



## **POST INCIDENT ANALYSIS FOR BLACKWOOD FIRE 8 – ELLENSBROOK- GNARABUP, 23/24 NOVEMBER 2011**

Noetic Solutions Pty Limited

ABN 87 098 132 024

June 2012



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## Revision Log

Revision date	Ver	Revision description
22 June 2012	1	Final

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# CONTENTS

Distribution .....	1
Authors .....	1
Revision Log.....	1
CONTENTS .....	2
INTRODUCTION .....	3
Background .....	3
Aim .....	5
Methodology.....	5
Principles.....	5
CONTEXT.....	6
EVENT DESCRIPTION .....	8
OBSERVATIONS AND LESSONS LEARNT .....	12
The Escape .....	12
The Response .....	15
The Effectiveness of Incident Management .....	15
The Effectiveness of Strategy and Tactics during the Fire .....	20
The Effectiveness of Aerial Suppression.....	22
The Effectiveness of Emergency Management Procedures.....	23
The Effectiveness of Inter Agency Operations .....	24
The Level of Resourcing .....	25
Information Management and the Effectiveness of Community Advice.....	26
The Effectiveness of Evacuation Procedures.....	27
The Effectiveness of People Welfare .....	28
The Effectiveness of Recovery Actions .....	28
CONCLUSION .....	31
ANNEXES.....	32
Annex A: Summary of Lessons .....	32
Annex B – Forecasts .....	45
Annex C - Interviews .....	46
Annex D–Documentation .....	47
Annex E - Workshop Participants.....	49
Annex F - Terms of Reference .....	50
Annex G – Public Submissions .....	51

# INTRODUCTION

## Background

On the morning of the 23 November 2011, two fires in the same region of Western Australia (WA) escaped containment lines of prescribed burns conducted by the Department of Environment and Conservation (DEC). Together, these fires are referred to as Blackwood Fire 8. The first of these fires was at Ellensbrook (15km North West of Margaret River) and the second at Gnarabup (7km South West of Margaret River). From the time of the escape to the eventual suppression, the fire destroyed 45 properties<sup>1</sup>, damaged critical infrastructure, and burnt over 2000 hectares<sup>2</sup>. Fortunately, no lives were lost. Even though no lives were lost, this fire had an impact on a large number of people, from those who lost homes, to those who provided support in the evacuation centres, to those involved in fighting the fire.

It should be noted that Blackwood Fire 8 was the subject of an inquiry led by Mr Michael Keelty AO and delivered on 27 January 2012<sup>3</sup>. This report was a forensic analysis of the prescribed burn – focussing on the planning, initial escape and response. Ten recommendations are made in Mr Keelty's report.

A Post Incident Analysis (PIA) was commissioned by the Department of Premier and Cabinet (DPC) to follow on from the Keelty report. To conduct the PIA, DPC contracted Noetic Solutions Pty Limited (Noetic) to conduct a '*critical analysis of response to a complex incident or an incident that results in significant impacts or consequences*'<sup>4</sup>. This report examines the response to the incident in order to determine lessons that can improve response and outcomes in the future.

## AGENCY BACKGROUND

This PIA takes a tripartite approach to include the other three bodies responsible for the response to the fires, DEC, the Fire and Emergency Services Authority (FESA) and the Local Government Authority (LGA) of Augusta Margaret River Shire (AMR). An outline of their respective roles is below:

- + DEC is responsible under the *Conservation and Land Management Act 1984* to manage vested Crown land, unallocated Crown land and unmanaged reserves outside gazetted areas and town sites. One of the management tools used by DEC is fire. DEC's internal policy for fire management is contained in *Policy Statement No. 19 – Fire Management Policy and Code of Practice for Fire Management* which provides guidance and direction on the management of prescribed burns including their initiation and containment. The Code of Practice also provides for the management of bushfires.
- + FESA is responsible for the provision of emergency management services throughout WA.
- + The local government, in this case the Shire of AMR, Under the *Emergency Management Act 2005* every is responsible for Local Emergency Management Arrangements (LEMA) and assistance with recovery as well as any other responsibilities delegated to them in the event of an emergency.

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<sup>1</sup> Figures from Shire of AMR.

<sup>2</sup> *Appreciating the Risk*, Keelty 2012.

<sup>3</sup> *ibid.*

<sup>4</sup> DEC Fire Operations Guideline 94.

In WA, incident management during emergencies rests on the structures and principles contained in the Australasian Inter-service Incident Management System (AIIMS). Among other provisions, AIIMS defines roles that provide for the following functions:

- + Incident Control
- + Operations
- + Planning
- + Logistic Support
- + Public Information

The Incident Controller (IC) is responsible for the overall coordination and management of an incident and leads the Incident Management Team (IMT). The IMT is a standard structure which assembles the AIIMS functions into a system of support for the IC. Arrangements within and between fire agencies provide for pre-formed teams established under the AIIMS structure that can be readily deployed in the event of an emergency of a specified level, and are rostered when periods of extreme weather are forecasted<sup>5</sup>.

AIIMS provides for three levels of incidents and IMTs. They are numbered from 1 to 3 with Level 1 incidents being typically small, low impact and single agency; and Level 3 incidents being large, complex, high impact and multi-agency. For bushfires, the levels refer to the three phases that a bushfire may pass through, from an initial attack (Level 1), to an extended attack (Level 2) and then to a campaign fire (or a fire that is complex or large) (Level 3)<sup>6</sup>. For Level 2 and 3 incidents, when available, pre-formed teams will be deployed.

## THIS REPORT

This report outlines the findings from the PIA. It will provide background information and an event description which will provide context for the findings. The report will explain the approach taken by the Noetic Team to develop the report. The findings will be presented in a series of observations and lessons structured by the terms of reference which are at Annex F. This will also be presented in tabular format of lesson, action and responsibility in Annex A. The report does not provide direction on responsibility for implementing the lesson. This will be determined by DPC and the relevant agencies.

## NANNUP/MILYEANNUP (BLACKWOOD FIRE 11) FIRE

Concurrent with the events covered in this report, a significant fire occurred at Nannup/Milyeannup (Blackwood Fire 11). The PIA for that fire is the subject of a separate report.

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<sup>5</sup> FESA Directive 3.5.

<sup>6</sup> FESA Incident Level Declaration.

## Aim

The aim of this report is to provide observations, lessons to be learned and recommended actions resulting from the Blackwood Fire 8.

## Methodology

Noetic's lessons learnt methodology is based around a set of principles which ensure that the most effective and useful lessons are determined. The process used to develop lessons begins with an information gathering stage to obtain a detailed understanding of what occurred from those involved in the incident. The data is then analysed, observations developed and draft lessons derived. The observations and draft lessons are then validated through a workshop with stakeholders, to further refine and articulate the lessons. This is then finalised, and presented in a report.

## Principles

The PIA of Blackwood Fire 8 is intended to provide DPC, DEC, FESA, and the Shire of AMR with an opportunity to reflect on what occurred and learn lessons for the future. The Noetic team used a proven lessons learnt process to conduct the PIA, with the following six principles guiding the review process:

- + **No Blame.** The lessons learnt process does not apportion blame to organisations or individuals.
- + **Identify all Lessons.** The intent of the process is to identify what was done well and what could be done better. It includes identifying the systemic issues that might not be readily apparent.
- + **The Future.** The aim of the process is to enhance the future performance of all agencies involved in disaster response in order to ensure that good processes are retained and mistakes are not repeated.
- + **Observations are not Necessarily Lessons.** Regardless of how passionately views are held by individuals or organisations, a single observation does not necessarily translate into a widely applicable lesson.
- + **Consult Widely.** Engaging with stakeholders and as many people involved with the incident as possible ensures a balanced outcome.
- + **Lessons are not Learnt until Something is Done.** The development of lessons must be accompanied by the allocation of responsibilities, resources and milestones to ensure lessons are in fact learnt.

## Information Gathering

Noetic undertook a comprehensive review of documentation, including:

- + FESA review into the fire
- + A draft DEC chronology of the fire
- + Legislation
- + Fire Diaries

+ Burn Prescription

A complete listing of the documentation is at Annex D.

Noetic began stakeholder engagement over the week beginning 22 April 2012. The interviews included representatives from DEC, FESA, Local Government, Western Australia Police and utilities providers. A full list of interviews conducted is at Annex C.

A public submissions process was also undertaken. This occurred through DPC and was available until 29 April 2012. Noetic received 51 submissions<sup>7</sup> in total and a full list is at Annex G.

Noetic also toured the fire ground to gain further insight and appreciation of the incident and its impact.

### **Analysis and Validation**

Following the information gathering, Noetic was able to identify common themes, and formulate observations and draft lessons. In addition to improvements, the process seeks to identify effective practice so that it can be replicated, and this was captured in the observations.

A workshop was conducted with representatives of the stakeholder groups (an attendance list is at Annex E) to validate the observations and lessons. This workshop offered stakeholders an opportunity to question the observations and draft lessons, add additional lessons and suggest actions. The workshop also identified where action relating to observations is already underway.

### **Finalisation**

Noetic produced a Draft Report based on the stages above. This report contained lessons and observations, and expanded upon themes identified during the workshop. The Draft Report was provided to the agencies involved in order to correct any factual errors. Noetic then incorporated this feedback and compiled a Final Report.

### **Report Intent**

The report is not a forensic analysis of the causes of the fire, or the conduct of individuals or agencies during the event. The principle of *no blame* is applied rigorously throughout. The relatively short period of information gathering and terms of reference means that the report is focussed on improving agency performance. Consequently, the analysis in this report is aimed at developing lessons that can be implemented by agencies to improve future performance.

## **CONTEXT**

Bushfires in the south-west of WA can be some of the most intense in Australia. As such, measures are prescribed to limit the impact bushfires have on communities, flora, fauna and other values. As mentioned earlier, prescribed burning by DEC attempts to mitigate the risk of bushfire in a given area by reducing the available fuel. This is intended to reduce the severity of any subsequent bushfires and moderate their

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<sup>7</sup> These submissions covered both the Margaret River and Nannup fires.

behaviour. Generally, the older the average age of the available fuel (measured from the time it was last subjected to a prescribed or naturally occurring burn) the greater the risk of ignition and the greater the likelihood that it will be severe (marked by high temperatures and enduring damage to the ecosystem) and demonstrate extreme behaviour (marked by wide, fast moving fire fronts with high flame heights).

The following paragraphs provide the context to understand the circumstances for Blackwood Fire 8. This report will not cover the reasons for prescribed burning. These are covered in detail in the Keelty Report *Appreciating the Risk* and are outside this report's terms of reference.

The Keelty Report provides a forensic analysis of the prescribed burn – focussing on the planning, initial escape and response. Ten recommendations are made, largely aimed at improving DEC risk management procedures. The Keelty Report into the Margaret River fires comes in addition to the recommendations made in the *A Shared Responsibility: The report of the Perth Hills Bushfire February 2011 Review*<sup>8</sup>, also conducted by Mr Keelty. The recommendations from *A Shared Responsibility* encompassed FESA, DEC and state and local governments.<sup>9</sup> As a result of the recommendations, all of these bodies are undergoing change.

