POST INCIDENT ANALYSIS

Bridgetown Complex

Fire 23 (Peninsula)
Fire 24 (Hester)
Fire 26 (Ferndale)

Thursday January 15th 2009
to
Tuesday January 20th 2009

Department of Environment and Conservation
Our environment, our future

Shire of Bridgetown-Greenbushes

Government of Western Australia
Fire & Emergency Services Authority

FESA
Fire & Emergency Services Authority of Western Australia

CONTENTS

DEBRIEF PROCESS

Debriefs and After Action Reviews were undertaken by the Incident Management Teams (IMT), fire fighter crew resources from both DEC and Bush Fire Brigades, the incident Management Group (IMG), the Operations Area Management Group (OAMG) and a multi-agency group chaired by WA Police that focused on traffic management.

Minutes and recommendations from these forums were collated and used to develop this Post Incident Analysis (PIA).

OVERVIEW

The Post Incident Analysis:

The purpose of this Post Incident Analysis is to produce an overview of what happened during the incident and to identify wherever possible issues, activities, procedures and processes that either worked well or need to be improved so that the management of future emergency incidents can be achieved more effectively. The primary aim of a PIA is to learn and improve the way we manage emergency incidents in future.

This PIA addresses the period from Thursday 15th January to Tuesday 20th January 2009 and incorporates three fires that occurred during that time and were managed as a complex of fires. The fires involved are Blackwood Fire 23 (Peninsula Fire), Blackwood Fire 24 (Hester Fire) and Blackwood Fire 26 (Ferndale Fire) (Figure 1).

The PIA provides a general chronology of events for each fire in the Complex. The areas of interagency cooperation, traffic management and the AIIMS functions of Operations, Planning and Logistics are then explored. Issues that were raised at After Action Reviews and other forums pertinent to capturing lessons learned have been addressed under these headings and recommendations for improving performance have been determined.

The Fires of the Bridgetown Complex:

The 2008/09 bushfire season in the south-west had all the usual hallmarks with periods of hot, windy weather and protracted summer drought. Rainfall was very much below normal during late winter 2008 with many localities experiencing record dry conditions illustrates that the area around Bridgetown was unusually dry during the summer of 2008/09 (figure 1). Bridgetown received only 26 mm of rain in August breaking a record that had stood since 1925. Late spring rains in November and December replenished soil moisture and encouraged a late flush of grass growth, particularly in coastal areas. With the onset of warm dry weather in the latter part of December forest and grass fuels dried rapidly and were fully available by mid January.

There were three fires in the Bridgetown Complex. Two ignited on Thursday 15th of January 2009 to the west of Bridgetown. A third fire ignited on Monday 19th at Ferndale Plantation in the vicinity of Wrights Bridge on the Blackwood River (figure 2).

The first fire was reported by Styles Fire Tower to the Kirup DEC office at 1514 and subsequently confirmed by the Blackwood spotter aircraft at 1527 as occurring in private pine plantation in the area on the Blackwood River to the west of Bridgetown known as the Peninsula. The Police Arson Squad investigated the cause of Fire 23 (Peninsula fire) but was unable to determine a definitive cause of ignition. The fires point of origin was determined to be in a pile of mulch created by pine logging operations that had occurred some years prior to the ignition. Ignition is unlikely to have been caused by spontaneous combustion from the mulch. A nearby power line was discounted as a source of ignition. No lightning was forecast, observed or reported on the day of ignition. Accidental or deliberate arson cannot be discounted but cannot be proven. This fire was mostly contained on Thursday night but broke containment on Friday as the trough moved eastward resulting in a wind change to the north and northwest. This fire subsequently burnt an area of 5,877 ha.

The second fire was reported to the DEC Kirup office at 1535 by the Blackwood Spotter aircraft as occurring in the Hester Nature Reserve approximately 4km to the west of Bridgetown. Investigation by the Police Arson Squad determined this fire, Fire 24 Hester, to be caused by arson. This fire was extinguished before it was any bigger than 3ha in size but was subsequently overrun by Fire 23.

At 1255 on Monday 19th January 2009 a fire was reported by Styles Fire Tower and immediately confirmed by the Blackwood Spotter aircraft at Ferndale Plantation SE of Wrights Bridge on the Blackwood River. This fire was designated Fire 26 – Ferndale. The cause of ignitions was determined by the Police Arson Squad to be deliberate arson. The fire burned through 639ha of pine plantation and private property before it was contained on the evening of Monday 19th January.

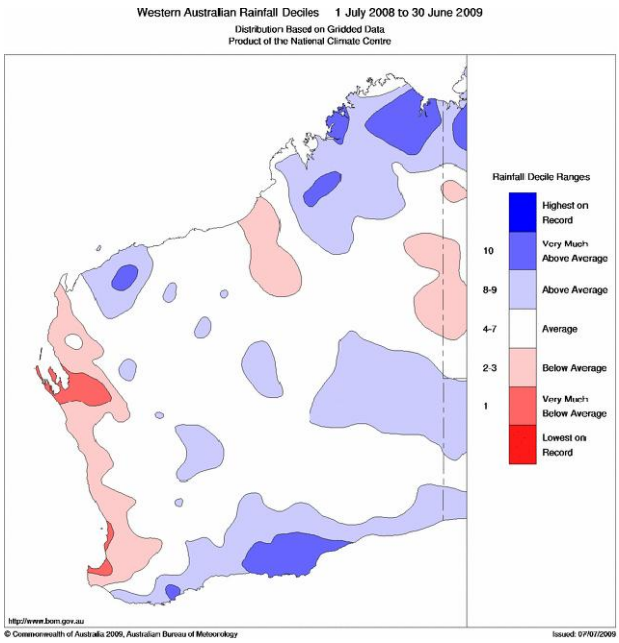

Figure 1. Map of Rainfall Decile ranges provided by the Bureau of Meteorology.

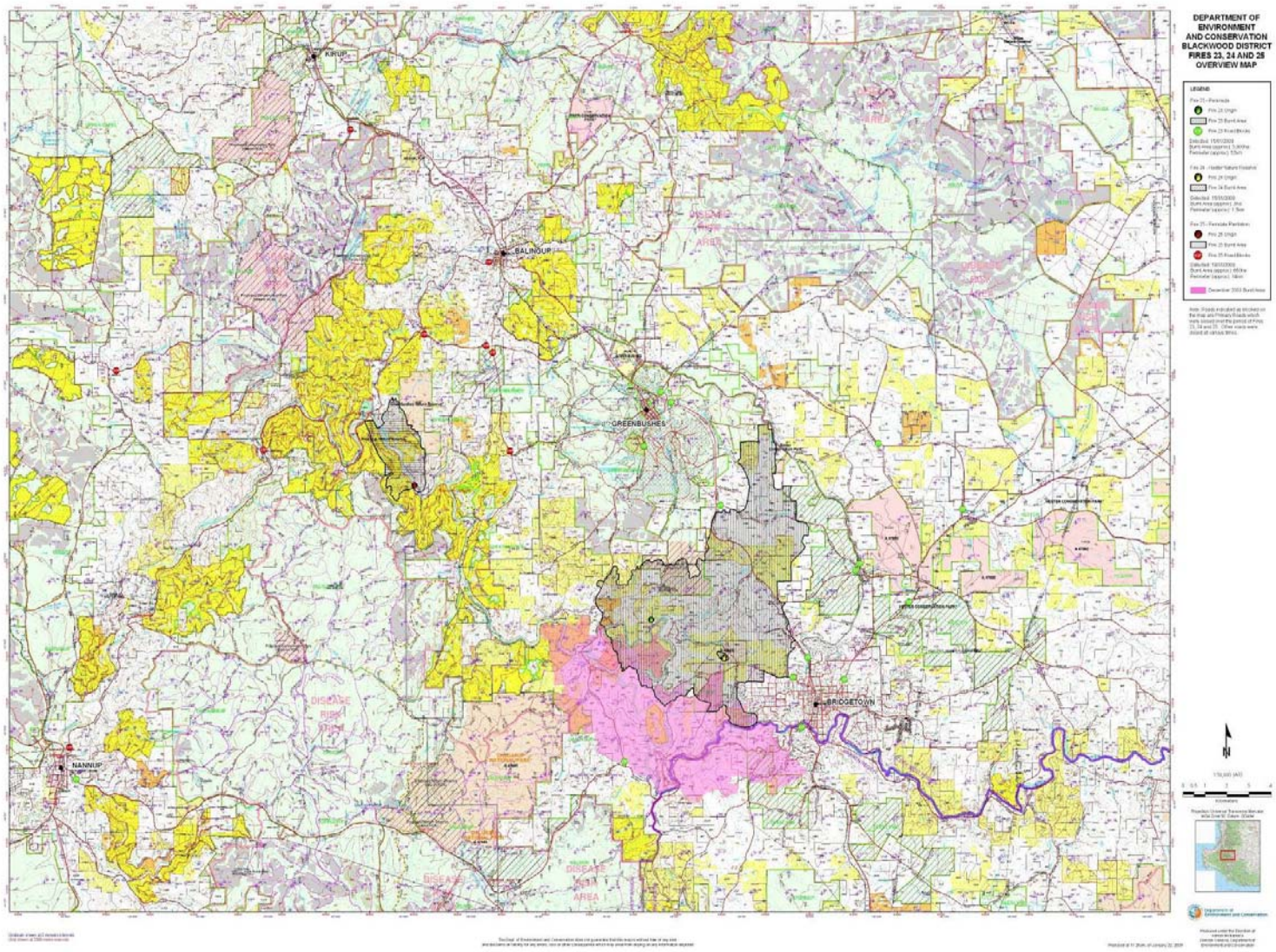

Figure 2. Final fire shape of Blackwood Fire 23 and 24, and 26, January 2009

GENERAL CHRONOLOGY OF EVENTS

Fire Weather:

On Thursday 15th January 2009 the weather forecast issued by BOM at 0750 (attachment 1) forecast a maximum temperature of 35^{0}C and a minimum Relative Humidity (RH) of 20% with winds out of the ENE, E and SSE between 20 and 24km/h. The Minimum Surface Moisture Content (SMC) was predicted to be 6 percent. SMC is a measure of the moisture content of the fine fuels (leaf litter and trash etc) and a reading below 10% indicates very dry fuels. The Grassland Fire Danger Index was HIGH. The Forest Fire Danger Index (FFDI) was 110 (High). The FFDI is an estimation of the rate of spread for a fire burning on flat ground in jarrah fuels of 8 tonnes/ha under the forecast minimum SMC and maximum wind speed for the day. It is used to indicate the difficulty of suppression. An FFDI of greater than 140 is considered to indicate extreme difficulty for suppression operations in forest fuels. The Soil Dryness Index (SDI) was 1424. SDI is an indication of the dryness of the large fuel components (logs and heavy branches etc). The SDI scale ranges between zero, when large fuels saturated with water such as might occur in the middle of winter, and 2000 when they contain no free water such as might occur at the very peak of the summer. An SDI over 1000 indicates that the heavy fuel components are available for consumption in a fire and will contribute to fire intensity, difficulty of suppression and likelihood that fires will continue burning overnight or re-ignite the following day. The graph of SDI at Bridgetown (figure 3) indicates a period of little rain over the preceding 3 months that allowed the larger fuels to dry early in the season.

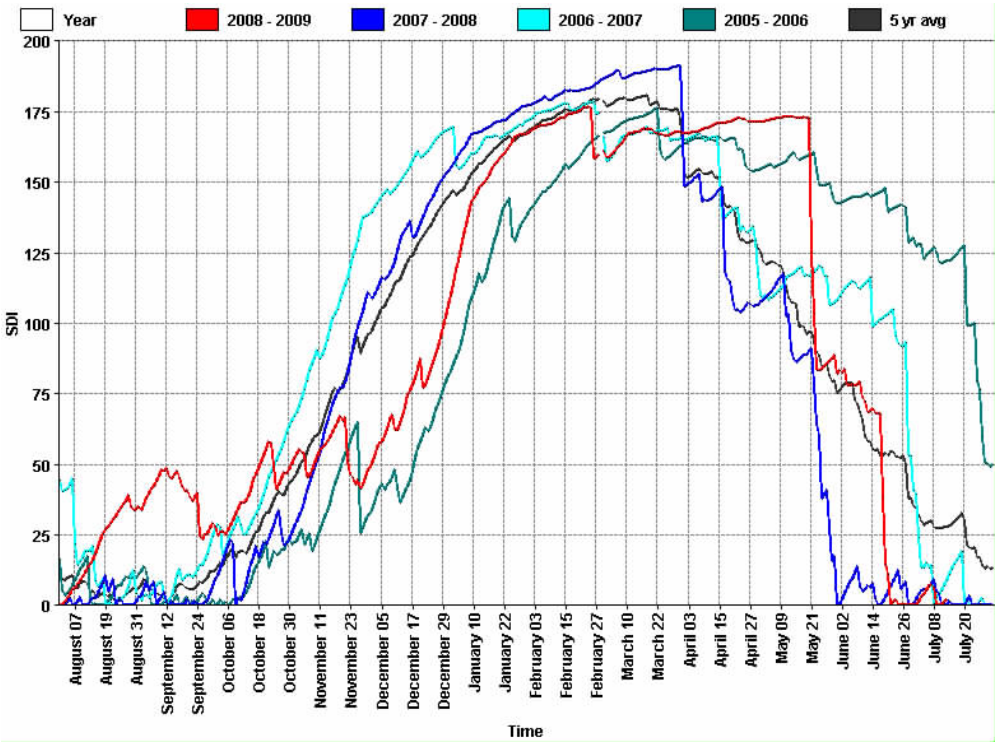

Figure 3 Soil Dryness Index for Bridgetown 2008/09

On Friday 16th the fire weather had worsened with the morning forecast anticipating Max temp of 39^{0}C, Min RH of 16% and hot dry winds out of the NE, NNW and WNW between 20 and 30 km/h. The FDI for the day was 180 (Very High). The outlook for Saturday and Sunday were for cooler conditions as the trough that was off the west coast and responsible for the hot, dry, north side winds moved eastwards and a cooler southwest changed occurred in the southwest land division after the passage of the trough.

Hester Fire

Fire 24 was reported at 1535 by the Blackwood Spotter aircraft in the Hester Reserve (Reserve No. A43031) approximately 4km west of Bridgetown near Peninsular Road at Map Reference GD6712. DEC was the Hazard Management Agency (HMA). The fire was approximately 20 square metres when reported and burning in 23 year old grassy jarrah forest fuel under a SE wind. This fire was responded to by local Bush Fire Brigade Unit, DEC resources and water bombers from the Airbase at Manjimup. This fire was contained, tracked and extinguished by 2030 hrs and had a final fire size of approximately 3ha. This fire was subsequently subsumed by Fire 23 on Friday 16th.

