

FIRE

Each year, thousands of fires impact on man-made structures, bushland and rural properties in Western Australia. FESA is the Hazard Management Agency for fires in gazetted fire districts in urban and rural areas, including land managed by the Department of Environment and Conservation (DEC) that falls within gazetted areas. Local governments are responsible for fire management in other areas of Western Australia.

It is our responsibility to ensure emergency management activities related to prevention of, preparedness for, response to and recovery from fire are undertaken. FESA's Operational Services are responsible for the development of the [State Bushfire Emergency Management Plan](#) and the [State Urban Fire Emergency Management Plan](#).

FESA career and volunteer Fire and Rescue Service (FRS) brigades, Volunteer Fire Services (VFS) and Volunteer Emergency Service (VES) units combat fires in urban and urban-rural fringes. Volunteer Bush Fire Brigades (BFBs) are managed by local governments. BFB volunteers combat fires in other non-gazetted areas. SES volunteers often provide a support role at fire incidents.

Funding for local government Bush Fire Brigades is now provided by the Emergency Services Levy, and data on local government fire incidents is also included in this section.

PREVENTION

ARSON

Arson Information Network

Currently, the arson conviction rate in Western Australia is approximately double the national average. During the 2006-07 period, Western Australia Police arrested 233 persons for fire lighting offences which was an increase of 3% on the previous year. FESA, Western Australia Police and the Department of Environment and Conservation spent considerable resources in the ongoing development of the Arson Information Network. The network is designed to capture and pass information from fire fighters and the community to Western Australia Police using a range of mediums including Crimestoppers.

Profiling of Bush Fire Arsonists

We have contracted a researcher to profile bush fire arsonists in Western Australia. It is estimated that the majority of bush fires each year are either deliberately lit or caused by human activities. However, there is very little information on bush fire arsonists to assist ourselves and our partners in developing and implementing bush fire prevention strategies.

The research will investigate factors related to bush fire arson activity and the characteristics of arsonists. It will concentrate on members of the general community who are lighting bush fires and also compare these people with arsonists who are firefighters.

STRUCTURAL FIRE

Fire safety inspections of vulnerable buildings

We continue to address the risk of fires in vulnerable buildings through joint inspections of selected premises with local governments.

This year we completed 257 inspections in 53 local government areas. Inspections included a range of budget accommodation types, as well as some public buildings. Priority was given to inspection of nightclubs, psychiatric hostels and some aged care facilities.

Low Budget Accommodation Inspections 2006 - 2007

BUILDING TYPE	QUANTITY INSPECTED
Metropolitan hotels/lodging houses	45
Country hotels with accommodation	44
Country lodging houses	71
Metro public buildings	50
Country public buildings	47
TOTAL	257

Follow up visits to backpacker properties were made, and these revealed a high rate of adoption of fire safe recommendations.

We have built strong relationships with local governments across Western Australia through this program. Since it began in 2003, more than 940 premises across 117 local government areas have been inspected and follow-up visits have revealed a high level of compliance with the inspection team's recommendations. Visits also resulted in an increased level of enforcement by local government.

Smoke Alarm Campaign

The Hon. Minister for Emergency Services John Kobelke MLA formally announced our annual smoke alarm promotion, *Don't be a Fool! Change your Smoke Alarm Battery on April 1st* on 21 March 2007.

The two-week campaign included a wide range of media and promotional activities, supported by campaign sponsor Gillette through its subsidiary Duracell Batteries.

There has been a steady increase in residential smoke alarm installations in recent years. Currently, 86% of Western Australian homes have smoke alarms – 24% hard-wired alarm and 62% battery powered. However, the campaign appears to be losing some of its impetus, with anecdotal evidence suggesting an increasing level of complacency among homeowners.

With the high percentage of homes with battery-operated smoke alarms, the campaign messages about changing batteries annually and regular testing and maintenance remain relevant.

There is strong community support for the campaign and we will explore new ways to increase desired behaviours for 2008 and beyond.

BUSHFIRES

Our Bushfire and Environmental Protection Branch support operational staff to minimise the impact of bushfires and provides information to assist members of the community to live and operate within bush and pastoral areas safely. The following key initiatives were undertaken during the past year.

