afac

Australasian Fire and Emergency Service Authorities Council

# A national systems approach to community warnings

September 2009

AFAC Discussion Paper

AFAC Limited (ABN 52 060 049 327)
Level 5, 340 Albert Street
East Melbourne Victoria 3002
Telephone: 03 9419 2388
Facsimile: 03 9419 2389
Email: afac@afac.com.au

Internet: http://www.afac.com.au

# Discussion Paper
# A national systems approach to community warnings

## Contents

This discussion paper is intended for use by the fire, land management and emergency service personnel working on policy and programs at a senior level. It is written for an audience with an assumed understanding of the issues discussed and should not be mistaken for a document providing guidance to the general public.

This discussion paper is one of a suite of documents informing the review of the AFAC 2005 Bushfires and Community Safety Position:

- Prepare, stay and defend or leave early
- Planning and development in bushfire prone areas
- Bushfire bunkers for residential homes
- A national systems approach to community warnings
- Guidelines for people travelling in cars during bushfires

Members of the public wishing to know more about the issues raised in this document should contact their local emergency service authority for advice on how the themes discussed in this paper are applied in their state.

At time of writing no findings from research or reviews into the 7 February 2009 Victorian fires had been released and therefore not incorporated into this paper. The industry intends to review the findings in due course and where appropriate consider its position.

5 May 2009

# EXECUTIVE SUMMARY

This discussion paper proposes that the issue of community warnings is much more than a telecommunications issue; it requires a systems approach based on a range of integrated elements, underpinned by community survivability strategies. It takes into consideration that community warnings involves the effective flow of information.

A considerable body of evidence exists to support the need for emergency service agencies to work in partnership with the communities they serve. This need is born out of the fact that no agency has the resources required to defend and protect every property should a major event occur.

Informed by a range of studies, agencies hold a firm view that with adequate and appropriate preparation people are in a better position to act to protect themselves and their families from harm and reduce the damage caused by natural and man-made hazard events.

The challenge for agencies is to encourage the community to acknowledge the risk and work with them to prepare them psychologically and physically to take appropriate action and then communicate timely and appropriate information and warnings during an emergency to those who need it.

This paper proposes that to respond to the challenges of providing timely and appropriate information and warnings to people, a systems approach is necessary. This systems approach establishes and reaffirms that all elements are intrinsically linked, with one element relying upon the other for strength and effectiveness and to ensure the desired outcome, the safety of the community.

The systems approach incorporates four elements:

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

In this paper each element is explained in detail, along with identification of where gaps exist and what actions are suggested to address them.

This paper also recognises that without leadership and a collaborative approach across all levels of government the ability to achieve nationally consistent arrangements will be significantly impeded. Without an understanding of all the elements required and the use of common language and terminology, warning messages from different jurisdictions and media will continue to be confusing to the public and inefficient to deliver.

This discussion paper proposes an AFAC Position that describes a model and an approach to resolve the issue of implementing a system for the consistent management of community warnings.

# PURPOSE AND BACKGROUND

## Purpose

This discussion paper proposes an AFAC Position that describes a model and an approach to resolve the issue of implementing a system for the consistent management of community warnings.

The paper draws together a range of complementary concepts and approaches within an overarching context and is designed to inform strategic thinking on this issue. Also discussed is a practical means of developing and implementing such a system.

## Background

### A Community Safety Approach

For the last few decades and informed by abundant evidence, a distinct and explicit shift in thinking by agencies has taken place to raise the awareness and develop resilience within communities. Based on the fact that no agency has the resources required to defend and protect every property during a major emergency event, communities will once again need to be prepared to accept some responsibility for their own safety and to work with agencies.

This change brought with it a return to the paradigm that centres on the notion that managing risk and reducing loss must be a shared responsibility between communities, Governments, land managers and emergency management organisations.

Consequently agencies have elevated their prevention and preparedness activities (as opposed to response only activities) designed to work with communities to engage, educate and prepare people to identify the risks they face and take appropriate action to ensure their safety and that of their family and property.

Agencies have for many years been researching and developing a range of community safety strategies and programs and undertaking a range of social science studies to understand how people think, behave and respond when confronted with emergency events. ‘Understanding how the public construct their perceptions of risk can greatly improve risk communication and direct risk reduction strategies most appropriately. (Cottrell and Bushnell et al 2008)’

Based on research findings, agencies hold the firm views that with adequate and appropriate preparation people are in a better position to act to protect themselves and their families from harm and reduce the damage caused by natural and man-made hazard events.

Prepared households tend to be less reliant on official warnings (Bushfire CRC Conference citing Boxelaar & Reinholtd, 2000). Furthermore, if understanding and awareness is limited, rather than triggering increased self-reliance and informed decision-making, an emergency warning is likely to increase uncertainty (RMIT University 2008).

## Community Alerts and Warnings

State and Territory agencies have long recognised the need to improve their systems and processes to ensure communities receive timely and relevant advice to assist them to take appropriate action when confronted with emergency situations.

This need has been reinforced through the findings of a range of agency reviews and Government Inquiries including:

- the Council of Australian Governments (COAG) 'Natural Disasters in Australia – Reforming mitigation, relief and recovery arrangements'; 2003
- the COAG 'National Inquiry on Bushfire Mitigation and Management', 2004

All of the reviews have recognised community warnings are an issue of significance to the safety of the community, while jurisdictions have commenced work on investigating and implementing solutions to this significant problem. This work has mostly progressed within the constraints of existing budget

From a search of the literature, a review of various trial projects and consideration of other approaches it would seem that no national arrangement has yet been devised for Australia that provides an over-arching context and framework for community warnings.

