Australia's revised arrangements for bushfire advice and alerts

- 2009/2010 Fire Season

Version 1.1
- 7 October 2009

AEMC - National Bushfire Warnings Taskforce

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Version Control

Version	Author	Remarks	Date
Draft 1	J Edwards	On behalf of National Bushfire Warnings Taskforce. Distributed to the taskforce for input, review and feedback.	9 Sep 09
Draft 2		Feedback on first draft received and incorporated. Gaps in information filled. Document tidied up.	16 Sep 09
Version 1	FINAL Doc	Distributed to all Taskforce members 18 Sep 09 and minor changes to words received from Caroline Douglass and a correction of FDI numbers in appendices incorporated into FINAL document. Re-distributed to all Taskforce members by Taskforce Chair D Place on 30Sep09.	30 Sep 09
Version 1.1	FINAL Doc	Inclusion of 'some' before the description of the fires in the top three FDR levels, eg "Some fires will be uncontrollable….". Redistributed to all Taskforce members by D Place on 7Oct09.	7 Oct 09

1. Introduction

In 2008 fire and emergency service agencies from across the country commenced a review of the AFAC Bushfires and Community Safety Position which incorporates the concept of Prepare, Stay and Defend or Leave Early. The major drivers for the review were the growing intensity and severity of recent bushfire experiences across the country and the availability of results of intensive research programs conducted under the auspices of the Bushfire Cooperative Research Centre

As the review of the Position was continuing, the events that unfolded on 7th February 2009 in Victoria brought into sharp focus the possibility that the current legislation, systems, practices and processes to support effective community safety outcomes may no longer match the increasing levels of risk and expectations.

The Victorian Government immediately following the tragedy of 7th February announced the establishment of a Royal Commission with broad terms of reference to investigate the causes and responses to the bushfires that swept through parts of the state.

The Royal Commission is required to produce an interim report by 17th August 2009 and a final report by 31 July 2010. The Interim Report was subsequently released as scheduled.

The 2009 Interim Report of the Victorian Bushfires Royal Commission has made a number of recommendations. Amongst them is that the Australasian Fire and Emergency Service Authorities Council (AFAC) and the Bureau of Meteorology (BoM) collaborate with researchers to explore options for the fire danger indices and fire danger ratings.

Recommendation 5.1 of the Royal Commission Interim Report suggested the following considerations:

- An additional fire danger rating beyond the current highest level of 'Extreme'
- Adjusting the existing fire danger ratings to correspond to higher Fire Danger Index values
- Developing a revised fire severity scale for use in bushfire warnings based on new fire danger ratings

On 3, 4, 5 August 2009, AFAC brokered a three-day event to facilitate shared understanding and reach agreement on common terms, trigger points and common messages for information and warnings to the community. The event included the updating of the scaled fire danger ratings used to forecast bushfire danger. This work is consistent with the recommendation made by the Royal Commission.

Following this event a National Bushfire Warnings Taskforce was established under the auspices of the Australian Emergency Management Committee (AEMC) to refine the work undertaken and broker national agreement. The Taskforce was immediately established and commenced its work.

This report represents an executive summary explaining the solution developed to increase the effectiveness of scaled bushfire advice and warnings to the community.

2. Background

The tragic events in Victoria on 7th February 2009 sharpened the resolve and focus of fire and emergency service agencies to review the scaled advice and warnings provided to the community, specifically for the bushfire hazard. There was a sense of urgency and an imperative to work together to find a solution to what is a complex, national problem.

It was determined that this extraordinary problem required an extraordinary approach.

2.1 Solving the Problem Together

AFAC brokered an arrangement with an organisation called Capgemini to utilise their Accelerated Solutions Environment (ASE) DesignShop®. The ASE DesignShop® was specifically chosen as it incorporates a specific technique and model that brings together people from diverse backgrounds and opinions. It creates an intense atmosphere designed to foster creative thinking and collaboration, delivering implementable solutions way ahead of conventional approaches.

The DesignShop® program was created by a Sponsor Team with representatives comprising:

- CFA – Victoria
- DSE – Victoria
- RFS – NSW
- CFS – SA
- AFAC
- Capgemini Facilitation Team

The event was conducted over three days (3, 4, 5 August 2009), with participants drawn from each State and Territory, from the Commonwealth, the community and other national organisations.

2.2 Governance Arrangements

As a part of the DesignShop® process a governance framework was identified which recommended the creation of a National Bushfire Warnings Taskforce under the auspices of the Australian Emergency Management Committee (AEMC).

This Taskforce would have representation from each State and Territory, Bureau of Meteorology, AFAC and the ABC. The Taskforce would have a limited duration and a specific focus to finalise the work commenced during the DesignShop®, to ensure jurisdictional representatives on AMEC were fully briefed and to support AEMC in reaching agreement on the final national framework for scaled advice and warnings to the community.

Additionally, there was a need for the DesignShop® work to be reviewed in the context of the Interim Report of the Victorian Royal Commission.

2.3 The participants

People working on developing the national solution were drawn from across Australia and included those whose responsibilities were directly related to community information and warnings policy and procedure within their organisations. Policy designers as well as the decision-makers were involved, along with experts in research, public relations, community and the media.

The names of the main participants are included as Appendix 1.