Bushfire arson reduction

During 2006-07, responses to bush fires in Western Australia increased for the first time since the introduction of targeted bush fire arson reduction activities in December 2001. 7,336 bushfire incidents were recorded, an increase of approximately 9% compared to 2005-06.

During the year comprehensive bush fire arson reduction programs were implemented at five locations where high incidences of bushfires had been recorded – Karratha, Roebourne, Fitzroy Crossing and Baldivis. These programs are developed after interrogating fire attendance data in liaison with local fire managers and partner agencies, and are designed to make communities aware that deliberate fire lighting puts local lives and properties at risk and encourage community members to report suspicious behaviour. Programs and activities are modified to meet the needs of local communities, ensure that residents are aware of the arson problem and to raise awareness of the options to resolve the problem in their area. Activities usually involve doorknocking at homes at the same time as school visits and shopping centre displays in targeted areas. These activities are also supported by media involvement.

In 2006-07 we also conducted widespread distribution of arson awareness posters for the first time.

BUSH FIRE MITIGATION

Urban bush fire response plans and bushfire mapping are invaluable tools that support bush fire mitigation, prevention, suppression and recovery activities across Western Australia.

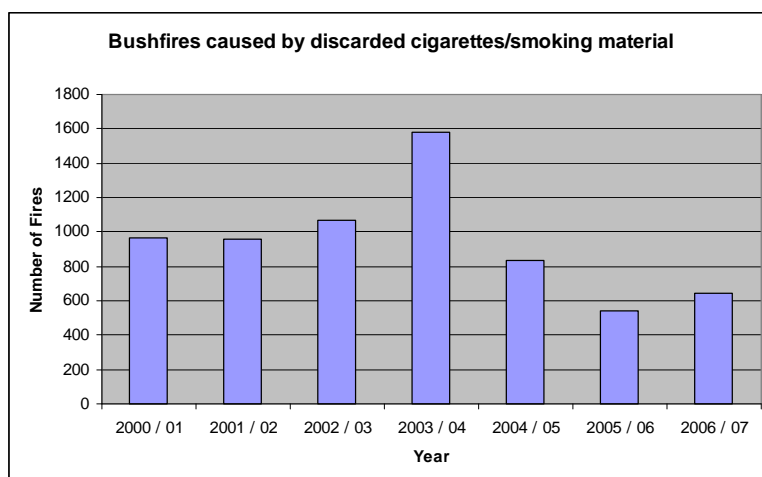
So far, urban bush fire response plans for 180 of 400 sites have been prepared. 20 *Bush Forever Sites* have also been mapped to assist fire services when attending incidents. Maps have also been provided to a number of local governments to assist with prevention planning.

Comprehensive maps for the Kimberley and Pilbara have been developed, including information on rainfall, soil types, vegetation types, topography, pastoral station carrying capacity, culturally sensitive sites and environmentally sensitive areas.

REDUCING ROADSIDE FIRES CAUSED BY CIGARETTES

We have continued to focus on reducing roadside fires caused by discarded cigarettes during the past year. We worked with local governments to manage the moisture content of roadside mulch, particularly for periods of high fire danger. Moisture is the most important factor affecting its propensity to ignite. We have tested to establish the most effective fire prevention regimes and delivered the findings to a number of local governments.

To further reduce bush fires caused by discarded cigarettes, we invited staff and volunteers to report people discarding cigarettes from their cars. A Discarded Cigarette Report Card – used to record an offender's vehicle details – was delivered to all regional offices, stations, brigades and units across Western Australia.



Whilst figures for this ignition source have increased this year, these initiatives have significantly reduced avoidable roadside bush fires caused by discarded cigarettes since the program was introduced. Importantly, this also reduces the incidence of firefighters operating in dangerous roadside situations.

GUIDELINES FOR SUPPRESSION OF BUSH FIRES IN ORGANIC SOIL AREAS

The management of bush fire suppression in areas containing high levels of organic soils (peat) is extremely complex.

Acid sulfate soils are naturally-occurring, highly organic soils that contain iron sulphide minerals. When exposed to air these soils produce sulfuric acid and can often release toxic quantities of iron, aluminium and heavy metals. Around 30% of Australia's acid sulfate soils are believed to occur in Western Australia. Many of the pyrites on the Swan Coastal Plain are fine-grained and can be highly reactive, with oxidation commencing within a few hours of exposure to air.