In the absence of a focused coordinated effort, individual elements relating to warnings are being developed in isolation of each other with the potential to result in inconsistency and confusion for the communities of Australia.

# OBJECTIVES AND SCOPE

## Objectives

This discussion paper proposes two outcomes:

- Establish an AFAC Position articulating its stance in relation to a national systems approach to community warnings.
- Propose a range of actions to move this issue forward, including a governance structure to maintain the currency and relevance of any established system.

## Scope

This paper proposes a systems approach to community warnings that is suitable for all hazards.

While AFAC member agencies represent fire, land management and State/Territory emergency service agencies it makes sense when considering the issue of community warnings to broaden the thinking to take into account an all-hazards approach. Taking such an approach will reassure members of the community that, regardless of the emergency, any alerts or warnings disseminated to them are authoritative, consistently constructed, timely and appropriate.

It is important therefore that the full range of emergency service and emergency management organisations are participants in the outcomes of this work. Opportunities will be sought and pursued to share this 'systems' thinking with all other relevant organisations that have responsibility for managing crises or emergency management.

It should be noted that whilst community education and engagement strategies are a fundamental component of the systems thinking articulated in this paper, the focus of this paper is on the community alert and warning component. Community safety strategies are not discussed in detail in this paper.

# ASSUMPTIONS

This discussion paper is predicated on a range of assumptions that have been derived from previous Coronial inquiries; operational reviews, research reports and agency strategies, namely:

- Living in high risk, vulnerable locations poses a threat to life and property.
- Safer decisions will be made if communities share responsibility for the management of risks and can be self-sufficient.
- Effective response to warnings is dependent on effective community engagement, education and awareness.
- Agencies and the community accept that while they are a high priority, issuing immediate or imminent warnings is not always possible.
- People should not have sole reliance on messages from agencies and should seek a range of measures to be aware of the situation around them.
- The issuance of warnings is no guarantee the community will act in an appropriate manner.
- Community preparedness, education and engagement strategies may not reach every person.
- People will make their own determinations and act with or without warnings being received; however, there may be times when authorities will make a choice for them.
- During an incident there is significant likelihood of critical infrastructure failure that may compromise traditional communication channels.
- •The decision to issue an emergency warning to the public rests with the ‘authorised person’ within each jurisdiction and the appropriate authorised organisation.
- Agencies need to use a mix of methods to issue warnings.
- The role of the media is crucial but effective control of communications media is difficult; there are obligations on all parties to issue warnings correctly and effectively.

# A NATIONAL SYSTEMS APPROACH TO COMMUNITY WARNINGS

The issue of community warnings is much more than a telecommunications issue; it requires a systems approach based on a range of integrated elements, underpinned by community safety strategies.

'System' in the context of this discussion paper is defined as 'a group of independent but interrelated elements comprising a unified whole'. It is not just about technology solutions.

Taking a systems approach to the issue of community warnings establishes and reaffirms that all elements are intrinsically linked, with one element relying upon the other for strength and effectiveness, to ensure the desired outcome, the safety of the community.

AFAC members believe a national approach is essential given:

- the transient nature of populations
- the fact that emergencies have no regard for jurisdictional boundaries
- mixed messages and inconsistent terminology undermines confidence in survivability options and associated community education and engagement strategies
- communications media are national entities, therefore their reach is extensive
- through consistency communities can become well practised and familiar with elements
- •it is financially and logistically beneficial to do so.

The system proposed in this paper incorporates the following elements:

Element 1. Preparing the Community

Element 2. Situational Awareness

Element 3. Message construction and dissemination

Element 4. Appropriate action taken

It is intended the above elements would be underpinned by nationally agreed principles; robust research, agreed information and warning standards and instruments and guidelines.

Attachment A models the relationship between these elements, along with key factors that will contribute to a more consistent and targeted approach.

## Element 1 - Preparing the Community


The most crucial aspect of the warnings system is the continued development of community survivability strategies that are in place well before any emergency event occurs.

In preparing the community and particularly through continued education, engagement, practice and reinforcement, people will be better equipped to be aware of their own situation and risk, know how to interpret and corroborate a warning message should they receive one, and understand the implications and be ready to take the appropriate action when an emergency event occurs; even in the absence of any official warnings.

Preparing the community represents a significant challenge given the remote, diverse and multicultural profile of Australia; however research into bushfires has shown that the programs across the broad spectrum “have the clear potential to achieve positive outcomes at both the ‘individual’ (resident, household, family) and community levels” (Elsworth and Gilbert 2009).

Based on this affirmation, the first element of any Community Warnings System should incorporate continued development of a diverse and wide range of survivability strategies with programs designed to address vulnerabilities and risk and to prepare communities.

**Opportunities for improvement:**

The investment made in survivability strategies should be commensurate with the importance of this issue. A significant injection of resources is needed for agencies to undertake the work necessary to increase the level of community preparedness and education. Whilst the introduction of telephony based warnings applications are being pursued an education requirement is essential so that people know what to do when they receive a message.

Incorporate key messages within school curriculums. With the impending re-write of the national education curriculum there is an opportunity to incorporate key survivability strategies within all classrooms across Australia. With a nationally consistent approach, terminology, language and key messages can be consistently conveyed to upcoming generations.