3. Creating a Revised National System

Explained in the National Systems Approach to Community Warnings[1], there are a range of elements that need to be in place to improve the effectiveness of community advice and warnings and ultimately contribute to better community safety outcomes.

Each element relies on the other for strength and effectiveness:

- Preparing the community
- Situational awareness
- Message construction and dissemination
- Appropriate action taken

The revised scaled advice and warnings framework is a key component of all of these elements. It was crucial that action was taken quickly to create the new arrangements as all other elements rely on it.

All States and Territories along with the Commonwealth, research and media experts committed to work together to devise new arrangements. Whilst an all-hazards framework was desirable, the focus was on the bushfire risk.

3.1 Objectives

Specifically the DesignShop® and the Taskforce work has brought together key fire and emergency service personnel from all States and Territories to:

- Review and refine the fire danger ratings (FDR) that describe the nature and potential impact of the fire danger on any day in a way that is relevant to the public and agencies.
- Develop the common descriptors and key messages for each fire danger rating (FDR) for agencies and for the public
- Identify the terms that align the key messages with the Common Alerting Protocol (CAP) in Australia
- Identify the criteria that determine the trigger points for communications to the public during existing fires.
- Develop the common descriptors and key messages for existing fires.
- Design a model that aligns all of the above that would be used by all agencies and partners in the public communication process
    - Determine the aspects of this model that could be used for other hazards
- Develop an implementation and communications plan to share/deliver the DesignShop® output with the States/Territories/Agencies (including a key media phrase and media messages aligned to the above).

3.2 Givens

There were a number of factors that needed to be taken into account when undertaking this work. These factors were identified as either important to the process; already confirmed as required, or outside of the scope to influence given the timeframes involved, they were:

- A new arrangement needs to be ready for October 1st, 2009.

[1] AFAC Discussion Paper – *A National Systems Approach to Community Warnings*, Edition 1 – May 2009

- A focus on the community including the vulnerable and the culturally and linguistically diverse (CALD)
- A nationally consistent approach is required
- Existing legislation/agreements are in place and take time to amend
- It may not always be possible to issue and receive warnings and not everyone is reachable
- The Fire Danger Index will be retained, but the ratings will be reviewed
- Trigger points are inherent in the Fire Danger Ratings (FDR)
- To achieve improvements in public communication there will need to be improvements in intelligence gathering and analysis
- Additions to common messages may be required on a geographical and jurisdictional basis
- Dissemination tools and methods to the public are out of scope
- Key messages need to be in lay language
- Any Common Alerting Protocol (CAP) related software is out of scope

4. The Outcomes

4.1 New National Phrase – Prepare. Act. Survive.

The primary purpose of the Bushfires and Community Safety position is to describe good practice in relation to creating and maintaining bushfire safe communities throughout Australia. This good practice incorporates the concepts of being prepared well ahead of fire danger conditions, preparing to leave before a bushfire threatens, or to be capable and prepared to stay and defend a property (using the home as a place of safety). The position is predicated on the fact that bushfires are a normal occurrence, are inherently dangerous and can cause death and injury to people.

Since the position was endorsed in 2005, the key messages it contains has been reduced down by some to the phrase of 'stay or go.' This phrase has not served the communities of Australia very well and has misrepresented the important components that people need to take into account when making survivability choices.

Recognising that it is much easier to use a shorter phrase to describe the position an alternative phrase has been developed: **'Prepare. Act. Survive'.**

Prepare. Act. Survive. was chosen as it embodies the key principles of the Bushfires and Community Safety position and is representative of the components explained within it. Each word is further explained:

Prepare
What will you do if a bushfire threatens your family, your house or your business? Do you have a survival plan and have you discussed it with your family?

You must decide what you are going to do well before the fire season starts and make the necessary preparation.

What will you do to be safe?

- *If you have no time to leave and a fire threatens you – what will you do, where will you shelter and how will you get there.*

- *If you are going to leave - prepare for where you are going to go, how you are going to get there and what you are going to take.*

- *If you are going to stay, prepare for a frightening experience. Have a plan for how you are going to survive and where you will shelter. Find out what equipment you need and determine what you will do if things don't go according to plan.*

Prepare your home and your property to survive the fire front. Even if your plan is to leave the more you prepare your home the better the odds it will survive the fire.

Know where to find information:
- *On ABC radio and local stations*
- *Via fire agency websites*
- *Bushfire advice call centres*

Act
Fires can threaten suddenly and without warning; you should be prepared to act without receiving any emergency warning, so:

- *Act decisively the moment you know there is danger*
- *Know what the fire danger rating is for your area*
- *Watch for signs of fire, especially smoke and flames*
- *Put your preparations into action; do not just 'wait and see'*
- *Look and listen for information on TV, radio, the internet, mobile phones and through speaking with neighbours*

Survive
The safest place is to be away from the fire.
Being involved in a fire may be one of the most traumatic experiences of your life.
Survival and safety depends on the decisions you make; are you bushfire ready?

4.2 A National Framework

A National Framework for Scaled Advice and Warnings to the Community was agreed by AEMC on Friday 4 September 2009. This Framework is included as Appendix 2 and encompasses the following:

1) Forecast conditions which describe the expected behaviour IF a fire starts
2) Messaging to the community when a fire is going

This Framework has been established on the fundamental assumption that managing risk is a shared responsibility and consistent with the State/Territory Policy position of Bushfires and Community Safety, incorporating the concept of Prepare, Stay and Defend or Leave Early.

