Background briefings on emerging issues for fire managers from AFAC and Bushfire CRC.

bushfire CRC afac

FIRE NOTE

ISSUE 118 OCTOBER 2013

MULTI-AGENCY EMERGENCY MANAGEMENT COORDINATION ABOVE THE IMT

SUMMARY

Better management of emergency incidents can reduce any adverse consequences on communities. As such, the aim of this project was to better understand how multi-agency emergency management coordination at regional and state levels can be improved.

Research has found the challenges facing emergency managers working at the strategic level, above the incident management team (IMT), are different in both content and context from the challenges facing personnel working at a local IMT level (Paton and Owen, 2013; Owen *et al.* 2013). At a strategic level, managers are typically engaged in incidents that are of high potential consequence, are non-routine and have significant political involvement. These managers are also concerned with longer term issues related to post-incident support, such as community well-being and recovery. Assessing the overall response and recovery effort is also important at the strategic level.

The research reveals a range of challenges and changes in the emergency management industry that will need to be addressed strategically. Key industry groups are identifying options and strategies to address these, in partnership with the research team.

ABOUT THIS PROJECT

This *Fire Note* reports on the *Effective incident management organising above the IMT* project, conducted under the Bushfire CRC theme *Managing the threat.*

AUTHORS

Dr Christine Owen (right), Bushfire CRC Project Leader, Dr Ben Brooks, Professor Douglas Paton, Dr Roshan Bhandari and Steve Curnin, University of Tasmania and Dr Chris Bearman, CQUniversity. For more information, contact christine.owen@utas.edu.au

▲ This study has investigated what enables and constrains effective performance at the regional and state levels of emergency management. *Photo: NSW Rural Fire Service*

CONTEXT

In reviews conducted following emergencies in Australia, as well as overseas, failure in emergency incident management coordination in major incidents has been well documented for a long period of time. This project aimed to identify ways to enhance the effectiveness of emergency management at regional and state/national levels to reduce the impact on communities.

BACKGROUND

In large emergency incidents, breakdowns of information flow and coordination are common and always problematic.

The findings from a range of post-incident reviews and inquiries conclude that there is a need to look beyond creating new standard operating procedures or adding to existing role responsibilities to address these breakdowns. These reviews indicate that despite the good work that has occurred to build a robust inter-service incident management system, in overwhelming incidents the first point of breakdown is typically in communication and coordination.

Ensuring the accuracy and relevance of the information flow from the Incident Management Team (IMT) and the coordination layers operating above the IMT requires a clearly defined understanding of various information needs at critical points. In particular, what is relevant information and what is not.

The theoretical work conducted in this area suggests that at the individual level, the internal mental representation of the event (i.e. the mental model) is a key conceptual construct that determines the transmission of information in ways that are relevant, accurate and timely. At the team level these mental models need to be shared to support team performance and to support distributed situation awareness between teams.

Practical tools could be developed to improve decision making, assisting incident managers deal with increasingly complex, time-pressured and multi-team situations. *Photo: CFS Promotions Unit*

BUSHFIRE CRC RESEARCH

The research has investigated what enables and constrains effective performance at the regional and state levels of emergency management (and at a national level in New Zealand). The research has examined:

- Existing practices and challenges facing those involved in managing emergency incidents at regional, state and national levels.
- Key factors involved in breakdowns in coordination.
- Changes that might be needed to support effective emergency management at regional/state and national levels.
- Education and training strategies to enhance capability.

Data collection and analysis has involved:

- Interviews with key personnel who work at a strategic level of emergency management (n=34).
- Two organisational surveys (n=206; n=103) of personnel working in regional and state and national levels of emergency management.
- Observations of team decision-making in simulation and state-level emergency operations centres in Tasmania, Victoria, New South Wales, the Australian Capital Territory, Queensland and New Zealand.
- Classification and analysis of human factors issues identified in major inquiries.
- Reviews and analysis of training exercises and training strategies for capability development.
- Problem-based learning consultation with key industry stakeholders.

This research has ultimately been drawn together to develop a discussion paper and identify strategies for the future.