## Element 2 - Situational Awareness


In any given event there will be a number of observations and interpretations taking place including that of the emergency service organisation which may be monitoring and modelling a range of emerging scenarios; and those of an individual who may be receiving information from a number of sources including their informal social network, or directly from the surrounding circumstances.

After weighing up a range of inputs the emergency service organisations will decide to warn and the individual will decide to act. These actions may not necessarily align. People may choose to (and need to) act well before a warning message is issued, based on the information they have at hand and their knowledge of what to do.

No matter how the information gets to someone, the challenge is to make sure the information is able to be corroborated through the authoritative source, is meaningful and people are confident they know what to do when they receive it.

**Authoritative Source - Emergency Service Organisation/Agency**

In some jurisdictions it is not clear where the responsibility for the decision to issue a warning to the community rests. The base assumption is that this responsibility is clearly articulated in legislation, policy or emergency management arrangements.

From a study commissioned by Victoria's Department of Sustainability and Environment and undertaken by the University of Tasmania in concert with the Bushfire Cooperative Research Centre (Owen and Hickey 2008), it is evident that 'where that responsibility incorporates multiple emergency agencies, information disseminated to the community needs to be role-specific to ensure information provision is systematically managed across the emergency partner organisations to reflect role and responsibilities.

Regardless of who carries the responsibility the need for accurate, timely and relevant warnings is crucial. Underpinning the decision to warn and the construction of such warning messages is the ability for agencies to rapidly analyse on the ground intelligence, monitor emerging risks, predict future impacts and decide the best course of action. This includes flood intelligence systems which are used to interpret flood predictions made by the Bureau of Meteorology to determine what the potential consequences of a flood will be and who will need to be warned.

The AFAC Australasian Inter-service Incident Management System (AIIMS) (AFAC 2005) provides for the establishment of an Information Unit within the incident control framework for operations, with responsibilities to "facilitate appropriate communication flows within the incident management team; across other organisations involved; up within agencies and government and out to the community and the general public".

With multiple stakeholders requiring different information for different purposes the demands on the Information Unit can become intense and the protocols for decisions regarding the issuing of information and specifically warnings can be counter-productive. Compounding the situation is the 'heavy reliance on transfer of information through paper-based means (Owen and Hickey 2008).

In a fast-moving, highly dynamic emergency event the value of hazard specific proactive, real-time intelligence and situational awareness at both the agency and the individual level is crucial, as is the ability for an incident management team to rapidly construct and disseminate information and warnings. With rapid onset incidents however, there will be times when it is not physically possible to receive and analyse the intelligence and issue a warning in a timely manner.

A gap exists in the intelligence and situational awareness tools and resource capacity to assist agencies in this regard. In recognition of the growing need to address this gap, agencies have embarked on developing their own modelling tools; others are collaborating or awaiting the introduction of the Bushfire CRC tools including fire behaviour and risk assessment modelling.

**Individual / Community / Industry / Sector**

People's interpretation of the threat of an emergency event may very much depend on a range of circumstances current at the time. As was revealed in a study conducted following the 2005 Eyre Peninsula bushfire, "various social structures give rise to mechanisms that, in certain circumstances, enable or constrain particular choices and actions" (Rhodes and Goodman 2006).

From the scenarios that this study explored, it seems that despite any lack of a formal warning, a person's knowledge of their personal risk, along with the knowledge of their social network directly impacts on the ability to assess danger and take appropriate action. The less informed people are, the less likely they are to believe a threat and see the significance of any danger.

While agencies recognise the need for the provision of timely and relevant warnings, preparedness strategies are crucial to ensure that people have as much knowledge as possible about the risks to their safety; are able to make an informed assessment of any threat and act appropriately even if they don't receive a warning.

Crucial to warnings being effective is a good ongoing understanding of the target community. Different communities use different terms and languages and people see the same cues but can interpret them differently. Each message should be constructed according to the needs of the incident and a strong understanding of the people that are trying to be reached.

**Opportunities for Improvement**

Develop an intelligence gathering / situational awareness tool. There is a gap in the early warning / situational awareness tools available for agencies to obtain, assemble, interpret and model dynamic emergency incident data. This is a matter that impacts directly on the relevance and timeliness of information and warnings issued.

Establish a partnership or Memorandum of Understanding with Defence Imagery and Geospatial Organisation (DIGO). An opportunity exists to leverage the capacity and capability of the Australian Defence Forces to utilise their geospatial and topographical mapping capabilities.

Reinforce and legitimise the use of the Information Unit within the AIIMS Structure. There is a need to continue to develop and reinforce the role and responsibility of the Information Unit and its relationship with other roles in the AIIMS system.

Develop guidelines and protocols for managing warnings. Aspects of the model as proposed in this discussion paper need to be further developed. These aspects include the identification of appropriate trigger points of when to warn; clarification of the provision of information from the issuance of warnings and the decision making protocols to ensure rapid authorisation of both information and warnings.

Strengthen the understanding of warning processes both at agency and community level. The introduction of new or revised processes requires a focused and comprehensive program of knowledge transfer and adoption. Agencies will need financial support to be able to educate all their personnel regarding a change to process as well as mount a continuous education campaign for members of the community.