### **THE LANDSCAPE OF MARGARET RIVER AND SURROUNDS**

Located in an area of Western Australia that is highly vulnerable to bushfires, Margaret River and its surrounding townships of Prevelly and Gnarabup have a population of over 13 000<sup>10</sup>. The area is a well-known holiday destination and attracts over one million tourists per year.

The Shire of AMR has a diverse range of settlements, from medium to low-density housing, peri-urban<sup>11</sup>, and farmland. Given the variety in settlement types, and the region's pre-disposition to bushfires, the Shire of AMR has placed considerable emphasis on communicating the risk of bushfire to rate payers. However, individuals are ultimately responsible for preparation of their property for bushfires. It is noted that not all residents have the same standard of bushfire maintenance, and given the large array of peri-urban settlement, this has the effect of creating a variety of fuel levels in the region.

### **THE UNCERTAINTY OF FIRE BEHAVIOUR**

Prescribed burning in Western Australia is not undertaken lightly. Keelty notes in his report that the planning for the Ellensbrook burn (BS520) began in 2006. It is not within the terms of reference for this report to look at the planning for the prescribed burn or the prescribed burn itself. However, it is worth noting that significant planning is undertaken with every prescribed burn that DEC undertakes. The Keelty Report elaborates upon this point.

Even with the level of planning for a prescribed burn, which takes into account fuel ages, fuel types, dryness, weather and resources using a number of bushfire modelling tools (The Red Book, VESTA) and risk ratings (the Fire Danger Index), escapes still occur. There is a degree of uncertainty whenever a fire is lit, and

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<sup>8</sup> *A Shared Responsibility: The report of the Perth Hills Bushfire February 2011 Review*, Keelty 2011.

<sup>9</sup> *ibid.*

<sup>10</sup> Source AMR shire website [www.amrshire.wa.gov.au](http://www.amrshire.wa.gov.au).

<sup>11</sup> Peri-urban areas are those situated between metropolitan centres and rural areas. They are neither fully urbanised nor completely rural, but comprise a "middle band" of land with particular characteristics situated on the periphery of metropolitan and regional cities.

unpredictable events occur. It follows then, that there is a level of risk in every prescribed burn. The planning process used by DEC is designed to minimise this risk, although it cannot be eliminated.

## EVENT DESCRIPTION

This section provides an overview of what happened after the escape of the Ellensbrook and Prevelly prescribed burns and the subsequent development of Blackwood Fire 8. The Keelty report provides a comprehensive description of the events leading up to the escape of the Ellensbrook fire. However, it should be noted that in preparing for this prescribed burn it was identified as a 'red flag' burn. This means it was a 'potentially risky and difficult burn'<sup>12</sup>. Additionally, the fire that escaped into Prevelly was also a red flag burn. The two fires in the Margaret River district in November 2011 caused the destruction of 45 properties in total<sup>13</sup>, including the historic and heritage listed Wallcliffe House<sup>14</sup>. Figure 1 on the next page is a map of the Margaret River district outlining the development of the fire and key events in its suppression.

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<sup>12</sup> Burrows, ND, Milyeannup Bushfire: causal factors and fire behavior April 2012.

<sup>13</sup> *Appreciating the Risk*, Keelty 2012.

<sup>14</sup> Wallcliffe House was one of the homes of the Bussell family, some of the earliest settlers in the south-west region. (Source: Margaret River and Districts Historical Society [www.mrdhs.com](http://www.mrdhs.com)).

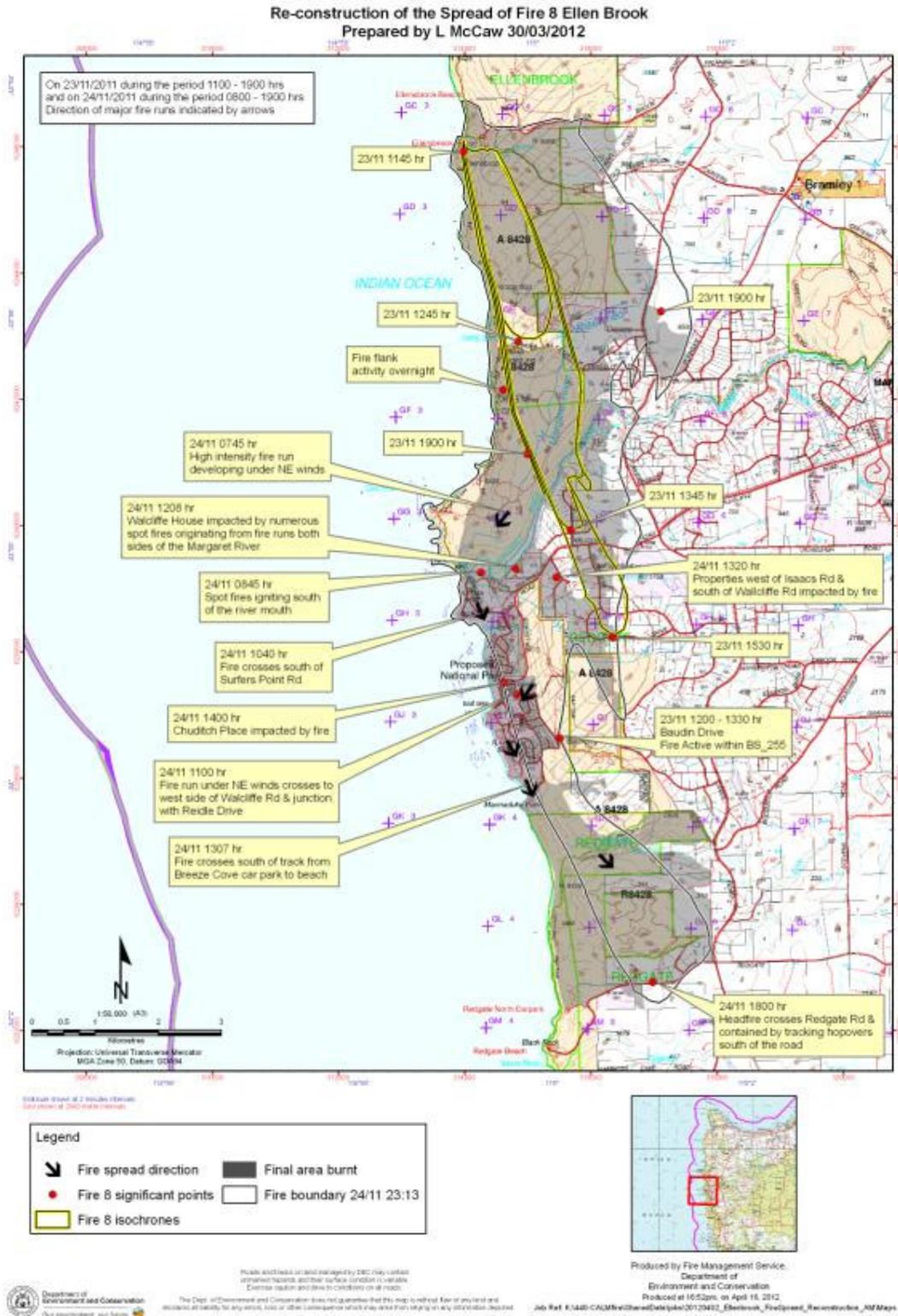


Figure 1 - Fire reconstruction diagram (source: DEC)

## **OVERALL DEVELOPMENT OF THE INCIDENT**

Blackwood Fire 8 was the combination of two separate fires. The first, the Ellensbrook fire broke out of containment and on 23 November ran south as far as Wallcliffe Road with some spotting across the road. The second fire, at Gnarabup, threatened homes at Prevelly on 23 November but was effectively contained. The latter fire is important because the location of two fires within close proximity and in the vicinity of settlements created complexity for incident controllers and the local government. It was the source of some confusion, particularly in the early stages of the fire suppression effort – until about mid-afternoon on 23 November.

By 24 November the Ellensbrook and Gnarabup fires had effectively become a single fire with the Ellensbrook fire jumping the Margaret River and running through Prevelly from the north and the Gnarabup fire impacting from the north-east.

Having swept through Prevelly, the combined fire then ran as far south as Redgate Road where it was stopped by a combination of a lack of fuel and the efforts of fire-fighters. Figure 1 illustrates the overall development of the incident.

## **ELLENSBROOK ESCAPE**

The Ellensbrook fire escaped prescribed burn BS520 at approximately 0915hrs on 23 November. The initial 'hop over' occurred in the carpark near Ellensbrook beach<sup>15</sup>, in the southwest corner of the prescribed burn. This escape placed people and property in the surrounding area at risk including the historic Ellensbrook House. At this stage the fire was managed by the DEC District Duty Officer, and he tasked the resources on hand to protect people and assets in the area.

By 1145hrs on 23 November the fire was escalated to a Level 3 Incident, and the Level 3 IMT began to form approximately 120 kilometres away in Kirup, where the DEC fire operations base for the district is located. The weather conditions, combined with the fuel type (coastal heathlands) caused the fire behaviour to become severe, burning at a speed estimated to be 3km per hour and spotting up to 2km ahead of the head fire. It was moving in a south-easterly direction, which placed settlements in its direct path.

By 1345hrs on 23 November the fire crossed the Margaret River, and was burning in the 'Wilderness' subdivision, a peri-urban development approximately 6km west of the Margaret River township. Several homes were destroyed. Residents in this locality were evacuated at around 1300hrs.

## **PREVELLY ESCAPE**

While the Ellensbrook fire was running, another prescribed burn (BS255) at Gnarabup, adjacent to the Prevelly settlement (approximately 7km south west of Margaret River), exhibited significant activity, including hop-overs, all of which were initially contained, without impact on infrastructure. However, the worsening weather conditions and fuel loads in the area presented cause for concern.

The Shire of AMR became aware of the situation at Prevelly/Gnarabup, and by 1100hrs the IMT formed for this response made the decision to evacuate residents from this area<sup>16</sup>. The Department of Child Protection

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<sup>15</sup> *Appreciating the Risk*, Keelty 2012.

<sup>16</sup> Interview with AMR shire representatives 26 April 2012.

(DCP) was put on alert at 1100hrs and began making preparations. Activation<sup>17</sup> was confirmed at 1250hrs<sup>18</sup> by the Shire of AMR, and an Emergency Relocation Welfare Centre was established at the Margaret River Cultural Centre.

At 1210hrs this fire was declared by the Shire of AMR to be a Level 2 Incident and a Level 2 IMT was established at the Wallcliffe Bush Fire Brigade.

### **ESCALATION TO LEVEL 3**

At approximately 1145hrs on 23 November, a decision was made to upgrade the Ellensbrook fire to Level 3. During the afternoon, the IC decided that it was undesirable to continue to manage the incident from Kirup. The DEC mobile ICC was deployed to Margaret River where it began to prepare itself for operations in the early evening.