Western Australia has legislation and policies such as the *Environmental Protection Act 1986*, provision of environmental harm legislation, and a policy on the potential to create acid sulfate soils, as well as legislation on bush fire suppression. All influence the strategies adopted during bush fire management.

All actions to manage bush fires in these important environmentally sensitive areas will result in some loss of environmental values. It is very important that any environmental damage, particularly long-term, is minimised. Fire suppression with foams, retardants or wetting agents which may contain surfactants and other compounds can cause loss of biodiversity and reduce regeneration.

The use of earthmoving machinery to create firebreaks can result in soils containing iron sulfide minerals being exposed air and producing sulfuric acid and often toxic quantities of iron, aluminum and heavy metals. To do nothing more than contain the fire within the perimeter of the peat area will potentially expose the local community to an extended period of smoke as well as the potential for physical harm of people or animals who may come into contact with burning peat.

In consultation with researchers, environmental agencies and land managers, we have developed fire management guidelines for peat laden (organic) and acid sulphate soils. In addition to the environmental benefits, there will be a reduction in time and costs associated with extinguishing of these 'difficult' fires. The guidelines were used at the Neerabup fire, which affected the Clarkson community, and proved to be effective.

FURTHER BUSH FIRE INITIATIVES

- The development of a visual guide for bush fire fuel identification in the South West will assist firefighters and those involved in preventative fire management to more quickly recognise fuel loads. This will also assist landowners to protect their property through clearing or installation of fire protection barriers.
- Considerable work has been completed in the Kimberly region to establish a holistic fire management strategy to assist pastoralists and land managers. There are two principal components of the strategy:
 - guidelines for effective firebreaks that are environmentally sound; and
 - development of scientifically-based burning guidelines to ensure effective fire management on pastoral stations.

Feedback from pastoralists has been positive. Similar work is being completed in the Pilbara region.

- In conjunction with the University of Western Australia, a research project was completed on the vulnerability of evaporative air-conditioners in bush fires. This recommended the inclusion of a fine wire aperture mesh to protect the cooling pads from airborne embers originating from nearby bush fires. The research will form the basis for engagement with air-conditioning industry representatives and related stakeholders to look at improving the vulnerability of these units in bush fire situations.

BUSH FIRE COOPERATIVE RESEARCH CENTRE (BUSHFIRE CRC)

FESA has established a dedicated Bushfire CRC coordinator to assist in sharing the research outcomes from [Bushfire CRC](#) programs with firefighters in Western Australia. During the past year, three interactive forums were held where Bushfire CRC researchers presented the outcomes of their work to volunteer and career firefighters, fire managers and stakeholders. Topics covered were:

- Smoke Forum – Respiratory Health of Firefighters;
- Building and Occupant Protection; and
- Decision Making and Firefighter Health and Welfare.

The half-day forums were held Fridays and repeated on the following Saturday morning to allow greater volunteer participation. One of the sessions was also videotaped and circulated widely across the Western Australian fire community.

Feedback from forum attendees has been extremely positive. The researchers involved have also expressed the benefits to them of hearing the concerns of firefighters 'first-hand'.

PREPAREDNESS

COMMUNITY SAFETY PROGRAMS

There were 10 reported fire fatalities in 2006-07. A database of fire fatalities has been established which, with the close co-operation of the Office of the State Coroner, will provide key information on the circumstances in which people were killed to better tailor our community fire prevention information.

Community safety information, including presentations and media releases are used to encourage all sections of the community to embrace fire safety. Where trends are identified, preventative announcements are made. Warnings on the use of candles and budget commercial night-lights were two notable examples during 2006-07.

Bush fire – Prepare, stay and defend or go early

The campaign objective is to raise awareness amongst residents living in bush fire prone areas in relation to preparedness and their options in the event of an emergency.

This year, the Bush Fire Stay or Go Kit has been reprinted in a smaller format for easier handling and distribution. Feedback from key stakeholders resulted in the launch in December 2006 of a *Be Prepared* DVD to help residents visualise preparedness actions. The filming of the DVD was assisted by a number of residents who shared their experiences of bush fires, and volunteer and career firefighters who provided an insight into fire behaviour. Approximately 12,500 DVDs and 14,000 Bush Fire Stay or Go Kits have been distributed to residents in target areas.

