them understand the need for planning and preparation for their animals as well as their human family in the event of a bushfire or other disaster.



PUBLIC INQUIRY INTO THE JANUARY 2016 WAROONA FIRE

**SUBMISSION BY THE AUSTRALIAN WORKERS' UNION,
WEST AUSTRALIAN BRANCH,
INDUSTRIAL UNION of WORKERS**

March 2016

AWU Submissions to the Public Inquiry into the January 2016 Waroona Fire

Background

The Australian Workers' Union, Industrial Union of Workers, West Australian Branch ("AWU") represents bushfire fighters employed across the State by the Department of Parks and Wildlife ("P&W"). The AWU appreciates the opportunity to make these submissions on behalf of AWU members who have a wealth of knowledge and experience in fighting bushfires and can provide direct insight into the capabilities and limitations of P&W.

The AWU submissions and comments will be limited only to the Union's area of industrial coverage. The Union intends to make brief submissions on the first terms of reference and more detailed submissions on the third.

The AWU has been actively campaigning for a considerable number of years to improve the capabilities and resources of P&W in bushfire fighting and prevention. Many of these submissions have been made to previous inquiries. There have been a number of improvements but other areas, particularly around manning and resourcing still require further attention. The AWU main submissions are intended to enhance P&W and hence the State's capability to effectively respond to major bushfires.

Term of Reference 1 - The response to the January 2016 Waroona Fire.

The AWU is concerned at some of the commentary already made by sections of the media, public, politicians and industrial organisations that seeks to apportion or shift blame for the effectiveness of the response. The Union is concerned this inquiry will provide such commentators, many of whom have little or no firefighting experience, a platform to continue such unwarranted and often inaccurate commentary.

The AWU has the greatest respect for the efforts of all the men and women from the various Agencies, community and volunteer groups involved in the extraordinary task of fighting bushfires.

The AWU asks the Inquiry to view the decisions made, at all levels, engaged in the bushfire fighting efforts, through the eyes of those making difficult decisions under the pressure of the moment and often with limited information available. It is easy to make comments and criticism with the full benefit of hindsight. Such criticisms are disrespectful to the hard work of firefighters and damaging to their morale.

This inquiry has the opportunity to recognise the efforts of firefighters whilst still providing positive improvements for the future prevention, response and recovery efforts.

Term of Reference 3 - The need for further reform.

The AWU submits it is primarily the State Government's role to adequately fund and resource the various bushfire agencies particularly in relation to fires in parks and other crown land. There are a number of options for funding improvements but that is beyond the scope of this Inquiry. The current limitations of resources are only publicly exposed when there are large, sustained or multiple incidents. However resources have been stretched for a considerable period of time and despite a small increase in P&W manning numbers in recent years, are still stretched with one major fire let alone multiple and concurrent fires.

Unfortunately, major fires causing loss of life and property are not isolated occurrences but rather an almost yearly tragedy. The number of fire inquiries and reports over the last decade, from the *Goldfields Fire 13 ("Boorabbin Fire") Operational Review July 2008* ⁽¹⁾ to this current Inquiry, stand testimony to the increasing number and severity of bushfires in the State.

The *Major Incident Review of the Lower Hotham and O'Sullivan Fires ("Hotham and O'Sullivan Report")* ⁽²⁾ (page 15) identifies an overall trend towards an increasing scale of bushfires incidents in the South West. Figure 7 - Hectares of P&W estate subject to bushfire 1961 -2015, reproduced at Attachment 4 of this submission, provides a clear a graphic illustration of that conclusion. Figure 7, however predates the Esperance and Waroona/Yarloop fires that occurred this fire season.

The Hotham and O'Sullivan Report further identifies the influence of climate is likely to escalate the risks of fire in the South West of WA in coming years. The AWU submits the State must take heed of these conclusions and plan accordingly.

P&W Resources

The Report entitled *A Review of the Ability of the Department of Environment and Conservation Western Australia to Manage Major Fires ("Ferguson Report 2010")* ⁽³⁾ made a number of observations relevant to this AWU Submission.

Observation 15 (page 3) of the Ferguson Report 2010, identified the importance of maintaining the DEC (now P&W) fleet of tankers, bulldozers and low loaders is crucial to DEC's fire management and control capacity. The AWU understand that observation 15 has largely been implemented. Following the Blackcat fire near Albany in 2012, where tragically one P&W firefighter lost her life and a number of others sustained injuries, significant safety improvements were made to the fleet of fire trucks. However the AWU submits that the fleet is only one half of the resources equation.

Trained and experienced firecrews form the second part of that resources equation. The AWU submits this is as an area of ongoing concern and has been the basis of numerous submissions and lobbying by the AWU. Attachment 1 shows the number of P&W firefighters in the Forest Regions of the South West of WA. These figures reflect only the frontline firefighters covered by the AWU and not P&W Officers, Rangers or Management.

In addition to the firefighter numbers in the Forest Regions there are further limited numbers of firecrews available in the rest of the State. The AWU understands this number to be around 36 full-time and 12 seasonal employees.

Attachment 1 shows modest increases in firefighter numbers in recent years but the AWU submits these do not go far enough to prepare the State for present and future bushfire risks and challenges.

Extended shifts and working hours at fires

The AWU points to the number and length of extended shift performed by P&W firefighters as clear evidence of inadequate manpower resources. It highlights just how thinly stretched resources are. The AWU has prepared a calendar showing the number and lengths of shifts worked by P&W firecrews at the Waroona and Yarloop fires.

Attachment 2 is prepared directly from P&W timesheets from various Districts around the State during the Waroona and Yarloop fires. It provides a useful overview of the length of the extended shifts and the repeated occurrence thereof. The AWU has chosen not to identify any individual employees or their workplace locations but the data is drawn from across multiple Districts and a number of firecrews.

Unfortunately, the number and lengths of extended shifts worked is not a unique or isolated occurrence at the Waroona/Yarloop fires. Attachment 3 is based on subsequent fires also requiring multiple extended shifts. There is a general acceptance that the first shift will be of an extended duration until resources are able to be deployed to the incident. Subsequent extended shifts are a clear sign that such reserve resources are not available to relieve the firecrew. As far back as 2008, the Boorabbin Report (page 91) recognised that most fires are reported in the afternoon and often late afternoon when workers have been at work all day so rested crews are unlikely to be available. It is therefore even more imperative that resources are available to relieve the first responding crew as soon as possible.

Fatigue is a substantial risk on the fireground. The AWU submits it does not receive the attention it deserves. For instance the Hotham and O'Sullivan Report (page 69) makes a brief comparison of the various Agencies fatigue management policies. The AWU submits that P&W Safe Operating Procedure (SOP12) ⁽⁴⁾ does not give the reader an appreciation of the actual hours of work performed. Attachments 2 and 3 of this submission are intended to more accurately reflect the reality on the fireground. SOP12 is regularly exceeded and serves as no more than an unattainable guideline with present resources.

It is widely accepted that fatigue adversely impacts decision making ability ,reduces communication capacity and concentration, capacity to judge risk and reaction times similar to alcohol. For example, the Worksafe Queensland website ⁽⁵⁾ compares the effect of being awake for 17 hours to a blood alcohol content of 0.05% and 21 hours awake to 0.10%.

It is unacceptable for intoxicated personnel to be in any workplace yet insufficient action is taken to address the equivalent level of impairment when it is caused by fatigue. Extended shifts of this duration are not acceptable in any other industry yet we expect firecrews to do exactly that and to continue to do so into the foreseeable future.

The Ferguson Report 2010 in Appendix A (page 34) assessed the "are resources sufficient to undertake duties imposed by legislation" criteria as amber with room for improvement. The AWU submits that this is still the case and in light of ongoing and increasing bushfire risks is even more imperative than when the assessment was originally made.

The heat is on: climate change, extreme heat and bushfires in Western Australia report ⁽⁶⁾ by the Climate Council made a number of findings relevant to this Inquiry. Their key findings of their report include:

- The long term trend is for worsened fire weather contributing to an increase in both frequency and severity of bushfires;
- A doubling of firefighters in WA will be required by 2030 to meet the increased risk.

The AWU recognises an increase in firefighter numbers cannot be implemented immediately and requires a longer term commitment including phasing in over time. The key reason being to ensure the safe working ratio of 2 experienced bush firefighters to 1 new employee. This safe working ratio also enables the new employee to receive adequate training and supervision. As a consequence it takes considerable time to significantly increase the number of experienced bush firefighters. This limitation makes it imperative that a commitment to increasing P&W bush firefighters is taken in the immediate term.

The AWU recommends an increase in P&W manpower equivalent to at least an additional crew at each Forest Region location and several other key locations within the State. This equates to approximately 90 -100 additional P&W firefighters. A typical (minimum size) crew consists of:

Equipment	Personnel
Gangtruck	1 Overseer 2 Firefighters (of which 1 may be a new employee)
Heavy Duty Truck	2 Firefighters
Dozer/Loader	1 Machine Operator

The AWU recommends this increase is phased in over a 3-5 year period for the reasons set out above.

The Ferguson Report 2010 (page 24) stated that the importance of maintaining forest fire specific equipment cannot be understated. And further; that heavy bulldozers are critical for fast and effective fire suppression in forest fuels. The AWU draws the Inquiry’s attention to the fact that the heavy plant is supported by 2 fire trucks at all times.

The AWU further recommends there be an increase in the number of qualified machine operators (not in addition to the above increase in manpower) but to advance more current (AWU General Agreement)⁽⁷⁾ classification level 2 Firefighters to (level 3) Machine Operators. This will provide P&W with a greater capacity and skills base in this crucial role.

Contract Firefighters

The AWU submits that contract firefighters are not the solution to the resourcing shortage. AWU members have provided feedback to the Union including; heavy equipment not specifically tailored to operate at forest fires (as recommended in the Ferguson 2010 report), lack of the latest safety improvements (such as roll down heat shields and deluge spray protection) now standard on all P&W firetrucks, lack of or unknown experience in operating on the fireline itself. In one instance, it was reported that a contract machine operator, whilst an experienced operator, had never worked on a fireline before. All of these deficiencies present an unacceptable risk to contractor and supporting firecrews.