During the afternoon, at around 1430 hrs, the Shire of AMR initiated and conducted an Incident Support Group (ISG) meeting. Although the ISG considered issues associated with both the Ellensbrook and Gnarabup fires these were still being managed by two separate IMTs and, at this meeting, the Shire was not aware of any representation from the IMT at Kirup. By this time, the Ellensbrook fire had crossed Wallcliffe Road which is the principal access road to Prevelly, and thus the problems presented by it and the Gnarabup fire had effectively become one. Evacuees were being received at the Shire-operated reception centre and the full severity of the threat faced by the Shire's residents was becoming apparent.

At around 1700 hrs the desirability of managing both the Ellensbrook and Gnarabup fires as a single incident was becoming evident and by around 2100 hrs it was decided that both would be managed by the Level 3 controller then located at Kirup. By 2300hrs on 23 November the IC had relocated from Kirup and the Level 3 IMT was fully established on the sports fields adjacent to AMR Shire offices in Margaret River.

The next morning, 24 November at 0700hrs, FESA, under Section 13 of the *Bush Fires Act (1954)* took control of the fire, and appointed a DEC IC who was already *in situ*. Under this structure, both fires continued to be managed as a single incident.

Throughout the day fire suppression efforts continued and additional resources were being progressively mobilised and were arriving at the fire ground. By the evening of 23 November, this included over 100 personnel, 30 fire units and aircraft<sup>19</sup>.

### **THE FIRE'S SECOND RUN**

Flanking<sup>20</sup> activity continued during the night of 23/24 November, focussing on the areas that presented a direct threat to property. The weather conditions on the morning of 24 November caused the fire to run in a south west direction, and by 1145hrs on 24 November the fire crossed the Margaret River and began to burn toward Prevelly. It was during this run that the historic Wallcliffe House and a number of homes in Prevelly were destroyed. The fire continued to burn south and the fire fighting effort was focused on protection of

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<sup>17</sup> Activation is the terminology used by DCP to either establish a Welfare Centre, or to provision welfare services.

<sup>18</sup> Interview with DCP on 26 April 2012.

<sup>19</sup> Review Margaret River and Milyeannup Fire November-December, FESA.

<sup>20</sup> Flanking focuses on fighting the sides of a fire to progressively narrow it and to prevent its lateral spread. It is usually employed when the severity or behaviour of a fire, or difficulty of access, precludes direct attacks on the head fire.

homes. By 1800hrs on 24 November, the fire reached an area of lower fuel availability and was held on Redgate Road, some 11 kilometres south of Prevelly.

During the course of the fire, 45 houses (including Wallcliffe House), nine chalets and five large sheds were destroyed. Three homes were partially destroyed<sup>21</sup>. 688 people were officially evacuated, although a larger number received a measure of support from the Shire-operated reception centre. More than 400 fire personnel and 30 fire units including significant aerial support were deployed in the emergency<sup>22</sup>.

## OBSERVATIONS AND LESSONS LEARNT

The following section details the lessons to be learnt from the incident. It provides some explanation and commentary on the issue. The issues covered reflect the terms of reference.

### The Escape

The escape happened on the morning of 23 November. As noted elsewhere in this report, the Keelty Report – *Appreciating the Risk* provides significant detail on the planning for the burn and the subsequent escape. However, a number of observations were made during the development of this report that merit recording.

The role of weather forecasting is a critical input to the successful planning for a prescribed burn and the fighting of a bushfire. The combination of weather and the other factors that determine fire behaviour require careful consideration by planners and incident managers. The weather forecast for 23 November modestly understated the severity of the conditions actually experienced. The forecast conditions were for winds of 27 kilometres per hour (kph) while gusts of 39 kph were recorded at the nearest weather station. The definition of an 'accurate' forecast is for wind speeds to be predicted to within +/- 10 kph – so the forecast for 23 November was modestly inaccurate. The geographic separation of weather stations and the geographic extent of forecasts might mean that conditions on the fire ground were different again.

It is not clear that this discrepancy had any material impact on the subsequent course of events. The fire had already been lit and was burning in BS520. Fuel loads south of the prescribed burn were very old. DEC had no clear mechanisms that would have triggered more substantive preparations if the forecast had been more accurate. The models of fire behaviour in coastal heath are not sufficiently well developed to be able to predict detailed differences in fire behaviour as a result of the difference in wind speeds. Generally, all those in the agencies involved understood the challenges presented by a west-coast trough and its associated unseasonably warm weather. The relatively high winds complicated subsequent suppression efforts, and added to the complexity of the challenges presented, but events following the fire's escape are not associated with weather forecasts prior to it.

Despite this, tightening the connection between weather forecasting and decision making would offer opportunities for improved risk management. There is also potential benefit early in a suppression effort if experienced forecasters and fire behaviour experts are collaborating to anticipate likely fire behaviours.

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<sup>21</sup> Review Margaret River and Milyeannup Fire November-December, FESA.

<sup>22</sup> *ibid.*

Modern forecasting models offer the prospects of more informed decisions but need to be interpreted by experienced meteorologists.

**Lesson**

- 1. Experienced forecasters and fire behaviour experts should be embedded in DEC at least at a state level to ensure that fire risks are properly understood by decision makers.**

When DEC commenced the prescribed burn they recognised and were concerned about the potential for escape. DEC also recognised that the old fuels surrounding the prescribed burn exacerbated the challenges of re-containing any break-out. However, when this fire did break-out, given the fire's rapid rate of spread and the prevailing conditions (weather, terrain and fuel) the resources immediately available were clearly insufficient. Although DEC quickly began to resource the suppression effort the situation was effectively irrecoverable.

**Lesson**

- 2. A risk management approach is needed which considers risks both inside the prescribed burn and the risks that will need to be managed if the fire escapes. This risk assessment should be dynamic in line with the four day and seven day<sup>23</sup> weather forecast.**

Comprehensive planning for a prescribed burn is important to help reduce the uncertainty and complexity of the task. The risk assessment for prescribed burns should lead to the production of contingency plans that cover the most likely aspects of fire suppression if the fire breaks out. These contingency plans should form the basis of an Incident Action Plan (IAP) to support the response to an incident.

Where there is a significant risk to communities, life or property the risk assessment for a prescribed burn should identify the necessary level and skill of an IMT that needs to be made available to manage the burn. This would reduce the risk by enabling a rapid response to an escape or other incident.

As noted previously, the challenges presented by BS520 led to it being identified as a 'red flag' burn. However, this recognition was not based on any set criteria and did not trigger any mandated risk management measures. The development of such criteria and subsequent planning action will help ensure that in future 'red flag' events are approached in a consistent manner.

**Lessons**

- 3. There should be clearly established criteria to identify burns which are specially challenging, and these criteria need to extend beyond the intended boundaries of the prescribed burn.**
- 4. Prescribed burns which meet the 'red flag' criteria should have mandated risk management criteria imposed.**

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<sup>23</sup> DEC does not use seven day forecasts, although they are available from the Bureau of Meteorology.

The initial fuel the fire escaped into is known as coastal heathlands. Although DEC have broad experience in the prescribed burning of coastal heathlands, understanding of how coastal heathlands burn is incomplete. There are no models specifically developed for the behaviours of fires in this type of vegetation. Additionally, there is substantial complexity in the fuel loads within coastal heath. This means that the detail of the burn history of an area including the intensity of previous burns is important when preparing a burn prescription. The possession and application of this knowledge will enhance fire agencies' ability to burn and combat fire in this environment.

Understanding fuel loads beyond a specific vegetation type is important to planning activity. As noted previously, the mosaic of land use types in the region added complexity. Different land use and management of private property needs to be understood as part of the risk management process. This information will help to provide a complete picture of the risks and possible consequences of a prescribed burn.

#### **Lessons**

- 5. Improved understanding of fire behaviour in coastal heathlands would support sound risk management through the southwest of WA.**
- 6. Maps prepared for prescribed burns should address the fuel type and burn history of the burn area as well as surrounding areas. Predicted rates of spread under prescribed and other conditions should recognise the complexity of coastal heathlands.**
- 7. Fuel loads on private property need to be identified and included in understanding fire behaviour to determine the contribution they make to the burn risk assessment.**

Land held by various landowners is subject to different hazard reduction regimes. There is a need to manage the landscape across tenures including but not limited to Local Government Authority land, private land, unallocated crown land and DEC-managed conservation estate (national park, state forest, nature reserve). Effective cross tenure management can markedly reduce the fire risk and improve suppression efforts.

#### **Lesson**

- 8. Inter-agency cooperation to manage fire precincts in a tenure-blind<sup>24</sup> fashion is necessary for effective fire suppression.**

Although prescribed burning is the primary fuel management strategy for large areas, other forms of fuel modification (such as rolling/mulching) can be important contributors to establishing secure edges. Community sensitivity about this type of modification, in national parks in particular, is understandable, but needs to be considered in the context of the additional security this treatment may provide to the boundaries of a prescribed burn. Working with communities on this issue will require good evidence of its efficacy and extensive stakeholder consultation.

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<sup>24</sup> Tenures should be managed the same, regardless of ownership.

**Lesson**

- 9. All forms of fuel modification should be available to fire managers.**

## The Response

The response component of Blackwood Fire 8 is comprised of several elements. The first level is incident management, which co-ordinates the response. The next component is the effectiveness of strategy and tactics in fighting the fire. The response also covers management of information to the community, through alerts, other means, and evacuations.

## The Effectiveness of Incident Management

As noted above, Western Australian emergency management response is based on the AIIMS incident management system. The effective use of AIIMS is essential to managing large and complex incidents such as Blackwood Fire 8. Applying AIIMS successfully requires trained personnel who have ideally worked together both in training and on other fires. Success further requires that the individual functions within AIIMS (operations, logistics, etc...) are able to operate individually as cells, and also collaboratively with other functions. Understanding how these functions work in a large scale emergency is critical to the effectiveness of the individual functions and the IMT as a whole.

It is the opinion of this report that the resources, communications, situation and public information functions were not adequately developed for effective incident management. The details of these shortfalls are raised in subsequent observations. Some of these deficiencies are inherent in the current version of AIIMS, specifically the planning and intelligence functions. Some of these shortcomings will potentially be addressed through an AIIMS review that has been initiated by the Australasian Fire and Emergency Service Authorities Council (AFAC).

However, up until mid-morning on 24 November, when the situation was developing rapidly and where considerable uncertainty and a measure of confusion were present, the IMT struggled to establish effective control. To some extent confusion and uncertainty are present in all emergency management situations but the presence of skilled and experienced individuals can minimise the impact. More training and exercising to help develop and practice the necessary skills is likely to have assisted in this incident.

In rapidly developing emergencies it is important that incident controllers are supported by sound staff processes that are, to the extent possible, anticipating further developments, identifying and testing potential responses and proffering alternatives to the controller. This rests on a combination of intelligence and planning functions that are only weakly developed in the current iteration of AIIMS. In the specific case of these fires, this weakness of AIIMS meant that throughout 23 November and for most of 24 November, the fire held the initiative and incident controllers were consistently behind events.