Peninsula Fire

Fire 23 (Peninsula fire) was reported by Styles Fire Tower to the Kirup DEC office at 1514 and subsequently confirmed by the Blackwood spotter aircraft at 1527 as a 3ha fire occurring in private pine plantation in the area on the Blackwood River to the west of Bridgetown known as the Peninsula. It was located on private property approximately 2.5km ENE of Marranup Ford at Map Reference GC6493 (figure 4). The fire was burning in old pine logging slash and grass fuels travelling WNW under a SE wind. The fire was notified to the Shire of Bridgetown-Greenbushes (SBG) as the Hazard Management Agency (HMA) with jurisdiction in that area.

This fire was responded to initially by local Bush Fire Brigade (BFB) resources, local private units (local farmers) and subsequently Department of Environment and Conservation (DEC) resources. As the fire was on private land, the SBG was in charge of the fire. Initial suppression operations were under the control of an Incident Controller appointed by the SBG who arrived on site at 1548 and established the Incident Control Centre (ICC) and Operations Point (OP) at a private residence on Location 3811 on Daniels Road. The SBG CFCO undertook a Sector Commander role and supervised initial tactical operations. By 1600 all brigades in the Shire and the Shire front end loader and water tanker had been activated and assigned to combat Fire 23 and 24. The potential of the fire was recognised and additional out of area resources were ordered through FESA. Two water bombing aircraft from Manjimup airbase were mobilised via DEC at 1536 hrs to assist in the initial attack. Two water bombers from Bunbury airbase were dispatched at 1628 by DEC to assist.

At approximately 1800 the fire was threatening a house in the vicinity of Daniels Rd. Difficulties were experienced in communicating with the water bomber pilot to confirm that the drop zone was clear which resulted in some

delay in applying aerial fire suppressant. The fire crossed Daniels Rd and continued to burn in a NW direction toward Marranup Ford Rd.

By this time a management structure had been determined with an IC, a local FCO as the Operations Officer and the CFCO and DEC personnel as Sector Commanders.

The fire was halted temporarily in the vicinity of Woljenup Creek north of Daniels Rd but broke out at approximately 1945 and continued to run in a NW direction through harvested pine slash and grass fuels toward Marranup Ford Rd. Fire fighters assisted in the evacuation of a number of residences in the vicinity of Marranup Ford Rd.

By approximately 2230 on the evening of Thursday 15th January the head fire had been held on Marranup Ford Rd although significant spotting continued to occur and fire fighters were committed to suppressing these spot fires.

At 0027 on Friday 16th January Marranup Ford Rd was closed to traffic by local Police. Traffic management contractors were not available to undertake this work until 0600.

Running fire had been stopped and containment operations were being undertaken north of the Blackwood River and east of the Marranup Ford Rd (figure 5.). The edge was very raw and a large mop up operation was initiated. The Peninsula fire had attained a size of approximately 190 ha with an approximate perimeter of 5.8 km.

In the absence of actively running fire, the ICC and OP were closed down at 0140 in the morning of Friday 16th January and IMT stood down to rest in readiness for the next daylight shift. The CFCO remained on duty and took on the role of IC. Unreliable radio communications due to the terrain in the area may have resulted in some resources on the fire ground not being aware of this change in command.

Containment and mop up operations continued throughout the night utilising most of the BFB and DEC resources present. The front end loader and dozer working on the fire were stood down as it was considered unsafe to continue to work them on slopes at night. The fire edge near the river could not be tracked and pockets of unburnt fuel were burnt out to consolidate the edge.

At approximately 0630 Friday 16th January the IMT retuned to the fire ground from rest and a transition of control occurred. The fire had not grown in size overnight. At 0700 a FESA communications bus was set up on Marranup Ford Rd and an OP established in that location. There were 44 fire fighting appliances on the fire ground from BFB and DEC. FESA staff manned the communications bus and provided a liaison officer. DEC had a liaison officer on site with the IMT. The fire was sectorised with DEC managing the South East Division and BFB managing the North West Division. Tracking and mopping up operations continued around the fire perimeter. Two BFB units were positioned south of the river to address any hop-overs that may eventuate. There was no Incident Action Plan (IAP) produced for the day shift and no pre-shift briefing of fire ground resources was undertaken.

The communications at the OP were inadequate. There was unreliable radio communication (due to terrain) to some sectors of the fire, no mobile phone

coverage and difficulties were experienced in sending and receiving faxed communications.

These communications difficulties contributed to a decision to move the ICC and most of the IMT to the Greenbushes Fire Station and leave the OP and Operations Officer on Marranup Ford Rd. This improved communications of the IMT with outside agencies. However, communication between the ICC and the OP were dependent on one radio command channel. Fax and phone communications were still not possible to the OP.

At approximately 1130 on Friday 16th under the influence of strong and hot NW winds Fire 23 broke containment lines in a number of places along its east, west and southern boundary (figure 6). At 1301 the IC was informed that the fire had escaped at two locations on the southern perimeter and had crossed the river and was burning strongly in a SE direction. The Greenbushes ICC was abandoned and re-established at the OP on Marranup Ford Rd.

The forecast fire weather conditions for Friday 16th were severe with observed conditions being a little more extreme than forecast (table 1.).

	Forecast	**Observed**
Air temp. (C)	39	40.4
Relative Humidity (%)	16 (later amended to 12)	32
Wind speed (km/h)	am. NE @ 30 pm. NNW @ 20-25	am. ENE @ 11 pm. NW@ 30 then SW@20-35
Grassland Fire Danger	Very High	Extreme

Table 1. Forecast and observed weather on Friday 16th January for Bridgetown

Resources from local BFB's and DEC, including 2 water bombers from Bunbury that were present at the fire, were committed to containment action. At 1227 two water bombers from Manjimup airbase were activated to assist in the containment of these hop-overs. At 1230 an additional 2 water bombers from Bunbury airbase were activated to assist. These additional two aircraft had been moved from Albany the previous day and staged at Bunbury in anticipation of severe fire weather. Initial attempts at control using ground and aerial suppression resources were unsuccessful and the fire continued to spread rapidly in a SE direction exhibiting intense fire behaviour in pasture, remnant bush and bluegum plantation fuels.

During the main fire run towards Bridgetown and outlying residential areas, the ground and aerial suppression resources implemented defensive fire fighting tactics, moving from house to house and structure to structure as the fire threatened these assets. Ground units used small back burns to protect structures and extinguished approaching headfires in pasture in front of assets where possible. The six water bombing aircraft used strategically laid drops to split headfire runs in front of assets and to lay wet lines around assets.

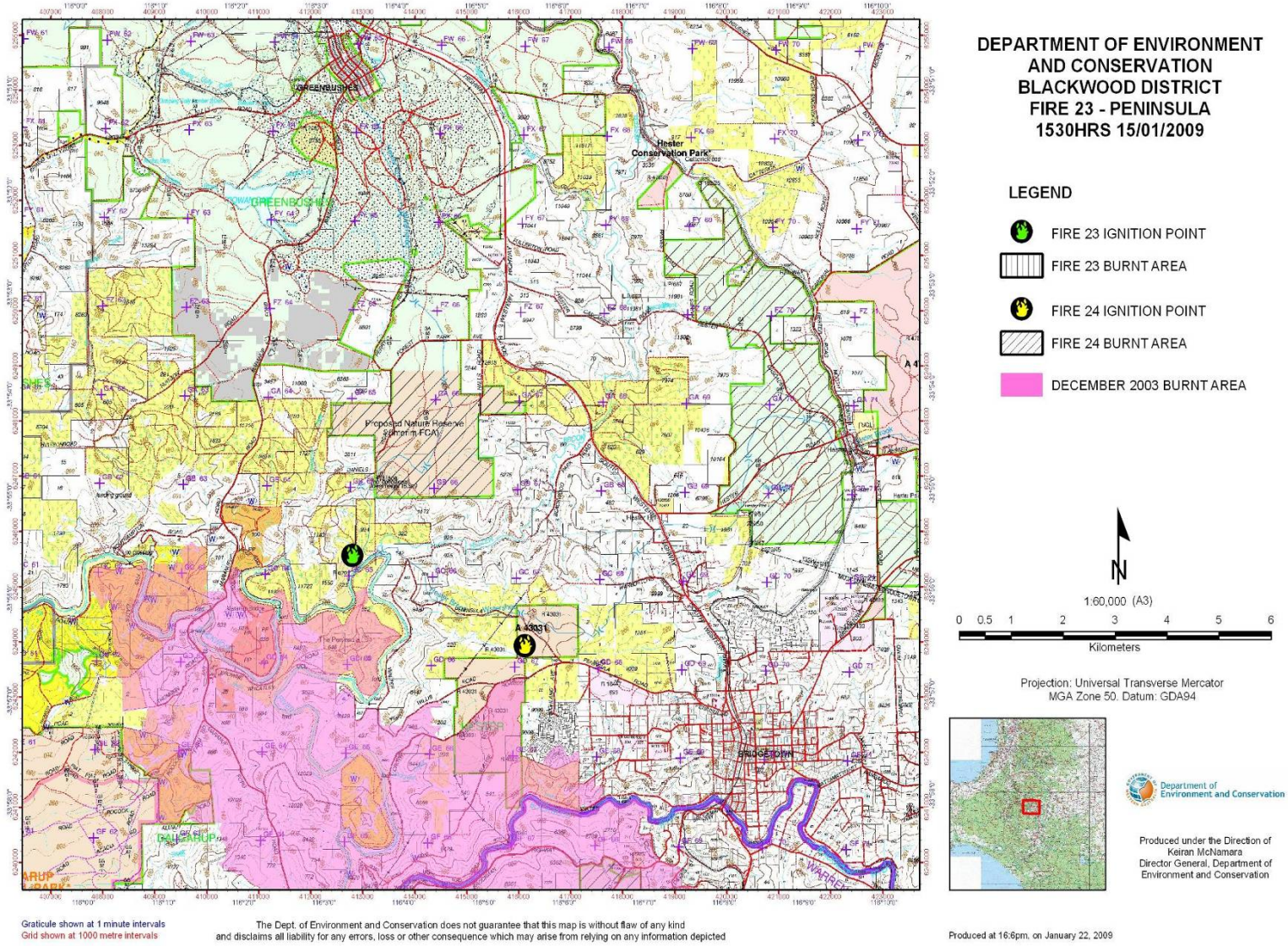

Figure 4. Ignition locations of Blackwood Fire 23 and 24, 15th January 2009

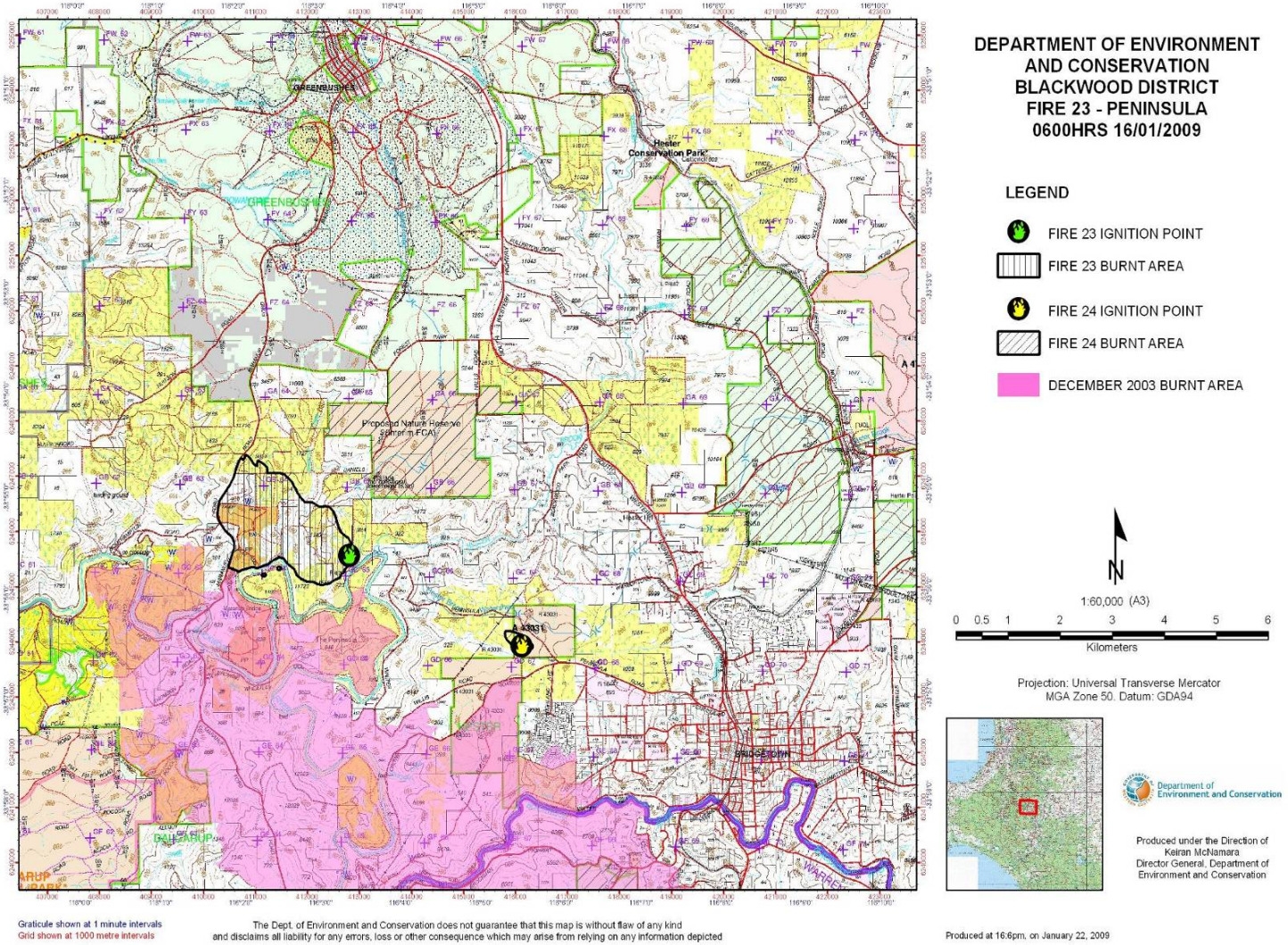

Figure 5. Extent of Fire 23 & 24 0600 hrs Friday 16th January 2009

Local knowledge concerning the location, access and condition of property assets and their defensible condition was invaluable to minimise damage and maximise the effectiveness of ground resources. Aerial reconnaissance provided by the Air Attack platforms and the DEC Blackwood spotter provided valuable information to Operations Section staff concerning the location of vulnerable assets and the proximity of fire fronts.

By 1500 hrs the fire had grown rapidly to approximately 1200 ha extending in a SE direction toward the outskirts of Bridgetown (figure 7). The fire straddled the Blackwood River and the limited existing access across the river became a significant impediment to mobilising resources around the fire. Spotting 3 km ahead of the main fire front into pasture fuels was reported. The rate of spread was estimated to average 1000m/hr with bursts of up to 3000m/hr.