## Element 3 - Message Construction and Dissemination

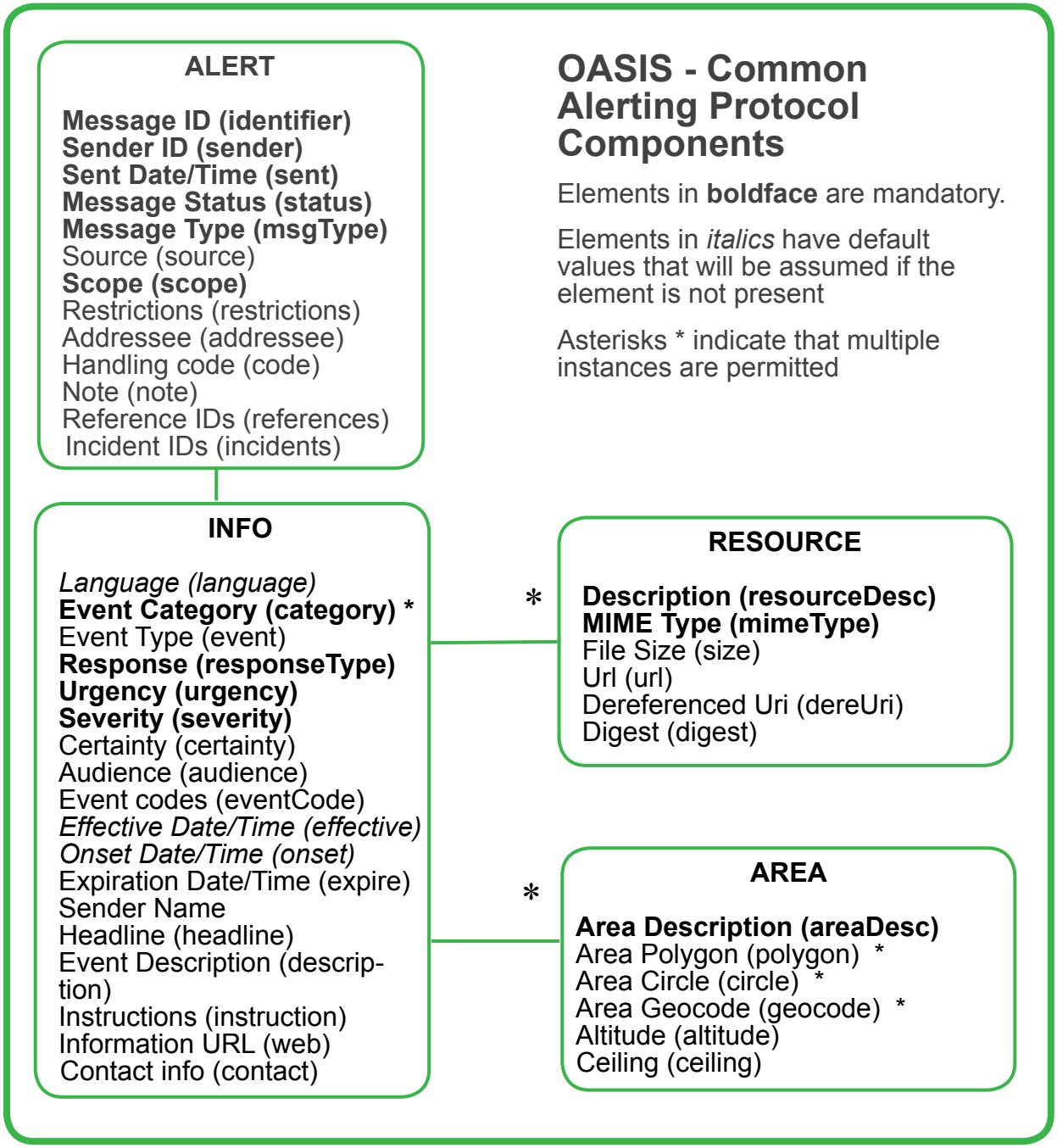

No nationally consistent standard for message construction or protocol for triggering a warning has been adopted by all Australian emergency service organisations and standard phraseology and terminology has not been agreed to by all jurisdictions. What has been developed however are a number of separate responses, all of which incorporate suggested messaging formats (each is different).

For example:

- Standard Emergency Warning Signal (SEWS)
- EMA Emergency Warnings – choosing your words (Australian Government 2008)
- Individual agency public information processes (Bureau of Meteorology 2009), (Queensland government 2005), (Victorian Government 2007) (NSW Government 2009), (FESA 2009)

Without a common description of the underlying event and using terminology with which the community is familiar, warning messages coming from different media will be confusing to the public and inefficient to deliver. A standards-based, all-media, all-hazards public warning strategic framework makes for a more effective solution and more efficient use of resources.

In April 2008, AFAC member agencies formally adopted, as its standard for handling message content the OASIS Common Alerting Protocol (CAP). (Note: OASIS Standard CAP-V1.1, October 2005 was adopted by a vote of the general international membership in September 2005. CAP is a simple but general format for exchanging all-hazard emergency alerts and warnings over all kinds of multi-media.) This Protocol provides a template for effective warning messages based on best practices identified in academic research and real-world experience. Rather than being defined for a particular communications technology, CAP is a 'content standard' and a digital message format that can be applied to all types of alerts and notifications.