A fundamental element of a successful IMT is the ability for clear, consistent communications. In the case of Blackwood Fire 8, radio communications in particular were poor. It is noted that the Margaret River region has a number of black spots for communications. The Communications Planning Officer within the IMT faced a significant challenge in delivering an effective communications plan. To better provide communications

support to all involved in the emergency, knowledge of areas of communications difficulty would provide the Communications Planning Officer awareness of the challenges and constraints when developing the communications plan. While this will not ensure perfect radio communications in all cases, it will help to provide the best possible communications situation for the given circumstances.

**Lessons**

- 10. Greater investment in training on specific functions within the AIMS structure will improve the support provided to the Incident Controller.**
- 11. As presently implemented, the AIMS situations function is under-developed and provides insufficient support to the Incident Controller.**
- 12. Communications planning for geographic regions with recognised black spots and specific communications challenges should be prepared in advance of an emergency in order to support the IMT Communications Planning Officer**

The speed at which this fire escalated meant that the IC was unable to anticipate the rapid development of the fire in the first few hours and was reacting to events. The transition from management by the DEC Duty Officer to a Level 2 incident and the subsequent declaration of a Level 3 incident trailed the actual need. Given the identified risks attendant on this prescribed burn, and the challenges presented by weather and surrounding terrain, it was possible to identify that any escape from containment was likely to escalate to a level 3 incident. If this had been done it is possible, although not inevitable, that incident controllers would have been better postured to manage events as they unfolded. Having the resources identified before a prescribed burn, as well as a preliminary assessment of what level the incident could escalate to will assist in mitigating risk.

**Lesson**

- 13. Rolling risk assessment conducted during ignition of prescribed burns should identify whether an escape is likely to develop into a Level 3 incident. As soon as possible after it is identified that the escape cannot be contained, the incident should be declared a Level 3.**

The awareness of the environment in an emergency, incorporating awareness of aspects such as resources, systems status, and events – known as situational awareness – is one of the most critical factors in effective emergency management. It enables the efficient deployment and application of resources. It is underpinned by good internal communication, as feedback from each area of the IMT will keep the IC informed of the total situation. It is dependent on input from the fire ground, other agencies and from other external sources (such as the Bureau of Meteorology for weather information).

During 23 November, the IC had limited situational awareness of the two fires that were to comprise Blackwood Fire 8. The complexity caused by two fires burning close to each other and in the presence of a number of settlements was exacerbated by poor mobile phone and radio communications across the Margaret River fire grounds. In addition, the IC had to control the incident with an IMT that was progressively being established as people arrived from across the region. This limited his ability to effectively control assets under his command. This was then made worse by the complex and dynamic situation on a number of fire grounds that the IC was responsible for. Adding to the confusion, the IMT was not fully aware of the efforts of the other agencies engaged in the fire suppression. The IMT was located 120km by road away from the major incident

(Margaret River) and this physical dislocation from the fire ground limited its capacity to establish effective control.

To develop workable situational awareness of such a complex situation with poor communications was probably unrealistic for the Level 2 and subsequently Level 3 IC. This situation could have been assisted by an assessment of the complexity and the early commitment of appropriately skilled resources in IMT roles.

Managing a fast moving fire in complex terrain is a challenging task. AIIMS provide a proven structure to undertake and coordinate the many tasks to enable successful management of major fire events. It is dependent on sufficient personnel, who are trained and experienced, and who have previously worked together. Without these attributes they are unlikely to be able to develop sufficient situational awareness for the IC to effectively exercise control of an event.

**Lessons**

**14. For incidents of this complexity, effective control in the critical phase (first 24-36 hours of the fire) requires an appropriately resourced IMT.**

ICs are typically overtasked in this type of complex and large-scale emergency. To assist ICs to better manage their role it is recommended that appropriately experienced Deputy ICs be employed. In complex situations there may be a need for several deputies. These deputies should themselves be qualified Level 3 ICs. Meeting this need will require that a larger pool of level 3 ICs be developed. Identifying and training the personnel for these demanding roles will take considerable effort. However, without such personnel and supporting teams, the ability to successfully combat large scale, complex fires will not match the need.

AIIMS identifies a need for deputy ICs but is not clear as to their roles. Simply being an understudy for the IC can relieve some of the burden but there would be advantage in clearly defining the division of responsibilities between the IC and the deputy/s. For example, making the deputy a 'chief of staff' responsible for the functioning of the IMT and for implementing the intentions of the IC would ensure continuity within the IMT. This would free ICs to spend more time conducting the strategic engagement, media and community liaison roles that, in this incident, were in competition with the IMTs need for direction.

**Lessons**

**15. The state should identify the number of fully trained, experienced and accredited Level 3 Incident Controllers required to be available at any time and establish a process for identification of suitable personnel, ongoing training and accreditation.**

**16. Within the AIIMS IMT doctrine the roles of the Incident Controller and Deputy Incident Controller should be defined and well-practiced.**

**17. An intensive exercise/training program should be developed and maintained across agencies to identify and establish a pool of current Incident Controllers who are capable of managing a Level 3 incident.**

The location of the IMT at Kirup on 23 November together with poor communications and other factors meant that on the fire ground, incident control was not as effective as it could have been. As DEC's initial focus was

on the Ellensbrook locality, the local Volunteer Bush Fire Brigade (VBFB) and AMR Shire established another IMT and began coordinating a response to the threat from the Gnarabup prescribed burn (BS255).

The fact that two IMTs were operating led to confusion. The DEC IMT at Kirup was largely unaware of the situation at Gnarabup and there was limited local knowledge. This meant that the two suppression efforts occasionally worked at cross purposes until the evening of 23 November. The lack of local knowledge at the Kirup IMT may have delayed the production of a useful IAP. Even when the IMT moved from Kirup to Margaret River, there was a perception that local knowledge was not fully integrated into decision making. Generally, inclusion of people with detailed local knowledge, particularly for fires near settlements, would enhance the effectiveness of suppression efforts and strengthen the connection between fire suppression and community resilience.

#### **Lessons**

- 18. Predetermined locations for Level 3 IMTs should be reviewed and adequately resourced with necessary communications and IT capacity.**
- 19. Early contact with the LGA is critical.**
- 20. There would be value in progressively aligning the geographical boundaries of emergency management agencies and co-locating where possible within regions and districts.**
- 21. Suitably experienced local representatives should be engaged to provide advice to the IMT in all Level 2 and Level 3 incidents at the earliest opportunity.**
- 22. Opportunities need to be sought to utilise local government representatives in other areas of the IMT particularly in public information or other community related functions.**

Around midday on 23 November the IC made the correct decision to move the IMT to Margaret River from Kirup. There are no DEC procedures which guide officers on the relocation of an IMT; therefore during the move in the late evening of 23 November (which took two hours) effective incident management was compromised. During the course of a large, prolonged fire it is likely that the IMT will have to move so that it can continue to exercise control as the fire front progresses. In doing so, it must be able to step up to a new location while maintaining the ability to exercise control from its existing location. This will require procedures to be developed and practiced by the IMT.

#### **Lesson**

- 23. Procedures to relocate IMTs need to be established in doctrine and exercised to ensure continuity of control.**

The fire was declared a Level 3 incident at 1045hrs on 23 November and a Level 3 IMT was progressively established at Kirup. During the course of the afternoon and evening of 23 November, a strategy to combat the fire was determined by the IMT and tactical implementation was overseen by the Operations Officer. A comprehensive IAP was produced early on the morning of 24 November for the incoming day shift. Weather conditions significantly deteriorated on the morning of 24 November which eventually led to all resources being redirected to asset protection and the abandonment of the IAP. At this stage of the operation, sectors

and strike teams responded as necessary to protect life and property. During the afternoon of 24 November, a fast moving fire, poor communications and the absence of a Common Operating Picture (COP) meant that many fire fighting assets were fighting the fire in a series of loosely coordinated local actions. It appears as if there was a break down in sector and divisional command structures during this period.

**Lessons**

- 24. The expected scenario, with a view to the worst-case scenario, should provide the basis for an IAP.**
- 25. Contingency planning is a critical function in the early stages of an escalating incident, and should provide the foundation of an IAP.**
- 26. Incident Controllers should be supported by a planning function that combines experienced weather forecasters, fire behaviour experts and local knowledge.**

As noted earlier, given DEC’s focus on the Ellensbrook incident and in accordance with the BFA the Wallcliffe VBFB and Shire of AMR took responsibility for the escalating fire within the Prevelly prescribed burn, established an IMT, initiated evacuations, opened evacuation centres, received evacuees, convened an incident support group and provided public information. The VBFB and Shire continued to provide this support throughout the afternoon of 23 November until the Kirup IMT assumed responsibility for both fires at around 1700hrs.

The actions of the Wallcliffe VBFB and Shire of AMR reflect well on the preparations and organisation of the Shire. The VBFB IMT and the Shire worked closely together throughout 23 November and decision making was generally well-informed and timely.

**Lesson**

- 27. IMTs need to establish early and effective liaison with Local Governments.**

Demands on ICs and IMT members to provide information to the chain of command (both inter agency and single agency) consumed substantial amounts of their available time and detracted from the overall emergency management effort. A single chain of command (and reporting) would have reduced demands on key personnel to provide reports/information.

The *Bush Fires Act 1954 (WA)* governs the management of fires throughout the state. Briefly the Act states that FESA may delegate powers of bushfire control to an appropriate person. During this fire, the Section 13<sup>25</sup> appointments led to some confusion over responsibilities and lines of communication in DEC and FESA. More clarity and understanding is needed around the implications of an appointment under Section 13.

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<sup>25</sup> Section 13 of the Bushfire Act.

**Lessons**

- 28. State-wide all agency reporting should be established to facilitate the interactions of emergency management agencies, support agencies and governments.**
- 29. Section 13 arrangements under the Bushfires Act need to be clarified across key agencies.**

The logistics and planning functions are critical cells within the IMT. It appears that the personnel resource management system did not function effectively during the first two days of the fire. It was reported during interviews that there were gaps in the reception, support and release of fire-fighters throughout 23 and 24 November. This had implications for fire fighter safety, management of fatigue and the effective deployment of resources. Developing the necessary skills within these AIIMS cells and ensuring that they work collaboratively with other cells (in particular, understanding each other's information needs) is an essential task in preparing for future fires. This report is not in a position to make a judgement on the adequacy of the underlying systems that support these functions and whether there are procedural or other gaps between the various agencies that might have exacerbated the challenges faced by AIIMS team members.

**Lesson**

- 30. Logistics and resource officers in IMTs need to collaborate and establish full awareness and control over the available resources.**
- 31. A review of the manner in which resourcing is conducted across all agencies needs to occur with a review identifying the best manner to ensure all agencies adapt to the same process.**

## The Effectiveness of Strategy and Tactics during the Fire

A key task for the ICs and the IMT is to develop a strategy to apply to combating the fire. This then becomes the basis for subsequent decision making. On 23 November, primarily due to the lack of situational awareness and the rapidly developing situation, the IMT experienced difficulty in formulating a strategy to fight the Ellensbrook fire. On 24 November, a strategy was evolving but the fire held the initiative throughout the course of events. In the end, the fire ran on to fuel conditions which enabled it to be contained by tactical action.