The high level of preparedness of many properties contributed significantly to the ability of firefighters to minimise damage to private assets. The presence of fire breaks around assets and expanses of green lawn around farm houses and outbuildings made a significant contribution to the defence of these assets. A significant number of dwellings survived the fire despite the severe conditions. However, there were properties that were not well prepared with fuel accumulations close to buildings that made their defence more difficult and exposed occupiers and fire fighters to higher levels of risk.

Stock numbers in the district appeared to be low and many areas of pasture were carrying fully cured grass fuels that had not been eaten down or trampled by stock. The quantity and arrangement of this fuel contributed to fire intensity and rate of spread. The low stock numbers resulted in very few stock losses.

Figure 8. Fire behaviour as the fire approaches Highlands Estate on the western outskirts of Bridgetown

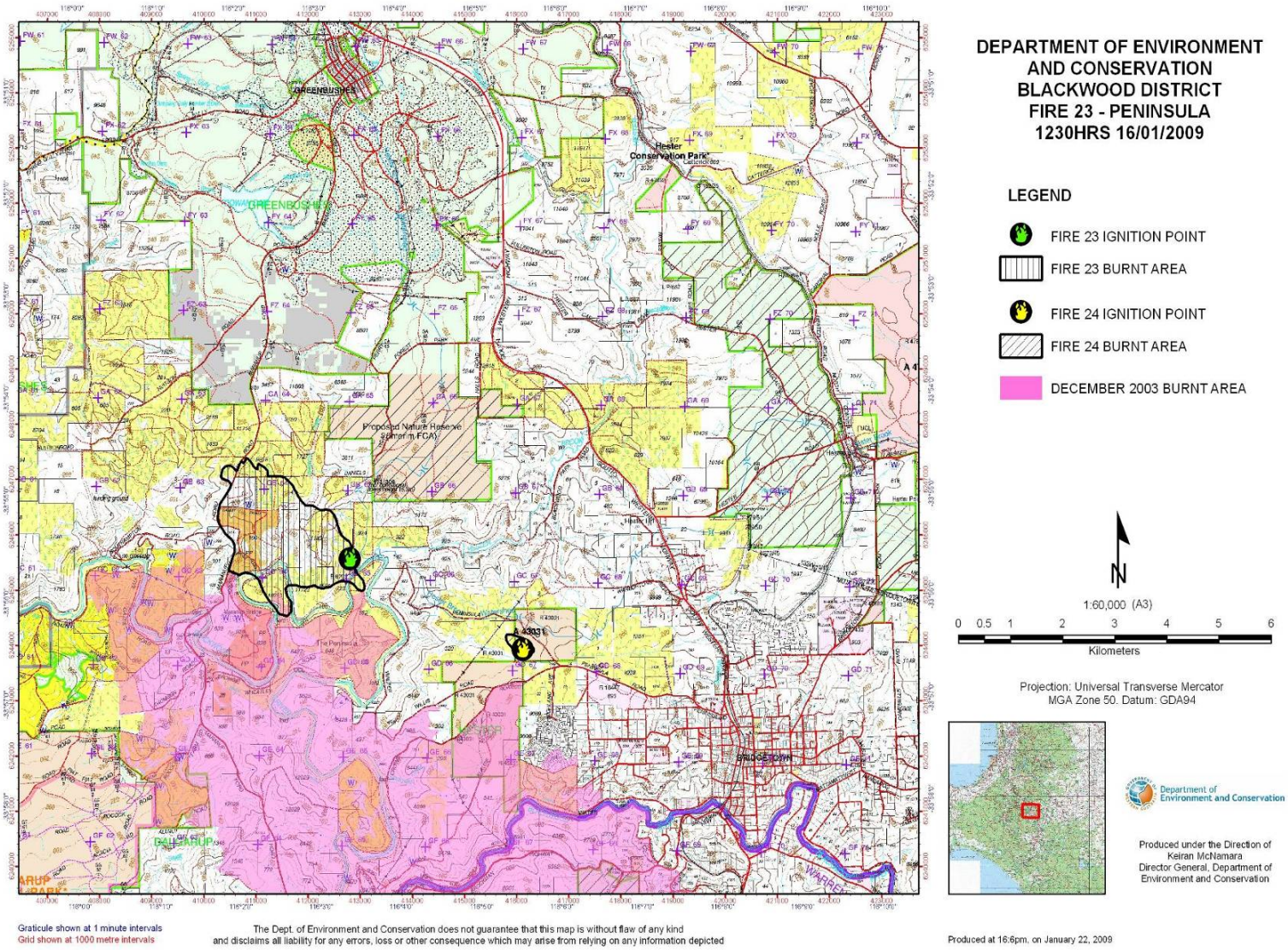

Figure 6. Extent of Fire 23 & 24 1230 hrs Friday 16th January 2009 indicating escapes SE across the Blackwood River

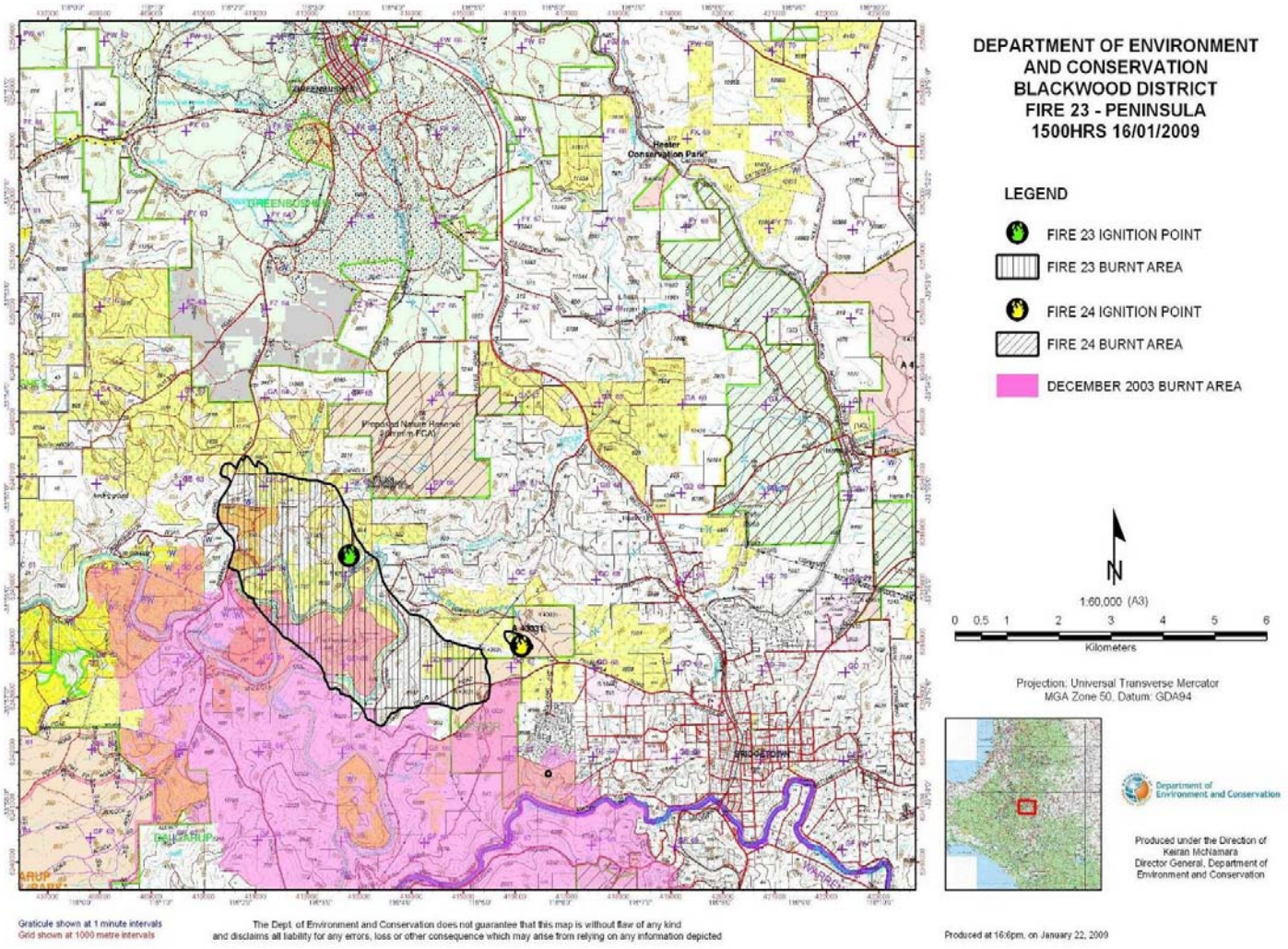

Figure 7. Extent of Fire 23 & 24 1500 hrs Friday 16th January 2009 indicating fire growth to the SE across pasture and blue gum plantation. Note the spot fire on the outskirts of Bridgetown several kilometres in front of the main fire.

At approximately 1415 on Friday 16th January, after discussion between Shire, DEC and Fire and Emergency Services Authority (FESA) personnel, the Shire of Bridgetown – Greenbushes requested DEC to take overall charge of the control of Fire 23. This decision was based on the recognition that DEC had the expertise and capacity to manage such a complex bushfire. DEC accepted the delegation for managing suppression operations and implemented a management structure consistent with the Australasian Inter-agency Incident Management System (AIIMS). DEC already had in place an AIIMS structure at its Kirup office to support the resources it already had in the field. The majority of the Incident Management Team (IMT) including Incident Control, Logistics and Planning were established at the DEC office at Kirup. An Operations Point was established at the Bridgetown Showground. A DEC communications bus and the Mobile Communications Facility were established at the showground to support the Operations Section.

An Incident Management Group (IMG) was established by DEC during the afternoon and evening under the chairmanship of the Shire President consisting of DEC, SBG, BFB, Police, FESA, State Emergency Service (SES), Volunteer Fire and Rescue Service (VFRS), Bridgetown Hospital, Dept of Agriculture and Food, Western Power, St Johns Ambulance, Talison Metals, Red Cross, Dept of Child Protection and Southern Road Services. The IMG provided coordination of support agencies and services to the IMT.

An Operations Area Management Group (OAMG) was established by the DEC Regional Manager in Bunbury (see Inter-agency Co-operation section below). It was decided that the FESA Director Fire Services SW Region would Chair the OAMG as he had previous experience in the Operations Area Manager (OAM) role and FESA had a capacity to facilitate the work of the OAMG due to its involvement in Local Emergency Management Committee and District Emergency Management Committee processes. The bulk of the work of the OAMG was focussed on co-ordinating and supporting community welfare issues, road closure and re-opening, essential infrastructure repair and community briefings at Bridgetown and Greenbushes.

DEC mobilised two of its pre-formed AIIMS teams to deal with this fire. Each preformed team contains 65 trained personnel that fill each of the incident management roles associated with a large incident. The pre-formed team that was on duty at the time (Black Team) was already committed to a large fire in the Yanchep National Park and pine plantations to the north of Perth and was therefore unavailable. The majority of resources allocated to the fire during Friday were from the Red and Blue Teams. The balance of these teams, that were not already committed and were available were mobilised. These resources were organised to provide ongoing incident management with assistance from local BFB, Shire, Police and other support agency personnel.

Traffic management and road closures became a significant consideration in operations during Friday 16th January. Major roads such as the SW highway, Marranup Ford Rd, Brockman Hwy, Hester Rd, Cascades Rd and Peninsula Rd needed to be closed and traffic management operations implemented. These and other road closures would require the application of significant planning and operational resources over the following days.

The “Guidelines for the Operation of Road Closures During Bushfires – 2008” that was developed by WA Police in conjunction with DEC, MRWA, FESA and WALGA in response to a significant fire incident in the 2007/08 fire season, were applied at the Bridgetown fire. The IMT also applied DEC Fire Operation Guideline 75 “Closure of Roads Associated with Wildfire Suppression Operations” to implement these operations. The involvement of the Western Australia Police was essential in planning and implementing these traffic management operations. In addition, the assistance provided by personnel from the Main Roads WA contractor Southern Road Services to implement the guidelines and staff vehicle control points was vital.

The dissemination of information to the public was a critical component of combating this fire. The fire was threatening rural communities, the town of Bridgetown and the travelling public. The Information Unit of the IMT initiated public warnings on ABC radio under an MOU for this purpose and via FESA. Unfortunately a malfunction in the ABC radio transmitter resulted in many of the messages being broadcast on a frequency not usually used by the local community which affected the effectiveness of this medium. Local commercial radio also provided news and editorial coverage. Major fires burning at the same time in Kings Park and Yanchep monopolised much of the commercial media coverage being broadcast to metropolitan and southwest audiences during the Bridgetown incident.

By 1630 on Friday 16 January, the fire had burned into the Highlands Estate on the western outskirts of Bridgetown. A spot fire developed to the south of the Estate and north of the Blackwood River. This spot fire ultimately merged with the main body of the fire (figure 9). A house and several vehicles in Highlands Estate were destroyed by fire during this time (figure 10,11). The house was unoccupied at the time the fire arrived and was, therefore, not defended by the occupants. All other houses in the Estate were occupied and were defended by the occupants resulting in minimal loss and damage. Aerial water bombing was effective in saving a number of structures from impact by head and flank fires. Smoke affecting visibility made it difficult for pilots to drop near some structures.

A south to south-westerly wind change occurred between 1700 and 1800 hrs. The fire developed in a northerly direction under the influence of the SW winds during the late afternoon and evening. It crossed the South West Highway north of Bridgetown at approximately 1800 hrs burning through steep country in the vicinity of Hester Brook in pasture fuels and pine plantations. During this north easterly run the fire burned several houses and outbuildings. The head of the fire continued to burn northward during the night being arrested in its easterly extent by recently prescribed burnt forest in the Hester Conservation Park (figure 12,13, 14). Its northward run was arrested in the vicinity of Hester Road and the railway line by direct attack undertaken by DEC and BFB resources as conditions moderated early in the morning of Saturday 17th of January.

The IMG arranged for a community welfare centre to be established in Bridgetown to cater for people affected or displaced by the fire. The centre had very few inquiries and most people that needed assistance or

accommodation appeared to organise it themselves or utilise friends and relatives to provide aid.

By Saturday morning the fire had burned a total area of 5,877 ha, of which 5,180 ha was private property and about 700 ha of DEC managed lands. The final fire perimeter was 52km. The fire destroyed 7 houses, 9 outbuildings, 5 vehicles, 50 km of fencing, 26 stock (9 sheep, 17 cattle), 400 ha of mature (28 to 33 year old) radiata pine plantation and a similar area of 8 year old Tasmanian bluegum tree farm. No lives were lost and no serious injuries were incurred.

The ICC was moved on Saturday night from DEC Kirup to be co-located with the Operations Point at the Bridgetown Showgrounds. From this point onward all incident management was undertaken from this facility. Locating the ICC close to the fire and the affected community provided significant increases in efficiency and effectiveness of incident management and allowed for a much higher level of cooperation and integration between the combat and support agencies and organisations.