The Framework is predicated on the following Principles:

- Fires impact people and communities; therefore this framework errs on the side of public safety as its primary consideration
- A fire can threaten suddenly and without warning
- People living in high risk areas need to be prepared to take protective action at any time

Underpinning the framework is detailed descriptors and messages that are relevant to the community to ensure they can be informed as possible. The information provided is extensive and takes into account the diverse and multi-dimensional communication preferences of people.

It is recognised that some refinement will need to occur to the messaging, however, decisive action was required now so that appropriate changes can be undertaken before the coming fire season.

4.3 Forecast Fire Danger Ratings - before a fire starts

The Fire Danger Rating (FDR) which is a combination of words and numbers, acts as an expert assessment of the potential fire behaviour, the difficulty of suppressing a fire and the possible impact on the community. The Bureau of Meteorology in consultation with fire agencies determines the ratings for any given period or day. For example, a forecast message from the Bureau would look like:

Fire Weather Warning for < Area – Forecast Districts or State >
Issued at <time of issue>

For Wednesday:
Catastrophic Fire Danger 100+ is forecast for the xxxxxx districts
Temperatures up to tt degrees, relative humidity down to rr% and winds to vv km/h are expected. The < responsible agency > advises that fires will be unpredictable, uncontrollable and fast-moving.

Extreme Fire Danger 75-99 is forecast for the yyyyyyy forecast districts.
Temperatures up to tt degrees, relative humidity down to rr% and winds to vv km/h are expected. The < responsible agency > advises that fires will be unpredictable, uncontrollable and fast-moving.

Severe Fire Danger 50-74 is forecast for the zzzzz forecast districts.
Temperatures up to tt degrees, relative humidity down to rr% and winds to vv km/h are expected. The < responsible agency > advises that fires will be uncontrollable and fast-moving.

Find information on potential fire behaviour and impact at <state agency website>. Seek advice and monitor fire and weather situations on <radio stations>, through <state agency website> and www.bom.gov.au, or phone < state agency information line, hotline etc phone number if applicable > [1]

< Total Fire Ban Advice > [2]

[1] Details of this action statement are determined in conjunction with the fire agencies in each State.
[2] In some States Fire Weather Warnings include information about current Total Fire Bans while in other States the Total Fire Ban Advice forms a separate message.

The numbers used with each rating is the result of a calculation performed by the Bureau of Meteorology based on various scientific variables such as temperature, wind speed, relative humidity and rainfall/drought. Referred to as the Fire Danger Index (FDI) these scientific variables were not specifically reviewed as part of this work, however, it was recognized that a review of the science underpinning the FDI should be the subject of further research.

The Fire Danger Rating is an early indicator of the potential danger, should a bushfire start.

The table below outlines the Fire Danger Ratings as identified and provides a sample of fire behaviour features and the potential impacts. These ratings have been created using research from past events; statistics on loss of life and property and the application of various Regulations and Codes for building in bushfire areas, particularly AS3959.

Pivotal to differentiating between the top three fire danger ratings is research that indicates where greatest losses occur. Figure 1 demonstrates where these historical losses have occurred as matched to actual FDI calculations.

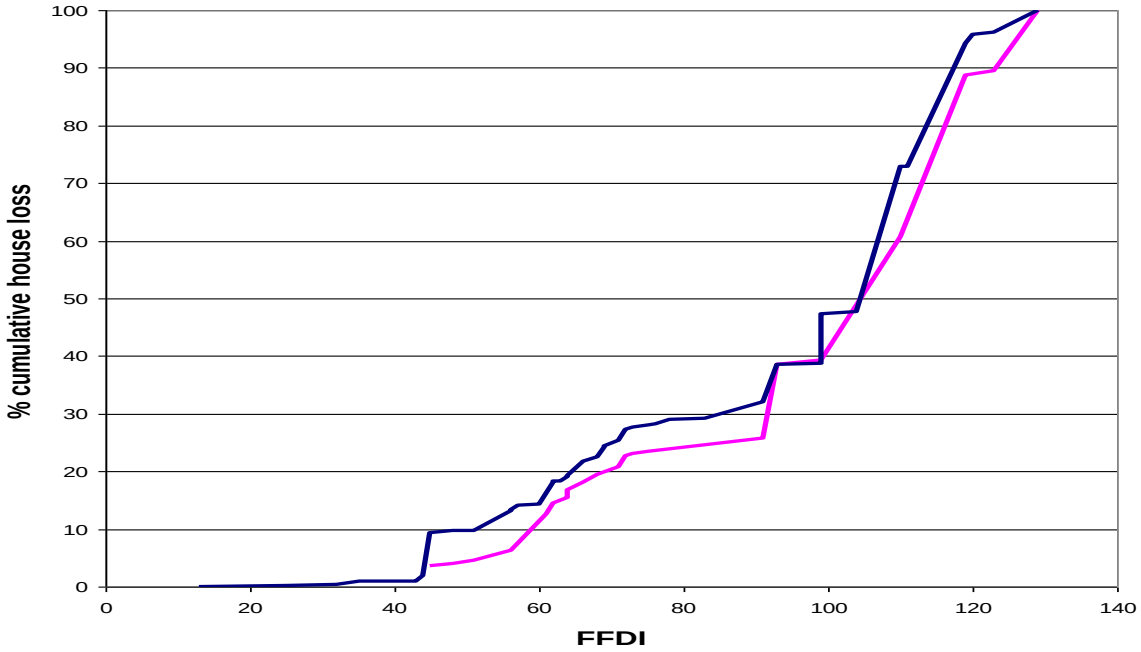

Figure 1: Source Justin Leonard CSIRO – Designshop – August 2009
Black line = house loss Pink line = life loss