Contract crews also come at considerable expense to the State for very little benefit. An investment needs to be made in an increased permanent full-time professional P&W firecrew.

Forest Fuel Ages and Prescribed Burning

The increased commitment and funding by the State for the purpose of prescribed burning is welcome. Whilst it is impossible to calculate the *prevented* damage/loss life and/or property due to prescribed burning, the benefits are clear to all involved in bushfire fighting. It the AWU's submission that it is not necessary to argue the merits of prescribed burning as these are well established and understood. For instance; the Hotham and O'Sullivan Report comments on figure 9 (reproduced as Appendix 6) demonstrates the slowdown of the fire when it reached lower fuel loads.

The high fuel loads identified in red colouring in figure 9 of the Hotham and O'Sullivan Report is a sobering reminder of both the risk of uncontrolled bushfires and the amount of prescribed burning yet to be completed. However, the AWU does caution against the simplistic focus on hectares burned as figure 8 (Attachment 5) of the Hotham and O'Sullivan Report does. Areas of urban interface require far greater resources for smaller area burns and present a greater risk in the event of an escape from the burn.

The AWU has sighted fuel age maps from the mid-1970s (from around what is now called the Perth Hills area) showing fuel ages surrounding settlements of 2-3 years or less. Large buffer areas around this were no older than 5 years. The low areas of land subject to bushfires (as shown in Attachment 4) during this period highlights the effectiveness of maintaining low fuel loads through regular prescribed burning.

Attachment 7 to this submission are parts of the *Forests Department Foresters' Manual Fire Protection* (Foresters' Manual) from March 1980. The Forests Department is the predecessor of CALM, then DEC and now known as P&W.

Part 9.002 of the Foresters' Manual concludes that after a lengthy accumulation of fuels, even high expenditure on firefighters and equipment cannot control a bushfire under severe conditions. It further concludes that effective control is only achievable through regular fuel reduction. Part 9.003 of the Foresters' Manual recommends a rotational system of prescribed burning with the length dependant on a number of factors including rate of fuel build-up.

Of particular interest and relevance to regional town sites are the conclusions at part 7.10 of the Foresters' Manual. The recommendation is to maintain a minimum 3 km buffer of reduced fuel load around town sites. Additionally an outer buffer should be maintained to 6km from town. This recommendation is consistent with the 1970s fuel age maps described above.

A substantial and sustained investment in fuel reduction through prescribed burning is required. Attachment 6 highlights how much work there is to be done to return to a situation where fuel ages around the South West are reduced to a level where firefighters have a reasonable chance against a large bushfire in the severe conditions regularly experienced in WA.

The AWU recommends prescribed burning around town sites is prioritised to maximise to chances of controlling an approaching bushfire and prevent a repeat of the tragic loss of nearly an entire town like Yarloop.

The benefits of the AWU's recommended additional personnel also extends to increasing the ability of P&W to take advantage of the limited windows of opportunity to conduct prescribed burning.

P&W Reporting of Number of Bushfires

As part of its annual reports P&W provide information on the number of bushfires the Agency attended to and the area burnt each year. For instance the 2014-15 Annual Report ⁽⁸⁾ (page 50) states P&W attended 825 bushfires which burnt 2.5 million hectares. This data does not provide much information on the scale of the fires which range from small to large major incidents requiring multi Agency response. The AWU submits that categorising and reporting all bushfires based on the amount of resources and/or time to bring under control will provide a useful oversight of any trends towards larger, more resource intense fires. This will enable P&W (and other Agencies) to plan accordingly for the long term.

Conclusion

The AWU supports previous fire reports and inquiries' recognition of P&W expertise in bushfire fighting and associated land management activities including prescribed burning. AWU members (and other employees) of P&W are dedicated and professional fire fighters who selflessly work extensive hours for the protection of the bushfire affected communities.

The AWU submissions and recommendations are all aimed at strengthening and improving P&W bushfire capabilities into the future. The increasing intensity and frequency of bushfires and drying climate is well recognised and must factor into resources allocation. Given the lead time to train new firefighters it is necessary to take immediate action. All of these measures come at a cost but the AWU submits this is a cost that is more than offset by preventing and minimising the loss of lives and damage to communities caused by bushfires.

AWU Recommendations

1. **Increase in the number of frontline P&W firefighters and associated equipment. The AWU recommends an increase of at least 90 – 100 P&W firefighters to establish an additional crew at each Forest Region works centre and a number of other key locations.**
2. **The manning increase to be phased in over a 3-5 year period to enable adequate training and safe working practices.**
3. **An increase in the number of P&W firefighters trained and qualified as Machine Operators.**
4. **A reduction in reliance on contract firefighters.**
5. **P&W reports to categorise the number of fires based on resource requirements and/or time required to bring under control.**
6. **Continued focus, resourcing and funding of prescribed burning to reduce the high fuel loads in the South West to levels where a bushfire can be controlled.**
7. **Particular focus of the prescribed burning program should be around town sites and other high value assets. This is resources intense and needs to be funded and reported separately from other forest fuel reduction burns.**

If the Inquiry requires any further submissions, written or verbally the AWU will provide every assistance to the Inquiry. The Union's contact details are as follows:

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References

1. *Goldfields Fire 13 ("Boorabbin Fire") Operational Review, July 2008*
2. *Major Incident Review of the Lower Hotham and O'Sullivan Fires, 24 December 2015*
3. *A review of the ability of the Department of Environment and Conservation Western Australia to manage major fires by Euan Ferguson, 6 September 2010.*
4. *Fatigue Management in Fire Operations including Prescribed Burning (SOP 12), 10 September 2014*
5. *Work Cover Queensland, <https://www.worksafe.qld.gov.au/injury-prevention-safety/mental-health-at-work/fatigue/effects-of-fatigue>*
6. *The heat is on: climate change, extreme heat and bushfires in Western Australia, Climate Council, 2015*
7. *Australian Workers' Union (Western Australian Public Sector) General Agreement 2015 (AG 6 of 2015)*
8. *Department of Parks and Wildlife 2014 – 15 Annual Report, https://www.dpaw.wa.gov.au/images/documents/about/annual-report/2015/ParksandWildlife_AnnualReport2014-15_Full.pdf*



AWU Forest Regions Fire Manning Numbers

2010/11 2011/12 2012/13 2013/14 2013/14 2014/15 2015/16

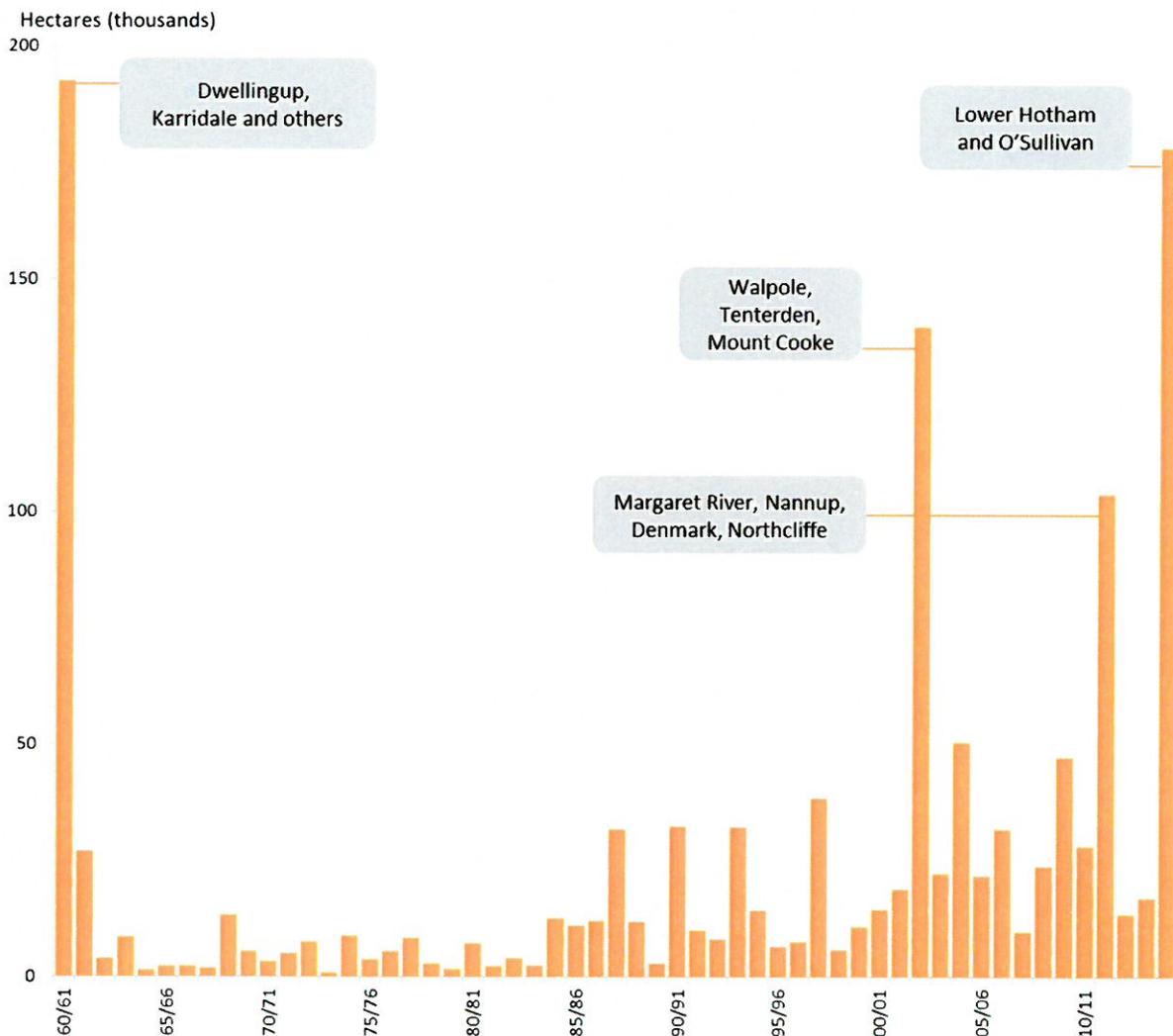
SWAN REGION									
Swan Coastal District	Permanent	29	31	31	31	31	31	31	31
	Seasonal	12	12	12	12	12	12	12	12
	District Total	37	41	43	43	43	43	43	43
Perth Hills District	Permanent	39	42	42	42	42	42	42	42
	Seasonal	15	15	15	15	15	15	15	18
	District Total	47	54	57	57	57	57	57	60
Region Total	84	95	100	100	100	100	100	103	
SOUTH WEST REGION									
Blackwood District	Permanent	32	37	37	37	37	37	37	37
	Seasonal	12	12	12	14	14	14	14	14
	District Total	52	44	49	49	51	51	51	51
Wellington District	Permanent	27	30	30	30	30	30	30	30
	Seasonal	15	15	15	15	15	15	15	15
	District Total	45	42	45	45	45	45	45	45
Region Total	97	86	94	94	96	96	96	96	
WARREN REGION									
Donnelly District	Permanent	37	40	40	40	40	40	40	50
	Seasonal	21	21	21	21	21	21	21	11
	District Total	55	58	61	61	61	61	61	61
Frankland District	Permanent	21	25	25	25	25	25	25	25
	Seasonal	7	6	6	6	6	6	6	6
	District Total	28	28	31	31	31	31	31	31
Region Total	83	86	92	92	92	92	92	92	
FOREST TOTAL									
Permanent	185	205	205	205	205	205	205	215	
Seasonal	82	81	81	83	83	83	83	76	
Total employed	264	267	286	286	288	288	288	291	