The ongoing operations associated with construction and consolidation of firelines, mop up, traffic management and road opening operations continued for the following 4 days and 8 day/night shifts before overall control of Fire 23 was handed back to the Bridgetown Greenbushes Shire at 1900 hrs on Tuesday 20th January 2009. Information on the fire situation, resources allocated, outstanding operations still requiring attention and a rehabilitation plan were included in the handover documentation.

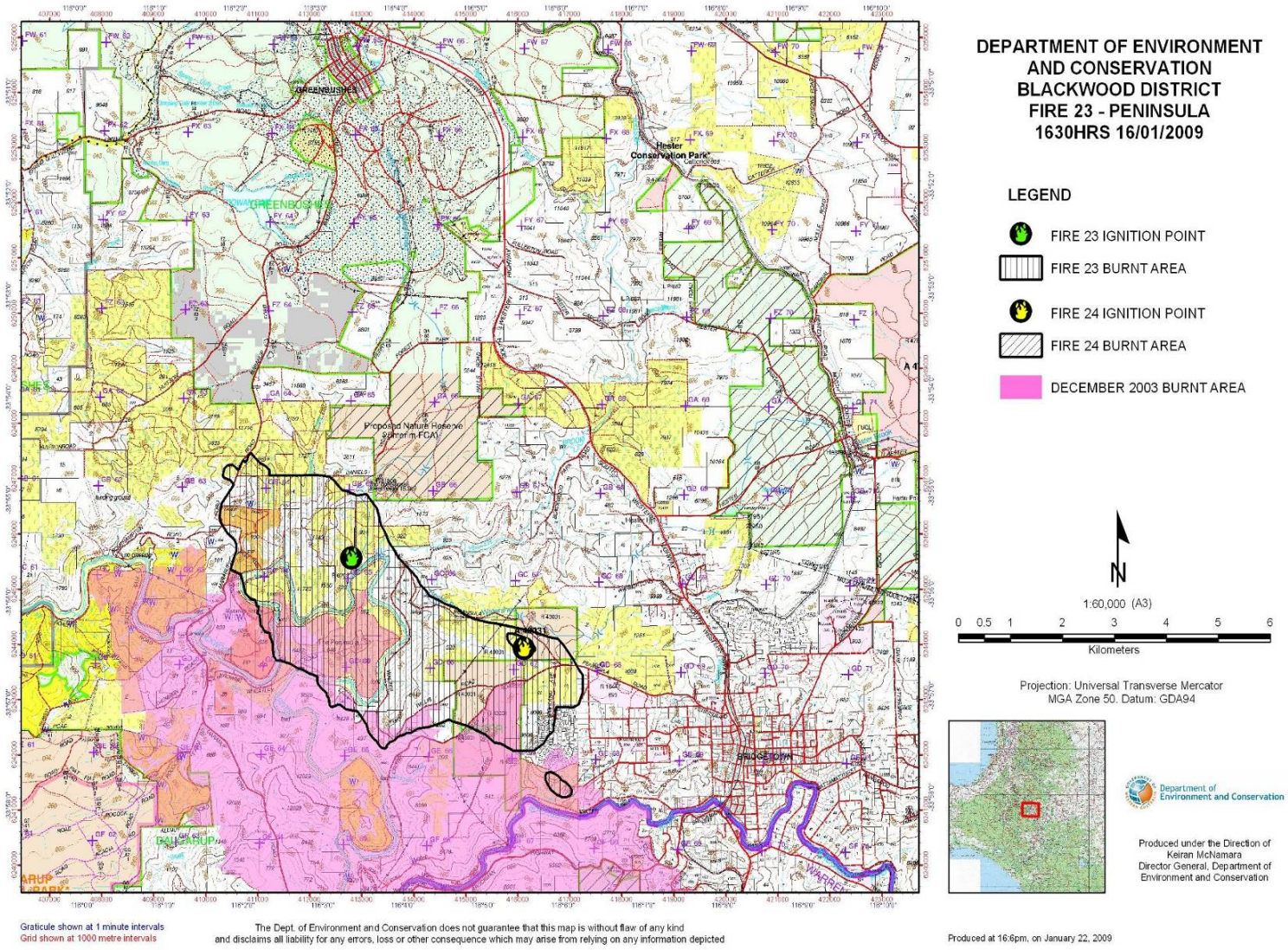

Figure 9 Extent of fire 23 1630 hrs Saturday 16th January 2009

Figure 10 Burnt truck in Highlands Estate. Note minimal damage to house structure due to preparedness of occupants and defense by occupants during the fire event.

Figure 11 Burnt house in Highlands Estate. The occupant was not at home when the fire arrived. Ignition was probably due to ember attack.

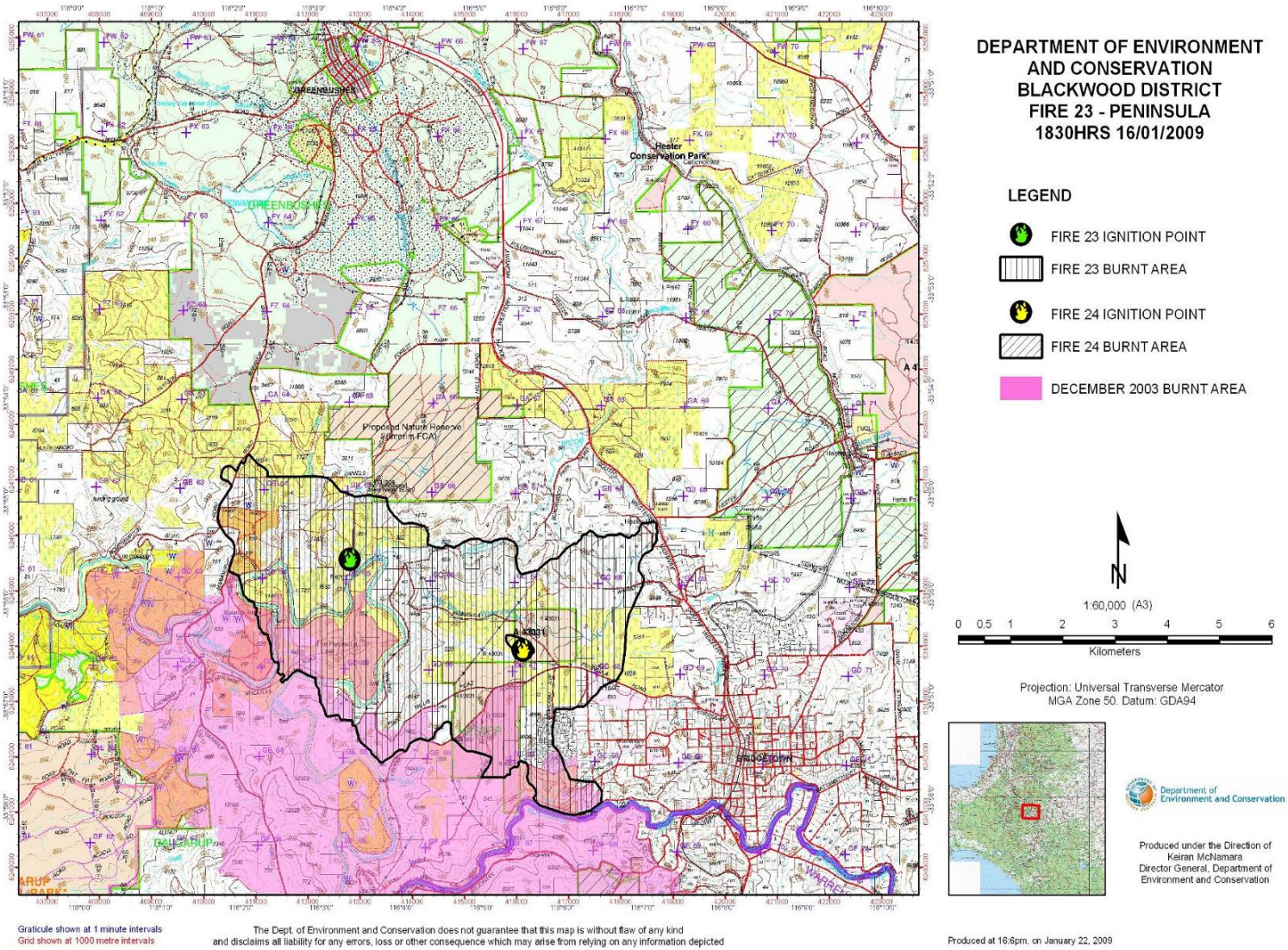

Figure 12 Extent of fire 23 1830 hrs Saturday 16th January 2009

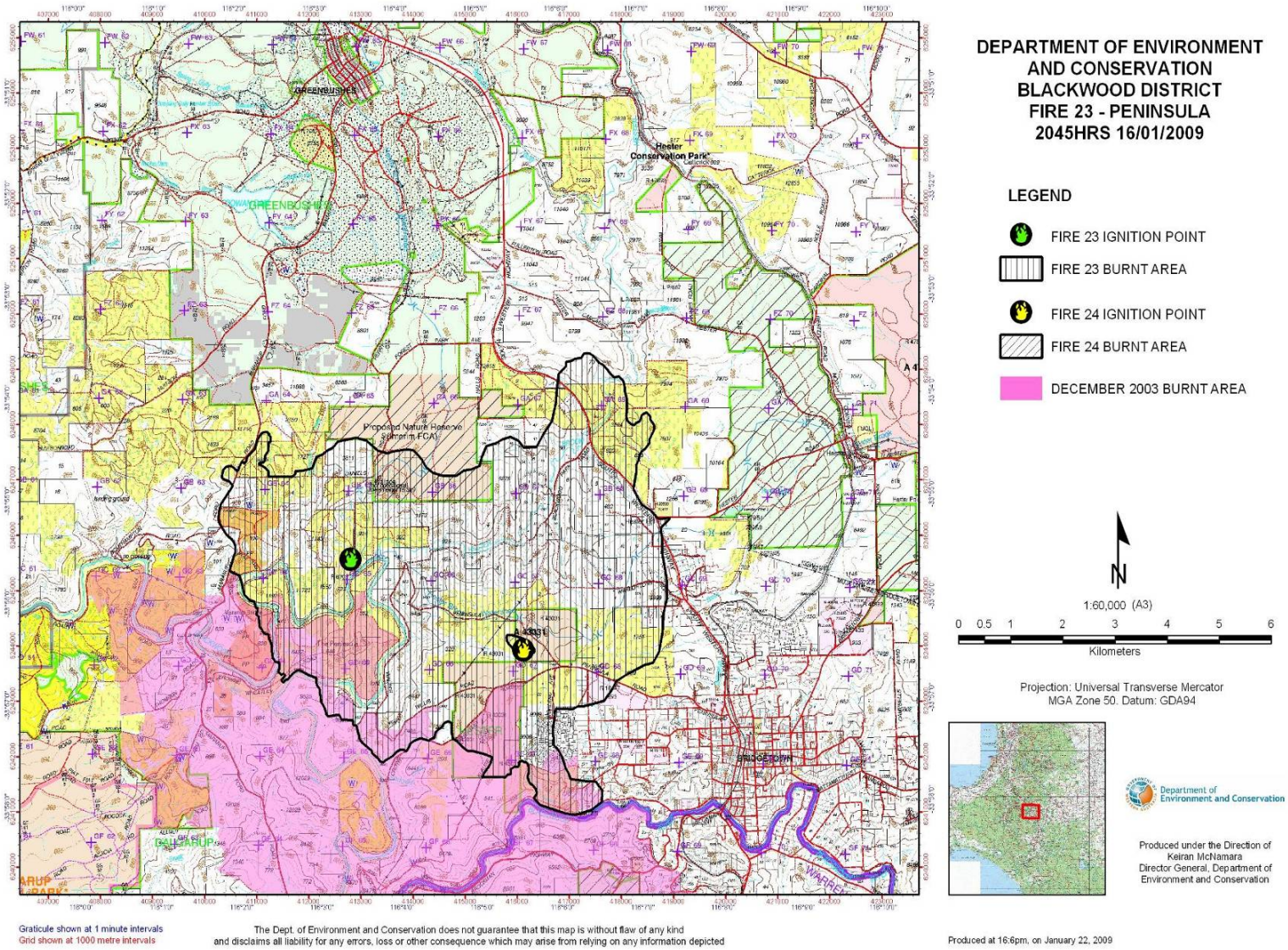

Figure 13 Extent of fire 23 2045 hrs Saturday 16th January 2009

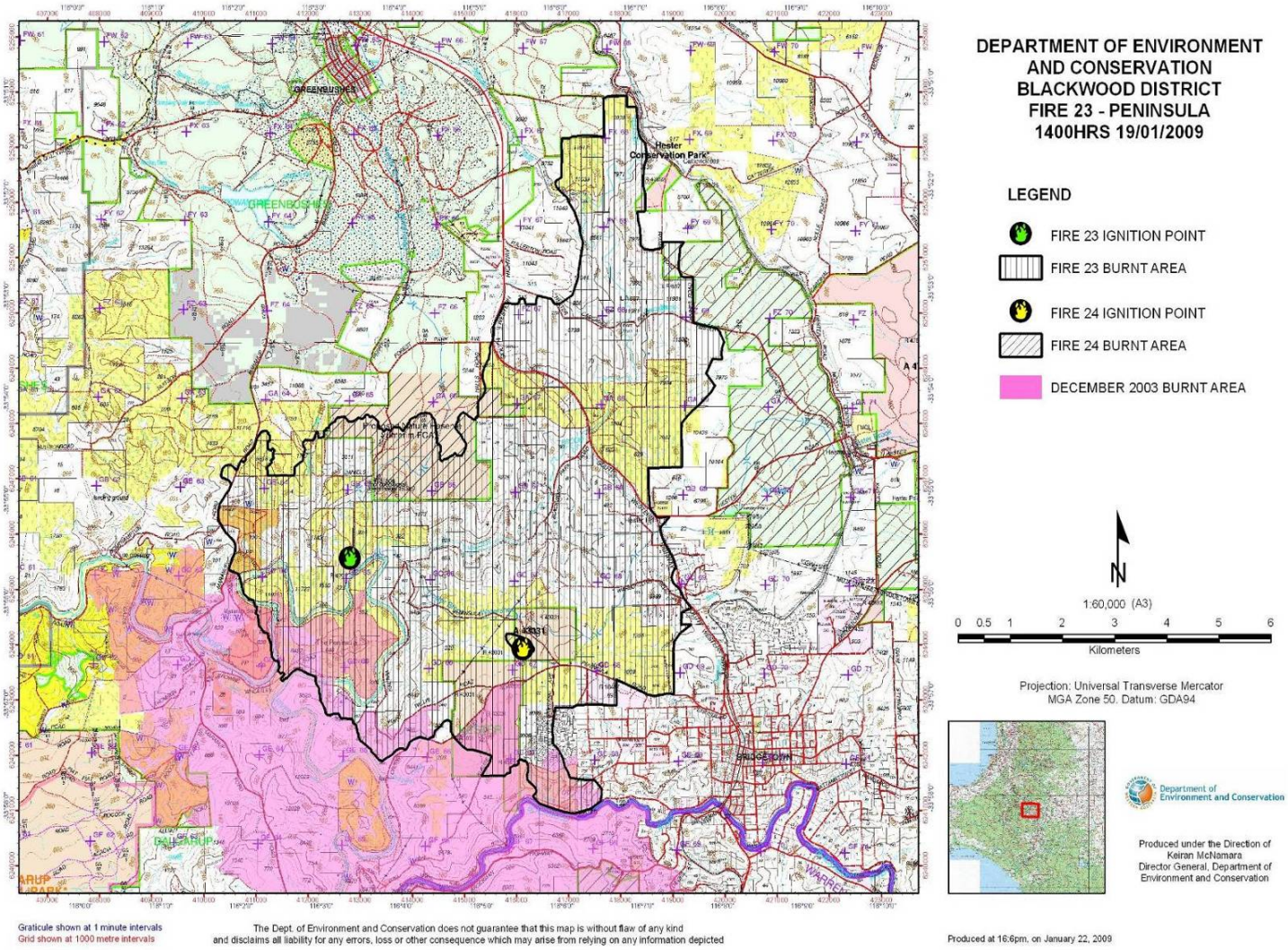

Figure 14 Final extent of fire 23 as at 1400 hrs Monday 19th January 2009

Ferndale Fire

At 1255 on Monday 19th January 2009 a fire was reported by Styles Fire Tower and immediately confirmed by the Blackwood Spotter aircraft at Ferndale pine plantation SE of Wrights Bridge on the Blackwood River approximately 11 km south west of Balingup at Map Reference FY5822. This location was amended at 1305 hrs to FZ5838. This fire was designated Fire 26 – Ferndale (Figure 15).