The Fire Danger Rating scale, along with more detail on fire behaviour and impact potential, as well instructions to the community are included as Appendix 3. A sample of this work is provided in the following table, with each state and territory responsible for the final construction of the messages to their communities.

Table 1: Fire Danger Conditions and Sample Messages

Fire Danger Rating	Sample Messages - Potential Fire Behaviour and Impact
CATASTROPHIC (CODE RED) **FDI 100+**	If a fire starts: • Some fires will be uncontrollable, unpredictable and fast moving – flames will be higher than roof tops. • There is a very high likelihood that people in the path of the fire will die or be injured. Thousands of homes and businesses will be destroyed. • Well prepared, well constructed and defended homes may not be safe during the fire. Construction standards do not go beyond a Fire Danger Index of 100. • Thousands of embers will be blown around. • Spot fires will move quickly and come from many directions, up to 20 km ahead of the fire. • **For your survival leaving is the best option.**
EXTREME **FDI 75-99**	If a fire starts: • Some fires will be uncontrollable, unpredictable and fast moving – flames will be higher than roof tops. • There is a likelihood that people in the path of the fire will die and be injured. Hundreds of homes and businesses will be destroyed. • Only well prepared, well constructed and actively defended houses are likely to offer safety during a fire. • Thousands of embers will be blown around. • Spot fires will move quickly and come from many directions, up to 6 km ahead of the fire. • **For your survival leaving is the safest option for your survival.**

Fire Danger Rating	Sample Messages - Potential Fire Behaviour and Impact
SEVERE **FDI 50-74**	If a fire starts: • Some fires will be uncontrollable and move quickly– flames may be higher than roof tops. • There is a chance people may die and be injured. Some homes and businesses will be destroyed. • Well prepared and actively defended houses can offer safety during a fire. • Expect embers to be blown around. • Spot fires may occur up to 4 km ahead of the fire • **Leaving is the safest option for your survival. Your home will only offer safety if it and you are well prepared and you can actively defend it during a fire**.
VERY HIGH **FDI 25-49**	If a fire starts: • Fires can be difficult to control – flames may burn into the tree tops. • There is a low chance people may die or be injured. Some homes and businesses may be damaged or destroyed. • Well prepared and actively defended houses can offer safety during a fire. • Embers may be blown ahead of the fire. • Spot fires may occur up to 2 km ahead of the fire. • **Your home will only offer safety if it and you are well prepared and you can actively defend it during a fire.**
HIGH **FDI 12-24**	If a fire starts: • Fires can be controlled • Loss of life is highly unlikely and damage to property will be limited • Well prepared and actively defended houses can offer safety during a fire. • Embers may be blown ahead of the fire. • Spot fires can occur close to the main fire. • **Know where to get more information and monitor the situation for any changes**
LOW-MODERATE **FDI 0-11**	If a fire starts: • Fires can be easily controlled • Little to no risk to life and property **Know where to get more information and monitor the situation for any changes**

4.4 Alert Messaging to the Community - when a fire is going

Fires can threaten suddenly and without warning, so the community should always be ready to act on the basis they may not receive an official emergency warning.

Fire agencies will provide as much information as is possible through a wide range of mechanisms and will use three levels of messaging to help people make the right safety choices.

These messages take into account the features of going fires, in pre-determined conditions as forecast through the Fire Danger Ratings. Incorporating a predicted rate of spread of the fire which is variable depending on topography, fuel type, prolonged drought and other local conditions, the messaging levels are designed with safety as the paramount consideration, yet acknowledging that over-warning can be counter-productive.

It is important that the community does not solely rely on receiving an official message and should always be aware of what is happening, as they could find themselves suddenly in danger.

Three types of alert messages were determined, to be preceded by the type of hazard applicable:

> **Emergency Warnings –** '*Bushfire Emergency Warning'* - you are in danger and need to take action immediately. You will be impacted by fire. This message may be preceded by an emergency warning signal (a siren sound).

Watch and Act – '*Bushfire Watch and Act'* message - represents a heightened level of threat. Conditions are changing; you need to start taking action now to protect you and your family.

Advice – '*Bushfire Advice' message* - a fire has started – there is no immediate danger; general information to keep up to date with developments.

The levels of messages identified have taken into account concerns that have been expressed that the people could be 'over warned'. This concern coupled with a known tendency for people to act at the last minute has informed the choice of message levels. Whilst the intent of agencies is to inform people according to the desired arrangements, the inescapable fact is fires can threaten suddenly and without warning making it impossible to get the messages out in time.

Appendix 4 outlines the details of messages provided to the community about what to do if a fire starts. The messages provide specific things people should be doing and is designed to help people to take appropriate action.