Updated 1/10/2015

2015/16 Comments

- * "Permanent" category includes permanent seasonal employees for 2015/16
- * Additional 2-3 seasonals in Perth Hills for Urban Interface Team for 1 year trial
- * Change to Donnelly District Manning Mix
40 Full-time (incl 8 current vacancies) to 32
Introduction of 8 permanent part-time/seasonal at 0.8 FTE
Introduction of 10 permanent part-time/seasonal at 0.7 FTE
Reduction in seasonals from 21 to 11
Total manning unchanged at 61 but 50 on a permanent basis

Figure 7: Hectares of South West P&W estate subject to bushfire 1961 - 2015

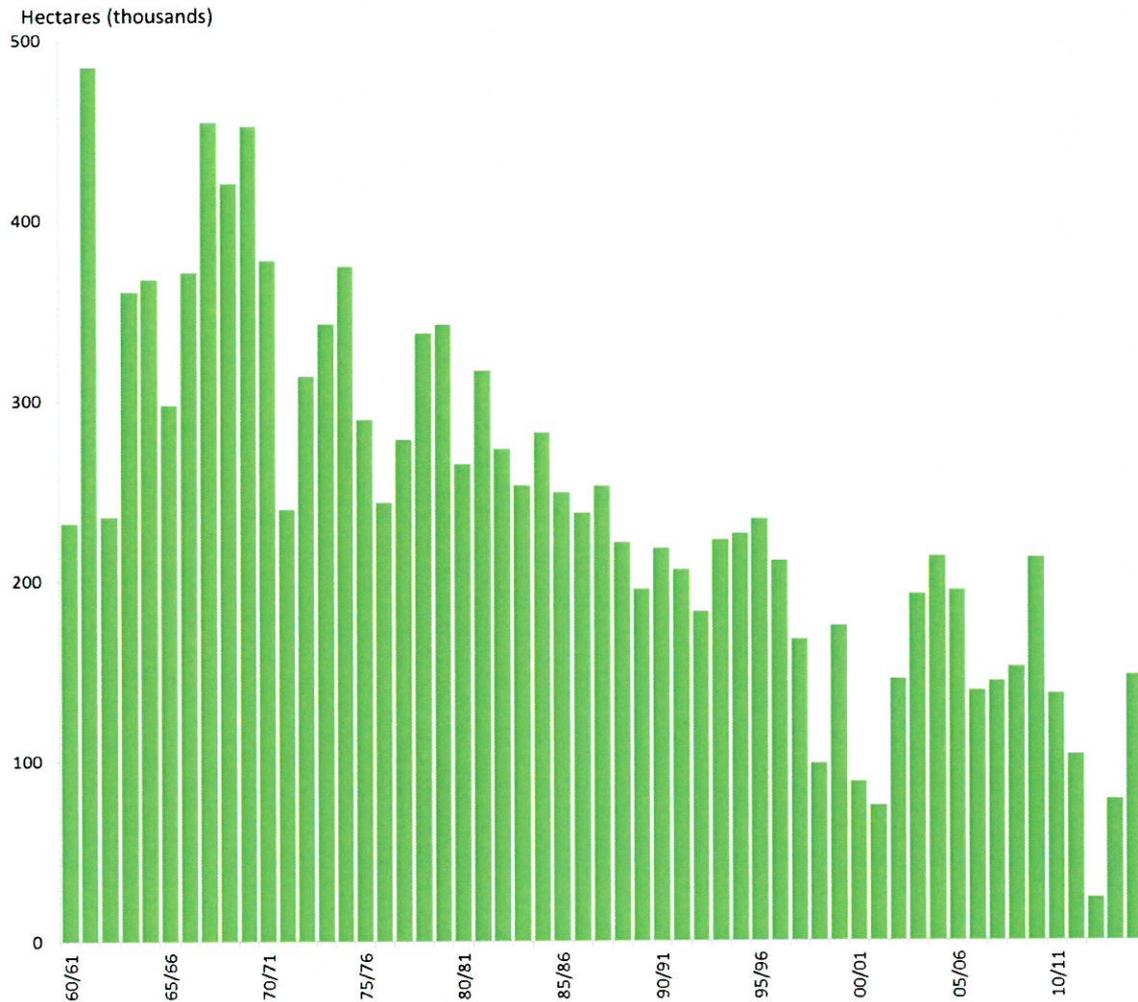


There is an overall trend towards an increasing scale of bushfire incidents in the South West. This may be the result of a number of factors, which are not examined in this MIR. Figure 7 shows an upward trend commencing from around the mid-1980s, becoming more pronounced in the last 13 years. The 1960/61 season featured the biggest scale of bushfires in WA's recent history, including the large Dwellingup and Karridale fires. This led to a Royal Commission and resulted in major changes to fire management practices. Examined on a decade to decade basis the upwards trend over the past 45 years is clear. The yearly average for the bushfires within the P&W estate for the 1970s, '80s, '90s, '00s and '10s (5 seasons to date) are approximately 5,000, 10,000, 17,000, 38,000 and 68,000 hectares respectively.

Figure 7 indicates there is a trend towards increasing scale of bushfires, but it does not fully illustrate the elevated risks that fires are posing to life and property. Recent fires are pertinent examples of this. On the metropolitan urban-rural interface, the Perth Hills fires of 2010/11 and the Parkerville, Stoneville, Mt Helena fire of 2013/14 resulted in the loss of 128 homes. Elevated risks on the urban-rural interface are also faced in growing regional areas, such as in the 2011 Margaret River fires that resulted in the loss of 32 homes and nine chalets. Although no lives were lost in these fires, the impact on the community was

P&W's (and its predecessors') management that was subject to prescribed burns from the season of 1960/61 to 2014/15.

Figure 8: Hectares of South West conservation estate subject to prescribed burns 1961 - 2015



There is a clear downward trend in the area of prescribed burns undertaken over the past 30 to 40 years. P&W's reconstruction of the Lower Hotham fire notes that "for a variety of reasons including climate variability, land use changes, population growth and resource constraints, the prescribed burning program has been falling behind targets since the 1990s".¹⁴ In recognition of the importance of prescribed burning for reducing fuel loads and hence bushfire risk, additional funding of \$20 million has been provided to P&W over four years from 2015-16 to expand prescribed burning.¹⁵

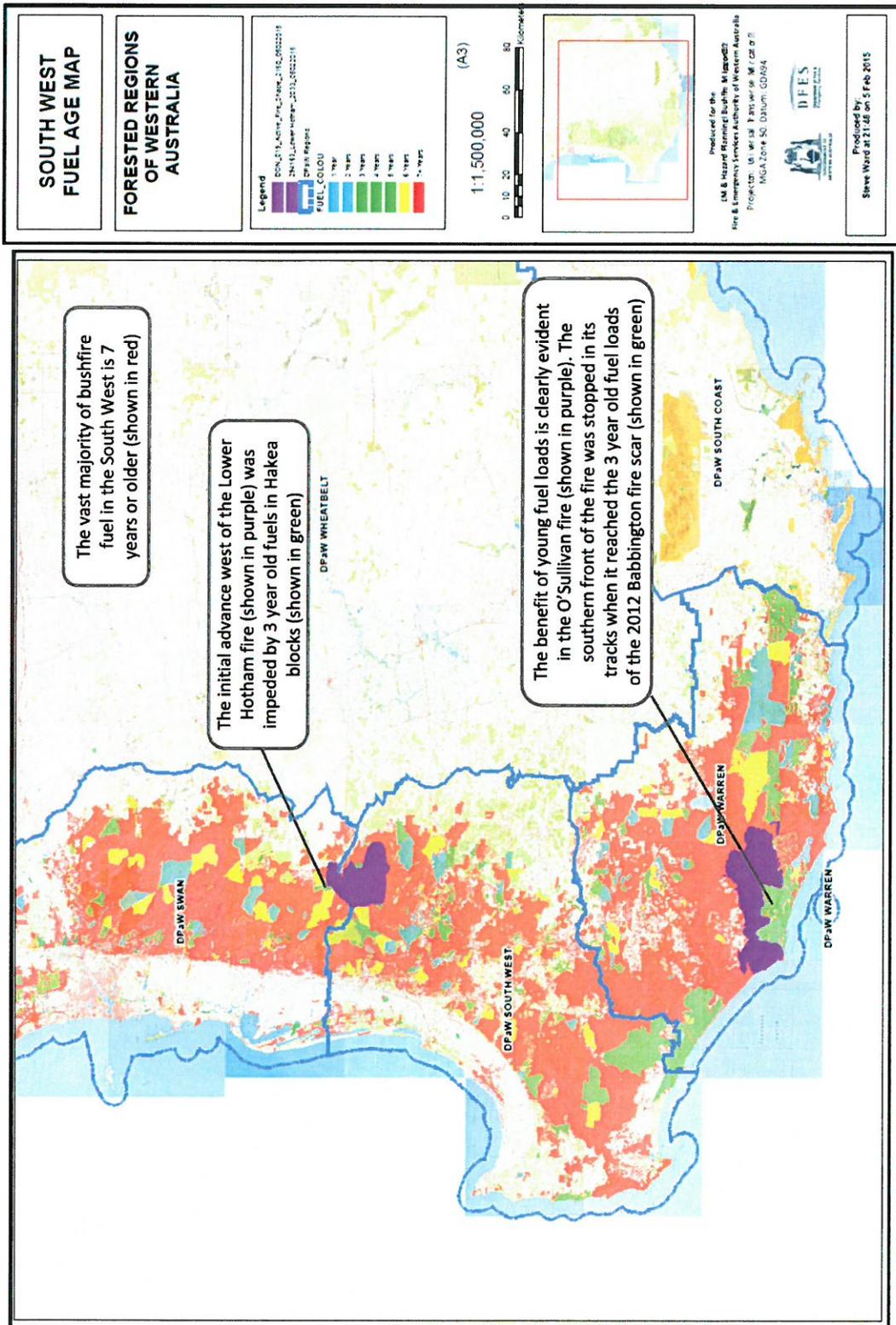
The long term trend towards reduced prescribed burns in the South West is reflected in high fuel ages. This is illustrated by Figure 9 on the following page, which shows fuel ages as at February 2015.¹⁶