In investigating the various roles and responsibilities of regional and state and national level personnel, Bhandari and Curnin (2012) found that there are different governance processes within the IMT and related arrangements in each state and territory. These differences arise from different legislation and different arrangements put in place by state governments. Staff from one state/territory may not be familiar with the arrangements in other state/territories, and indeed even the spatial configurations of emergency operations centres are all different. Such differences are significant because states and territories call on each other for support at a range of levels in major incidents, which also makes it challenging for other support agencies who may be required to help (e.g., critical infrastructure, health services).

In investigating factors that lead to coordination failure, Bearman *et al.* (2010; 2012) and Brooks (2011) identified breakdowns and disconnects as important contributing factors. A breakdown can be formally defined as a situation where there is a failure in coordination, cooperation or communication that leads to a temporary loss in the ability to function effectively. A breakdown may contain several disconnects between the individuals or teams, with Bearman *et al.* (2010) identifying three types of disconnects: operational; informational and evaluative. Following on from this, the research found there are two main reasons that breakdowns and disconnects in the functioning within and between regional and state/national level teams occur: (i) a lack of shared understanding of the situation, and (ii) inconsistent plans or differences in opinion about how to execute that plan exist.

END USER STATEMENT

The pursuit of improvements in the way we manage and use information to build systems that support decision making is now acutely focused on regional and state level personnel and structures. The critical insights for emergency service organisations that are coming from the work of this project are immensely valuable in this task. Those working at this level are well aware of the challenges of managing out of scale events and are searching for options that will support them in identifying gaps in preparedness and planning at all levels of decision making. Agencies can begin applying the knowledge already gained from this project and will continue to benefit from the understanding that is being built by the research team.

– Liam Fogarty, Director Knowledge and Engagement, Department of Environment and Primary Industries Victoria.

RESEARCH OUTCOMES

Clarification is needed to resolve ambiguity around how concepts such as command, control and coordination are applied at the state level. The function of the regional level in the structure of incident management continues to be debated, with some jurisdictions removing this layer and others maintaining it in different ways, e.g., in the ACT and Tasmania, the jurisdiction is small enough that the regional layer is not required; in New South Wales, the role of the region is still present but is centralised within a State Operations Centre. If the regional level is maintained, one of its functions may be to provide direct oversight of IMTs and to resolve evaluative disconnects identified in Bearman *et al.* (2010).

The findings from the secondary sources analyses by Brooks (2011) indicated that incident management systems are often reduced in capacity during emergency incidents. This raises the challenge of how IMTs are able to manage under conditions that are less than ideal, and in particular how they might:

- Recognise that the situation they are in is degrading.
- Develop strategies to assist people to manage under these conditions (in other words, to 'cope ugly').

The phrase 'coping ugly' has been coined by the research team to identify less than ideal situations where personnel still need to get the job done (see in particular Brooks and Owen 2012). From a systems perspective, this involves the drift from a safe to a high risk performance, to situations that may include accidents and incidents. Personnel need ways to visualise approaching or crossing these boundaries so that coping strategies can be adjusted.

Based on the consultations with key stakeholders within the emergency services industry about the implications of the research, seven challenges have been identified. Their implications have been written into a discussion paper currently circulating to stakeholders to prioritise strategies for the future. The challenges are:

1. Increased uncertainty, complexity and convergence.
2. Disaster risk reduction and policy disconnects.
3. Community expectations and resilience.
4. Social media, networking, and emergence.
5. The political-operational nexus.
6. Measuring emergency management effectiveness.
7. Development and capability.

▲ Public and political expectations of emergency coordinators are challenging when incidents are of high potential consequence, non-routine and have significant political involvement.
Photo: NSW Rural Fire Service

If you would like to contribute to this final component of the project please contact christine.owen@utas.edu.au

There is also a need to develop leadership and capability. The research findings also acknowledge the improvements in contextual learning and leadership education that have already occurred within the industry. These can be used as opportunities to enhance the development of non-technical skills within and above the IMT. At the same time, this must include the development of new tools for practice (such as 'coping ugly' in conditions that are less than ideal and degrading).

Training and exercising are key components of building capability. In investigating emergency management training and exercising activities, Brooks and Owen (2012) found there are currently some significant constraints. Opportunities and resources for training above the IMT are limited, whilst emergency incidents are changing in terms of complexity, intensity and duration. As a result, public and political expectations of coordinators are challenging, if not sometimes impossible, to meet.