Arguably, the risks identified in the case of 'red flag burns' should prompt a measure of preparatory planning. Given the weather forecasts and fuel conditions, the broad outlines of likely fire development in the event of its escape could have been anticipated several days before the event. A contingency plan, in effect a first draft IAP, could have been prepared which would have offered a useful start point for the detailed work of ICs and IMTs.

**Lesson**

- 32. Contingency planning before the fire may have supported the IMT in recognising and seizing strategic opportunities earlier.**

The tactic of direct attack on the fire north of the Margaret River was considered by the IMT during shift 1 on 23 November. Due to the high fuel loads, unstable and difficult terrain, and lack of existing access into the area, the decision was made that it was too dangerous for fire fighters to employ a direct attack on the fire in this area, and the tactic was not pursued.

There was a plan to deal with the threat of a fire run impacting on Margaret River (Wallcliffe House and west). This included scrub-rolling, upgrading of breaks and use of aerially delivered retardant strips for protection of assets such as Wallcliffe House, which were all implemented. The plan to burn out the area north-west of the river using aerial ignition early in the morning of 24 November was not able to be implemented before the strengthening wind made conditions unsuitable.

Scrutiny of previously burnt areas, farmland and other topographical features suggests that there were potentially four points at which the fire may have been able to be stopped; at Kilcarnup, the Margaret River, Gas Bay/Marmaduke point, and Redgate Road. Despite concentrated efforts at Margaret River and Marmaduke Point it was not until the fire ran onto areas offering little fuel south of Redgate Rd that it could be controlled.

There was a general dissatisfaction expressed with the level of control developed at the sector and divisional levels<sup>26</sup>. This partly rested on problems with communications incompatibility and partly on the lack of a clear and implementable operational plan.

During interviews with fire fighters it was reported that due to the problems of strategic planning and tactical control, there were times when the available fire fighting resources were underutilised. As a result, it is hard to make judgements about the resourcing requirement for this fire, as better planning and better control may have reduced the absolute demand for resources.

Overall, the tactical judgements and decisions made by division and sector commanders were sound. This is particularly in light of the complex terrain of the fire ground and extreme fire behaviour. However, regardless of the efficacy of tactical action, the lack of a coherent strategy to bring the fire under control meant that these actions were only of limited benefit.

#### **Lessons**

- 33. Strategic direction seeks to identify and resource those areas of tactical action that offer the greatest advantage.**
- 34. Clear direction to divisional and sector commanders and a common communications platform enables maximum return to be gained from the application of tactical resources and this rests on good incident action planning, and good command and control.**

A number of fire agencies committed resources to this fire. Each of these has its own characteristics and relative strengths and weaknesses. Getting the best result requires a 'horses for courses' approach, which would see resource allocation through the IMT sending the right resources to the right division and sector commanders. It was reported to this review that resource allocation did not consistently leverage the

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<sup>26</sup> Sourced from stakeholder interviews.

strengths offered by specific agencies. Doctrine, training and exercising are needed to develop mutual understanding of the various capabilities of each of the agencies, so that they can be employed to the best effect on operations.

**Lesson**

**35. In multi-agency responses the culture, training and equipment characteristics of each of the agencies should be considered in their employment.**

Fire crews from around southwest WA were deployed to the incident. In the early stages of this fire they faced a dangerous fast moving fire, an insufficiently resourced IMT that was not able to exercise effective command and control, patchy communications and mapping which was inadequately detailed to enable effective direction in the urban/rural interface. While some of these issues will face crews arriving early at any fire ground, some will be mitigated by more effective incident management. Importantly, even if a fully resourced IMT is established and functioning smoothly, it is not possible for the IMT to effectively manage fire crews or for fire crews to respond to direction from the IMT without high quality maps. Developing these maps, particularly in the urban/rural interface is essential to being better prepared for future fires.

The ability to locate fire crews and appliances is essential for effective control of the fire ground. It is also vital in maintaining safety. It ensures that crews can be warned of changes in the fire and be moved from areas of extreme danger. The ability for this information to be automatically acquired should be explored to enhance operational outcomes and improve fire fighter safety.

**Lesson**

**36. Better maps are required for urban/rural interface fires.**

**37. A system of vehicle tracking should be fitted to all fire appliances and linked to the common operating picture. Good communications planning is essential for good command and control.**

## The Effectiveness of Aerial Suppression

Three rotary wing<sup>27</sup> and three fixed wing aircraft were employed in fire suppression as support to on-ground resources; this was all the aircraft available in the region. Despite the fact that high winds and dense smoke presented a considerable challenge, aviation support to fire suppression appeared to be effective. Aerial suppression commenced at midday on 23 November and continued until 28 November.

It is noted that some aerial support was mobilised earlier than their contracted start date. This aviation support was provided outside the annual contract period and demonstrated good flexibility from the contractor.

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<sup>27</sup> Helicopters.

## The Effectiveness of Emergency Management Procedures

The cluster of emergencies at Margaret River and at Nannup disclosed some weaknesses in emergency management procedures. While these arrangements are generally sound, enhancements to them are possible.

The impact of different agency geographic boundaries and different agency headquarters (HQ) locations increased the challenges faced by emergency management. There would be benefit in progressively realigning agencies boundaries and locations. Specifically, the liaison between agencies in the event of emergencies and the ability to collectively surge at short notice may have accelerated the response to these fires.

Under existing arrangements district and local emergency management committees are focussed on deliberate planning – that is the Preparedness component of the PPRR<sup>28</sup> continuum. The objective of good emergency management is to support community resilience. Combat agencies are culturally and organisationally focused on countering the specific hazards for which they are accountable and relationships with the community are customarily seen through this lens rather than through that of resilience. The ISG that forms part of the WA emergency management arrangements, and in particular its relationship to the IMT, subordinates the perspectives of the community to those of incident management. In the case of these fires, the needs of fire suppression at times took precedence over the needs and perspectives of the community. An expanded role for District and Local emergency management committees to extend their role into hazard management across a precinct, and into the response and recovery phases, would expand the role of the community in managing emergencies that impact on it. It could also offer a useful mechanism to encourage the community to accept its share of the responsibility to manage emergencies. Mechanisms to actively engage district and local emergency management committees across the PPRR emergency management continuum would be beneficial.

FESA has limited call on local government fire fighting assets. There are traditional reasons for this arrangement but there would also be advantage in establishing a legislative framework to enable FESA to determine the appropriate distribution of fire fighting assets in the event of a Level 3 incident and in particular to direct local government to release the number of fire fighting assets FESA believes to be appropriate.

### Lessons

- 38. There would be benefit in progressively aligning the geographic boundaries of each of the agencies and seeking to co-locate their headquarters within those boundaries.**
- 39. Legislative change may be needed to enable FESA to better manage fire fighting resources across the state.**
- 40. The role of district and local emergency management committees should be reviewed to ensure they are appropriately engaged in the active management of emergencies across the PPRR continuum.**

<sup>28</sup> PPRR – Prevention, Preparedness, Response, Recovery (see [www.em.gov.au](http://www.em.gov.au)).

DEC's prescribed burning activities helps manage fire risks across the state. However, it can also create localised threats to communities as it undertakes these activities. The impact of these threats can be markedly reduced if land use planning, building regulations, and local government and private landholders are actively engaged in establishing defensive measures against fire. Successful prevention and preparation for bush fires requires acceptance that there exists mutual obligations from all stakeholders to manage the risk.

#### **Lesson**

**41. Increased acceptance of mutual obligations will be fundamental to the management of fire risk across the state**

## **The Effectiveness of Inter Agency Operations**

The lack of a COP and a common communications platform limited the establishment of an effective inter agency effort despite the goodwill and good intentions of all involved. This meant that, until at least the middle of 24 November, at the tactical level agencies organised their own actions along agency lines. Maximum benefit was not gained from the combination of the capabilities of the various agencies, in particular the fire agencies. Absence of a COP and good communications also meant that support agencies were often unable to access up-to-date or reliable information. It is noted that this is an area of focus since the Perth Hills bushfire report.<sup>29</sup>

#### **Lessons**

**42. The State should progressively align on a shared platform, such as WebEOC, to establish a COP.**

**43. The State should converge on a single communications platform for all emergency management and support agencies.**

The effective response to a complex and demanding emergency requires well-coordinated action so that all elements act in unison. Unified action requires good interoperability and a single point of control. During the course of the Margaret River fires it does not appear that fire agencies had unity of control. Individual fire agencies tended to organise themselves along agency lines rather than moving quickly to a single multi-agency chain of control. This was reflected in the number of reporting chains that were established during the event. This multiplicity of chains detracted from the effectiveness of the response.

#### **Lesson**

**44. Reporting and control should be through the incident chain of command and not through agency chains of command.**

<sup>29</sup> *A Shared Responsibility: The report of the Perth Hills Bushfire February 2011 Review*, Keelty 2011.

## The Level of Resourcing

At the escape of the fire, the level of resourcing available was not sufficient. The factors for this are noted earlier. As the incident progressed, resources steadily became available, but there were issues (which are noted earlier) that meant they were not deployed as effectively as they could have been.

The IMT initially established at Kirup was formed progressively as people moved across from a number of agencies and areas. As this IMT formed it was responsible for four fires, one at Milyeannup, one at Ellensbrook, one at Prevelly/Gnarabup and one at Abba. Initial reliance on DEC personnel was progressively supplemented by personnel arriving from other fire management agencies, however, it was not until late on 23 November that a fully functioning multi-agency IMT was established. Until then there were insufficient appropriately trained and experienced personnel to manage the responses to all of these fires. Arguably an early decision to make this a multi-agency response – either through a Section 13 declaration or simply through inter-agency coordination might have led to the earlier establishment of a fully functioning IMT.

Different agencies each bring with them different strengths, cultures and experiences, and in forming an IMT there is advantage in employing individuals in positions that maximise their utility. This suggests that multi-agency IMTs should seek to employ agency representatives on a ‘horses for courses’ basis. For example, DEC personnel often have extensive experience in bushfire management. This expertise is best employed in specific areas of an IMT – for example, in the controller, situations and operations roles.

### Lessons

- 45. DEC’s fire management expertise should be augmented by multi-agency IMTs that incorporate the expertise of other agencies and in fast developing situations the appropriate decisions will need to be made early.**
- 46. At Level 3, the available fire management expertise should be applied overwhelmingly to the fire management aspects of emergency management, possibly in incident control, and certainly in situations planning and operations roles.**
- 47. To be effective, multi-agency IMTs will need to be exercised regularly and supported by sound and comprehensive doctrine.**

The initial resources deployed to the escape from BS520 (DEC and brigades) were unable to contain the fire north of EllenBrook and the fire subsequently ran to the southeast. The speed at which the fire travelled and the subsequent impact where it crossed the Margaret River meant that suppression resources were inadequate for a large part of 23 November. This was primarily due to the lag time required to deploy resources to the area from elsewhere in the southwest. By the latter stages of 23 November, there were significant resources available on the fire ground. Coordination of these resources was initially impaired by the structural arrangements operating during the day which are explored elsewhere in this report.