¹⁴ N. Burrows et al, *Reconstruction of the path and behaviour of the Lower Hotham fire*, (Department of Parks and Wildlife, 2015), p8

¹⁵ Government of WA Media Statements, "Extra \$20 million for prescribed burning program", 11 May 2015

¹⁶ Provided by DFES Lower South West

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



PART 9

FORESTERS'
MANUAL

FIRE PROTECTION

FORESTS DEPARTMENT
PERTH
WESTERN AUSTRALIA.

~~Revised 10/79~~

Revised 3/80

Updated to 11/80
NB 4/2/81
Updated 5/81

PART 9 - FIRE PROTECTION

INTRODUCTION

Fire problems

- 9.001 The problem of fire control is intimately connected with the questions of reforestation and afforestation, and the ultimate success of the Department's efforts in these projects is largely dependent on a strong measure of public sympathy and co-operation in attacking the fire problem.

Of equal importance is the proper use of controlled fires to regenerate and protect the forest and its associated flora and fauna, and to guard adjoining communities from wildfire.

The eucalypt forests of Western Australia have evolved in a fire environment. Both flora and fauna have adapted to hot dry summers and the associated fires started by lightning and, more recently, by man. It is, therefore, natural and advisable to undertake hazard reduction by the intelligent use of fire of prescribed intensity and frequency to minimise damage caused by intense summer wildfires.

HISTORY

Historical background

- 9.002 Before the passing of the Forests Act, 1918, the northern half of the State forests had been ravaged by unrestricted cutting and uncontrolled fires.

Since 1919 roads have been increasingly constructed within the forest and, until the early 1950's, the aim of the Forests Department was to provide complete protection to the forest. During this period, the extension of group settlement and other farming ventures resulted in heavy damage from indiscriminate firing of the southern forest area where forestry organization was not yet established.

Protection problems

It was found that after 15 or 20 years' protection, the accumulation of combustible material was such that even very heavy expenditure on men and equipment could not control a fire under the severe weather conditions that occur periodically in Western Australia. Other states have learned this lesson with equal force. Effective fire control can only be achieved in the south-west forest through regular reduction of fuel hazards by prescribed burning and maintaining an efficient detection and suppression system capable of rapid and effective attack on fires before severe damage occurs.

OBJECTIVE OF MANAGEMENT

- 9.003 The Department's objective is to provide a fire control system capable of protecting recognised forest values from serious damage. The system is to be compatible with the dominant land use in any area, with the cost of protection not exceeding the value of the loss prevented.

Prescribed burning of large areas on a rotational system. The length of rotation will depend primarily on the rate of fuel build-up together with seasonal weather, manpower availability and other local circumstances.

Advance burning - prior to logging operations.

Slash burning, for regeneration or hazard reduction, following logging operations.

Burning under pine canopy for the purpose of subdividing extensive plantation areas to minimise loss in the event of wildfires.

Areas to be protected

9.041

Except for those areas where specific approval for burning has been obtained from Head Office, complete protection will be afforded to:

Pine and hardwood plantations.

Karri tops or scrub-rolled areas being held for regeneration burning and areas programmed for cutting within three years

Regenerated karri areas where crop saplings are less than 15 m tall.

Regenerated jarrah areas where crop saplings are less than 6 m tall.

Areas required for research and investigation.

ROTATIONAL PRESCRIBED BURNING

Master plans

9.042

Area O.I.C.'s must draw up prescribed burning master plans. These plans will show:

Hardwood areas which will be burnt as buffer areas.

Hardwood areas for prescribed burning on a rotational basis for protection of timber, flora, fauna or recreational values. Rotation length should depend on the average rate of fine fuel accumulation for each forest type, unless defined management objectives dictate otherwise for a particular area. As our suppression organisation can be expected to handle wildfires in fuels up to eight tonnes/ha in jarrah fuel types and up to 19 tonnes/ha in karri fuels, this should generally be used as the criterion to decide rotation length.

The prescribed conditions for burning an individual area will be decided by the primary land use objective for that area. Where timber values and preservation of flora and fauna are paramount, the following limits will apply:

Standard for prescribed burning

9.043

(a) Management Priority Areas and other areas where primary land use requires mild prescribed burning.

8 TONNES/HA
= 5 YEARS →

7.10 Town
Protection
Zones

Experience indicates that the effective width of a strategic fuel reduced buffer needed to contain a high intensity wildfire in the forest, is a minimum of 3km. However, where long-range spotting is likely to threaten very high community values (eg, towns, settlements) the effective width needs to be increased to about 6km. The optimum town protection low-fuel buffer system in forest communities needs to have a 3km radial buffer where fuels are maintained at less than 6 tonne/ha in jarrah, and 15 tonne/ha in karri fuels. In addition an outer buffer system should be maintained which extends 6km to the northern quadrant and 4km in the southern quadrant. The fuels in the outer buffer should be maintained at less than 8 tonne/ha jarrah or 19 tonne/ha in karri.

The buffer limits for protection of towns adjoining non-forested vegetation types can be reduced considerably due to the reduction in fire intensity and long-distance spotting associated with these scrub dominated fuels.

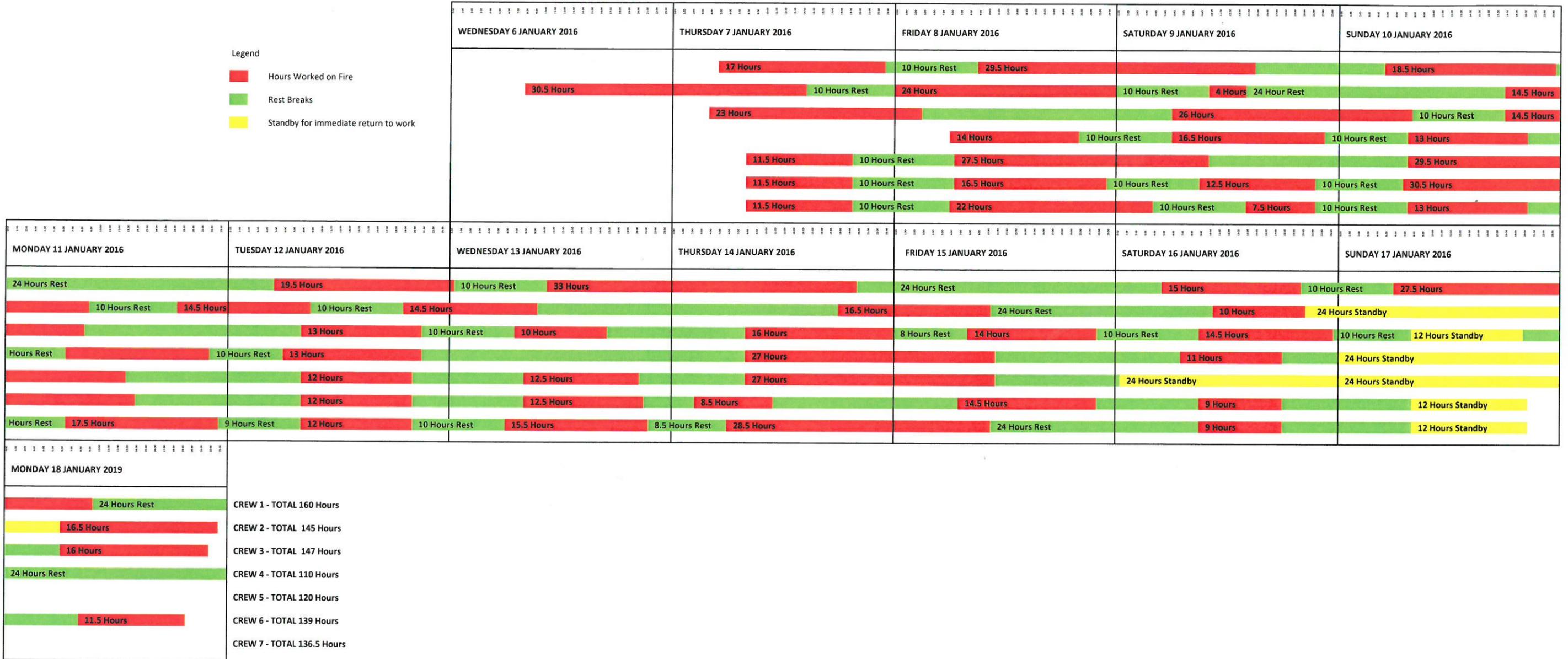
Effective town protection buffers should be not less than 500 metres and scrub fuel quantity limits should be less than 6 tonnes/ha in this zone.

requires
disturbance/
prot² plan.