ALERT
Message ID (identifier)
Sender ID (sender)
Sent Date/Time (sent)
Message Status (status)
Message Type (msgType)
Source (source)
Scope (scope)
Restrictions (restrictions)
Addressee (addressee)
Handling code (code)
Note (note)
Reference IDs (references)
Incident IDs (incidents)
OASIS - Common Alerting Protocol Components
Elements in boldface are mandatory.
Elements in italics have default values that will be assumed if the element is not present
Asterisks * indicate that multiple instances are permitted
INFO
Language (language)
Event Category (category) *
Event Type (event)
Response (responseType)
Urgency (urgency)
Severity (severity)
Certainty (certainty)
Audience (audience)
Event codes (eventCode)
Effective Date/Time (effective)
Onset Date/Time (onset)
Expiration Date/Time (expire)
Sender Name
Headline (headline)
Event Description (description)
Instructions (instruction)
Information URL (web)
Contact info (contact)
*
RESOURCE
Description (resourceDesc)
MIME Type (mimeType)
File Size (size)
Url (url)
Dereferenced Uri (dereUri)
Digest (digest)
*
AREA
Area Description (areaDesc)
Area Polygon (polygon) *
Area Circle (circle) *
Area Geocode (geocode) *
Altitude (altitude)
Ceiling (ceiling)

The CAP standard consists of four primary components (each containing a number of elements) arranged in a hierarchical structure:

**<Alert>** – The <alert> component provides basic information about the current message: its purpose, its source and its status, as well as unique identifier for the current message and links to any other, related messages. An <alert> component may be used alone for message acknowledgements, cancellations or other system functions, but most <alert> components will include at least one <info> component.

**<Info>** - The <info> component describes an anticipated or actual event in terms of its urgency (time available to prepare), severity (intensity of impact) and certainty (confidence in the observation or prediction), as well as providing both categorical and textual descriptions of the subject event. It may also provide instructions for appropriate response by message recipients and various other details (hazard duration, technical parameters, contact information, links to additional information sources, etc.) Multiple <info> components may be used to describe differing parameters (eg for different probability or intensity “bands”) or to provide the information in multiple languages.

**<Resource>** - The <resource> component provides an optional reference to additional information related to the <info> component within which it appears in the form of a digital asset such as an image or audio file.

**<Area>** - The <area> component describes a geographic area to which the <info> component appears and applies. Textual and coded descriptions (such as post codes) are supported, but the preferred representations use geospatial shapes (polygon and circles) and an altitude or altitude range, expressed in standard latitude / longitude / altitude terms in accordance with specified geospatial datum.

Using a standard message format, an authorised warning message can be simultaneously issued in a community using multiple technologies. In this way, the reach and reliability of warning dissemination is increased, people can corroborate the message through multiple sources increasing the chance that the message will be acted upon.

**National Principles**

In September 2008, the Ministerial Council for Police and Emergency Management – Emergency Management agreed, out of session, to 12 system framework national principles. These principles are:

1. Coordinated: a warning system should avoid duplication of effort where possible and support a shared understanding of the situation among different agencies involved in managing the incident.
2. Authoritative and accountable: warnings are to be disseminated on the decision of an authorised person. Authorities should be able to interrogate the system components for later analysis.
3. Consistent / Standards based: the information content is coordinated across all of the mechanisms used for warnings. Messages must be consistent across different sources if they are to be believed by the general population. Conflicting messages tend to create uncertainty and will delay responsive action. Any relevant identified standards will underpin the agreed System Framework.
4. Complete: message content should include relevant pertinent details, including possibly a direction on the need to consult other sources, presented in a way that is easily and quickly understood by the population. This includes multiple languages in some cases, as well as the use of multi-media for those who are illiterate or people with a disability (eg hearing or vision impaired).
5. Multi-modal: warnings are to be disseminated using a variety of delivery mechanisms and in multiple information presentation formats that will, in some circumstances, complement each other to produce a complete picture, with planning and processes to allow for maximum reach to all members of the community and to provide for redundancies in the case of critical infrastructure failure (eg power or telecommunications).
6. All-hazards: any emergency warning system developed will be capable of providing warnings, where practicable, for any type of emergency.
7. Targeted: messages should be targeted to those communities at risk in order to reduce the complacency that can result from people receiving warnings that do not apply to them – ‘over warning’.
8. Interoperable: has coordinated delivery methods, capable of operation across jurisdictional borders for issuing warnings.
9. Accessible and responsive: capable of responding to and delivering warnings in an environment of demographic, social and technological change. Recognise the criticality of adopting universal design and access principles, particularly in the development and acquisition of technologies.
10. Verifiable: the community is able to verify and authenticate the warnings to reduce incidents of accidental activations and prevent malicious attempts to issue false alerts to a population.

11. Underpinned by education and awareness raising activities: the system, any delivery mechanisms that constitute it and the language used in the warning messages it delivers, should be underpinned by appropriate education and awareness raising activities.
12. Compatible: with the existing telecommunications networks and infrastructure without adversely impacting on the normal telephone and broadcast system. The system should avoid any adverse operational, technical or commercial implications for the provision of current communications services to consumers and on the integrity of communications networks.

**Australasian CAP Profile / Triggers**

Whilst the OASIS CAP provides the basis for a messaging format standard it may require the identification of a profile that is more suitable to the Australasian context. This means adjusting some terminology that better reflects the language used in this region, as opposed to terminology originally designed for the United States.

Additionally, advice from those who are experienced in the implementation of CAP is that thresholds or triggers should be set as to what the communities will be warned about.

Australia has the opportunity to leverage from the work many other countries have done when implementing CAP and producing their own country profiles, for example, Canada, Italy, Indonesia. Additionally we have the benefit of an in-country expert on CAP available to support this work.