Dry Season Campaign

This was launched on 22 July 2006 in Broome. The program is designed to address fire safety issues specific to the northern dry season in the Pilbara and Kimberley between May and November. Targeted programs were designed in collaboration with local stakeholders to meet individual community needs. The target group of the 2006-07 program was tourists to the region; especially those travelling vast distances on the road and camping in either designated areas or indiscriminately on pastoral or crown land.

Winter Safe Program

This program is designed to educate communities about potential fire hazards and appropriate fire prevention and preparedness activities during the winter period. The program specifically targets at-risk community groups, including families with young children, seniors, carers of the frail, elderly or people with disabilities, and residents in suburbs that have a statistically high fire risk.

This year's campaign focuses on increasing research evidence that the use of functioning smoke alarms significantly reduces the risk of fatalities from fire and smoke. It also promotes the importance of developing, documenting and practising a home fire escape plan.

WAROONA DOOR KNOCK

During the week of the serious Dwellingup bushfires in February, staff from our Bush Fire and Environmental Protection Branch doorknocked homes in the Waroona area, approximately 24 kilometres southwest of Dwellingup.

They physically inspected homes and left fire safety information with residents who could potentially be affected by bush fire. Although some of the properties inspected were well prepared for a bush fire, most residents needed to undertake more work.

MAJOR EXERCISES

Kalamunda bush fire

A simulated bush fire exercise was conducted in Kalamunda. The aim of the exercise was to evaluate a multi-agency response, management and coordination of a major escalating bush fire that crossed jurisdictional boundaries. Participating agencies were able to evaluate their own agency's response and test their communications and reporting protocols.

Exercise SLIP – EM bush fire

This was multi-agency, information sharing desk-top exercise designed to introduce and test cross-agency information sharing using the EmerGeo product for the provision of a coordinated multi-agency response to a bush fire emergency.

The objectives of the exercise were:

- To test the effectiveness of information sharing across multiple agencies;
- To test the practicality and suitability of the EmerGeo product as a large incident management tool;
- To test the ability of product configuration to support the operational processes; and
- To test the completeness of the data gathered to support the operation.

The aims of the exercise were achieved. EmerGeo is well positioned to be used to map divisional and sector boundaries, and to give other agencies and stakeholders the ability to share, view and update incident information. Work is required on the process for authorising data to be shared.

RESPONSE

In 2006-07, fires accounted for more than 48% of all incidents responded to by career or volunteer firefighters, a slight increase on last year. The number of incidents in all categories of fires has increased.

BUSHFIRES

Career or volunteer firefighters responded to a total of 7,343 bush fires during the past year. This is an increase of 11.5% on 2005-06.

A bushfire emergency period was declared when significant resources were required to combat hundreds of bush fires across the State during the 2006-07 bush fire season. This extraordinary power, prescribed by the [Bush Fires Act 1954](#) has only been exercised twice in the State's history and is reserved for those occasions where there is a very real threat of a bush fire catastrophe. Of particular significance were 29 bush fires across the south western portion of the State, requiring the formation of incident management teams and coordinated support across 25 local governments.

STRUCTURAL FIRES

Structural fires are defined as fires in housing or other buildings ([Report on Government Services, 2007](#)). During 2006-2007, a total of 1,452 structural fires were suppressed by our career or volunteer firefighters. This is an increase of 7.5% on 2005-06.

OTHER FIRES

Firefighters responded to 4,128 other fires during 2006-07, an increase of 12% compared to last year. This category includes rubbish fires, fires in other structures such as tunnels, outbuildings, fencing or storage facilities and mobile property fires.

NOTABLE INCIDENTS – STRUCTURAL FIRE

KWINANA BULK TERMINAL CONVEYOR BELT TUNNEL – JANUARY 2007

This fire involved a 200 metre long underground conveyor belt tunnel transporting coal to shipping. Ignition was caused by spontaneous combustion of high-grade coal. Estimated property loss was \$4.85 million.

NATIONAL HOTEL, FREMANTLE – 11 MARCH 2007

This fire resulted in \$4 million damage. Crews arrived at the scene quickly after early notification through 000. However, the blaze was very difficult to suppress because of grave danger that the heritage building might collapse. At the height of the incident around 50 firefighters worked to contain the fire and protect neighbouring businesses. Investigations revealed that the fire was intentionally lit. Two juveniles were subsequently charged with unlawful damage and remanded in custody.