HOURS of WORK, REST BREAKS and STANDBY at the WAROONA/YARLOOP FIRES

Legend

- Hours Worked on Fire
- Rest Breaks
- Standby for immediate return to work



HOURS of WORK, REST BREAKS and STANDBY at other FIRES

FRIDAY 22 JANUARY 2016	SATURDAY 23 JANUARY 2016	SUNDAY 24 JANUARY 2016	MONDAY 25 JANUARY 2016	TUESDAY 26 JANUARY 2016	WEDNESDAY 27 JANUARY 2016	THURSDAY 28 JANUARY 2016
9 Hours Standby	13 Hours Standby	8 Hours Standby	15 Hours Standby	11 Hours Standby	27 Hours	

CREW A - TOTAL 83 Hours

SATURDAY 6 FEBRUARY 2016	SUNDAY 7 FEBRUARY 2016	MONDAY 8 FEBRUARY 2016	TUESDAY 9 FEBRUARY 2016	WEDNESDAY 10 FEBRUARY 2016	THURSDAY 13 FEBRUARY 2016
Standby 8 Hours Standby	8 Hours Standby	26 Hours	10 Hours Rest 14 Hours	Standby	

CREW B - TOTAL 56 Hours

Legend

- Hours Worked on Fire
- Rest Breaks
- Standby for immediate return to work



Bee Industry Council of Western Australia

ACN 609 634 059

ABN 68 609 634 059

Secretary
285 Leyland Close
BEECHINA WA 6556
0428290029

2nd March 2016

Waroona Bushfire Special Inquiry
Level 6, Dumas House
2 Havelock Street
WEST PERTH WA 6005

Email: waroonainquiry@semc.wa.gov.au

Dear Sir,

On behalf of the beekeeping industry of Western Australia we wish to convey our thoughts on the recent handling of the Waroona fires and fire management in general.

It has long been the standing of the fire service authorities to not approach the fire at its source immediately and instead to back burn by creating a containment line and attack it as it burns (ie. Gains strength) by allowing this to occur the native scrubland and vegetation is burnt. This may not have any threats to lives or homes and buildings but it does affect our resource that is vital to the beekeeping industry. A bush area whether it be shrubs or trees can take years to regenerate and be viable for a crop of honey and pollen for our bees.

Once a fire starts, attempts should be made to put it out at the source rather than waiting to see how it will develop. Any Beekeepers attending should be used for their knowledge of the area and allowed to assist DFES and DPaW to protect our bush. Putting out the fire in the bush should be the priority not just containment. The bush should have an economic value based on variety and location and not be seen as expendable. The fires over the summer will conservatively cost the WA industry over \$10 million in lost sales over the next 5 years, and it will only get worse if the bush is treated as an expendable commodity.

What can Beekeepers do to help to prevent fires and manage the land e.g. access, fire breaks, control burns etc. DPaW has actually closed the access tracks that are in some areas which means that in the event of a fire the fire attacks cannot access the fire and have to wait for heavy vehicles to create an accessible clearing. Can we help create tracks and access to areas that are not currently open? Currently our clearing permits state that we are allowed to only clear by hand and a mower. If we had the ability to use small tractors we would be able to create a better cleared firebreak area around the beehives and be able to maintain the access tracks which will assist the fires in the event of a fire.

Fires need to be the major priority over the whole year to manage the fuel load more effectively and the state needs to be resourced as such, even if it means training more people, having more planes, helicopters, involving the defence force etc. and fully understanding warning signs to prevent major outbreaks.

Yours faithfully,

Leilani Leyland
Secretary

ENVIRONMENTAL & EARTH SCIENCE CONSULTANTS

A.B.N. 21 575 410 959

B K MASTERS and ASSOCIATES

PO Box 315
Capel WA 6271

Phone 9727 2474

Mobile [REDACTED]

Email bmasters@inet.net.au

March 15, 2016

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

Dear Sir,

Public inquiry into January 2016 Waroona fire

I wish to provide the following submission to your Inquiry.

My relevant background comprises three parts:

1. For 4 years in the 1970s, I was a Wildlife Officer employed by the then Department of Fisheries and Wildlife in Busselton. While fire management was not a key part of my duties, I nonetheless attended a multi-day workshop in Perth on bushfire management run by the then Bushfires Board of WA and I assisted at a bushfire south of Yallingup in privately owned coastal heath.
2. I hold a degree in geology and zoology from the University of WA and, for 18 of the past 26 years, I have operated a one person environmental and geological consulting business, specialising in many aspects of natural land management including fire management. I have written several fire management plans for areas of natural bushland, including for two Shire (now City) of Busselton bushland/woodland reserves.
3. Since 1982, my wife and I have lived at Peppermint Grove Beach, a coastal urban development comprising about 400 houses with a permanent population of about 300. Earlier this year, the entire community was classified as being located within a high bushfire risk area due to the large amount of natural vegetation retained within the subdivision. The community has a bushfire brigade unit and water supply is provided by the Water Corporation via pumping from the deep groundwater into a large overhead tank.

In many respects, Peppermint Grove Beach shares many similarities with the township of Yarloop:

- Many houses are constructed of timber or other combustible materials which are at severe risk of loss during an ember attack
- Water supply is provided by the Water Corporation via pumps feeding into gravity-feed overhead storage tanks.

- Electricity is required to maintain water within the overhead tanks and, when electricity supplies fail, it will be just a matter of time before the overhead tank supply is exhausted.

Terms of Reference

1. The response to the January 2016 Waroona Fire

(b) The effectiveness of emergency management plans and procedures;

In the aftermath of the Waroona/Yarloop fire, both the Minister for Fire and Emergency Services and the DFES Commissioner said that people should not rely on town water supplies to provide water during a bushfire emergency. Both people stated or implied that electricity supplies would fail in the hours or days leading up to a bushfire reaching the outskirts of a town such as Yarloop, thereby placing water supplies at risk. The Minister went further and stated that urban dwellers need to have their own independent water and electricity supplies if they intend to stay and defend their homes.

I submit that an acceptance by the Minister and the Commissioner of the inevitability of electricity and water supply failures is a major failing in the state government's emergency management plans and procedures. If such failures are an acknowledged consequence of a bushfire attack, then the prudent course of action is to build into the emergency management plans and procedures a set of actions which will ensure continued provision of electricity and hence a continued supply of water for fire-fighting purposes.

I further submit that the statement by the Minister that all urban dwellers must have their own water and electricity supplies is unrealistic, unreasonable and impractical.

In south west WA, there are between 250 and 350 small urban communities similar to Yarloop (and Peppermint Grove Beach) where, if the Minister's self-reliant philosophy was implemented, it would mean that several hundred thousand urban dwellings would need to have their own petrol-powered water pumps plus stored water supplies of several cubic metres. I estimate the cost of such fire readiness precautions to exceed several hundred million.

If the fire authorities such as DFES understand and accept the inevitability of electricity supplies failing prior to the arrival of a fire at a townsite, then effective emergency management plans would include the provision of an emergency generator to the Water Corporation's water supply pumps so that, when external electricity supplies fail, the generator can automatically kick in and keep the pumps operating, thereby maintaining water levels in overhead tanks or water pressure in urban areas where water is not stored in tanks.

My limited experience of emergency electricity supply suggests that the Water Corporation could install appropriate equipment ready to accept the connection of a generator to its water pumping system at a cost of less than \$5000 per town water supply. A generator of, say, 100 kVA capacity could then be hired from the private sector and brought to site in the days leading up to the fire threatening a town at a cost of no more than \$400 per day (including fuel). Considering that the cost of rebuilding Yarloop has been estimated at more than \$100 million, an investment of less than \$5000 and a daily cost of \$400 as suggested would provide an effective and relatively inexpensive emergency response to a bushfire threatening a town such as Yarloop.

Where my wife and I live at Peppermint Grove Beach, we have taken a number of bushfire management actions:

- A sprinkler system is installed on our roof

- Only one small gutter about 5 metres long has been installed along a roof edge some 40 metres long and this gutter is regularly cleaned out of dead vegetation matter.
- The house has green lawn along its two long edges and most dry grass and similar highly combustible material is removed from our native garden prior to each summer
- We have installed garden hoses at the front and rear of the house that can reach to all parts of our urban block.

In spite of these measures, our ‘stay and defend’ plans depend completely on a continuance of water supply from the Water Corporation’s overhead tank. In turn, the filling of this tank is completely dependent upon Western Power electricity supplies being maintained in the days and hours leading up to the arrival of a fire front, but the single powerline leading into our urban community is at high risk of damage, either through direct fire damage to a pole or through a tree falling on the powerline under strong wind conditions which are likely to prevail at the time of highest bushfire threat.

In other words, our ‘stay and defend’ strategy would fail a few hours after electricity supplies to Peppermint Grove Beach stopped and allowed the overhead water tank ran out of water.

I submit there are tens of thousands of urban residents and their dwellings throughout the south west of WA who are at a similar high (certain?) risk of their ‘stay and defend’ strategy failing unless the Water Corporation takes steps to have emergency generators brought in to their water supply sites prior to the arrival of a fire front. This is a major oversight of existing fire management plans and procedures and needs to be urgently addressed.

Terms of Reference

1. The response to the January 2016 Waroona Fire

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

Statistics show that the area of native vegetation subjected to prescribed or controlled burning per year has been lower in recent years than in the decades following the 1961 Dwellingup fire. In turn, anecdotal evidence suggests that the area of land burnt by uncontrolled bushfires was low in the 1960s to 1990s but has increased significantly in the last 15 to 20 years as the area of prescribed burning has reduced.

As a resident of the south west of WA for almost 40 years, I believe that the safety and security of rural and small urban areas in the south west is critically dependent upon a much higher level of prescribed burning than is currently taking place. As a qualified environmental scientist of some 45 years’ standing, I believe the scientific evidence in support of prescribed burning is sound and unequivocal: if applied carefully and with sensitivity to the existing environmental values of the area to be burnt, it can be carried out not just without causing environmental harm but in fact can achieve important environmental benefits (for example wetland areas containing populations of the mainland quokka, a small native marsupial, require burning at intervals of about 10 years in order to allow dense regrowth of wetland plants within which the quokka can be safe from predation by foxes).