Each State and Territory will devise more detailed actions based on their relevant community safety programs and the various risk levels that are applicable to various communities.

4.5 Trigger Points for Action

Trigger points were identified as an important concept to work on so that decision making not only at agency level but also at community level is strengthened. To this end it was determined that particular triggers should be identified for community preparedness actions, to ensure people can make positive choices well before any fire threatens, and importantly in taking protective action in response to a fire starting.

The trigger points outlined below should also incorporate other cues that people should pay attention to, such as changes in the wind speed and direction; smoke; neighbourhood activity;

Forecast Conditions before a fire starts….

The Fire Danger Rating scale will itself act as a trigger for action. The higher the level of fire danger, the more imperative the actions become, both from a community preparedness level as well as an agency preparedness level.

The Fire Danger Rating is an early indicator of potential danger and the first trigger for action to be taken.

Table 2: Forecast Fire Danger Rating scale (extract from the National Framework)

Forecast Fire Danger			Fire Danger Rating	
Fire Behaviour Predictions	**Impact Assessment**	**Call to Action**	**Category**	**D**
The Fire Danger Index along with the possible erratic nature of fire, the energy released and levels of area burnt are the main factors that have been used to differentiate between fire danger rating	The predicted wind levels combined with the application of the building code AS3959 have been used to describe the potential danger at each rating level.	The fire behaviour and potential impact along with the ability to suppress a fire has been incorporated into the specific	Catastrophic (Code Red)	
			Extreme	
			Severe	
			Very High	

When a fi

The Fire Danger Rating, combined with a 'time to impact' will trigger the type of message to be issued to the community by the agency. The trigger matrix is predicated on the assumption that an agency will have sufficient information to assemble, analyse and construct an appropriate message for the community. Fires can threaten suddenly and without warning.

Table 3: Alert Messages – Trigger Matrix (extract from the National Framework)

Fire Danger Rating		Flame Ht/ Rate of Spread	Time to Impact			
Category	**Fire Danger Index**		**<2 hrs**	**2-6 hrs**	**6-24 hrs**	**24 plus hrs**
Catastrophic (Code Red)	100+	VARIABLE	Emergency Warning		Watch and Act	
Extreme	75-99					
Severe	50-74					
Very High	25-49					
High	12-24					
Low - Moderate	0-11		Advice			

The actual Fire Danger Rating, along with the fire location, its behaviour and who and what is at risk will dictate which level of message will ultimately be used. If, for example, on a catastrophic forecast a fire starts in a location where there are no people or property or assets threatened, then an emergency warning may not be necessary.

5. The Common Alerting Protocol (CAP)

To support the rapid and effective construction and dissemination of alert messages to the community the OASIS Common Alerting Protocol (CAP) as adopted for use by Australian fire agencies.

CAP provides a message template and a digital format for messages. Victoria has taken the lead on the development of the terms that are consistent with the nationally agreed framework. Finalisation of the Australian context of CAP however will now be incorporated into the National Emergency Warning System (NEWS) protocols work and take into account all hazards. Interim arrangements will be in place in some jurisdictions in the short term until such time as the NEWS project completes its protocol work.

6. Implementation

This Report will act as an input into the development of specific and tailor-made arrangements by each State and Territory.

It is not possible for the revised arrangements to be introduced across Australia at the same time. This is because the nature of Australia's weather patterns dictates seasonal bushfire risk. Northern parts of Australia experience increased risk at different times to the southern states and vice versa. There is also the requirement for a significant number agencies and organisations to change process, procedure and technology environments which will take a great deal of time and resourcing to achieve.

Each State and Territory has commenced work on implementing the new arrangements; adapting the nationally agreed framework for the local context. Although there will be jurisdictional variances to accommodate local legislation and policy environments, what the public will hear, no matter where they are, is consistency, reinforcement and familiarity.

7. Review of the National Framework

Unlike other natural hazards communications regarding the bushfire hazard are complex, multi-level and challenging. It is recognised that whilst a great deal has been accomplished to improve the system within Australia there is still much to do.

It is therefore proposed that a review of the National Framework and associated components will be undertaken after the 2009/2010 fire season has concluded. The review will be an important part of the continuous improvement of the national system of advice and warnings and take into account the practical application of the new arrangements and the experiences of its use.

The extraordinary commitment, collaboration and agreement forged by all States and Territories in creating the National Framework is indicative of the significance of the problem and the passion shown by all participants to improve the safety of the community safety.

Appendix 1 – Participants

National Warnings Taskforce:
David Place, SAFECOM (Chair)
Euan Ferguson, SA Country Fire Service (Chair)
Craig Hynes – WA Fire and Emergency Service Authority
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Capgemini DesignShop®- Participants List - - 3, 4, 5 August 2009

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SA State Emergency Service	Matt Maywald
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Commercial radio	Erin Maher
Researchers	Justin Leonard
	John Handmer
	Josh whittaker
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Community FireGuard Leader	Max Garner
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	Nanette Fitzgerald
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Appendix 2 – National Framework for Scaled Advice and Warnings to the Community

PREPARE. ACT. SURVIVE.