As this fire occurred prior to the normal bushfire season, a number of resources (aviation, standing DEC IMT, multi-agency IMT) were not available for immediate mobilisation. The aviation contractor/s provided un-forecast aviation support at very short notice. Their flexibility and goodwill was important in the subsequent protection of life and property.

## Information Management and the Effectiveness of Community Advice

Ensuring community safety during an emergency requires timely and relevant information to be disseminated through a number of channels. The complexity of doing this during a major bushfire should not be underestimated. For those undertaking the incident management role, there is often uncertainty about the location, intensity and direction of the fire, and the likelihood of success of their fire fighting and containment plans. This uncertainty may be accentuated by poor communications with the fire ground and the provision of limited information from fire crews who are focussed on fighting the fire. The resulting lack of situational awareness means providing effective community advice can be problematic.

During the Margaret River fires the alerts to the public were generally not timely – for example, at 1130hrs on 23 November a *Watch and Act* alert was issued. This was followed by an *Emergency warning* alert at 1325hrs for Kilcarnup. The judgement at the time was that once the fire crossed Ellen Brook the fire would not be stopped until it reached the Margaret River. Therefore, the *Watch and Act* should have been issued as soon as the fire escaped containment. Similarly there was only an hour between the *Watch and Act* and the *Emergency Warning* alert, which was unnecessarily short.

Another example occurred when the community alert *Watch and Act* was issued at 1100 hrs, as Prevelly was being evacuated. The DEC hourly emergency warning updates were at times up to 40 minutes out of date. Generally (and throughout 23 November in particular) a succession of alerts, warning and updates were issued. Due to delays in processing in various agencies, it appears that on occasion the timings of these alerts became jumbled with consequent confusion. This caused significant concern in the community. Notwithstanding the difficulties of providing effective warnings to the community, there is a requirement for more effort to be invested in developing processes and supporting infrastructure for timely alerts to the community.

### Lesson

#### 48. Timely alerts and updates to the community are essential.

The fact that there were two IMTs working independently during 23 November caused some confusion in the orderly implementation of evacuations. When the decision was made to evacuate Prevelly at 1100hrs on 23 November the Local Government sought to release a StateAlert<sup>30</sup> text message, but that required the approval of the Incident Controller who at this stage was largely unaware of the significance of the Prevelly fire. Although central control is important to avoid confusing messaging, in this case central control of messaging could have placed people at risk. Simplicity in the process for initiating and releasing StateAlert messages is required.

<sup>30</sup> StateAlert is an automated system that uses web technology to deliver emergency warnings to landline phones or mobiles. People can also register to receive emergency warnings via email, RSS feed and their mobiles for up to three addresses. It may be used for any type of life threatening emergency including fires, cyclones, chemical spills and tsunamis. Source <https://statealert.wa.gov.au>

**Lesson**

**49. The process for initiating and releasing StateAlert messages requires review.**

As the StateAlerts are text based, it requires a degree of local knowledge to interpret the geographical locations they are referring to. In the absence of local knowledge, confusion or uncertainty can result. Greater use of graphical content and social media with graphical content would facilitate community understanding.

**Lesson**

**50. Expand the exploitation of social media, including graphical content for state alerts and warnings. Consider increasing the graphical content of web-based warnings.**

As noted earlier the accuracy and timeliness of information to the community was not satisfactory. While there was good use of different channels in providing community information, the lack of accuracy led to confusion. Members of the community sought information from other sources (such as local government) and this added to the work burden for agencies not equipped to deal with requests for this information. Developing the means to ensure that all information channels have up to date and accurate information is an important lesson.

**Lesson**

**51. Radio bulletins need to be up to date and time-stamped. Where social media is used the messages need to be up to date and accurate. Websites need to be up to date and accurate.**

## The Effectiveness of Evacuation Procedures

During these fires communities north of the Margaret River and Prevelly/Gnarabup were evacuated. The DEC IMT and the Local Government IMT initially managing the Prevelly/Gnarabup fire initiated evacuations without coordination. This was in part due to the poor communications between the two IMTs, leading to no 'single picture' of the incident. It is noted earlier that the IMT at Prevelly experienced issues with communication in regard to alerts, and this contributed to the difficulties in coordinating the evacuations. However, it is noted that the decision by the Local Government to evacuate Prevelly at 1100hrs on 23 November was timely and important in reducing the number of people at risk in what was to become the fire ground.

Evacuation is one of the most difficult emergency management operations to undertake<sup>31</sup>. Effective evacuation requires good coordination between all agencies including local government. The decision to evacuate needs to be taken as early as possible and requires thorough planning.

**Lessons**

**52. Decisions on evacuations need to be made early enough for people to be fully informed, prepared and to move to a place of greater safety. Failure to conduct good planning can create situations where loss of life can occur.**

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<sup>31</sup> Note the difficulties experienced during Hurricane Katrina in the US.

## The Effectiveness of People Welfare

The Shire of AMR was proactive and efficient in providing initial welfare support to its people. They had a mature emergency management plan that was well practiced. During the event, Shire staff delivering welfare support operated outside their usual roles in engaging with evacuees and other Shire residents. As the DCP was activated, they were able to support the Shire programs. A range of Non-Government Organisations such as the Salvation Army, Red Cross, St Vincent De Paul Society, the Country Women's Association and others made important contributions to the welfare effort. It appears as if this aspect of the event was well handled throughout.

It is noted by this report that the Shire of AMR performed admirably in initiating the provision of welfare to affected members of the community. Early engagement by the Shire of AMR with DCP ensured services were available when required. The 'one stop shop' where affected residents could engage with utility providers, get information updates, receive advice of relief payments, and have access to other welfare services was a valuable and useful interface for the community.

### Lesson

**53. Good Local Government planning and management facilitates community resilience.**

## The Effectiveness of Recovery Actions

Managing the recovery phase of a disaster is a fraught activity. High needs, uncertainty, involvement of a variety of agencies (government and non-government) and the disruption caused through damaged infrastructure all contribute to the complexity of the recovery process. Despite the sometimes long timeframe of the recovery phase, an early and effective start to the process is important.

As the response phase transitioned to the recovery phase, the Shire of AMR and the IMT took special measures to support people who had lost their houses. This included trips to inspect damage before the fire ground was reopened to public access and the provision of psychological support. This was well received and a positive contribution to the start of the recovery phase.

In addition to their own insurers, people who were impacted by the fire were potentially eligible for financial support from a number of sources including DCP, the Premier's Relief Fund and the Lord Mayor's Distress Relief Fund. Community consultation indicated that there was an incomplete understanding of the entirety of the financial support that was available, when it would be available and how it could be accessed. It is important that the entirety of the financial assistance and support offered to affected communities is managed as a whole – or at least that there is a single point of contact to facilitate the interaction between community members and the sources of financial support and relief. Communication with the community must provide a comprehensive picture of the support available as early as possible in the recovery phase.

In general, the financial support provided offered important physical and psychological support to those affected. Community consultation disclosed the following specific perceptions:

- + Initial relief payments were distributed by the Shire early to eligible people. This was highly valued by affected residents and provided an important step in their own recovery processes.

- + Eligibility for DCP welfare payments was not clear to all affected residents, or to the Shire of AMR staff who were effectively providing the first point of contact. The result was some confusion and a measure of discontent.
- + Residents expressed some confusion about the specific criteria for payments that might be available through the Lord Mayor's Fund.

In February 2012 the WA Government announced the Margaret River Financial Assistance Scheme to provide additional support for residents affected by the bush fire. In doing so, they communicated financial guidelines, media advertising and community information via Local Government meetings, provided a claims registration line and claim assessing services. The focus of the Scheme in the first instance is to assess as many claims for assistance as possible and to commence payments as soon as possible, with the aim of all claims being finalised by the end of 2012. Assessing services and assistance to fire victims eligible for financial assistance will remain available to Margaret River residents until all claims are concluded and the Scheme is closed.

Despite these arrangements, during the preparation of this report there remained a perception that the staged process of financial support to those who endured losses had stalled. Some residents are experiencing financial hardship and are unable to proceed with rebuilding until state government decisions enable the further distribution of funds. A number of residents suffered relatively minor property damage, but so far they have been left to deal with this from their own resources. This is a source of stress and some bitterness in sections of the community. There is demonstrably a need to enhance communications between state government agencies and affected local residents.

From the point of view of the Shire of AMR, delays to the Western Australia Natural Disaster Relief and Recovery Arrangements (WANDRRA) determination meant that some infrastructure rectification was held up pending decisions on authorisation. The process to distribute WANDRRA payments should be made immediately after the criteria are met. This will ensure critical infrastructure is rectified as quickly as possible.

Even where residents were not subjected to material loss as a result of the fire, in many cases they shared in the community's collective response. Communities such as Prevelly which were severely impacted go through a grieving process and to assist their resilience there will be an occasional need for external support for this process. Each situation and the nature of the response would necessarily be tailored to specific circumstance but, in the case of the Prevelly community, there was a perception that the wider WA community had moved on from these fires and was largely oblivious to the impact they had suffered.

#### **Lessons**

- 54. Procedures to resolve issues surrounding financial assistance need to be reviewed to ensure they are as smooth, fast and transparent as possible.**
- 55. Shire experiences in managing these traumatic events should be captured and passed into state emergency management procedures.**
- 56. An early decision on relief funding enables timely responses. DCP should review their communication of relief arrangements to ensure that they are clear.**

- 57. Given the prominent role played by the Shire in the management of welfare aspects in this emergency, there may be a need for state sponsored training for shire staff who are involved in implementing state emergency management policies and plans including how to deal with traumatised individuals.**
- 58. When communities are grieving there is a need to provide special forms of support to affected residents.**

## CONCLUSION

This report provides a range of lessons for consideration by agencies responsible for fire management in Western Australia. The report does not provide a forensic analysis of the causes of the fire. Implementing all of the lessons will not be simple and will take time. There are also likely to be resource implications. The successful implementation of the lessons will result in improvements in the agencies' capability to prevent, prepare and respond to fire events. However, there is always uncertainty in dealing with fire and while risk can be reduced it cannot be eliminated.