**Software application tool – "write it once"**

With the exception of FESA in Western Australia and CFS in South Australia, no agency has a software application tool that provides 'write it once' support for the creation and dissemination of warning messages. In the absence of such a support tool, agencies construct messages using word processing applications or email templates and resort to sending messages via hard copy, email or faxes and publishing the messages on websites. This is problematic when warnings are time critical and highly incompatible when attempting to use multi-media dissemination approaches.

To assure the integrity of the message source and engender trust and confidence in the authoritative source of messages, a 'write it once' software application, built using the OASIS CAP standard, would significantly improve the speed with which messages can be constructed, authorised and disseminated.

Availability of such a tool would improve consistency of language (pick lists with pre-determined language protocols); improved control over the authentication and authorisation of messages (in-built authorisation protocols) and most importantly the warning is already formatted so that it can be machine interpretable, providing the capability for computers to "listen" and respond almost instantly to any issued warning.

**Standard Emergency Warning Signal / Sirens**

In 1999, an agreement was reached between all States and Territories on the need for a Standard Emergency Warning Signal (SEWS) to be used in assisting the delivery of public warnings and messages for major emergency events. It was agreed the signal to be used is the existing Bureau of Meteorology tropical cyclone warning signal.

SEWS is intended to attract attention to the fact that an emergency message has been issued. There are specific rules and procedures in each jurisdiction that govern the use of SEWS.

Whilst SEWS is not a message construction or dissemination standard, it has been seen as a key component of any warnings approach. Used in conjunction with the standard messaging format (CAP) and incorporated into relevant technological solutions (for example public address, radio and TV), the use of the emergency signal to alert people that a CAP message has been issued/follows may be appropriate in some situations.

**Multi-channel dissemination approaches**

A single input message will provide consistency in the information delivered over multiple systems. People will receive exact corroboration of the warning through multiple channels. This is very important given that research has found that people generally do not act on the first warning signal but begin looking for confirmation. Only when convinced that the warning is real do they act sometimes leaving their decision too late.

Through the use of a messaging standard (CAP) delivered via multi-moda channels, the public will be able to tap into various methods and means of obtaining time critical information.

Taking a standard based approach ensures that regardless of the technologies identified to support message dissemination, the actual message itself is made readable by any machine that exists or that may be invented in the future.

**Opportunity for Improvement:**

COAG agree to the use of the OASIS Common Alerting Protocol as the basis for messaging within Australia and set a timeframe for its implementation by emergency agencies. Similar to the action taken by FEMA in the United States, it is appropriate that a decision is made on an appropriate message construction and dissemination format that can be adapted for the Australian context.

Develop an Australian Profile for the Common Alerting Protocol. As a matter of urgency, bring together those responsible for emergencies and develop the Australian profile, incorporating appropriate trigger points and categories of warnings. This would then form the basis for the development of appropriate technologies to support the construction and dissemination of messages.

Develop categorisation levels for other emergencies. Particularly in relation to the fire hazard, reconsider the use of the Fire Danger Index incorporating the experiences of dealing with cyclones.

Develop 'write-it once software application. Invite a consortium of technology providers to develop a 'write it once' tool for authorities for the creation of alert and warning messages, incorporating access to an appropriate secure telephone database and telecommunications network when needed. Learning from the development of the prototype WA State Alert system could fast track this requirement.

Support the invention of dissemination tools. Consider a consortium of private providers to work with disability and emergency service organisations to develop appropriate technologies to send/receive the standard message from its authoritative source. These tools should incorporate the use of social networking technologies as they are becoming more and more prevalent, particularly amongst young people.

## Element 4 - Appropriate action taken by the community


The purpose and intent of any community warnings system is to ensure that people take appropriate action to ensure their safety and the safety of their family and friends. While this is the ideal it is acknowledged that community preparedness, education and engagement strategies may not reach every person.

As shown in the study by Rhodes (2005) conducted in high bushfire risk areas in Victoria, community education does make a difference. Analysis shows that there is a 'significant association between the participation in community safety programs, higher levels of household preparation and higher levels of adoption of more appropriate protective action intentions'.

While emergency service organisations strive to provide timely, relevant and accurate warning messages, it will not always be possible for some warnings to be sent and received before protective action is necessary.

Individuals may need to take action well before any warning message is received, or in the absence of any warning, so it is important they are prepared and have the knowledge they need to make informed decisions.

**Opportunities for Improvement**

Undertake additional research into how to get peoples attention and keep it. The ability to encourage appropriate behaviour could be impacted by complacency, particularly as people are exposed to regular warnings. Additional knowledge into what incentives will contribute to people remaining aware of their risk and situation would greatly enhance survivability strategies in the future.

# PROPOSAL

As outlined in this paper, a strong case exists to adopt a national systems approach to community warnings. It is proposed therefore that AFAC members endorse this discussion paper and adopt a national system based approach to community warnings.

To introduce and embed such an approach the following will be required:

a) Recognition and acceptance at all levels of Government and in those organisations that deal with crises and emergencies, that a community warning is more than a telecommunications issue; that it requires a systems approach based on a range of integrated elements, underpinned by community preparedness strategies.

b) Determine the ownership of this issue and assign responsibility and resources to develop and oversee the implementation of the national standards required to achieve consistency and interoperability across all jurisdictions.

c) Determine where ongoing responsibility for the maintenance, review and development of the agreed standards will be.

# CONCLUSION

The flow of information to those threatened by the escalation of emergency events involves a lot more than issuing a warning. For decades coronial reports and research has consistently argued that emergency services develop a capacity to communicate better with communities during an emergency (C Carson 2004).