NATIONAL FRAMEWORK FOR SCALED ADVICE AND WARNINGS TO THE COMMUNITY

PRINCIPLES:

- Fires impact people and communities, therefore this framework errs on the side of public safety as its primary consideration
- A fire can threaten suddenly and without warning
- People living in high risk areas need to be prepared to take protective action at any time

FIRE DANGER PERIOD – SEASONAL FORECAST

Preparedness Messages –Initiated by Bureau of Meteorology with Fire Agency Advice				*Response Messages - Initiated by Fire Agencies with Bureau of Meteorology Advice*
FORECAST FIRE DANGER – Before a fire starts • Preparedness and education strategies • Survivability options already identified and in place			**FIRE DANGER RATING**	**TRIGGER POINTS – for messaging when a fire starts** • FDR + Time to Impact • Three levels of messaging
FIRE BEHAVIOUR PREDICTIONS The projected FDI along with the erratic nature of fire, the energy released and levels of area burnt are the main factors that have been used to differentiate between fire danger rating levels. Volatility of fire Flame Height Speed of spreading Ability to Suppress	**IMPACT ASSESSMENT** The predicted wind levels combined with the application of the building code AS3959 have been used to describe the potential danger at each rating level. Expected life and asset loss House survivability points (homes as a **place of safety)**	**CALL TO ACTION** The fire behaviour and impact assessment along with the ability to suppress a fire has been incorporated into the specific instructions and directions to the community.	**Category** / **Fire Danger Index** **CATASTROPHIC (CODE RED)** – **100 +** EXTREME – 75 – 99 SEVERE – 50 – 74 VERY HIGH – 25 - 49 HIGH – 12 – 24 LOW – MODERATE – 0 - 11	Actual FDI calculations on the day along with the fire location and behaviour will dictate which level of message will be used. If, for example, on a catastrophic forecast a fire starts in a location where there are no people or property threatened then an emergency warning would not be necessary.	<2 hrs | 2-6 hrs | 6-24 hrs | 24 hrs Plus EMERGENCY WARNING + SEWS WATCH AND ACT ADVICE
Inherent in the different levels of fire danger ratings is the applicability of AS3959 and the ability of homes to act as places of safety when needed. AS3959 is known to apply up to a FDI of 80 – 100 depending on the location in Australia.			The Fire Danger Index is fundamentally a predictor of fire behaviour and suppression difficulty.		The message levels have taken into account the evidence that suggests over warning can contribute to complacency and delays in people taking protective action.
Prolonged heat waves, fire weather intensity, fuel variability and topography are all major variables that influence the behaviour of a fire. Further work is required to enable technology to calculate the FDR at individual community level.			Without supporting scientific evidence no change can be made to the calculation of the fire danger index. The existing rules and parameters therefore have been retained and only the categories have been recalibrated and described.		**Emergency Warning** is calibrated to the highest level of risk to life and aligned with the principle message that the safest option is to not be near the fire. The standard emergency warning signal (SEWS) would be played with this message.
Significant historical evidence exists that is guiding the thinking and approach to the recalibrated fire danger rating. There is an undeniable link between higher FDI and loss of life and property, with exponential increases in losses as the FDI increases.			There is evidence to support the addition of two additional categories above the FDI of 50. This evidence relates to the house survivability points as determined by research; future impact as predicted through climate change research and recent experiences in SA, Vic, and ACT.		**Watch and act** messages are identified as supporting the need for people to be aware of their situation and the circumstances around them and take action to prepare and protect themselves, their family and neighbours.
An important component of any education campaign involves the explanation associated with the Total Fire Ban prevention measure. TFB will be incorporated into the broader preparedness messaging and education programs.			It is important that a wide range of education and media campaigns teach the public about the fire danger ratings given their current low level of understanding.		**Advice** messages are to keep people informed and up to date with developments.

NOTE: Detailed descriptors and messages underpin this framework.

As Agreed at the Australian Emergency Management Committee - 4 September 2009 – VERSION 5.1

Appendix 3 – Forecast Fire Danger Ratings

FORECAST FIRE DANGER – *before a fire starts*

The table below contains core descriptors and messages that are available for use by agencies to inform their communities. They have been crafted by a range of fire and communications experts, taking into account research that suggests more direct language should be used to have a greater chance that people will personalise the risk they face and take appropriate action. The messages are strong, confronting and representative of the gravity of the forecast danger. They can be tailored to suit each State and Territory's community safety policies.