The weather forecast for the day issued by BOM at 0850 (attachment 2) forecast a maximum temperature of 27^0C, Minimum Relative Humidity of 36% and winds from the SE to SSE at 15- 22 kph. The Forest Fire Danger Index for the day was 72 and the Grassland Fire Danger Index was High.

This fire was responded to by DEC resources that were re-deployed from Fire 23. This fire was aggressively attacked using DEC trucks, heavy earth moving machinery and 6 water bombing aircraft. The fire was contained, tracked and extinguished by 2100 hrs after burning through approximately 639 ha or very steep country in mostly pine plantation fuels, some pasture and remnant bush.

The initial fire report indicated that the fire was approximately 1ha and burning in pine plantation and grass fuels under a SE wind. Fire behaviour was typified by 4m to 5m flame heights in unpruned pine on the flatter grades and 6m or greater on the slopes (primarily flanking fire). Localised areas of crown fire occurred in pine plantation as the fire ran uphill in pruned and unpruned pine fuels. The fire travelled about 2.5 km in 1.5 hours indicating an average rate of spread of 1700m/hour.

The initial strategy was to protect the assets on private property in the path of the fire and to remove campers from Wrights Bridge camp site. Evacuation of campers was achieved by Western Australia Police. Roads leading to the fire ground were closed using Police and Donnybrook Balingup Shire resources. Suppression resources were mustered in front of the head fire in a paddock with grass fuels. The head fire was arrested as it moved down-slope in these fuels.

After the head fire had been knocked down, fireline was constructed in Ferndale and Lewanna plantations using heavy machinery and existing access along the fire flanks. Pockets of unburnt pine fuel were burn out to provide a safe and effective fire boundary.

The fire had the potential to burn through private property to the NE containing many houses and outbuildings, pasture, plantations, horticultural crops and to impact the township of Balingup within six to eight hours (Figure 16).

The cause of the fire was determined to be deliberate arson with 9 distinct ignition points being located. The Police Arson Squad investigation determined that the arsonist set the fire some time during the previous evening (Sunday night) and that 7 of the 9 ignition points self extinguished during the night. Two ignitions continued to smoulder until flaming combustion occurred under the warmer and windier conditions present during the late morning.

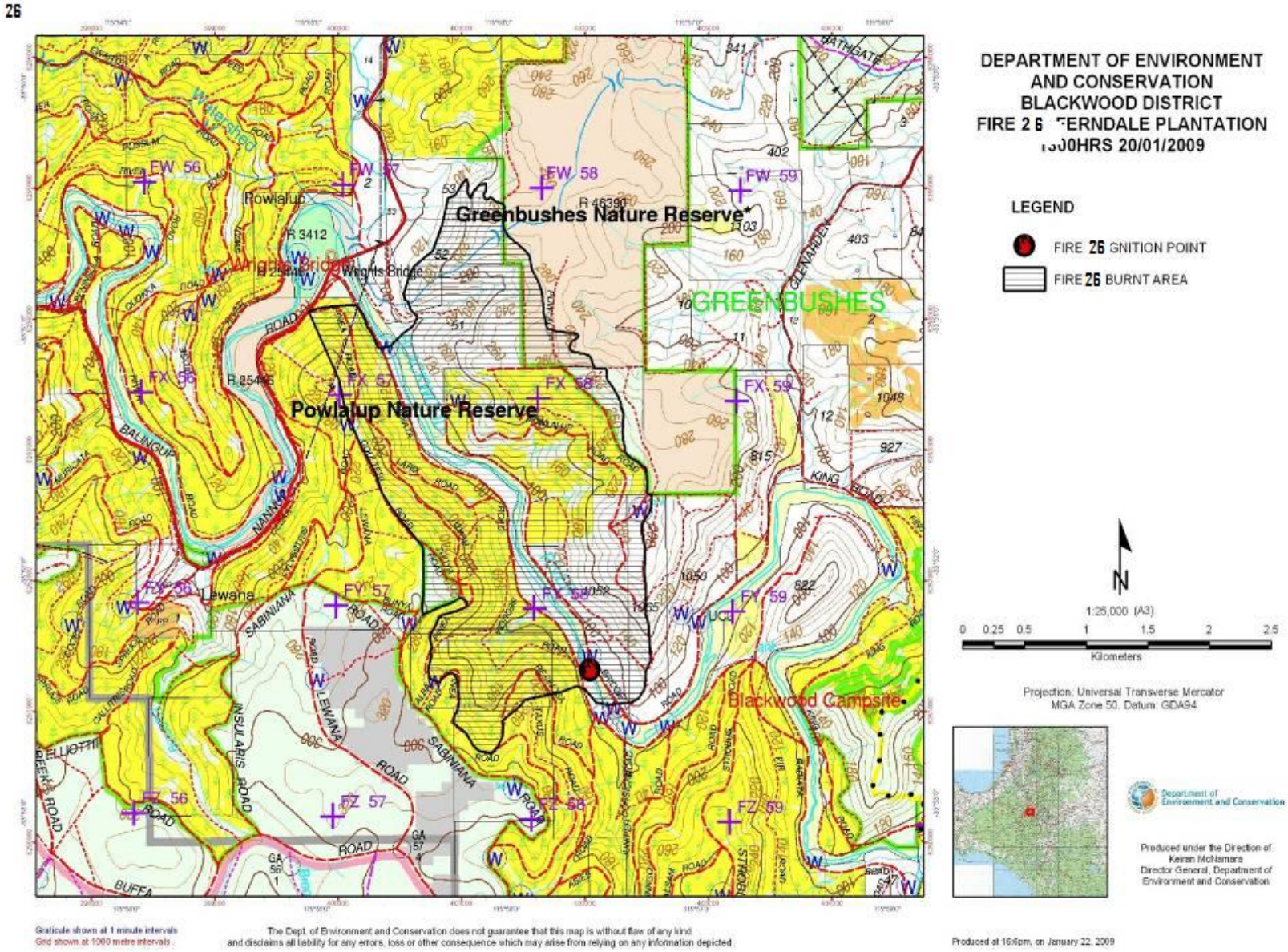

Figure 15. The final fire shape for Ferndale Fire 26

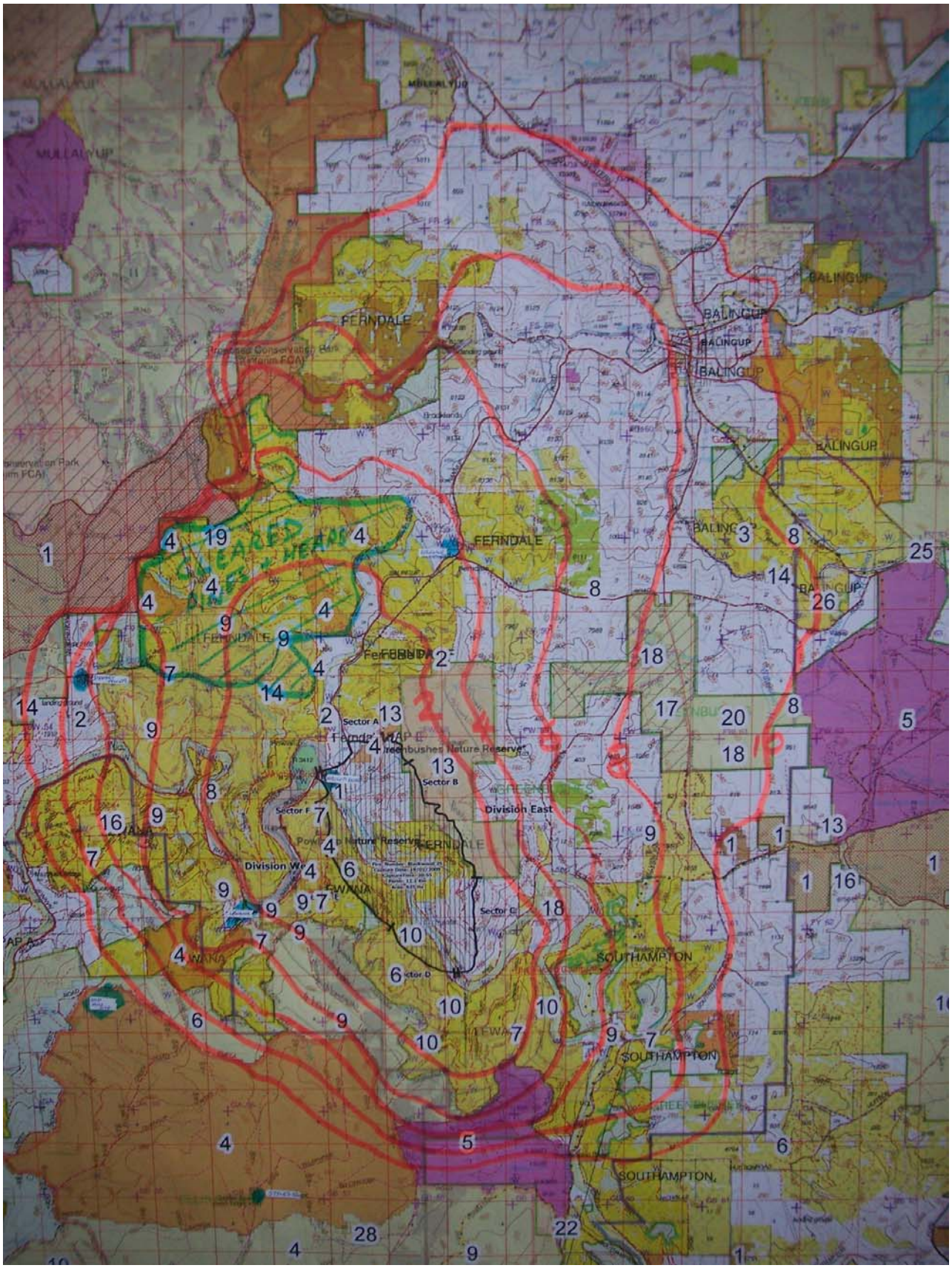

Figure 16. Predicted spread of Ferndale Fire 26. Numbers show current fuel age in forest areas. Predicted fire boundary is shown at 2 hourly intervals. Note the retardation of headfire spread predicted for the strategically located one year old prescribed burn to the NW adjacent to Cundinup Rd.

INTERAGENCY COOPERATION

The Bridgetown fire Complex involved 400 DEC personnel, 150 volunteer personnel, 6 fixed wing aerial suppression aircraft, 1 rotary wing suppression aircraft (Sikorski 61) and one rotary wing aircraft used for reconnaissance and as an Air Attack platform.

An IMG located at Bridgetown and an OAMG located at Bunbury were established to support the incident.

On Friday 16th January at 1415 hrs discussions were held between Bridgetown-Greenbushes Shire (HMA), FESA and DEC. As a result the Bridgetown-Greenbushes Shire invited DEC to take charge of all suppression operations for Fire 23 on its behalf. DEC accepted this invitation and established an AIIMS structure to manage the incident. There was no formal instrument prepared or signed to delegate authority from the HMA to DEC. Responsibility for suppression operations for Fire 23 were handed back by DEC to the LGA on Tuesday 20th of January in a formal process. DEC continued to provide resources to mop up operations under the direction of the Shire.

Under SEMC Policy 7 LGA's are the recognised HMA for bushfire on all private lands within the Shire that are located outside Gazetted Fire Districts. The legitimacy of this policy is only supported by a head-power in the *Emergency Management Act 2005* that enables SEMC to make policies that can be enacted when approved by SEMC. The legitimacy of the policy to appoint a HMA is questionable when Section 4 of the Act specifies a procedure for defining by regulation a HMA for a specified hazard. Fire is specified as a 'hazard' under Section 3 (b) of the *Emergency Management Act 20*05. However, the HMA(s) for bushfire are not as yet specified in the *Emergency Management Regulations 2006*. In the presence of a regulated mechanism to do so, but in the absence of such specific regulation, the powers and protections of the *Emergency Management Act 2005* may not apply to agencies undertaking bushfire suppression operations as a HMA as set out in SEMC Policy 7 and under the arrangements for such operations set out in Westplan Bushfire.

The arrangements put in place at Bridgetown for Fire 23 would suggest that DEC was provided the authority, by the Shire of Bridgetown-Greenbushes, as the HMA defined in Policy 7, to manage the suppression operations on its behalf. In such case the IMT should have been reporting to the Shire as the HMA and not as it was, to the DEC agency hierarchy. The IC reported to the Regional Manager of DEC as if DEC were the HMA. Having said that, there was a very effective liaison maintained between the IC, the Shire President and the Shire CEO via the IMG and by personal contacts that resulted in clear and timely exchange of information and informed decision making by all parties. There was also effective liaison between the DEC Regional Manager and FESA in Bunbury that facilitated coordination of all combat and support agencies.

It should be noted that DEC cannot 'take over' the fire as a HMA. DEC is not the HMA for bushfire on private lands under any recognised arrangement. DEC may take '*supreme control and charge of all the operations*' of a fire on

or near crown land under authority provided in Section 45 of the *Bush Fires Act 1954*. However, it would be difficult to argue that Fire 23 was on or near crown land or to any significant degree threatening such estate that it would justify the exercise of this power.