From the perspective of public warning investment it makes sense to implement arrangements that are consistent across the country, standards-based, multi-modal and all-hazards.

This discussion paper proposes a strategic context in which consideration can be given to developing all the elements necessary for effective information flow and warnings to the community. The model outlined flags that each element is important, with one relying on the other for strength and effectiveness. Dealing with one element in isolation from the other is of less value.

# REFERENCES


AFAC, 2005, *the Australasian Inter-service Incident Management System (AIIMS)* – A Management System for any Emergency, AFAC, Melbourne

*Australian Government (2008), Emergency warnings – choosing your words* [Internet pdf] Barton ACT, Commonwealth of Australia

Available at: http://www.ses.tas.gov.au/Plans/files/CommunityWarningsChoosingWords08.pdf

(Accessed 4 May 2009)

Bureau of Meteorology, 2009, *Other warnings and alerts* [internet] Bureau of Meteorology Available at: http://www.bom.gov.au/catalogue/warnings/WarningsInformation_OTHER.shtml

[Accessed May 4 2009]

Cottrell A, Bushnell S, Spillman M, Newton J, Lowe D & Balcome L (2008) *Community perceptions of bushfire risk* In Handmer and Haynes ed, Community Bushfire Safety, CSIRO Publishing, Collingwood, Chapter 2

Council of Australian Governments (COAG) 2003 *'Natural Disasters in Australia – Reforming mitigation, relief and recovery arrangements'*; Canberra Australia

Available at: http://www.ema.gov.au/www/emaweb/rwpattach.nsf/VAP/(9929279492 3AE8E7CBABC6FB71541EE1)~Natural+Disasters+in+Australia+-+Review.pdf/$file/Natural+Disasters+in+Australia+-+Review.pdf

Council of Australian Governments, 2004, *'National Inquiry on Bushfire Mitigation and Management'* Canberra, Australia

Available at: http://www.coagbushfireenquiry.gov.au/report/pdfs/report_small_size.pdf

Elsworth G, Gilbert J, Rhodes A, Goodman H (2009) *Community Safety Programs for Bushfire: What Do They Achieve, and How?* Journal of Emergency Management, due to be published 31 May, 2009

Fire and Emergency Service Authority of WA, 2009, *State Alert,* [Internet] Western, Perth, FESA

Available at: http://www.fesa.wa.gov.au/internet/Alerts/default.aspx

[Accessed 4 May 2009]

Handmer J and Haynes K ed 2008, *Community Bushfires Safety*, CSIRO Publishing, Collingwood

NSW Government, 2009, *the Standard Emergency Warning Signal,* [Internet] Sydney, NSW Government.

Available at: http://www.emergency.nsw.gov.au/sews

[Accessed 4 May 2009]

OASIS Emergency Management TC, 2005, *Common Alerting Protocol, v. 1.1:* OASIS, Billerica, MA USA

Available at: http://www.oasis-open.org/committees/download.php/14759/emergency-CAPv1.1.pdf

Owen C, Hickey G, J Douglas (2008) – *Mapping information flow during critical incidents*, Melbourne, The Department of Sustainability and Environment

Available at http://eprints.utas.edu.au/7855/1/Mapping_information_flow_during_critical_incidents.pdf

Queensland Government (2005), *The Standard Emergency Warning Signal and its use in Queensland* [internet pdf] Queensland, Queensland gFire and Rescue Service, Queensland

Available at: http://www.disaster.qld.gov.au/disasters/pdf/sews_guidelines.pdf

[Accessed 4 May 2009]

Rhodes A, 2005, Does *Community Education Make a Difference?* AFAC Bushfire CRC Conference, Auckland, New Zealand, 5-7 October 2005. Bushfire CRC, Melbourne. Available at:

http://www.bushfirecrc.com/publications/downloads/Does_community_education_make_a_difference.pdf

(Accessed 4 May 2009)

Rhodes A, Goodman H, 2006, *Where there's smoke there's fire – isn't there? Understanding community response to the threat of the Eyre Peninsula bushfire;* AFAC Bushfire CRC Conference, Melbourne, Australia, 10-13 August 2006. Bushfire CRC, Melbourne. Available at:

http://www.bushfirecrc.com/documents/poster_progc%20-%20Rhodes.pdf

(Accessed 4 May 2009)

Victorian Government, 2007, *the Standard Emergency Warning Signal,* [Internet] Melbourne, Victorian Government. Available at: http://www.oesc.vic.gov.au/wps/wcm/connect/OESC/Home/Managing+Emergencies/Initiatives/OESC+-+Standard+Emergency+Warning+Signal+(SEWS)

[Accessed 4 May 2009]

Bushfire CRC *Conference citing Boxelaar & Reinholtd*, 2000; Drabek, 1999; Mileti & peek, 2000

# BIBLIOGRAPHY


Carson C (2004) AFAC Conference Paper: *The Information Unit: Effective Information Flow to the Community at Risk During the Onset of Wildfire in Victoria.*

Office of the Emergency Services Commissioner (2006), *Community Information and Warning Systems; The Report of the Trial and Evaluation,* [Internet pdf] Melbourne, Office of the Emergency Services Commissioner

Available at: http://www.oesc.vic.gov.au/wps/wcm/connect/OESC/Home/Managing+Emergencies/Initiatives/OESC+-+Community+Information+and+Warning+System+(CIWS)

[Accessed 4 May 2009]