Fire Danger Rating	Fire Behaviour Predictions	Impact Assessment – If a fire breaks out	Call to Action
CATASTROPHIC (100+) (CODE RED)	*Behaviour* Bushfire: • ROS: 10+ km/h, • Spotting: 8-20 km • Intensity: 50,000+ kW/m; • Area growth: 4000 to 8000 ha/h Grass: • ROS: 15-25 km/h, • Intensity: 20,000 to 50,000 kW/m; • Area growth: 20000 to 30,000 ha/h Some fires will be unpredictable, uncontrollable and fast-moving Fires will spread much faster on hills or in thick bush Flames will be much higher than roof tops Thousands of embers blown around and into homes Spot fires will move quickly and could come from many directions – possibly well ahead of the main fire	A fire can threaten suddenly and without warning There is a very high likelihood that people in the path of the fire will die or be injured, and whole communities will be affected Thousands of homes and businesses will be destroyed Well prepared & constructed homes may not be safe during a fire Strong winds will bring down trees and powerlines, blocking roads – this will be well ahead of the fire Strong winds may blow roofs from houses and break windows Power, water, home and mobile phones are likely to fail It will be very hot and windy, and as the fire approaches it will become difficult to see, hear and breathe Petrol-driven cars, pumps and generators may not work Don't expect a fire truck or other emergency workers at your home	- Leaving is the safest option for your survival – finalise your options for relocation – *state 'agency'* recommends that you leave the night before - Prepare to leave – check your kit (state-specific i.e. emergency, survival, recovery, etc) - Check your bushfire survival plan – Now (state specific message) - Monitor weather and fire situation in any way you can: through website (specific), radio(state specific), TV and newspapers - Call '000' if you see flames (state specific message)
EXTREME (75-99)	*Behaviour* Bushfire: • ROS: 3-6 km/h, • Spotting: >6 km • Intensity: 30,000 to 60,000 kW/m; • Area growth: 1000 to 2000 ha/h Grass: • ROS: 10-15 km/h, • Intensity: 15,000 to 30,000 kW/m;	A fire can threaten suddenly and without warning There is a likelihood that people will die or be injured, and whole communities will be affected Hundreds of homes and businesses will be destroyed Only well prepared, constructed and defended homes are likely to offer safety during a fire	- If you plan to leave finalise your options and leave early on the day - Prepare for the emotional, mental and physical impact of defending your property – if in doubt, leave - Only stay if your home is well prepared, constructed and you can actively defend it. - Check your bushfire survival plan - Now

Fire Danger Rating	Fire Behaviour Predictions	Impact Assessment – If a fire breaks out	Call to Action
	• Area growth: 10,000 to 20,000 ha/h Some fires will be unpredictable, uncontrollable and fast-moving Fires will spread much faster on hills or in thick bush Flames will be much higher than roof tops Expect thousands of embers to be blown around and into homes Spot fires will move quickly and could come from many directions – possibly well ahead of the main fire	Strong winds may bring down trees and powerlines, blocking roads – this may be well ahead of the fire Strong winds may blow roofs from houses and break windows Power, water, home and mobile phones are likely to fail It will be very hot and windy, and as the fire approaches it will become difficult to see, hear and breathe Petrol-driven pumps and generators may not work Don't expect a fire truck or other emergency workers at your home	(state specific message) - Monitor weather and fire situation in any way you can: through website (specific), radio (state specific), TV & Newspapers - Call '000' if you see flames (state specific message)
SEVERE (50-74)	*Behaviour* Bushfire: • ROS: 2-3 km/h, • Spotting: >4km • Intensity: 20,000 to 40,000 kW/m; • Area growth: 500 to 1000 ha/h Grass: • ROS: 8-12 km/h, • Intensity: 10,000 to 25,000 kW/m; • Area growth: 9000 to 14000 ha/h Some fires uncontrollable and fast-moving Fires will spread much faster on hills or in thick bush Flames may be higher than roof tops Expect embers to be blown around and into homes Spot fires will move quickly and could come from many directions – possibly ahead of the main fire.	A fire can threaten suddenly and without warning There is a chance people may die and be injured, and communities may be affected Some homes and businesses will be destroyed Well prepared and defended homes can offer safety during a fire Power, water, home and mobile phones may fail It will be very hot and windy, and as the fire approaches it will become increasingly difficult to see, hear and breathe Don't expect a fire truck or other emergency workers at your home	- If you plan to leave finalise your options and leave early on the day - Prepare for the emotional, mental and physical impact of defending your property – if in doubt, leave - Only stay if your home is well prepared and you can actively defend it. - Check your bushfire survival plan – Now (state specific message) - Monitor weather and fire situation in any way you can: through website (specific), radio (state specific), TV & Newspapers - Call '000' if you see flames (state specific message)
VERY HIGH (25-49)	*Behaviour* Bushfire: • ROS: 1-2 km/h, • Spotting: >2km • Intensity: 10,000 to 20,000 kW/m;	A fire can threaten suddenly and without warning There is a low chance people may die or be injured Some homes and businesses may be damaged or destroyed	- If you plan to leave finalise your options and leave early on the day - Only stay if your home is well prepared and you can actively defend it. - Check your bushfire survival plan – Now (state specific message)