Recommendation

> The *Emergency Management Regulations 2006* be urgently amended to determine a HMA(s) for bushfire.

Recommendation

> *The Emergency Management Act 2005 is amended to provide a mechanism for one HMA to transfer responsibility to another HMA and ensure that both HMA's are provided the powers and protection necessary under that Act.*

Recommendation

> *All incidents where the HMA delegates the authority to manage suppression operations to another agency on its behalf, should be achieved via a written delegation setting out the scope, limitations and duration of the delegation.*

The first meeting of the IMG was on the morning of Saturday 17th January. An informal meeting of some of the members had been held on Friday afternoon. The IMG subsequently met regularly for the duration of the incident and participants generally agreed that it functioned well. The IMG remained in place as the incident transitioned from response to recovery.

Recommendation

> *A formal IMG meeting should be convened as early as possible at initiating incidents with potential. At the very least early advice to potential IMG members should be made that a meeting is likely to be convened. The initial IMG should include all IMG representatives to ensure comprehensive briefing, agency specific situational awareness and issue identification.*

The IMG was chaired by the Shire President. As the HMA for bushfire on private property within the Shire (outside gazetted fire districts) the Bridgetown Greenbushes Shire has the responsibility to appoint an Incident Controller (IC) and the IC has the responsibility to establish and Chair the IMG. Having the Shire President Chair the IMG, of which the IC was a member, was seen to be appropriate in this instance and worked very well.

The constituents of the IMG were essentially the same as the Local Emergency Management Committee (LEMC) which is responsible for establishing hazard management arrangements and plans for the LGA. Telstra was overlooked in the formation of the IMG but was represented at the OAMG. Potential IMG membership should be identified in local hazard management plans.

Recommendation

> *Potential IMG membership should be identified in local hazard management plans. The information needs to be kept current. The*

contact details for each member should be recorded. These plans and contact details need to be available to any IMT mobilised to deal with an incident within the jurisdiction. This means access to this information via internet and storage and maintenance at a centralised facility managed by FESA.

Recommendation

Prior to the bushfire season, potential IMG members, many of whom are members of the Local Emergency Management Committee (LEMC) should be made aware of, and possibly exercise, their role as an IMG member.

On Friday 16th at about midday a meeting was held between the Regional Manager of DEC South West Region and FESA Director South West to establish an Operations Area Management Group (OAMG). The Bridgetown Greenbushes Shire (the HMA) was not represented as the Shire CEO was committed at Bridgetown attending to the needs of Council and local residents. Under Westplan Bushfire it is the responsibility of the HMA (in this case the BGS) to appoint an Operations Area Manager (OAM) and for the OAM to establish an OAMG. In the absence of the HMA, DEC and FESA took the initiative to form an OAMG.

It was decided at this meeting to appoint the FESA Director SW the OAM as he had previous experience in the role and was in a position to effectively coordinate and support the combat and support agencies due to his familiarity with the emergency management arrangements developed by Local and District Emergency Management Committees (LEMC & DEMC).

The OAMG was constituted by representatives from the Shire of Bridgetown Greenbushes, Department of Child Protection, WA Police Service, Telstra, Western Power, Main Roads WA, Country Health, Department of Agriculture and Food WA and Water Corporation. The OAMG met on three occasions and was retired on 20th January. The OAMG successfully coordinated issues associated with community welfare and the maintenance of service infrastructure and capacity. Many of these issues were also dealt with very effectively at a tactical level by the IMG and officers from the relevant agencies that were assigned to work with the IMT. The OAMG dealt with a range of issues including the activation of the local welfare plan, the maintenance of telecommunication capacity, the restitution of power, traffic management, maintenance of water supply, preparation for dealing with dead and injured livestock, maintenance of hospital and ambulance services and the considerations of health issues for vulnerable members of the community (aged etc), preparation for evacuations, community security law and order and issues associated with resources to address these activities.

The OAMG proved to be a very effective structure in coordinating the management of issues that affected or were affected by the fire incident.

Recommendation

A formal OAMG meeting should be convened as early as possible for incidents with the potential to be Level 3 incidents.

At the very least early advice to potential OAMG members should be made on days that exhibit extreme fire weather and other high ignition risk factors that a meeting is likely to be convened. The initial OAMG should include all OAMG representatives identified by LEMAC and DEMAC for each area to ensure comprehensive briefing, agency specific situational awareness and issue identification.

Recommendation

Potential OAMG membership should be identified in DEMC protocols and local hazard management plans. The information needs to be kept current. The contact details for each member should be recorded. These plans and contact details need to be available to any IMT mobilised to deal with an incident within the jurisdiction. This means access to this information via internet and storage and maintenance at a centralised facility managed by FESA.]

Recommendation

When an OAMG is established, a formal declaration of its establishment needs to be transmitted to all organisation/agencies involved. The declaration should clearly establish the reporting arrangements for Incident Controllers to the OAM as described in Westplan Bushfire.

Recommendation

The responsibilities and obligations for an OAM and OAMG (when established) needs to clarified and codified in Westplan Bushfire with regard to

- *Provision of information to participating organisations about the progress and potential of an incident;*
- *Dealing with information disseminated to the public; and*
- *Sourcing, coordinating and prioritising resources required by incidents within the Operations Area.*

There is lack of clarity in current arrangements concerning the role of the agency undertaking control operations e.g. DEC or a local govt and the transfer of these responsibilities to an OAMG when established.

TRAFFIC MANAGEMENT

Traffic management operations were undertaken under the arrangements set out in the document "Guidelines for the Operations of Road Closures During Bushfires 2008" and the DEC Fire Operations Guideline (FOG) 75 Closure of Roads Associated with Wildfire Fire Suppression Operations (07/01/09). In essence these arrangements require the IC to authorise the closure (either total or partial) and re-opening of roads, the execution of which is managed by the Western Australian Police Service (WAPOL).

Traffic management operations were instituted on the Marranup Ford Rd on Friday 16th January. As the incident developed during the day, traffic management operations were planned and instituted on other roads. Road closures were required on main access corridors such as Marranup Ford Rd,

Peninsula Rd and the SW Highway. Many other secondary roads required traffic management. The local OIC of the Bridgetown Police Station was engaged to implement these Vehicle Control Points (VCP).

WAPOL, Shire and Main Roads WA (MRWA) contractors (Southern Road Service - SRS) resources were utilised to implement traffic management in the field. It was fortuitous that SRS were undertaking traffic management in Bridgetown associated with roadwork on the highway at the time of the fire. Their close proximity and their ability to make staff available across the weekend contributed significantly to the effectiveness of the traffic management operations. If they were not already on site it would have taken many hours to mobilise sufficient SRS resources to take over from police and fire fighters.

Information produced by an After Action Review (AAR) undertaken by the IMG on 17th February at the Bridgetown-Greenbushes Council Chambers included traffic management issues associated with the Bridgetown and Ferndale fires. An AAR of traffic management was undertaken by WAPOL on the 8th of May to which representatives of WAPOL, DEC, FESA, Shire of Donnybrook - Balingup and SRS contributed. This AAR considered the traffic management experience at the Peninsula fire (Fire 23), Ferndale fire (Fire 26) and Fire 38 which occurred a few weeks later at Ferndale on Saturday 14th of February.

Road management was one of the most difficult ongoing issues and created angst amongst some community members. This was essentially caused by:

- the inconvenience of the closures,
- a lack of appreciation by some community members of the risks following impact upon roads by fire
- a lack of appreciation by some community members of the responsibilities of the agencies to the public and
- a situation where road block staff had been allowing local residents through full Vehicle Control Points (VCP) with the approval of the IC or knowledge of the Police then this was rectified and they were not then permitted access.

There were a number of issues and lessons gleaned from these AAR's:

The role, reporting arrangements and chain of command for the traffic management role within the AIIMS structure needs to be comprehensively described. The role must be filled by a WAPOL officer under the Interagency Guidelines. This officer must have involvement with IMT planning and decision making processes. A 'Traffic Operations Officer' that reports to the IC is required at large incidents. This role will have strong links to the Planning Section, particularly the Situation Unit and the Information Unit. This officer needs to be supported by a suitably qualified officer from MRWA that is capable of developing Traffic Management Plans that address risk and are cognisant of considerations associated with road type, appropriate speed limitations, signage requirements, traffic volumes, detours for local traffic and heavy haulage etc. Risk is proportionate to road use e.g. SW Highway has thousands of vehicles per day versus other road with only 100 vehicles per day. Access to expertise and knowledge of these metrics is required in

developing traffic management plans, road blocks and detours. This expertise and information is usually not available within bushfire HMA agencies

Recommendation

> *At Level 3 incidents the position of 'Traffic Operations Officer' –be established and filled by a WAPOL officer. A role description for this position is required and should be included in the "Guidelines for the Operations of Road Closures During Bushfires 2008". This officer is to be supported by a suitably qualified officer from MRWA that is capable of developing Traffic Management Plans that address risk and are cognisant of considerations associated with road type, appropriate speed limitations, signage requirements, traffic volumes, detours for local traffic and heavy haulage etc. This role should report to the IC and have strong links to the Operations Section, Planning Section (particularly the Situation Unit) and the Information Unit.*

The travelling public did not always recognise the authority of civilian contractors (SRS) to enforce a road block. Uniformed police were very effective at implementing VCP's as the public readily recognised their authority. In addition, local community members used their knowledge of tracks and minor roads to circumvent VCP's. This resulted in traffic 'leakage' into the area affected by fire suppression operations and the occasional situation where unauthorised traffic was observed in areas where they were at risk from falling trees, smoke or damaged power lines or where they unexpectedly came across fire suppression crews and machinery working on the roads. Total road closures on arterial and/or high risk roads is best achieved using uniformed Police. Partial VCP's are effective when resourced with civilian contractors. VCP staff reported 'hard barriers' were more effective than traffic cones in establishing total road closure VCP's but there was a limited availability of these types of barriers.

Recommendation

> *Main Roads Western Australia, Police and LGA's be encouraged via State emergency arrangements to establish a distributed cache of "hard" road barriers for deployment to major incidents*

This leakage and some of the community frustration referred to below was due to an initial lack of clarity in defining the road closure level i.e. total vs partial. This resulted in some traffic being permitted to pass and others not. This was quickly rectified and total closer VCP's re-established. The focus then changed to prioritising the opening of roads. Initially there was a lack of uniform awareness across all agencies involved in traffic management of the criteria to be utilised in downgrading a road from total road closure to partial road closure or the declaring of a road safe for public access. This was particularly so in considering safety from falling trees and the need to consider access to 'unsafe' feeder roads from 'safe' major roads etc.

Recommendation

> *In preparing traffic management plans consideration should be given to which VCP's are critical and need to be resourced with uniformed Police Officers and which VCP's can be manned with civilian contractors.*

The Stay and Defend policy appears to be incongruent with the Interagency Guidelines for road closure with regard to moving in and out of the area enclosed by total road closures. Local residents that had stayed and defended their assets and needed to travel on closed roads to get supplies to continue this task were allowed to leave the fire affected area but were denied access when they attempted to return. Similarly, those that had left their homes to seek refuge elsewhere but wanted to get back to their properties to mop up and make them safe were denied access.

In a similar vein, VCP staff reported that they had difficulty in consistently identifying personnel authorised to access a partial VCP. Vehicles with government registration plates and vehicles with slip-on fire fighter units etc were often let through VCPs as they were assumed to be associated with fire suppression or support operations. This assumption was sometimes ill founded.

There is a need to establish and implement a process of identifying and registering local residents in circumstances of a road block where it may be safe to allow those residents access to their properties. A systematic means of identifying authorised vehicles associated with either combat, support or recovery operations is also necessary.

Recommendation

> *The Interagency Guidelines for Road closure needs to be reviewed to incorporate a mechanism to identify bone-fide local landholders to facilitate their movement in and out of cordoned areas in sympathy with the Stay and Defend requirements.*

On Saturday 17th a program was developed to prioritise, in conjunction with the LGA and Police, roads for inspection and reopening. The process of reopening roads in the Bridgetown fire was delayed by the Ferndale fire which occurred at this time and drew many of the resources committed to road opening away to fire suppression work at Ferndale.

Some of the travelling public and local community members exhibited frustration with the prolonged closure of SW Highway and Peninsula Rd. To the lay eye, the road appeared safe as there was no running fire. They did not readily appreciate the ongoing risk that was present due to falling limbs, trees, smoke and damaged infrastructure such as power lines.

Frustration was sometimes vented at VCP staff. Initially there was inadequate briefing of traffic management personnel which made their role difficult. This was later rectified. VCP staff need to be ‘armed’ with the most up to date information available on the status of the incident in order to deal with the inevitable public inquiries. Printed material suitable for handing to drivers was a very effective medium and decreased to friction experienced by VCP staff.

Recommendation

> *Provision of timely, accurate and regular information to the community via electronic media (radio and internet) is a recognised function of the Information Unit in liaison with the Traffic Operations Officer. The aim of this arrangement is to facilitate appropriate behaviour in the*

travelling public and local community concerning access limitations and disruptions to the fire ground and surrounding areas.

Recommendation

Full briefings of traffic management personnel should be provided prior to dispatch to work areas – why road closed, what their authority level is, level of current risk etc

Recommendation

Information packs to be provided to road traffic personnel to assist with enquiries by public or provision to members of public and landholders who are defending homes/stock etc

Prolonged and multiple road closures presented significant resourcing challenges for WAPOL. The resourcing of road blocks during weekdays by SRS contractors was problematic due to their existing contractual commitments. It was fortunate that the Bridgetown fire ran over a weekend in this regard. Local government do not have capacity to manage road blocks as many of their limited staff resources are involved in combat and/or recovery operations. The ability to effectively resource VCP's at large incidents is dependent on early identification of the need for traffic management and the potential scale and duration of that commitment. This information needs to be communicated as early as possible to the IMG (OAMG if established) to facilitate the sourcing and planned maintenance of VCP resource needs.

The legal liabilities associated with a person breaching a road closure who is subsequently injured or killed is uncertain. Taking reasonable steps to deny access e.g. unmanned road barricades and being able to foresee that these reasonable steps may not always be effective leaves in question the liability owed by the HMA to the injured party. The Interagency Guidelines infer a risk elimination objective rather than a risk management objective. It is not operationally feasible to inhibit all traffic movement into an area by total road closure VCP's. The guidelines need to clearly reflect an objective or risk minimisation based on risk assessment and risk management by the implementation of reasonable strategies that are cognisant of the resources available to undertake the operations. These strategies should include an emphasis on the provision of information to the public to inform them and allow them to make reasonable decisions about their own behaviour.

Recommendation

The Interagency Guidelines need to be amended to reflect what is operationally possible with regard to risk management rather than what is required to achieve an absence of risk.