In support of this last claim about environmental benefits arising from the wise and science-based application of fire, I refer you to the works of two highly respected and competent historians who have collated information from early explorers and settlers in southern Australia:

- Sylvia Hallam, author in 1975 of *Fire and Hearth*
- Bill Gammage, author in 2011 of *The Biggest Estate on Earth: How Aborigines Made Australia*

Both authors show through extensive references to observations and insights dating back 150 to 250 years that Aboriginal people used fire extensively to create a landscape that best met their various

needs of food, access, habitation, safety and certain material resources. However, it is certain that only a proportion of the southern continental landscape was burnt by Aboriginals at short (2 to 4 year?) intervals to create a mosaic of grasslands interspersed with dense, long unburnt vegetation. My estimate is that less than 50% of the landscape was burnt by Aboriginals in this way and that the remaining 50% or more of the landscape was burnt at 40+ year intervals via rare escapes from Aboriginal burns or from lightning strikes.

Today, with human beings and their infrastructure scattered throughout the southern landscape of Australia, it is impossible to return to an Aboriginal fire regime. However, we need to blend the 50,000 years of Aboriginal fire management knowledge with the more recent scientific understandings of the settled environments of Australia and to use fire to protect the human and physical assets in urban areas while protecting the most important of the natural environmental values of the bushland we live in.

Clearly, pre-incident bushfire prevention effectiveness was inadequate for the Waroona/Yarloop fire. I submit that future bushfire prevention measures must include regular prescribed burns of all bushland within 500 to 1000 metres of towns and other important public and private assets (unless there is reasonable certainty that other measures such as the use of non-combustible building materials is likely to make those assets fire-proof), with bushland more remote than this distance to be burnt at a frequency and with an annual areal extent consistent with sound bushfire hazard reduction science and nature conservation knowledge.

SUMMARY

1. The state government should amend their bushfire emergency management plans such that the Water Corporation is required to modify its pump station electrics to accept the temporary installation of a portable generator in the lead-up to an imminent bushfire threat so that water tanks or pressure-based systems can continue to provide water to at-risk urban areas throughout a bushfire emergency.
2. The state government should provide sufficient resources to the most appropriate government agencies such that frequent prescribed burning of bushland within 500 to 1000 metres of important assets such as rural urban areas can be achieved and so that regular burning of more distant bushland at a frequency and annual areal coverage as determined by modern hazard reduction science and nature conservation knowledge is also achievable.

If requested, I would be pleased to attend a hearing of this Inquiry to answer questions or expand on my submission points.

Yours sincerely

A handwritten signature in black ink, appearing to be 'Bernie Masters', with a long horizontal line extending to the right.

Bernie Masters
BSc (Geology, Zoology), University of WA 1971
Member for Vasse 1996-2005
Councillor, Shire of Busselton 2008-2009

Safer, Cost Effective Fire-Fighting Options:

**Australian fire fighting Technology - the world's first
non-toxic fire suppressant: BlazeTamer380™**

A submission to the Public Inquiry into January 2016 Waroona Fire

Prepared by Keith Blyth for BioCentral Laboratories Ltd

Additional Test Results/Video Evidence/Representation available upon request

March 2016

Overview:

BlazeTamer380™ is a polymeric water enhancer that increases the efficiency of water by 43% for Class A bushfire operations.

Developed and produced by Adelaide based BioCentral Laboratories Ltd¹, BlazeTamer380™:

- Delivers superior fire extinguishing performance characteristics;
- Offers a non-toxic, harmless to humans, animals and vegetation option in firefighting practices;
- Provides a healthy, environmentally friendly cost effective alternative to the use of foams in Australian firefighting.
- Reduces the cost of all direct attack aerial and ground unit firefighting activities

¹ See Appendix A: Introducing BioCentral Laboratories

Delivering Superior fire extinguishing performance characteristics:

What is BlazeTamer380™?

BlazeTamer380™² is a polymeric elastomer designed for use by aircraft (fixed wing or rotary) to suppress bushfires. It is a Polyacrylamide – a polymer of controllable molecular weight formed from the polymerisation of acrylamide.

Blazetamer380™ can also be used by any ground based vehicle with a dedicated water tank for firefighting efforts.

This elastomer is a, water soluble linear liquid, designed specifically to bind water molecules together instantly with moderate agitation.

BlazeTamer380™, an anionic Polyacrylamide, binds water molecules together in random linear chains. This in turn greatly reduces the water molecules susceptibility to evaporation (steaming off), on contact with any hot surface.

BlazeTamer380™ becomes viscous (thick) when activated.

BlazeTamer380™ is non-toxic and non-corrosive which, given time, will break down into CO₂, water and nitrogen. Increased UV activity accelerates the breakdown timeline.

BlazeTamer380™ is now being utilised in New South Wales – RFS and Tasmania – Tasmanian Aerial Fire-Fighting Authorities. It has also just successfully won the tender to supply the Victorian Country Fire Association and DELWP – Department for Environment, Land, Water & Planning. BlazeTamer380™ is currently being used in Texas, Minnesota, Michigan, Philadelphia USA.

How does BlazeTamer380™ work?

BlazeTamer380™ contains a mix of polymers, surfactants, water and other ingredients. It is provided as a concentrate from BioCentral Laboratories and is mixed with water in very small concentrations (from 0.1% to 0.65%). Highest rate of mixture to date is 6.5 litres per 1000 litres of water dropped from aircraft.

When placed on a fire an endothermic reaction occurs. This endothermic reaction absorbs heat and cools the fire, thus breaking the fire triangle – this causes rapid extinguishment of the fire, with little to no re-ignition, virtually no ash and reduced smoke.

² See Appendix B: Differences between BlazeTamer and other products currently in use.

**What types of fire will
BlazeTamer380™ extinguish?**

BlazeTamer380™ has been used to extinguish many types of fires – with the exception of electrical fires. To date the product has demonstrated its ability to control:

- Grease/Fat fires
- Coal Fires
- Diesel Fires
- Ethanol Fires
- Class A Wildland and Structural Fires
- Peat fires (speciality for this technology).
- Tire fires (speciality for this technology). Tests have demonstrated a 60% reduction in water required to extinguish equivalent fire sources.
- It has successfully complied with Australian Standards for both A & F class fire extinguishers.

Offering a non-toxic option in firefighting practices:

Is BlazeTamer380™ safe to use?

BlazeTamer380™ has undergone 11 years of rigorous and comprehensive testing, receiving full United States Department of Agriculture – Forestry Service Accreditation.³

BlazeTamer380™ is also one of the few products approved for use in and around water catchment areas by the Australian Water Quality Centre and is approved for use by the EPA⁴ and in the European Union. BlazeTamer380™ is also accredited for use by the Australasian Fire and Emergency Service Council (AFAC).

Is BlazeTamer380™ environmentally friendly?

BlazeTamer380™ applied dilution solution breaks down in approximately 100 days, eventually degraded by biological and Ultra Violet action. This degradation ensures no harmful residues remain in the environment.

Similar polymers have been used in soils prepared for food crop production in agriculture for water retention, erosion control, spray drift reduction and efficiency improvements in nutrients. The polymers have no effect on the plants themselves and residues have not been found to be harmful to humans or animals.

Part of the requirements for US Department of Agriculture approval for use included extensive independent testing on potential impacts on fish populations. BlazeTamer380™ has a slight level of toxicity to fish (in concentrated form). The mixed product presents very low risk: during the testing a Zero Mortality rate for baby Rainbow Trout was achieved.

Does BlazeTamer380™ damage housing?

BioCentral Laboratories encourages every home owner to inspect the dwelling if there has been a fire or ember damage – followed by a thorough cleaning of ash and residue from gutters. BlazeTamer380™ does not damage structural surfaces, timber or paintwork. Some smooth, non-porous surfaces may remain slippery if subject to aerial spraying (during a fire). This is easily washed off with water.

Any product which lands on gravel or gardens will quickly break down and degrade. It can also be watered into the soil as part of any clean-up process following a fire event.

³ See Appendix C: United States of America Department of Agriculture-Forest Service USDA-FS 5100-306A accreditation.

⁴ See Appendix D: Letter from Environment Protection Authority

Providing a cost effective alternative to the use of foams in West Australian firefighting:

Is BlazeTamer380™ cost effective?

BlazeTamer380™ is an extremely cost effective⁵ firefighting option for West Australian bushfires in contrast to current foams being used:

- Assists pilots in hitting targeted drop zone/area consistently by reducing the mixed solution drifting in high wind conditions;
- Reduces pumping load dynamics;
- Reduces evaporation rate;
- Fast knockdown;
- Inhibits re-ignition;
- No residual clean up requirement.
- Is 43% more effective than water alone

Does BlazeTamer380™ need to be premixed?

BioCentral Laboratories has engineered a portable filling station that is both solar and battery powered. A fixed wing, single engine aerial bomber can be refilled within 3 minutes. BlazeTamer380™ is mixed as the aircraft is filled with water.

BlazeTamer380™ is also compatible with most on-board concentrate injection systems.

What aircraft are suitable for BlazeTamer380™?

BlazeTamer380™ has been successfully used by:

- Helicopters fitted with on-board Belly Tanks
- Helicopters using Bambi Buckets or similar bucket systems
- Ground filled Air tractors
- Water scooping Fire Boss
- The large Airtanker Program (LAT) C130 – recently used in NSW
- Air tanker operations in Tasmania

⁵ See Appendix E: Cost Comparison

Can BlazeTamer380™ be used by fire engines?

Yes, in a pre-mixed form. At a maximum dilution rate of 1-2 litres per thousand litres, (dependent on fire fuel loads), it is simply poured into the tank and recirculated one full cycle through the pump, it is then ready to use.

This application method has been successfully tried and executed by the VIC CFA and the Texas AT&M Forest Service.

How does BlazeTamer380™ differ to existing products?

- It is easy to mix;
- It is the first and only Elastomer to be registered on the USDA-FS QPL. (Qualified Product List)
- It is the only product of its type in the world to be used exclusively to fight fires.
- It uses effectively a third to a quarter the amount of concentrate compared to other water enhancers;
- It is approved to use in all aircraft types and configurations;
- It is easy to clean up;
- It mixes easily in all water types including hard and saline water, and sea water;
- When dropped from aircraft the polymer chains make the water less prone to drift and wind shear evaporation – it has been designed to “FLY”;
- It will make a continuous footprint on the ground and has a more concentrated ground coverage level than gels or foams;
- It will remain effective on the ground for up to 2 hours (dependent on coverage level and mix rate) unlike foams which become virtually ineffective in less than 30 minutes.