Fire Danger Rating	Fire Behaviour Predictions	Impact Assessment – If a fire breaks out	Call to Action
	• Area growth: 200 to 400 ha/h Grass: • ROS: 5-10 km/h, • Intensity: 8000 to 2,0000 kW/m; • Area growth: 3000 to 5000 ha/h Fires can be difficult to control Fires will spread faster on hills or in thick bush Embers may be blown ahead of the fire and around your home Spot fires can occur ahead of the main fire	Well prepared and defended homes can offer safety during a fire Power, water and phones may fail It will be hot and windy, and may become difficult to see, hear and breathe Don't expect a fire truck or other emergency workers at your home	- Monitor weather and fire situation in any way you can: through website (specific), radio (state specific), TV & Newspapers - Call '000' if you see flames (state specific message)
HIGH (12-24)	*Behaviour* Bushfire: • ROS: 0.5-1 km/h, • Spotting: >1km • Intensity: 4,000 to 10,000 kW/m; • Area growth: 50 to 100 ha/h Grass: • ROS: 3-6 km/h, • Intensity: 5000 to 12,000 kW/m; • Area growth: 1500 to 3000 ha/h Fires can be controlled Fires are less likely to burn in the tree-tops Embers may be blown ahead of the fire and around your home Spot fires can occur close to the main fire	A fire can threaten suddenly and without warning Loss of life is highly unlikely, and damage to property will be limited Well prepared and defended homes can offer safety during a fire Don't expect a fire truck or other emergency workers at your home	- Make sure your family and property are well prepared for the risk of bushfire - Review and practice your bushfire plan for different scenarios (eg kids at school/home, visitors) - Know where to get more information
LOW-MODERATE (0-11)	*Behaviour* Bushfire: • ROS: 0.1 to 0.5 km/h, • Spotting: <1 km • Intensity: 100 to 3000 kW/m; • Area growth: 2 to 30 ha/h Grass: • ROS: 0.1 to 3 km/h, • Intensity: 500 to 5000 kW/m; • Area growth: 100 to 1000 ha/h Fires can be easily controlled	Little to no risk to life and property	- Make sure your family and property are well prepared for the risk of bushfire - Review and practice your bushfire plan for different scenarios (eg kids at school/home, visitors) - Know where to get more information

Messaging to the Community – when a fire starts

Fire Danger Rating		Time to Impact				
Category	**FDI**	**Flame Ht/ Rate of Spread**	**<2hrs**	**2-6 hrs**	**6-24 hrs**	**24 plus**
Catastrophic	**100+**	VARIABLE	**To save your life: Take the following Actions** **Seek shelter now – heat from the fire will kill you** **Details: State/situation specific information** **You will be impacted by fire**	**To save your life: Take the following Actions** **Even if you have a survival plan, leaving is your safest option for survival.** **If the path is clear, leave now.** **Details: State/situation specific information**	**To save your life: Take the following Actions** **Even if you have a survival plan, leaving is your safest option for survival.** **If the path is clear, leave now.** **Details: If you stay or are unable to leave now.** **Details: State specific Information ie.** • **Commence your final check** • **Protective Planning**	**Refer to Fire Danger Rating pre fire actions – or state specific IMT plans**
Extreme	**75-99**		**To save your life: Take the following Actions** **Only if the path is clear go to your safer place.** **Details: State/situation specific information** **Well prepared, constructed and actively defended homes may provide shelter** **Heat from the fire will kill you**	**To save your life: Take the following Actions** **If you don't have a plan or your plan is to leave – leave now** **If your survival plan is to stay and your home is well prepared, constructed and actively defended: Details: State specific Information ie.** **Heat from the fire will kill you**	**To save your life: Take the following Actions** **Activate and check your survival plan now** **If you don't have a plan or your plan is to leave – leave now** **Well prepared, constructed and actively defended homes can provide shelter. Make final preparations now.** **Heat from the fire will kill you**	**Refer to Fire Danger Rating pre fire actions – or state specific IMT plans**

Fire Danger Rating		Time to Impact				
Category	**FDI**	**Flame Ht/Rate of Spread**	**<2hrs**	**2-6 hrs**	**6-24 hrs**	**24 plus**
Severe	**50-74**	VARIABLE	**To save your life: Take the following Actions** **If the path is clear go to your safer place.** **Details: State specific Information** **Actively defend your home: Well prepared homes can provide shelter** **Heat from the fire will kill you**	**To save your life: Take the following Actions** **If you don't have a plan or your plan is to leave – leave now** **If your survival plan is to stay and your home is well prepared, constructed and actively defended: Details: State specific Information ie.** **Heat from the fire will kill you**	**To save your life: Take the following Actions** **Activate and check your survival plan now** **If you don't have a plan or your plan is to leave – prepare to leave** **Well prepared and actively defended homes can provide shelter. Make final preparations now.**	**Refer to Fire Danger Rating pre fire actions – or state specific IMT plans**
Very High	**25-49**		**To save your life: Take the following Actions** **If the path is clear go to your safer place.** **Details: State specific Information** **Actively defend your home: Well prepared homes can provide shelter** **Heat from the fire will kill you**	**To save your life: Take the following Actions** **Activate and check your survival plan now** **If you don't have a plan or your plan is to leave – leave now only if the path is clear** **Well prepared and actively defended homes can provide shelter. Make final preparations now.**	**To save your life: Take the following Actions** **Activate and check your survival plan now** **If you don't have a plan or your plan is to leave – prepare to leave** **Well prepared and actively defended homes can provide shelter. Make final preparations now.**	**Refer to Fire Danger Rating pre fire actions – or state specific IMT plans**

High	**12-24**		**Take the following Actions** **Activate your survival plan now** **If you don't have a plan or your plan is to leave – leave now only if the path is clear** **Well prepared and actively defended homes will provide shelter.**	**Take the following Actions** **Activate and check your survival plan now** **If you don't have a plan or your plan is to leave – leave now only if the path is clear** **Well prepared and actively defended homes can provide shelter. Make final preparations now.**	**Take the following Actions** **Activate and check your survival plan now** **If you don't have a plan or your plan is to leave – prepare to leave** **Well prepared and actively defended homes can provide shelter. Make final preparations now.**	**Refer to Fire Danger Rating pre fire actions – or state specific IMT plans**
Low - Moderate	**0-11**					