OPERATIONS

Mobilisation:

Mobilisation of some resources, both DEC and brigades, resulted in resources being mobilised to the incident and not being used immediately or some brigade resources being mobilised off the incident to rest taking longer because their location on the fire ground was not known. This was due to

information not being transferred effectively between the incident and the mobilising agency (FESA or the DEC home district) and the monitoring of brigade resources on the fire ground being incomplete.

Very clear communication arrangements are required between FESA and the CFCO or FCO responsible for brigade mobilisation from the home patch. These arrangements are in place and have been used effectively in the past. It would appear that some pre-season refresher training is all that is required to maintain awareness of the accepted processes.

Check in and check out of brigade resources that were not 'local' to the local jurisdiction was very successful. However, local brigade resources were not as disciplined in notifying the Resources Section of their arrival and departure from the incident which caused difficulties in operational management of these resources.

Recommendation

> *A centralised, regional, multi-agency resource coordination and tracking system/facility be established to accommodate and coordinate the movement of resources from all agencies within and between regions.*

A 'BFB Task Force Liaison' person present at the Operations Point of Staging Area would be useful to gather up incoming out of region brigade resources and be a point of contact to provide assistance and direction with check in procedures and to provide information to incoming brigade resources.

Recommendation

> *The role of 'BFB Task Force Liaison' be defined and appropriately trained personnel be provided by the HMA (possibly from support brigades) to facilitate brigade movements on and off the fire ground.*

A number of Brigade personnel mobilised as Sector Commanders were not immediately utilised. In the dynamic stage of incident response it is not unusual for some resources to be excess to the current requirement or for the requirements for resources to change rapidly. However, in these situations there is always an opportunity to be involved in a learning experience and be partnered with another Sector Commander or Divisional Commander. Brigade resources that find themselves present but without an assignment need to make themselves known and be pro-active about accepting an alternate role assignment.

Recommendation

> *Unassigned resources arriving at incidents should be encouraged to make themselves known and to undertake alternate duties.*

A number of CFCO's noted that it would be beneficial to be given as much notice as possible of a 'possible' mobilisation request to allow them to make 'stand-by' arrangements in a timely fashion rather than try to contact people late at night or in the early hours of the morning. Notification to CFCO in surrounding Shires of the existence of a large incident would also allow them to make preparatory arrangements.

Recommendation

> *The declaration of a potential Level 3 incident should be notified to FESA who can facilitate an early warning to CFCO's in the Shire and surrounding LGA's.*

Communications:

Some overload of radio channels was observed during Friday when the fire was escalating rapidly. Alternate channels were available but a decision was made not to alter the existing communications arrangements during this dynamic period of fire development as the potential for confusion and unsafe situations to develop was deemed unacceptable. Communications planning after this juncture was implemented well with no further confusion or radio channel overload.

Communications plans included in the Incident Action Plan (IAP) from Friday night onwards were generally of good quality and made a significant contribution to establishing and maintaining an effective radio communication network across the fire ground.

The utilisation of the DEC mobile communications facility was instrumental in facilitating effective and reliable communications across the fire ground.

The ability for Air Attack to communicate effectively with BFB ground controllers was sometimes difficult. Ground Controllers need to use the designated channel to talk to Air Attack which is different to the channels used on the Sector. Air attack resorted to requesting Ground Controllers to use a simplex channel but Ground Controllers often did not know how to do this. Refresher training for Ground Controllers is required prior to each season to ensure that they have the knowledge concerning radio use to allow them to work effectively in this role. This training requirement could be organised through ROAC.

Recommendation

> *Pre-season multi- agency refresher training for Ground Controllers should be undertaken each year.*

Fatigue Management:

The management of fatigue for volunteers was an issue for some brigades. Check in time must be the time of mobilisation and not the time of arrival at the incident to allow effective management of fatigue. Brigade members and Resources Check In personnel need to be cognisant of this requirement.

The management of travel for BFB resources back to their place of rest needs to be planned to negate these personnel driving for considerable periods at the completion of extended operational shifts. The industry standard of 2:1 work to rest ratio should guide these arrangements. The provision of relief drivers or dedicated transport to transport personnel at the end of extended shifts is required. The aim should be not to allow any person to drive after working (including transport to rest) more than 16 hours. These arrangements are able to be made by the IMT with close liaison with the combat agencies involved.

Recommendation

> *Transport plans for BFB resources should be prepared by the Ground Support Unit in close liaison with FESA who will liaise with the home jurisdictions of the brigades. Moving personnel whilst leaving the equipment at the fire ground staging areas is preferred to moving equipment in and out with every shift.*

Fire Ground Resource Management

The deployment of DEC and BFB Strike Teams on the fire ground worked well. Keeping Strike Teams together on the fire ground provided a significant advantage to the Resources Unit in tracking resources and to Logistics Section in servicing the needs of these resources with food, transport and accommodation.

Strike teams that were configured as a STL and 2 trucks allowed the Operations Officer to maintain the strike team as a unit as it was deployed around the fire ground. Strike Teams that are larger than this are difficult to maintain as a cohesive unit and inevitably become fragmented into smaller units to meet the operational needs of the incident. Conversely, resources deployed as individual trucks or persons increase the workload and complexity in the Resources Unit, Logistics Section and Operations Section and add unnecessarily to the span of control of Sector Commanders.

Recommendation:

> *Suppression resources should be ordered and mobilised as 2 truck Strike Teams with a STL and consistently deployed to the fire ground as a unit.*

Air Operations:

Air Operations at the Operations Point requires designated space (a donga) that has room to brief and display maps etc with access to a computer link. It also requires access to communications facilities in addition to those being utilised by Operations. A Communications bus was utilised to support the Air Ops management and provided the functionality required without disturbing Operations.

Recommendation

> *At large incidents a communications bus should be provided for the use by Air Ops and a designated work space should be provided for the Air Ops management group.*

The maps provided to Air Ops were the same as those provided to ground resources. There is a lot of information presented on these maps such as hatching and area statements etc that clutters the map pane and makes it difficult to use thee maps to record intelligence when flying. An aviation map that is 'cleaned' or extraneous information would be of benefit to air crew.

Recommendation

> *Add and 'Aviation' map to the standard set of incident maps. The standard for this map will need to be developed by subject matter experts from the Air Ops group.*

The Sikorsky S61 arrived at the fire without water bombing operational channels 1/2/74/75 programmed. On arrival at the fire other aerial assets could only communicate with the Sikorski on the air to air frequencies. This communication issue in concert with a number of other operational considerations led to other fixed wing aviation assets being stood down to provide the Sikorski with safe working air space. A DEC communications technician provided the required frequencies and the Sikorski engineer programmed the radios overnight. The appropriate channels were available and operational in the Sikorski the following day.

Recommendation

> *Ensure the S61 helicopter has all appropriate channels for water bombing operations throughout the State by including this requirement on a pre-deployment checklist.*

PLANNING

Incident Action Plan Production:

The functionality provided by the DEC Mobile Communications Facility and associated support facilities (dongas) allowed good quality IAP's to be prepared, delivered and briefed to. The ability to collect good quality intelligence from the co-located Operations Section in a timely fashion and to include that information on map products for use in the IAP was excellent. The electronic mapping facilities and the ability to reproduce large numbers of good quality maps was excellent. Improvement needs to be made to the photocopying capacity to allow the rapid production of collated documents.

Recommendation

> *Provide a photocopier in the Mobile Communications Facility or the mobile equipment cache that is capable of large volume production of collated documents.*

Check In Check Out

Most crews and other resources from DEC and BFB, particularly those arriving after the initial response, exercised disciplined check in procedures and utilised the T-card to good effect. Local DEC and BFB resources responding in initial attack were less disciplined. These local resources were committed to the fire early in the incident and came to the fire using many different access routes. Initial check-in at the Operations Point was sometimes not feasible given that a time consuming detour would be required and priority was given to suppression action on the fire line. Subsequent check in/out would have been facilitated by establishing a Staging Area at a strategic location that would capitalise on travel routes used by resources accessing and leaving the fire ground. Self deployment/ demobilisation by

local volunteers made the safe management of these personnel very difficult for Sector Commanders.

Recommendation

> *A strategically located Staging Area serviced with check in/out personnel should be considered as early as possible at incidents involving an extended attack.*

Check out procedures were less disciplined and resources leaving the incident at the end of shift, particularly those not exiting via a Staging Area, were prone to do so without notifying the Resources Unit.

A more disciplined use of check out procedures would have allowed information to be conveyed to those checking out of the recommencement times for the next shift and any catering, travel or accommodation information required by those going off shift.

Recommendation

> *Pre-season refresher training to include an emphasis on check in/out procedures*

Public Information

The warnings/ alerts to the community concerning Prepare, Stay and Defend of Go Early message needs to be reviewed. Community interpretation of public warning messages over ABC radio varied. Some interpreted the warnings as a requirement for evacuation which caused confusion and anxiety. The message, its construction and the wording needs to be very deliberate and consistent over time and between incidents. The preparation of the community prior to the fire season on what the messages mean is fundamental to facilitating the expected behaviour of community members. A Common Alert Protocol is needed in Western Australia for all HMA's that will ensure consistent messaging is achieved in a recognisable format that is reliably interpreted by the target audience and is issued from one trusted source. In addition warning and alert information needs to be promulgated to target audiences using digital technologies such as mobile phone text messages, recorded messages to phones within a defined location etc. Systems and procedures that allow all HMA's to access and utilise these instruments need to be developed and training and extension programs implemented to allow their consistent application and use.

Recommendation

> *A review of community messages, their construction and component parts, the process to activate them and the technology required to deliver the messages by digital and non-digital media should be undertaken. The desired outcome is to define standard messages, procedures, tools and technologies that can be utilised by all HMA's in Western Australia.*

Information to the community was provided by public meetings, ABC radio, information boards at a number of localities in affected communities and via the DEC and FESA websites.

Recommendation

> *Public meetings are to be encouraged for all Level 3 incidents that affect, or have the potential to affect communities.*

Recommendation

> *A centralised emergency services website should be established that the public can access for reliable and up to date information on any incident. The website must be capable of reliably servicing a very high traffic load and be easily updated by HMA's.*

The Information Services Unit (ISU) was led by very experienced personnel who ensured an effective response and management of information needs form the incident. This level of experience and professionalism is essential at complex, multi-agency incidents such as Bridgetown.

Recommendation

> *At Level 3 incidents the Information Services Unit should be adequately resourced with information technology and at least 6 persons, all of whom are very experienced and capable in dealing with the information demands of a Level 3 incident.*

The location of the ICC at Bridgetown provided a very effective forum for interaction between the ISU and information sources, particularly Operations Section and the Situation Unit and with information customers, particularly Western Australia Police, Main Roads Western Australia, Shire, FESA, Western Power, Telstra and SRS contractors.

Recommendation

> *Wherever possible the ISU should be co-located with Operations and Logistics Sections to ensure effective communications and the ICC in which they operate should be located in the affected community.*

There was a very active partnership between the ISU, the media section of DEC and the ABC that enabled effective messaging and information flow to the local community and other interested publics. Inclusion of the ABC on the IMG/OAMG structures would be beneficial. An early morning briefing to the ABC program Director would also facilitate effective communications between the incident and the HMA/incident and allow ABC to facilitate programming information broadcasts and public warning messages.

Recommendation

> *ABC Radio should be a participant in IMG and/or OAMG. LEMC and DEMC should plan for this involvement in Local and District Emergency Management Plans.*

The limited phone access to the ICC proved problematic for the ISU in servicing the needs of public and agency inquiries. Greater phone capacity is required by the ISU.

Effectively responding to local community inquiries required a level of local knowledge that was not available to the ISU. Incorporating local personnel into the ISU that possess such knowledge would be a great benefit in this regard.

Recommendation

> *The ISU should be provided with a person with local knowledge at Level 3 incidents.*

The information needs of personnel staffing vehicle control points is a priority. These people need to be provided up to date information in a standard format to allow them to relate to the travelling public about the fire situation.

Recommendation

> *Dedicated information packages should be made available to personnel operating Vehicle Control Points at the shift briefing.*

Written information provided to the public on websites and on community information boards was effective because it appeared in a standard format that people got used to interrogating and digesting. New information or information on particular issues was readily identified.

Recommendation

> *The information templates used by the ISU in developing public information boards need to be standardised and posted on the DEC Fire Management Services webpage to allow access and use by the ISU. A standard across government would add significantly to their acceptance and use by the public as a reliable source of information.*

A community debriefing was held on Tuesday 27th January at the Bridgetown Hall and attracted over 400 attendees. In general the feedback from community members was positive. Some criticisms were expressed concerning the tactics utilised on individual properties, the effectiveness of community warnings and the ability of property owners and relatives to get back to properties through road blocks.

Media

Moving the ICC to Bridgetown brought the media into close proximity with the Operations Section. The demand for interview time with operations personnel was demanding at times and requires better management.

Recommendation

> *Media liaison personnel are needed to 'ride' shotgun' on media personnel to facilitate them getting their stories without imposing on the effectiveness of operations.*

LOGISTICS

Facilities

The establishment of the ICC at the Bridgetown showgrounds provided a significant increase in effectiveness to all Sections. Co-location of the Operations Section with the other sections of the IMT ensured timely transfer of accurate information and the exchange of information and ideas that resulted in more efficient and effective incident management.

The transfer of the ICC from DEC Kirup office to Bridgetown occurred on Saturday night without affecting incident management. This was the first time that the DEC facilities had been utilised at an incident and their were a number of lessons learnt from this experience.

Access and Parking:

- Access to the ICC (including the Operations Point) should be controlled by fencing and flagging and by the way that the facility is laid out so as to minimise through traffic from 'public' areas such as catering facilities and briefing areas and the facilities used by the IMT.
- Parking needs to be considered in the layout so that incoming vehicles pass through a 'control point' and receive direction to parking and/or servicing areas. The control point staff should be custodians of all vehicle keys that are to be used on the fire line and are likely to be used by multiple crews during the incident.
- No parking should be allowed in proximity of the ICC facilities.
- Heavy fleet (trucks) should be parked in a designated area after being checked, refurbished and serviced by mechanical support staff. Out of service trucks should be parked together in a servicing area.
- The truck re-fuelling and re-supply area should be on the way to the truck parking area.
- Light vehicles should be parked in a separate designated area with parking bays delineated to allow maximum parking capacity whilst maintaining sufficient room to access and egress the parking area i.e. not allow vehicles to become 'parked in' by other vehicles parked too close to allow egress.
- Parking areas should be located and signposted to facilitate people passing through the Check In/Out desk.