Appendix A:

Introducing BioCentral Laboratories

BioCentral Laboratories Limited (BCL) is an Adelaide based, South Australian unlisted public company. BCL was formed as a research and development entity to explore commercial options for a range of linear polymers in firefighting, agriculture, road construction and engineering.

BCL has commercialised a number of innovative polymer products most notably:

- AquaBoost™ (for water retention in agriculture);
- PolyCom™ (for road base construction);
- DustChek™ (for dust control on heavy mining haul roads).

Recently, the company's flagship product BlazeTamer380™ achieved USDA-FS approval and BCL is now embarking on commercialisation and introduction to the Australian fire industry.

This product offers fire authorities around the world a cost effective and environmentally sensitive solution to bushfire issues.

Contact Details:

BIOCENTRAL LABORATORIES LIMITED

22 Phillips Street, Thebarton SA 5031

Managing Director:

John Stepancic

General Manager

Melissa Brooks

08 8234 8886

Appendix B:

Differences between BlazeTamer 380™ and other products currently in use in Australia

Differences between BlazeTamer380 and Foam, Super Absorbent Water Enhancers, Retardant

Application Properties	Foam	Water Enhancers	Retardant	BlazeTamer380
<i>Mix Rate</i>	0.1% - 1.0%	0.5% - 3.0%	15% – 20%	0.1% - 0.65%
<i>Aerial Attack type Direct or Indirect</i>	<ul style="list-style-type: none"> • Direct on fire 	<ul style="list-style-type: none"> • Direct on fire • Near Direct attack as short term wet break 	<ul style="list-style-type: none"> • Indirect attack as a chemical break only in advance of the fire 	<ul style="list-style-type: none"> • Direct on fire • Near Direct attack as short term wet break
<i>Wind effects</i>	<ul style="list-style-type: none"> • Prone to drift from aircraft 	<ul style="list-style-type: none"> • Prone to drift from aircraft 	<ul style="list-style-type: none"> • High viscosity less prone to drift • Low viscosity prone to drift from aircraft 	<ul style="list-style-type: none"> • Only minor drift in high wind conditions
<i>Mixing Infrastructure</i>	<ul style="list-style-type: none"> • Minimal 	<ul style="list-style-type: none"> • Complex systems requiring technical expertise and training 	<ul style="list-style-type: none"> • High cost infrastructure and technical expertise required 	<ul style="list-style-type: none"> • Minimal
<i>Approvals in all aircraft types</i>	<ul style="list-style-type: none"> • Only some products approved in all aircraft types 	<ul style="list-style-type: none"> • Only some products approved in all aircraft types 	<ul style="list-style-type: none"> • Specific products for specific aircraft types 	<ul style="list-style-type: none"> • Approved for use in all aircraft types and applications
<i>Compatible with on board aircraft dosing systems</i>	<ul style="list-style-type: none"> • Yes 	<ul style="list-style-type: none"> • Only some aircraft compatible 	<ul style="list-style-type: none"> • Not mixed on board aircraft 	<ul style="list-style-type: none"> • Yes
<i>Humidity Effects</i>	<ul style="list-style-type: none"> • Ineffective in very low humidity conditions 	<ul style="list-style-type: none"> • High dose rates required in low humidity conditions 	<ul style="list-style-type: none"> • Still works when water evaporated off 	<ul style="list-style-type: none"> • Works well in very low humidity conditions
<i>High drop heights</i>	<ul style="list-style-type: none"> • Prone to drift • Needs low wind conditions 	<ul style="list-style-type: none"> • Prone to drift • Needs low wind conditions 	<ul style="list-style-type: none"> • High viscosity retardant works • Low viscosity retardant prone to drift 	<ul style="list-style-type: none"> • Not subject to wind drift effects
<i>Mixing with high salinity water</i>	<ul style="list-style-type: none"> • Compatible 	<ul style="list-style-type: none"> • Product becomes unusable 	<ul style="list-style-type: none"> • Compatible 	<ul style="list-style-type: none"> • Compatible
<i>Accuracy of mixing dose and its effectiveness on drop performance</i>	<ul style="list-style-type: none"> • Very susceptible to variations in mixing rate on operational effectiveness 	<ul style="list-style-type: none"> • Can overdose mix to turn solution into thick gel • High viscosity curve 	<ul style="list-style-type: none"> • Can overload aircraft due to high specific gravity of retardant and high dose rates if mixing not accurate 	<ul style="list-style-type: none"> • Unaffected

Appendix C:

USA Accreditation 5100-306A



US Forest Service

Washington Office

Fire & Aviation Management

4/5/12

Water Enhancers (Gels) for Wildland Fire Management

Qualified By US Forest Service in Accordance with Forest Service Specification 5100-306A as Amended

These products are evaluated and qualified only at the specified mix ratio range and only for use with the indicated application. Consult individual agencies for specific policies relating to water enhancer use. Please review the Notes for Selection and Use.

Chemical	Mix Ratio ¹	Qualified Applications ²				
		Fixed-Wing Airtanker		Helicopters		Ground Engine
		Multi Engine	SEATS	Fixed-Tank	Bucket	
Uncolored						
Chemdal Aqua Shield 100	0.4–1.2%	3	•	-	•	•
Sold as Phos-Chek AquaGel-K	0.4–1.2%	3	•4	-	•	•
Sold as FireOut Ice	0.4–1.2%	3	•	-	•	•
Barricade II	1.0%	3	•4	-	•	•
Barricade II	1.0%–3.0%	-	-	-	•	•
Thermo-Gel 200L	0.5%–3.0%	3	•4	-	•	•
Thermo-Gel 500P	0.4%–0.5%	3	•4	•	•	•
Thermo-Gel 500P	0.4%–1.2%	3	•4	-	•	•
Wildfire AFG Firewall II	0.25%–3.0%	3	•4	•	•	•
BioCentral Blazetamer 380	0.65%	3	•	•	•	•
GelTech FireIce	0.12 lb/gal–0.18 lb/gal	3	•4	-	•	•
Phos-Chek Insul-8	0.37%	3	•	•	•	•
Phos-Chek Insul-8	0.37%–0.67%	3	•	-	•	•
Phos-Chek Insul-8	0.37%–3.0%	-	-	-	•	•
Colored – Specific colors are evaluated for use with specific products. Using a color qualified with one product in another product without further testing does not make a new qualified product.						
Thermo-Gel 200L AV-B1 (Blue)	0.5%–3.0%	3	•	-	•	•
<p>1 – Each product is qualified for the specified mix ratio or range. Mixtures outside the mix ratio or mix ratio range shown are not qualified for use.</p> <p>2 – Qualification Notes</p> <ul style="list-style-type: none"> • Fully Qualified – Product complies with all requirements of a formal specification. ○ Conditional Approval – Product complies with all requirements in the specification for laboratory evaluation; a field evaluation is required for full qualification. Evaluations from the field are requested with regard to effectiveness, ease of use and mixing. (Evaluation forms are available on the web at www.fs.fed.us/rm/fire/wfcs/tests/index.htm. Select “Water Enhancer Evaluation” under Section 12 – Operational Field Evaluation Test) - Not qualified for this application. <p>3 – Forest Service policy does not allow application of water enhancers from large airtankers. These products meet the requirements for application from multi-engine aircraft for those agencies whose policy permits this use.</p> <p>4 – Colored experimental products may be used within a controlled study to determine visibility as required by the specification.</p>						

Appendix D:

Australian Environment Protection Authority

Environment Protection Authority
www.epa.sa.gov.au



GPO Box 2607 Adelaide SA 5001
250 Victoria Square Adelaide SA
T (08) 8204 2000 F (08) 8204 2020
Country areas 1800 623 445

John Stepancic
Managing Director
BioCentral Laboratories Ltd

Dear John,

I have reviewed the MSDS for BLAZETAMER (attached). On the basis of this information it is my assessment that the BLAZETAMER product represents a low risk to the environment if it is used appropriately in a fire fighting scenario.

The EPA is not in a position to formally endorse the product (or any other fire fighting chemical agent). However the EPA would consider the appropriate use of this product to be consistent with the requirements of the *Environment Protection Act 1993* and the Environment Protection (Water Quality) Policy 2003.

Regards,

Clive Jenkins

Senior Scientific Officer
Science and Assessment Division

ENVIRONMENT PROTECTION AUTHORITY

Date: 5/4/2012

SAFETY DATA SHEET



Blazetamer380

Infosafe No.: MTB1X
Version No.: 1.0
ISSUED Date: 30/09/2011
ISSUED BY BIOCENTRAL
LABORATORIES LTD

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name

Blazetamer380

Company Name

BIOCENTRAL LABORATORIES LTD

Address

22 Phillips Street Thebarton
SA 5031 Australia

Emergency Tel.

+61 415 824 608 or +61 458 047 431

Telephone/Fax Number

Tel: +61 8 8234 8886

Fax: +61 8 8234 8889

Recommended Use

A Class fire suppression and retarding liquid. The use of the product involves significant dilution with water (1:150 to 1:1500).

2. HAZARD IDENTIFICATION

Hazard Classification

NON-HAZARDOUS SUBSTANCE.

NON-DANGEROUS GOODS.

Not Classified as Hazardous according to criteria of National Occupational Health & Safety Commission, Australia (NOHSC).

Not Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

Risk Phrase(s)

Not classified as hazardous according to criteria of NOHSC

Environmental Hazards

Based on component data the product is not expected to be harmful to the environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Composition, information on ingredients

The product is a polyacrylamide copolymer emulsion, containing surfactants and performance additives.

Ingredients

Name	CAS	Proportion
Ingredients determined not to be hazardous, including water		100 %

4. FIRST-AID MEASURES

Inhalation

If inhaled, remove to fresh area. Keep at rest until recovered. If symptoms persist seek medical attention.

Ingestion

Do NOT induce vomiting. Wash out mouth and lips thoroughly with water. Seek medical attention.

Skin

If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. If symptoms develop seek medical attention.

Eye

If in eyes, hold eyelids apart and flush the eyes continuously with running water. Continue flushing for several minutes until all contaminants are washed off completely. Seek medical attention.

First Aid Facilities

Eye wash fountains and normal wash room facilities.