## ANNEXES

### Annex A: Summary of Lessons

LESSON	COMMENT	ACTION	RESPONSIBILITY
1. Experienced forecasters and fire behaviour experts should be embedded in DEC at least at a state level to ensure that fire risks are properly understood by decision makers.		Establish procedures and doctrine to support an embedded forecaster working alongside fire behaviour experts.	
2. A risk management approach is needed which considers risks both inside the prescribed burn and the risks that will need to be managed if the fire escapes. This risk assessment should be dynamic in line with the four day and seven day weather forecast.		Review existing risk management tools to ensure that processes exist to periodically re-confirm their results.	
3. There should be clearly established criteria for burns which are specially challenging, and these criteria need to extend beyond the intended boundaries of the prescribed burn.		Update red flag burn criteria to include consideration of challenges faced outside the prescribed burn area.	
4. Prescribed burns which meet the 'red flag' criteria should have mandated risk		Establish risk management criteria for	

<b>management criteria imposed.</b>		burns that meet red flag criteria.	
<b>5. Improved understanding of fire behaviour in coastal heathlands would support sound risk management through the southwest of WA.</b>		Initiate research to develop accurate models, or broaden existing models, for fire behaviour in coastal heath.	
<b>6. Maps prepared for prescribed burns should address the fuel type and burn history of the burn area as well as surrounding areas. Predicted rates of spread under prescribed and other conditions should recognise the complexity of coastal heathlands.</b>		Amend the documentary requirements for burn prescription.	
<b>7. Fuel loads on private property need to be identified and included in understanding fire behaviour in determine the contribution they make to the burn risk assessment.</b>		Risk assessments include consideration of private property fuel age and availability.	
<b>8. Inter-agency cooperation to manage fire precincts in a tenure-blind fashion is necessary for effective fire suppression.</b>		Develop policy to support a land tenure blind, precinct approach to fuel management.	
<b>9. All forms of fuel modification should be available to fire managers.</b>		Increase community awareness of different fuel modification types and their	

		appropriate use.	
<b>10. Greater investment in training on specific functions within the AIMS structure will improve the support provided to the Incident Controller.</b>		<p>Conduct a Training Needs Analysis to identify fire-specific training needed by IMT members.</p> <p>Expand the availability and scope of AIMS training in DEC, FESA and LG</p>	
<b>11. As presently implemented, the AIMS planning role is under-developed and provides insufficient support to the Incident Controller.</b>		AIMS IV is presently under development – engage with this process to ensure the situation role is sufficiently well defined.	
<b>12. Communications planning for geographic regions with recognised black spots and specific communications challenges should be prepared in advance of an emergency in order to support the IMT Communications Planning Officer</b>		Develop communications maps for fire prone regions that clearly identify nulls and dead-spots	
<b>13. Rolling risk assessment conducted during ignition of prescribed burns should identify whether an escape is likely to develop into a Level 3 incident. As soon as possible after it has been identified that the escape cannot be contained, the incident should be</b>			

<p><b>declared a Level 3.</b></p>			
<p><b>14. For incidents of this complexity, effective control in the critical phase (first 24-36 hours of the fire) requires an appropriately resourced IMT.</b></p>		<p>DEC's State Duty Officer should review the proposed Incident Management structure of a Level 3 incident with the State Duty Director FESA to ensure that the proposed structure has the capacity to deal with anticipated scale and complexity of the incident.</p>	
<p><b>15. The state should identify the number of fully trained, experienced and accredited Level 3 Incident Controllers required to be available at any time and establish a process for identification of suitable personnel, ongoing training and accreditation.</b></p>		<p>Establish the number of Level 3 Incident Controllers required across the state and develop supporting processes (training ,exercising and the provision of appropriate experience) to sustain that number.</p>	
<p><b>16. Within the AIIMS IMT doctrine the roles of the Incident Controller and Deputy Incident Controllers should be defined and well-practiced.</b></p>		<p>Ensure Incident Controller training is regularly updated, regularly conducted and consistent with current emergency management standards. Ensure that the divisions between the IC and Deputy IC roles are clear and understood.</p>	
<p><b>17. An intensive exercise/training program should be developed and maintained across agencies to identify and establish a pool of current Incident</b></p>		<p>Develop and implement appropriate training material for Level 3 Incident Controllers.</p>	

<p><b>Controllers who are capable of managing a Level 3 incident.</b></p>			
<p><b>18. Predetermined locations for Level 3 IMTs should be reviewed and adequately resourced with necessary communications and IT capacity.</b></p>		<p>Establish a baseline standard for Level 3 IMTs and undertake assessment of predetermined IMT locations and ensure that any shortcomings are mitigated.</p>	
<p><b>19. Early contact with the LGA is critical.</b></p>		<p>Develop or update doctrine and procedures to include early and sustained contact with the LGA.</p>	
<p><b>20. There would be value in progressively aligning the geographical boundaries of emergency management agencies and co-locating where possible within regions and districts.</b></p>		<p>Undertake a strategic review of geographic boundaries of each agency and locations and identify opportunities to align and co-locate.</p>	
<p><b>21. Suitably experienced local representatives should be engaged to provide advice to the IMT in all Level 2 and Level 3 incidents at the earliest opportunity.</b></p>		<p>Develop or update doctrine to identify and include local representatives in appropriate areas of IMTs at the earliest possible stage.</p>	
<p><b>22. Opportunities be sought to utilise local government representatives in other areas of the IMT particularly in public information or other community</b></p>		<p>Identify IMT roles where local government representatives can be best employed.</p>	

<b>related functions.</b>			
<b>23. Procedures to relocate IMTs need to be established in doctrine and exercised to ensure continuity of control.</b>		Develop doctrine and training programs for relocating an IMT without disrupting its control of an incident.	
<b>24. The expected scenario, with a view to the worst-case scenario should provide the basis for an IAP.</b>		Doctrine for IAPs should be focused on 'most likely' situations while acknowledging and hedging against the 'most dangerous' situation arising.	
<b>25. Contingency planning is a critical function in the early stages of an escalating incident, and should provide the foundation of an IAP.</b>		Doctrine for contingency planning should be developed and should be triggered by decisions to ignite 'red flag' burns. The contingency plans that result offer a first cut IAP to an IMT that is assembling and coming into action under the pressure of events.	
<b>26. Incident Controllers should be supported by a planning function that combines experienced weather forecasters, fire behaviour experts and local knowledge.</b>		Ensure AIIMS IV has adequate provision for a planning function that is supported by an appropriate intelligence function.	
<b>27. IMTs need to establish early and effective liaison with Local</b>		Develop or update doctrine and procedures to include early and sustained contact with the LGA possibly including enhancing the	

<b>Governments.</b>		role of the Local Emergency Management Committee.	
<b>28. State-wide all agency reporting should be established to facilitate the interactions of emergency management agencies, support agencies and governments.</b>		Develop agency processes to support IMT chain of command reporting.	
<b>29. Section 13 arrangements need to be clarified across key agencies.</b>		Develop an agreed responsibilities document regarding Section 13 appointments for all emergency management agencies	
<b>30. Logistics and resource officers in IMTs need to collaborate and establish full awareness and control over the available resources.</b>		Review IMT doctrine and update roles to emphasise collaboration between logistics and resource planning. Develop training to support implementation.	
<b>31. A review of the manner in which resourcing is conducted across all agencies needs to occur with a review identifying the best manner to ensure all agencies adapt to the same process.</b>			
<b>32. Contingency planning before the fire may have supported the IMT in recognising and seizing strategic</b>		Doctrine for contingency planning should be developed and should be triggered by decisions to ignite 'red flag' burns. The burn prescription should include guidance	

<p><b>opportunities earlier.</b></p>		<p>on the contingency plans that need to be prepared.</p>	
<p><b>33. Strategic direction seeks to identify and resource those areas of tactical action that offer the greatest advantage.</b></p>			
<p><b>34. Clear direction to divisional and sector commanders and a common communications platform enables maximum return to be gained from the application of tactical resources and this rests on good incident action planning, and good command and control.</b></p>		<p>Determine and implement an appropriate communications platform for emergency management.</p>	
<p><b>35. In multi-agency responses the culture, training and equipment characteristics of each of the agencies should be considered in their employment.</b></p>		<p>Increase frequency of multi-agency exercises and ensure debriefings cover effective deployments and update doctrine and training to reflect changes.</p>	
<p><b>36. Better maps are required for urban/rural interface fires.</b></p>		<p>Develop high quality maps for use in urban/rural interface fires.</p>	
<p><b>37. A system of vehicle tracking should be fitted to all fire appliances and linked to the common operating picture. Good communications planning is essential</b></p>		<p>Determine and implement an appropriate communications platform for emergency management</p>	

<p>for good command and control.</p>			
<p><b>38. There would be benefit in progressively aligning the geographic boundaries of each of the agencies and seeking to co-locate their headquarters within those boundaries.</b></p>		<p>Undertake a strategic review of geographic boundaries of each agency and locations and identify opportunities to align and co-locate.</p>	
<p><b>39. Legislative change may be needed to enable FESA to better manage fire-fighting resources across the state.</b></p>		<p>Review current legislation to ensure FESA is able to effectively allocate fire fighting resources.</p>	
<p><b>40. The role of district and local emergency management committees should be reviewed to ensure they are appropriately engaged in the active management of emergencies across the PPRR continuum</b></p>		<p>Develop or update doctrine and procedures to include early and sustained contact with the LGA.</p>	
<p><b>41. Increased acceptance of mutual obligations will be fundamental to the management of fire risk across the state</b></p>		<p>Develop policy to support a land tenure blind, precinct-wide approach to fuel management.</p>	
<p><b>42. The state should progressively align on a shared platform, such as WebEOC, to establish a COP.</b></p>		<p>Determine and implement an appropriate communications and operations management platform for all emergency management agencies.</p>	

<p><b>43. The state should converge on a single communications platform for all emergency management and support agencies.</b></p>		<p>Determine and implement an appropriate communications platform for emergency management.</p>	
<p><b>44. Reporting and control should be through the incident chain of command and not through agency chains of command.</b></p>		<p>Develop agency processes to support IMT chain of command reporting.</p>	
<p><b>45. DEC's fire management expertise should be augmented by multi-agency IMTs that incorporate the expertise of other agencies and in fast developing situations the appropriate decisions will need to be made early.</b></p>		<p>Increase frequency of multi-agency exercises and ensure debriefings cover effective deployments and update doctrine and training to reflect changes.</p>	
<p><b>46. At Level 3, the available fire management expertise should be applied overwhelmingly to the fire management aspects of emergency management, possibly in incident control, and certainly in situations planning and operations roles.</b></p>		<p>Increase frequency of multi-agency exercises and ensure debriefings cover effective deployments and update doctrine and training to reflect changes. Employ DEC fire managers in IMT positions where this expertise is especially critical.</p>	
<p><b>47. To be effective, multi-agency IMTs will need to be exercised regularly and supported by sound and</b></p>		<p>Increase frequency of multi-agency exercises and ensure debriefings cover effective deployments and update doctrine</p>	

<b>comprehensive doctrine.</b>		and training to reflect changes.	
<b>48. Timely alerts and updates to the community are essential.</b>		Review and update doctrine regarding community information management.	
<b>49. The process for initiating and releasing StateAlert messages requires review.</b>		Review procedures for StateAlert with a view to streamlining processes for evacuations.	
<b>50. Expand the exploitation of social media, including graphical content for state alerts and warnings. Consider increasing the graphical content of web-based warnings.</b>		Undertake a review of current state alert and warning procedures and incorporate social media use and graphical content.	
<b>51. Radio bulletins need to be up to date and time stamped. Where social media is used the messages need to be up to date and accurate. Websites need to be up to date and accurate.</b>		Review and update doctrine regarding community information management, including time stamping radio bulletins and social media/websites.	
<b>52. Decisions on evacuations need to be made early enough for people to be fully informed, prepared and to move to a place of greater safety. Failure to conduct good planning can create situations where loss of life can occur.</b>		Review doctrine to ensure decisions on evacuation are given the highest priority.	