Arrangement of the workspace and AIIMS Units:

- The layout of the facilities needs to be standardised and a facilities map produced and displayed at the entry to the facilities so that people know where various sections are housed.
- The Briefing Area should be away from the Operations Point and be close to the catering facilities.
- Resource Unit needs to be located adjacent to the Accommodation Unit as they need to constantly exchange information.
- Resources Unit also needs to provide information to the Ground Support Unit that develops transport plans for shift change and demobilisation transport.
- The Logistics Officer and Supply Unit to share a donga. The dongas for Logistics/ Supply, Facilities, Catering and Ground Support need to be co-located as they have strong information interactions.
- Information Services needs to be located adjacent to the IC and Situation Unit as they share a lot of information. The Information

Services donga requires a whiteboard, 2 phones (cordless), 2 computers, pin boards, printer (A3), and enough space for 5 people to meet and work.

- The helipad should be located some distance from the ICC and catering facilities to minimise dust and noise during briefings or impacting on work and eating areas.

Facilities and equipment:

- Each donga needs to be set up with basic office requirements in place. This includes phones, computers, portable UHF radio, internal and external phone books, stationary supplies (pads, pens, pencils, staplers, hole punches, blue tac, sticky tape etc) and appropriate ICS forms.
- There needs to be a computer in each donga/tent office and office to office e-mail capacity.
- The site needs to be flat, well drained, grassed and approximately 2.5 ha in size (bigger depending on how much heavy plant is to be parked up).
- The briefing area needs a dais for people providing briefings and map boards sufficient to display large incident maps. The briefing area needs locations around its boundary that are signposted with the Division names to allow Divisional Commanders to provide detailed briefing to their assigned resources after the general briefing is complete.
- Resources require a large works space. A donga is too small and a Western Shelter tent facility is more appropriate. Resources need to be located close to the Ops Point. Resources needs trestle tables, 2 electronic white boards, pin up boards (big enough for IRMS), 4 computers, data projector and screen, printer (A3), 2 phones.
- The check In/Out desk at every Staging Area needs to be connected to Resources Unit by phone, computer and UHF radio so that information can be passed rapidly and with the minimum of double handling or transcription.
- The phones at the ICC need to come through an 'exchange' in Management Support to allow direction of all incoming calls. Radios need to be located in the Management Support donga to allow constant monitoring of communications. Management Support donga should be the production centre for the IAP equipped with a fully functional high production photocopier capable of A3 printing and ancillary supplies capable of printing large numbers of collated documents.

It is suggested that a Western Shelter tent is utilised for:

Resources Unit housing 6 people

Situation (3 people) and Information Services (5 people)

It is suggested that the Pantec is utilised for:

IT specialist (1),

Situation mapping (2) and

Management Support (phone desk) (2)

It is suggested that a container/donga is utilised for:

IC, Deputy IC, PA, Liaison (4)

Management Support (3)

Planning Officer, Deputy PO and PA (3)

Communications Planning and Communications Tech Support (3)

IT and Communications Support

The utilisation of the Mobile Communications Facility and the ancillary support facilities provided an environment that facilitated the effective use of IT. The computer server and the Local Area Network that it serviced with connectivity to the Internet and the DEC Wide Area Network allowed very effective communications to be established within and outside the incident.

Although an effective communications web was established and maintained, the co-location of the Communications Support Unit and the Communications Planning Unit would have improved the integration of telecommunications as they share a lot of information and have to work closely together.

The undulating terrain hampered effective radio communications in some areas.

Recommendation

> *Portable, reliable mobile repeaters are required to provide radio communications into areas not covered by existing repeater networks. These repeaters need the capacity to be linked.*

Lap top computers brought to the incident by team members needed to be configured to allow them to connect to the Mobile Communications Facility and utilise the servers. This required a lot of time and effort on the part of the IT support technicians and slowed the transition of some officers into their roles.

Recommendation

> *There needs to be a system that allows laptop computers brought to an incident to be configured at the start of the season and allow them to be easily activated to the correct configuration when they arrive at the incident.*

Food and Catering:

The provision of food to the incident was very effective, particularly after the incident management team became established on Friday. The utilisation of the DEC catering facility and the pre-season planning arrangements in place to utilise local food catering providers allowed the continuous provision of adequate quantities of good quality food to fire fighters on the fire ground over an extended period.

Recommendation

> *Pre-season arrangements to provide high quality food should be encouraged in all emergency management plans*

The ability of local providers, supported by their community, to source and supply an ongoing store of high quality food is to be highly commended.

Food hygiene was a concern to those involved in Catering. A lot of food was prepared, packaged and transported to incident personnel. The ongoing storage of that food in fire ground appliances was a concern. Many appliance have coolers or fridges but many, particularly those used by BFB's do not.

Recommendation

> *Food storage should be a design consideration in all fire ground appliances*

The ability to identify food that is 'out of date' is an issue at extended incidents. It should be possible to identify perishable food that is no longer deemed safe to consume. This will require perishable food items to be 'stamped' with a 'use by date/time'.

Recommendation

> *Perishable food should be 'stamped' with an expiry date.*

Accommodation:

A shortage of available accommodation in proximity of the incident was observed. The January holiday period resulted in much of the accommodation space available from hotels, motels and other providers being utilised by holiday makers. This resulted in incident resources being accommodated at significant distances from the incident (Northcliffe to Harvey) resulting in significant travel times at the beginning and end of shifts that limited the length of operational shifts. DEC and out of region BFB resources were sent back to their home locations if accommodation could not be found locally.

Recommendation:

> *There is an established need to develop mobile accommodation and accommodation facility support solutions that allows an acceptable standard of accommodation to be provided to fire fighters in close proximity to the incident.*

Many of the out of regions BFB resources were mobilised to their home locations at the completion of each shift. This is largely due to volunteers only being able to commit to one shift at a time due to other work commitments. However, where ever possible, accommodation of BFB resources close to the incident between shifts can be organised by the IMT. This will require close liaison between to combat agency, the Strike Team Leader in charge of the BFB resources and the IMT. The requirement for accommodation needs to be identified at the beginning of the shift to allow time for accommodation arrangements to be made by the IMT.

Navigation on the fire ground:

Many resources attending this fire were not familiar with the area or the terrain. The maps in the IAP were of acceptable quality and very useful but could not provide sufficient detail to navigate through paddocks at night by personnel unfamiliar with their surroundings. Those with access to GPS unit found them to be very useful in this regard.

Signage on the fire line that directs resources along the fire line and designates sector and division boundaries and the location of water points and caches of consumables needs to be improved. Signage should be of a type that is effective at night (reflective) but portable and easy to erect, maintain and modify.

Recommendation

> *A standard for signage at fire incidents be developed and caches of this equipment be established at DEC and Local Govt facilitates to enable its rapid and effective deployment by Ground Support Unit at fires.*

SMC: 6 FDI: 8 W 14 S VH

PA 1500-1600, 1700-1800

Fire Weather for D.E.C.
from the Weather Bureau, Perth

Issued at 0750 WDT on Thursday the 15th of January 2009

LOCATION	DATA		WINDS (KM/HR)			TOMORROW'S WEATHER	TOMORROW'S OUTLOOK	
PEARCE	T	39	1100	ENE	32	FINE. GUSTING TO 45 KM/H DURING AM. WSW CHANGE LATER PM.	MAXT	42
FINE. GUSTING TO 65 KM/HR AM.	DP	7	1300	ENE	24		WIND (KM/HR)	
	RH	14	1500	E	22		AM	NNE 32
	LAL	0	1700	ESE	20		PM	NW 22
			0300	ENE	28			
BICKLEY	T	36	1100	ENE	32	FINE. GUSTING TO 45 KM/H DURING AM. WSW CHANGE LATER PM.	MAXT	40
FINE. GUSTING TO 70 KM/HR AM.	DP	7	1300	ENE	24		WIND (KM/HR)	
	RH	17	1500	E	20		AM	NE 32
	LAL	0	1700	ESE	20		PM	NW 20
			0300	ENE	28			
DWELLINGUP	T	36	1100	ENE	30	FINE. GUSTING TO 45 KM/H DURING AM. WSW CHANGE LATER PM.	MAXT	40
FINE. GUSTING TO 50 KM/HR DURING AM.	DP	8	1300	ENE	24		WIND (KM/HR)	
	RH	18	1500	E	20		AM	NE 30
	LAL	0	1700	ESE	20		PM	NNW 20
			0300	ENE	24			
BRIDGETOWN	T	35	1100	ENE	24	FINE. WSW CHANGE LATER PM.	MAXT	39
FINE.	DP	9	1300	ENE	20		WIND (KM/HR)	
	RH	20	1500	E	20		AM	NE 24
	LAL	0	1700	SSE	20		PM	N 15
			0300	E	16			
WITCHCLIFFE	T	31	1100	E	24	FINE.	MAXT	33
FINE.	DP	11	1300	ESE	20		WIND (KM/HR)	
	RH	29	1500	SSE	20		AM	NNE 20
	LAL	0	1700	SSE	26		PM	SW 24
			0300	E	16			
PEMBERTON	T	32	1100	ENE	22	FINE. WINDS POSSIBLE NW FOR PERIOD IN PM BEFORE SW.	MAXT	37
FINE.	DP	10	1300	ENE	20		WIND (KM/HR)	
	RH	26	1500	E	20		AM	NNE 22
	LAL	0	1700	SE	24		PM	SW 12
			0300	ENE	16			
WALPOLE	T	28	1100	ENE	24	FINE. SW CHANGE LATER PM.	MAXT	35
FINE.	DP	11	1300	E	24		WIND (KM/HR)	
	RH	35	1500	ESE	26		AM	NE 24
	LAL	0	1700	ESE	28		PM	NNE 20
			0300	ENE	20			
ROCKY GULLY	T	31	1100	ENE	24	FINE. SW CHANGE LATER PM.	MAXT	38
FINE.	DP	9	1300	E	20		WIND (KM/HR)	
	RH	26	1500	ENE	20		AM	NNE 24
	LAL	0	1700	ESE	24		PM	NNE 20
			0300	ENE	16			

Harvest ban: 1500 -2000

Total campfire ban

Continuous sched.

Fire Weather for C.A.L.M.
from the Weather Bureau, Perth

Issued at 0750 WDT on Thursday the 15th of January 2009

TODAY'S GRASSLAND FIRE DANGERS

LW Coastal:	VERY HIGH
LW Inland:	VERY HIGH
SW Coastal:	HIGH
SW Inland:	HIGH
Stirling Coastal:	HIGH
Stirling Inland:	HIGH

SYNOPTIC DISCUSSION

A high pressure system is moving south of the state into the Bight, bringing fresh and gusty E'ly winds to much of the SW Land Division this morning. Expect fine conditions with rapid warming to very hot conditions over western and northern districts as a surface trough develops near the west coast. On Friday the deep heat trough should be off the west coast in the morning moving inland in the afternoon and evening. Isolated showers and thunderstorms are likely to extend into the inland Central West district and northern parts of the Central Wheat Belt. It should be fine through the remainder of the SWLD and hot to very over most parts in a NE flow.

LOW LEVEL WINDS (KM/HR)

PERTH		ALBANY
1000ft	1000ft	1000ft
2000ft	2000ft	2000ft
3000ft	3000ft	3000ft
5000ft	5000ft	5000ft
7000ft	7000ft	7000ft

Fire Weather for C.A.L.M.
from the Weather Bureau, Perth

Issued at 0850 WDT on Monday the 19th of January 2009

LOCATION	DATA	WINDS (KM/HR)	TOMORROW'S WEATHER	TOMORROW'S OUTLOOK
PEARCE	T 32	1100 SSE 24	FINE.	MAXT 33
FINE.	DP 10	1300 SSE 18		WIND (KM/HR)
	RH 28	1500 SW 24		AM ESE 25
	LAL 0	1700 SSW 28		PM SSW 28
		NIGHT ESE 18		
BICKLEY	T 28	1100 ESE 20	FINE.	MAXT 30
FINE.	DP 10	1300 SE 16		WIND (KM/HR)
	RH 33	1500 SSE 12		AM ESE 25
	LAL 0	1700 SW 20		PM SSW 28
		NIGHT ESE 22		
DWELLINGUP	T 29	1100 ESE 25	FINE.	MAXT 30
FINE. POSSIBLE GUSTS TO 45 AM.	DP 7	1300 ESE 18		WIND (KM/HR)
	RH 33	1500 SE 18		AM ESE 25
	LAL 0	1700 SW 24		PM SSW 28
		NIGHT ESE 22		
BRIDGETOWN	T 27	1100 SE 15	POSSIBLE SHOWER.	MAXT 29
FINE.	DP 5	1300 SE 20		WIND (KM/HR)
	RH 36	1500 SSE 24		AM VRB 10
	LAL 0	1700 SSE 22		PM S 20
		NIGHT VRB 08		
WITCHCLIFFE	T 24	1100 SE 24	POSSIBLE SHOWER.	MAXT 25
FINE.	DP 7	1300 SSE 28		WIND (KM/HR)
	RH 41	1500 SSE 30		AM VRB 10
	LAL 0	1700 SSE 32		PM S 23
		NIGHT SE 10		
PEMBERTON	T 24	1100 SSE 15	SHOWER OR TWO.	MAXT 26
FINE.	DP 8	1300 SSE 18		WIND (KM/HR)
	RH 43	1500 SSE 18		AM VRB 10
	LAL 0	1700 SSE 14		PM SSW 20
		NIGHT S 08		
WALPOLE	T 21	1100 SE 20	SHOWER OR TWO.	MAXT 24
FINE.	DP 8	1300 SSE 24		WIND (KM/HR)
	RH 52	1500 SSE 25		AM VRB 10
	LAL 0	1700 SSE 20		PM SSW 25
		NIGHT WSW 10		
ROCKY GULLY	T 24	1100 SSE 15	SHOWER OR TWO.	MAXT 27
FINE.	DP 7	1300 SSE 18		WIND (KM/HR)
	RH 34	1500 SSE 20		AM VRB 10
	LAL 0	1700 SSE 16		PM SSW 20
		NIGHT ESE 08		

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Fire Weather for C.A.L.M.
from the Weather Bureau, Perth

Issued at 0850 WDT on Monday the 19th of January 2009

TODAY'S GRASSLAND FIRE DANGERS

LW Coastal:	HIGH
LW Inland:	HIGH
SW Coastal:	HIGH
SW Inland:	HIGH
Stirling Coastal:	HIGH
Stirling Inland:	HIGH

FAXED
19 JAN 2009
BY:.....

SYNOPTIC DISCUSSION

A mid level trough is producing isolated thunderstorms and showers over the southern Goldfields, western Eucla, and through most parts of the SW Land Division away from the Central West and Southwest Districts, which will slowly contract southeastwards during the afternoon and evening. Thunderstorms and showers will tend scattered at first over southeastern parts of the SW Land Division, with some moderate falls possible.

LOW LEVEL WINDS (KM/HR)

	PERTH		ALBANY	
1000ft	SE/24	1000ft	SE/24	1000ft
2000ft	ESE/35	2000ft	SE/22	2000ft
3000ft	E/35	3000ft	SE/17	3000ft
5000ft	S/7	5000ft	SE/20	5000ft
7000ft	S/17	7000ft	S/13	7000ft

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