Advice to Doctor

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use appropriate fire extinguisher for surrounding environment.

Hazards from Combustion Products

Under fire conditions this product has been tested using method NFX 70-100. The R value was determined at 0.72.

Special Protective Equipment for fire fighters

Fire fighters should wear appropriate protective clothing and breathing apparatus in accordance with prevailing fire conditions.

Specific Hazards

The product is a fire retardant and therefore non combustible.

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures

Wear appropriate personal protective equipment and clothing to prevent exposure. Increase ventilation. Evacuate all unprotected personnel. If possible contain the spill. Place inert, non-combustible absorbent material onto spillage. Use clean non-sparking tools to collect the material and place into suitable labelled containers for subsequent recycling or disposal. Dispose of waste according to the applicable local and national regulations. If contamination of sewers or waterways occurs inform the local water authorities and EPA in accordance with local regulations.

Personal Precautions

Spills produce extremely slippery surfaces on non porous surfaces only.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Wear appropriate protective equipment to prevent inhalation and eye exposure. Use in designated areas with adequate ventilation. Prevent the creation of vapours and mist in the work atmosphere. Keep containers closed when not in use. Practice good personal hygiene, that is, always wash hands after handling, and before eating, drinking, smoking or using the toilet facilities.

Conditions for Safe Storage

Non combustible liquid. Store in a cool, dry well-ventilated area away from heat and out of direct sunlight. Keep containers closed when not in use and securely sealed and protected against physical damage. Inspect regularly for deficiencies such as damage or leaks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards

No exposure standards have been established for this material.

Engineering Controls

Use with good general ventilation. If mist or vapour are produced local exhaust ventilation should be used.

Respiratory Protection

In case of insufficient ventilation, suitable respiratory equipment should be worn.

Eye Protection

Where eye contamination is likely the use of chemical goggles, safety glasses with side shield protection or face shield as appropriate should be worn.

Hand Protection

Suitable impervious gloves, e.g. neoprene, nitrile or laminated film are recommended.

Footwear

Safety boots as required.

Body Protection

Suitable impervious protective clothing should be worn when handling large quantities.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

White milky liquid.

Odour

Mild odour.

Melting Point

0°C (32°F) approx.

Boiling Point

>100°C (212°F)

Solubility in Water

Miscible with water.

Specific Gravity

0.998 (H₂O=1)

pH Value

6.4 (as supplied)

Vapour Pressure

Not available

Vapour Density (Air=1)

Not available

Flash Point

Not applicable, water-based emulsion.

Flammability

Non-combustible liquid.

Flammable Limits - Lower

Not applicable

Flammable Limits - Upper

Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability

Stable under normal conditions of storage and handling.

Hazardous Decomposition Products

Under the conditions set out in Section 5: Hazardous Combustion Products the release of gases including oxides of carbon and sulphur, are deemed to be within safe limits.

Hazardous Polymerization

Will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicology Information**Acute Oral Toxicity:**

For the Concentrate: LD50 >5050 mg/kg

For the Mixed Fire Chemical: LD50 >5050 mg/kg

Acute Dermal Toxicity:

For the Concentrate: LD50 >2020 mg/kg

For the Mixed Fire Chemical: LD50 >2020 mg/kg

Primary Eye Irritation - Nonwashed Eyes:

For the Concentrate: Mildly irritating. Toxicity category IV. Irritation score: 5.3

For the Mixed Fire Chemical: Practically non-irritating. Toxicity category IV. Irritation score: 0.7

Primary Eye Irritation - Washed Eyes:

For the Concentrate: Minimally irritating. Toxicity category IV. Irritation score: 5.3

For the Mixed Fire Chemical: Practically non-irritating. Toxicity category IV. Irritation score: 1.3

Primary Dermal Irritation:

For the Concentrate: Slight irritant. Toxicity category III

For the Mixed Fire Chemical: Slight irritant. Toxicity category IV

Inhalation

Inhalation of vapours or mists may cause irritation to the mucous membranes and upper airways.

Ingestion

May cause irritation to the mouth, oesophagus and stomach. Symptoms may include nausea and vomiting.

Skin

May cause mild irritation in contact with the skin, which can result in redness, itchiness and possible dermatitis.

Eye

May cause transient eye irritation resulting in redness, swelling, stinging and lacrimation.

Chronic Effects

Prolonged or repeated exposure to this material may result in irritation to the skin, and aggravate existing respiratory disorders.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Anionic polyacrylamide has no systemic toxicity to aquatic organisms or micro-organisms.

Persistence / Degradability

Non-degraded anionic polyacrylamide has been shown to be recalcitrant to microbial degradation. This is probably related to the extremely high molecular weight which renders microbial attack very difficult. However, once the polymer has been degraded through photolysis (i.e., the action of UV light), and the macromolecule broken down into oligomers, it becomes bioavailable and is biomineralized.

Mobility

Not available

Bioaccumulative Potential

Anionic polyacrylamide has no potential to bioaccumulate, being completely soluble in water (only limited by viscosity) and insoluble in octanol.

Environmental Protection

This product is an A Class fire suppression and retarding liquid. The use of the product involves significant dilution with water (1:150 to 1:1500).

This product represents a low risk to the environment if it is used appropriately in a fire fighting scenario.

Acute Toxicity - Fish

LC50 (Brachydanio rerio) 96 hours: 178 - 357 mg/L

Test F242:OECD 203/GLP/report 21/12/1995

Acute Toxicity - Daphnia

EC50 (Daphnia magna) 48hr: 212 mg/L

Test F243:OECD 202/GLP/report 21/12/1995

Acute Toxicity - Algae

EC50A (I)/Chlorella vulgaris/ 96 hours: > 1,000 mg/L

EC50µ (I)/Chlorella vulgaris/ 96 hours: > 1,000 mg/L

No Observed Effect Concentration (NOEC): 708 mg/L

Test F244:OECD 201/GLP/report 21/12/1995

Acute Toxicity - Bacteria

EC10/Pseudomonas putida/18 hours: 127 mg/L

EC50/Pseudomonas putida/18 hours: 892 mg/L

Test F245:OECD 301F,DIN 38412-27,ISO 7027/GLP/report 21/12/1995

13. DISPOSAL CONSIDERATIONS

Disposal considerations

Dispose of waste, according to federal, EPA and state regulations. Assure conformity with all applicable regulations.

14. TRANSPORT INFORMATION

Transport Information

Not classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

U.N. Number

None Allocated

Proper Shipping Name

None Allocated

DG Class

None Allocated

Packing Group

None Allocated

DOT Proper Shipping Name

This product is not regulated for transportation.

DOT Packing Group

None allocated

DOT Class

None allocated

15. REGULATORY INFORMATION

Regulatory information

Not classified as Hazardous according to criteria of National Occupational Health & Safety Commission (NOHSC), Australia.

Not classified as a Scheduled Poison according to the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

This product is considered to be a non-hazardous chemical under the Hazard Communication Standard.

Poisons Schedule

Not Scheduled

16. OTHER INFORMATION

Date of preparation or last revision of MSDS

SDS SDS amendment: February 2015 Section 14

SDS amendment: August 2013

1. Identification of the substance/mixture and of the company/undertaking
2. Hazards identification
3. Composition/information on ingredients
6. Accidental release measures

9. Physical and chemical properties
12. Ecological information
16. Other information

MSDS Reviewed: March 2011
Supersedes: December 2008

References

Hazard Communication Standard.
ACGIH Threshold Limit Values.
NIOSH: Pocket Guide to Chemical Hazards.

Technical Contact Point

BioCentral Laboratories Limited
22 Phillips Street, Thebarton, South Australia, 5031.
Phone Business Hours: +61 8 8234 8886
Facsimile: +61 8 8234 8889
Emergency Phone all Hours 24/7: +61 415 824 608 or +61 458 047 431

END OF SDS

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Appendix E:

Cost Comparison of Aerial Fire Suppressants/Retardants

Cost Comparison for BlazeTamer380 against other Aerial Fire Suppressants/Retardants.

Product	Cost per litre concentrate or cost per Kg for powder concentrate	Recommended application rates	Cost per litre delivered typical helicopter application or light fuels by SEAT	Cost per litre delivered typical for SEAT application in moderate to heavy fuels	Cost per litre delivered heavy fuels or short term breaks (1-2 hours)	Cost per 1000 litres delivered typical helicopter application	Cost per 3000 litres delivered typical SEAT application	Comments
BlazeTamer380	1000L Tote \$19/L 20L Pail \$22/L	0.2% - 0.65%	Mix at 0.2% Tote price \$0.038 Pail price \$0.044	Mix at 0.4% Tote price \$0.076 Pail price \$0.088	Mix at 0.65% Tote price \$0.124 Pail price \$0.143	Tote Cost \$38 Pail Cost \$44	Tote Cost \$114 Pail Cost \$132	Price difference between totes and pails is due to packaging costs
Bushfire fighting foams	\$5.35/L Angas Forexpan-5	0.1% - 1.0%	Mix at 0.3% Cost \$0.015	Mix at 0.3% Cost \$0.0161	Not appropriate for short term breaks Mix at 0.3% Cost \$0.0161	\$16.10	\$48.30	Not appropriate for short term breaks for times greater than 15-30 minutes
Superabsorbent polymers Liquid Concentrate	Estimated cost only \$19/L	0.7% - 2.0%	Mix at 0.7% Cost \$0.133	Mix at 1.5% Cost \$0.285	Mix at 2.0% Cost \$0.38	Cost \$133	Cost \$855	Mix rate determined from D. Cant's CFS experience comparing product application rates
Retardant Powder "A"	Estimated cost only \$5.25 kg	Standard mix rate as specified 1 Kg yields 8.972 litres	Cost \$0.585	Cost \$0.585	Cost \$0.585	Not approved for helicopter tank use Cost \$585	Cost \$1755	Costs are estimates only. Note: Fixed mix rate Indirect attack application
Retardant Liquid Concentrate "B"	Estimated cost only \$5.00/L	Standard mix rate as specified 1 litre yields 4.398 litres	Cost \$1.137	Cost \$1.137	Cost \$1.137	Not approved for helicopter tank use Cost \$1137	Cost \$3411	Costs are estimates only. Note: Fixed mix rate Indirect Attack application