MIDLAND MILITARY MARKETS – 25 APRIL 2007

Crews worked for two hours to bring the blaze in this 94 year old building under control. Most of the 120 shops within the markets were destroyed although firefighters were able to save a number in the north west corner of the building. Fire investigators established that the fire was caused by an electrical short circuit in an electrical distribution board. Total damage was estimated at \$5 million.

NOTABLE INCIDENTS – BUSH FIRE

CARABOODA – 29 AUGUST 2006

Firefighters faced significant challenges in extinguishing this fire due to difficult access and the difficulties associated with extinguishing fire in peat soils. The fire caused considerable adverse public opinion due to smoke, odour and firefighters' inability to extinguish it.

FITZROY VALLEY – OCTOBER 2006

This bush fire affected more than 500,000 hectares and took two weeks to control. It caused significant pasture loss to Brooking Springs, Ellendale and Jubilee Downs pastoral stations. Our managers, local government, Hamlet Grove BFB and Fitzroy Crossing VES assisted the pastoralists to contain this fire using direct attack, back burning and earth fire breaks.

COCONUT WELLS – OCTOBER 2006

This fire spread rapidly through the rural community east of Coconut Wells on Waterbank Aboriginal Lease. Our managers assisted local government, Broome BFB and Broome VFRS to control the fire during a three day period. The fire damaged outbuildings, fences, vehicles and mango plantations.

KALAMUNDA FIRE – 12 DECEMBER 2006

This major bushfire threatened properties in the Perth Hills area of Kalamunda. Career FRS, volunteer FRS, volunteer BFB crews and DEC personnel worked for several hours to contain the fire. Helitacs and fixed wing water bombers were deployed to protect crews and properties. Unfortunately, the fire completely destroyed one house and damaged another when embers from a bushfire entered the houses through roof-mounted evaporative air conditioning units.

DWELLINGUP – 16 DECEMBER TO 11 FEBRUARY 2007

Three significant bush fires in the Dwellingup area burnt through an estimated 14,000 hectares of bushland between Dwellingup and Coolup. The first fire was deliberately lit and started three kilometres north of the Dwellingup townsite. Investigations determined that the second and third ignitions were most likely caused by smouldering peat soils in the hot, dry weather conditions.

It is important to note that there was no loss of life during the Dwellingup bush fires despite the extreme conditions and significant associated risks.

However, the rapid response and tireless efforts of DEC, volunteer BFBs, career and volunteer FRS crews, supported by water bombing aircraft, could not prevent the loss of 14 houses and damage to a further four. Stock, outbuildings and farm machinery were also extensively damaged.

WHITEMAN PARK – 15 DECEMBER 2007

Significant damage was caused to the bush environment and some sheds on the property. Evacuating and accounting for all visitors to the park at the time was challenging.

CHATCUP – 3 FEBRUARY 2007

During the early stages of this fast moving fire, a local resident self-evacuating at a late stage lost control of her vehicle and was killed. The fire was estimated to be travelling at 9,000 metres per hour at its peak. No major property losses occurred. The incident was the subject of a Western Power investigation.

BOYA – 9 MARCH 2007

This deliberately lit bush fire threatened neighbourhoods in Greenmount and Darlington. It was one of 40 suspicious incidents recorded in two months in Boya and neighbouring suburbs. Helitacs assisted firefighters in protecting property, saving ten homes and protecting a further 22 properties.

PORONGURUP WILDFIRE – 11 FEBRUARY 2007

This fire razed 4000 hectares in the Porongurup National Park and 2,800 hectares of private property. One person was severely burnt, one house was lost and damage was sustained to fencing, stock and farm buildings and Western Power and Telstra infrastructure.

RECOVERY

ARSON ADVICE FOR FREMANTLE BUSINESS

After the National Hotel fire, our Fire Investigation and Analysis Unit and staff from the Fremantle regional office informed business owners in the area how to better protect their business from arson.

WANDRA

A natural disaster was declared for the areas affected by the Dwellingup fires. Community relief funding of \$1.04 million was provided through WANDRA to assist with road repairs, restoration of essential public assets, clean up costs and personal hardship.