Lawson A (2005), DRAFT *AFAC Position – Bushfire Warnings*

Gilbert J (2007), *Community education, awareness and engagement programs for bushfire: an initial assessment of practices across Australia,* Melbourne RMIT University

Available at: http://www.bushfirecrc.com/research/downloads/Communities-Report-Gilbert-C0701.pdf

[Accessed 4 May 2009]

Australian Government (2008), *Discussion Paper: The development of national principles for the dissemination of emergency warnings to the community*

International Telecommunications Union, Geneva Switzerland, Study Group 2 (2007): *Guidelines for using a content standard for alerts and notifications in disasters and emergency situations*

EAS – CAP Industry Group (2008), *Media Advisory – Emergency Alert System Manufacturers and Service Providers Develop Profile for Using Common Alerting Protocol in Broadcast EAS*

UN-SPIDER – *United Nations Platform for Space-based Information and Disaster Management and Emergency Response;* http://www.unoosa.org/oosa/en/unspider

# DEFINITIONS

**Alert** - condition of heightened watchfulness or preparation for action

**Application** - a program that gives computer instructions that provide the user with tools to accomplish a task

**Information** – Data in a context to which meaning has been attributed

**Informed** - having much knowledge or education

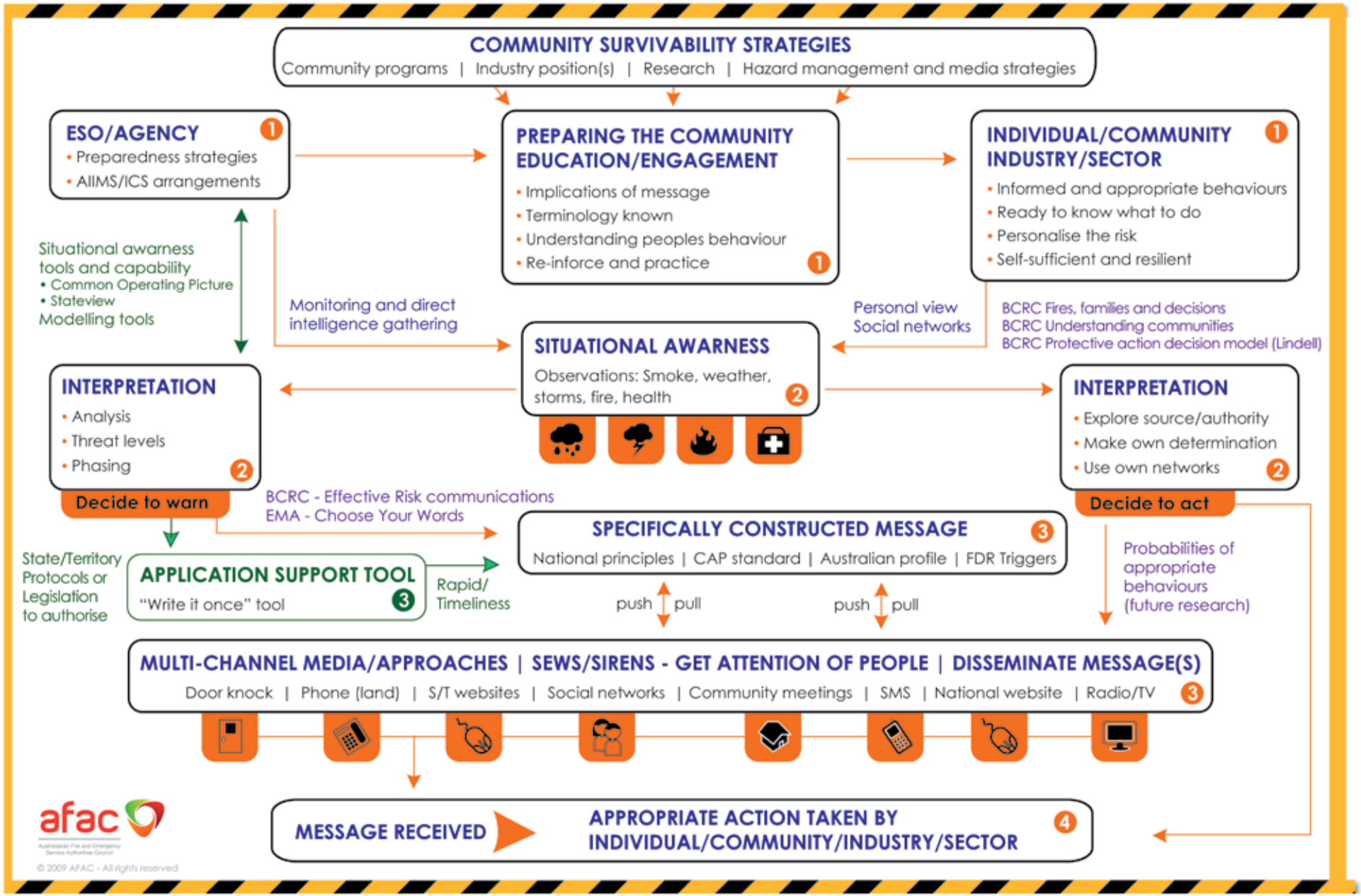
**Informing** - an act that conveys information

Interpret - make sense of; assign a meaning to

**System** – a group of independent but interrelated elements comprising a unified whole.

**Warning** - a message, notification of something, usually in advance; informing of danger

# A NATIONAL SYSTEMS APPROACH TO COMMUNITY WARNINGS




afac