<p><b>53. Good Local Government planning and management facilitates community resilience.</b></p>		<p>Ensure local emergency management plans are established and well exercised.</p>	
<p><b>54. Procedures to resolve issues surrounding financial assistance need to be reviewed to ensure they are as smooth, fast and transparent as possible.</b></p>		<p>Review and streamline current financial relief procedures.</p>	
<p><b>55. Shire experiences in managing these traumatic events should be captured and passed into emergency management procedures..</b></p>		<p>Conduct a review of welfare support doctrine and incorporate representatives of the Shire of AMR. Ensure clarity and effective communication of relief arrangements.</p>	
<p><b>56. An early decision on relief funding enables timely responses. DCP should review their communication of relief arrangements to ensure that they are clear.</b></p>			
<p><b>57. Given the prominent role played by the Shire in the management of welfare aspects in this emergency, there may be a need for state sponsored training</b></p>		<p>Establish procedures to identify and provide training to local government staff involved in providing welfare services.</p>	

<b>for shire staff who are involved in implementing state emergency management policies and plans including how to deal with traumatised individuals.</b>			
<b>58. When communities are grieving there is a need to provide special forms of support to affected residents.</b>		Conduct a review of welfare support doctrine and incorporate representatives the Shire of AMR.	

## Annex B – Forecasts

**Table 3.** Outlooks for 23 November 2011 at Witchcliffe issued over the previous four days. The 0750 issue on 23 November is a specific forecast for that day (source BoM)

Date of forecast issue	Time of issue (WST)	Temp (°C)	AM winds (km/h)	PM winds (km/h)
19 Nov	1545	30	NNE 29	NNE 23
20 Nov	1545	30	NNE 29	NNE 13
21 Nov	1545	30	NNE 27	N 27
22 Nov	0750	31	NNE 27	N 27
22 Nov	1545	31	NNE 30	N 30
23 Nov	0750	31	N 27	N 22

Source: DEC

## Annex C - Interviews

Geoff Hay - DPC  
Dr Neil Burrows - DEC  
Dr Lachlan McCaw - DEC  
Darren Klemm - FESA  
Bruce Jones - FESA  
Ralph Smith - FESA  
Andre van der Heyden - FESA  
Mick Fitzpatrick – Volunteer Fire Fighter  
Justin Croker – Volunteer Fire Fighter  
Murray Luff – Volunteer Fire Fighter  
Andrew Burton – Bureau of Meteorology  
Mike Bergin – Bureau of Meteorology  
Ian Gibb – Western Power  
Brian Congear – Western Power  
Greg Blee – Western Power  
Paul Gravatt – AMR Shire  
Gavin Jennion – AMR Shire  
Vicki Small – AMR Shire  
Alison Edmunds – AMR Shire  
Brendan Jordan – AMR Shire  
Rob Bootsma – AMR Shire  
David Holland – AMR Shire  
Ian Earl – AMR Shire  
Gary Evershed – AMR Shire  
Bob Chandler - DEC  
Greg Mair - DEC  
Peter Gibson - DEC  
Peter Keppel - DEC  
Paul Cassidy – Main Roads  
John Tillman – FESA  
Steve Ward – FESA  
Daniel Austin - FESA.  
Jason Ringrose – Water Corporation  
Gary Yates – Water Corporation  
Roma Boucher – Department of Child Protection  
Anna Huxtable – Department of Child Protection  
Superintendent Lawrence Panaia – WA Police  
Sergeant Mark Emmett – WA Police

## Annex D–Documentation

DEC – Burn Complexity and Risk Matrix  
DEC – Burn Complexity and Risk Matrix – Guide  
DEC – Burn Complexity and Risk Matrix - Summary  
DEC – CLM-269  
DEC – Ellensbrook Collation of Fire Diary Entries  
DEC - Ellensbrook Debrief Collation – Attachment 1  
DEC - Ellensbrook Debrief Collation – Attachment 2  
DEC - Ellensbrook Debrief Collation – Attachment 3  
DEC - Ellensbrook Debrief Collation – Draft  
DEC – Ellensbrook IMT Structure by Shift  
DEC – Ellensbrook Prevelly Incident Management Chronology draft  
DEC – Ellensbrook Summary of Bushfire Alert Notification  
DEC – Ellensbrook Summary of Meetings by Shift  
DEC – Ellensbrook Weather Conditions Report BS 520  
DEC – Fire Management Policy  
DEC - Fire Operations Guidelines 3, 7, 12, 18, 22, 24, 38, 66, 75, 77, 79, 80, 82, 83, 87, 88, 89, 91, 93  
DEC - Fire Protection Instruction 14, 23, 39a, 41, 45  
DEC- Glossary of Acronyms  
DEC – Milyeannup Collation of Fire Diary Entries  
DEC – Milyeannup Debrief Collection Draft  
DEC – Milyeannup IMT Structure by Shift  
DEC – Milyeannup Operational Maps  
DEC – Milyeannup Summary of Bushfire Alert Notifications  
DEC – Milyeannup Summary of Meetings by Shift  
DEC – Milyeannup Summary of Resources by Shift  
DEC – Policy Statement 21  
DEC Fire Management Checklists 203, 228, 236, 237, 282, 289, 386  
DEC/FESA – Public Information DEC/FESA agreement 2012  
FESA – 2011-12 Seasonal Operational Changes Handout  
FESA – FESA review Margaret River/Milyeannup Fire 2012  
FESA – Aerial Suppression Operation Procedure 2009-10  
Bush Fires Act 1954 incl. Bush Fires Regulations 1954  
FESA – Command Control and Coordination of Major Incidents  
FESA Directives – 0.0, 3.1, 3.2, 3.5  
FESA – Emergency Turnout Procedures SOP 3  
FESA- FG3.2 Incident Control  
FESA – FG3.11 Air Operations  
FESA – First Hour  
FESA – Four Hour  
FESA – Operation Coordination Management Structure  
FESA – Operations Deployment Guidelines Ver4

FESA – Procedure OP23

FESA Standard Operating Procedures 3.2.4, 3.2.5, 3.5.1, 3.5.2, 3.5.10

Appreciating the Risk – Report into the Margaret River Bushfires 2011 – Michael Keelty

A Shared Responsibility – The Report of the Perth Hills Bushfire February 2011 Review - Michael Keelty

Shire of AMR – Incident Support Group Minutes

Shire of AMR – Bushfire Response Plan 2009

Shire of AMR – Bushfire Meetings Held

Shire of AMR – Bushfire Recovery Key Contacts

Shire of AMR – Community Updates 6 April 2012, 2 March 2012, 21 October 2011, 2 December 2011, 23

December 2011, 12 January 2012 20 January 2012, 30 March 2012

Shire of AMR – Debrief Meeting Minutes 1 December 2011, 2 December 2011

Shire of AMR – Emergency Evacuation Plan

Shire of AMR – Emergency Management Arrangements

Shire of AMR – Bushfire FAQs 1 December, 2 December, 12 December, 14 December, 4 January, 9 January,  
2 February

Shire of AMR – Affected Landowners Briefing Minutes 24 November 2011

Shire of AMR – Agency Briefing Minutes 24 November 2011

Shire of AMR – Fire Break Notice 13 September 2011

Shire of AMR – Key Contacts, Key Contacts and Services

Shire of AMR – Minutes of ISG Debrief for the Blackwood Fires Complex

Shire of AMR – One Stop Shop Services

Shire of AMR – Recovery Plan

Shire of AMR – Resource and Contact Schedule

Shire of Nannup – Fire Incident Log

Shire of Nannup – Preparedness and Prevention Plan parts A and B

Shire of Nannup - Welfare Plan 2012

## **Annex E - Workshop Participants**

Gary Kennedy – FESA  
Brett Belstead – MRWA  
Mark Fitzhardinge – Water Corporation  
Ralph Smith – FESA  
Gary Shearer – Health Department  
Mary Allen – WACHS  
Paul Gravett – Shire of AMR  
Murray Carter - DEC  
Bruce Jones – FESA  
Terri Kurtis – FESA  
Mark Platt – FESA  
Genevieve Young – DPC  
Bob Hay – DPC  
Kelly Gillen – DEC  
Bob Chandler – DEC  
Greg Mair – DEC  
Andrew Grono – Department of Education  
Peter Keppel – DEC  
John Tillman – FESA  
Peter Gibson – DEC  
Michael Peters – WAPOL  
Greg Blee – Western Power

## Annex F - Terms of Reference

The Terms of Reference for the PIA are:

1. Weather conditions during and following the fire escape
2. Effectiveness of pre –suppression bushfire mitigation strategies
3. Effectiveness of suppression strategies and tactics during the fire
4. Effectiveness of incident management
5. Level of resourcing
6. Information management and effectiveness of community advice
7. Effectiveness of evacuation procedures
8. Effectiveness of people welfare
9. Effectiveness of aerial suppression
10. Effectiveness of interagency operations
11. Effectiveness of emergency management procedures
12. Effectiveness of recovery actions
13. Recommendations

## Annex G – Public Submissions

Jess Beckerling  
John and Barbara Dunnet  
Harry Barriskill  
Wendy Hinchcliff  
Anne Drummond  
Beth Schultz  
Phill Schultz  
Lauren Aspland  
Neil Hawkins  
Paul Matthews  
E/Prof. Don Bradshaw  
David Hunt  
Jennifer Della-Vedova  
Duncan Gardner  
Nigel Morgan  
Helen Dilkes  
Michael O'Neill  
Ric Gath  
Matthews Family  
Michael Chaney  
James Ross  
Mary Elton  
Robert Elton  
Phil and Joy Sparrow  
Michael Lochore  
Peter McGann  
Natalie Muir  
Mark Westlake  
Stewart and Alison Scott  
Kim and Ingrid Goodridge  
John Bradbury  
Stephen Enright  
Nick Katona  
Marcus Troake and Rachel McMahon-Troake  
Deborah Jane Barber  
Denise and Paul Wilkinson  
Mark and Leslie Heussenstamm  
Gilbert Rowan-Robinson  
Antoinette Atkinson  
Enzo Donisi  
Ian Zlatnik  
Jasper Grugeon

Jenny Colquhoun

Gavin and Bev Hartley

David Gossage (two submissions)

Christine and Lyndon Rowe

Robert Dunnet

Jocilyn Marita Gratto

Sharon, Joerg and Matthew Jordi

Greg Grist