AERIAL FIREFIGHTING

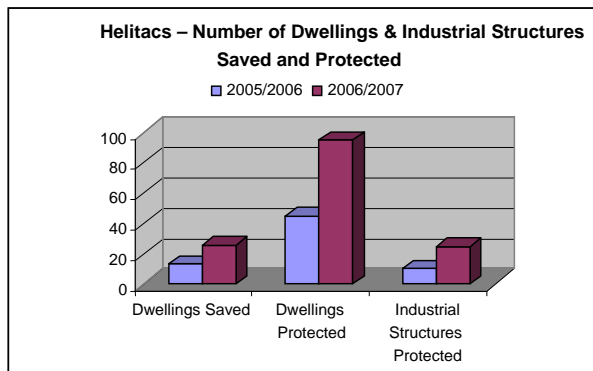
The integrated use of helicopter water bombers (Helitacs) and fixed-wing water bombers continues to be a successful strategy – combining the bush fire ‘knockdown’ capacity of the fixed-wing aircraft and the fast turn-around times of the Helitacs to provide effective protection of Perth’s rural-urban fringe.

Helitacs are now considered an essential firefighting tool in support of fire fighters on the ground in Western Australia. Following the expansion of the Helitac response area in 2005-06, additional collar tanks for water resupply were strategically located for the 2006-07 fire season.

The 2006-07 fire season was longer and more severe than the previous year. As a result, Helitacs were activated for 148 incidents, delivering 2.971 million litres of water and 6,666 litres of foam in a total of 2,971 drops. Fixed-wing water bombers worked jointly with the Helitacs at 20 incidents.

Overall, there was a 200% increase in incidents requiring response, and a 500% increase in Zone 2 responses. Total flying hours increased by 73% and the number of drops more than doubled from the previous year. Despite these significant increases in operational activity, the Helitac average response time of 12 minutes was 20% below a 15 minute target, and turnaround time to get water to the fire line improved from 5.6 minutes in 2005-06 to 4.6 minutes.

Zone 2 automatic responses comprise the dispatch of two Helitacs and two-fixed wing water bombers with the remaining two Helitacs on standby at Perth airport if required. This strategy effectively saved an estimated \$9 million worth of structural assets and protected a further \$41 million worth.



NOTABLE INCIDENTS

WHITEMAN PARK – 3 DECEMBER 2006

This incident escalated rapidly and had the potential for injury as well as loss of life and property. Three Helitacs and fixed wing bombers supported ground crews and appliances for more than 13 hours, with poor visibility due to smoke and the proximity of the general aviation approach to Perth Airport making aerial operations difficult.

ZIGZAG – 8 MARCH 2007 AND BOYA 9 MARCH 2007

Both of these Zone 2 incidents were suspected of being deliberately lit. Helitacs and fixed wing water bombers were used to support ground crews and appliances to contain the fires and protect numerous properties under direct threat. With a number of aircraft operating in a relatively high-risk area with high tension power lines, valleys and ridges – safety was of paramount importance. Without the joint effort of aerial suppression and ground crews there would likely have been significant property losses.

AERIAL INTELLIGENCE

Increased State Government funding has enabled our air intelligence helicopter to be equipped with a Star Safire III thermal imaging camera incorporated with a digital video camera, laser rangefinder, microwave down-link and Avalex mapping system.

The new equipment is invaluable for bush fire and incident management. It transmits real-time images of mapping, hot-spot information and digital/infrared vision from the helicopter to management teams in the field. Maps indicate the exact location of the fire and assist in identifying vulnerable community assets.

The information gathered and transmitted has greatly enhanced the ability of incident management teams to view hotspots, and predict fire shapes and escalating threat. This has allowed for early community warnings, more effective protection of community assets and a greater level of firefighter safety.

The new equipment is also being evaluated for real-time data capture in a range of incidents including hazardous materials response, urban search and rescue, land search and rescue, floods and storms.

In 2006-07, the aerial intelligence helicopter was used for 68 incidents compared with 40 the year before. Flying hours more than doubled from 53 in 2005-06 to 125 in 2006-07. We achieved 100% availability to assist against a target of 95%.

Average time to activate this year was 12.3 minutes against a target time of 15 minutes. This was an improvement on last year's performance of an average activation time of 14.3 minutes.