HOW THE RESEARCH IS BEING USED

AFAC stakeholders are reviewing the implications outlined in the discussion paper to assist in prioritising strategies for change to build capability in the future. Through those consultations five core elements or themes have been identified as part of a change framework. They are:

- **Doctrine**: Principles (and values) governing practice, relationships, structure and processes.
- **Governance**: Processes and structures that provide role clarity in key decision areas and reporting relationships (within and across jurisdictions).
- **System oversight and evaluation**: Processes and tasks associated with providing quality assurance about the integrity of the emergency management system in place to manage incidents.
- **Developing leadership and capability**: Developing and maintaining decision making, communication skills and meta-leadership for building and sustaining cross institutional relationships.
- **System enablers**: Resources and tools for information gathering, analysis, dissemination and decision making.

The consultations are taking the form of a virtual workshop (online forum), the results of which will reported to the AFAC AIIMS Steering Committee for confirmation.

FUTURE DIRECTIONS

The need to be able to articulate how emergency management performance is measured and assessed is a serious concern that the emergency management industry has recognised needs to be addressed in the future. At the heart of this issue is the need to maintain effective teamwork during out of scale events (Bearman *et al*. 2013).

There is a need to work with the industry to develop a suite of practical tools that can improve decision making across different types of emergency management contexts, helping people deal with increasingly complex, time-pressured and multi-team situations. There is also a need to design methods capable of systematically evaluating agencies operational activities in this area.

As this project concludes, the emphasis will be on continuing to synthesise and publish the findings to date, as well as on consulting with the industry to develop an appropriate framework for change for industry consideration.

▲ The research aims to enhance the management of major emergency incidents.
Photo: CFA Communities and Communication

REFERENCES /FURTHER READING

Bearman C, Grunwald J, Brooks B and Owen C, 2012, Breakdowns in Coordinated Decision Making At and Above the Incident Management Team: An analysis of three large scale Australian Bushfires, manuscript under review.

Bearman C, Paletz S, Orasanu J and Thomas M, 2010, The breakdown of coordinated decision making in distributed systems, *Human Factors: The Journal of the Human Factors and Ergonomics Society,* 52(2),173-188.

Bearman C, Owen C, Brooks B and Grunwald J, 2013, Problems of maintaining effective teamwork during out of scale events, Proceedings of the Bushfire CRC and AFAC 2013 Conference Research Forum, 2 September, Melbourne.

Bhandari R and Curnin S, 2012, Case study of incident management approaches: Examining state level arrangements, University of Tasmania and Bushfire CRC.

Brooks B, 2011, Summary of issues emerging in coordination breakdown from secondary sources (in particular inquiries and similar), University of Tasmania and Bushfire CRC.

Brooks B and Owen C, 2012, Training Pathways for Effective Emergency Management Coordination above the IMT, University of Tasmania and Bushfire CRC.

Curnin S and Owen C, Obtaining information in emergency management: a case study from an Australian emergency operations centre, *International Journal of Human Factors and Ergonomics,* in press.

Curnin S and Owen C, Spanning organisational boundaries in emergency management, *International Journal of Public Administration,* in press.

Owen C, 2012a, Challenges and implications facing senior personnel engaged at regional and state levels of emergency management operation coordination, University of Tasmania and Bushfire CRC.

Owen C, 2012b, Information systems implications for information flow between layers in emergency management coordination, University of Tasmania and Bushfire CRC.

Owen C, Bosomworth K, Bearman C and Brooks B, 2013, Discussion paper: challenges for strategic emergency management, University of Tasmania and Bushfire CRC.

Paton D and Owen C, 2013, Incident management in Penuel B, Statler M, and Hagen R (Eds), *Encyclopedia of Crisis Management,* 1, Sage, Thousand Oaks, California.

Fire Note is published jointly by the Bushfire Cooperative Research Centre (Bushfire CRC) and the Australasian Fire and Emergency Service Authorities Council (AFAC). This Fire Note is prepared from available research at the time of publication to encourage discussion and debate. The contents of the Fire Note do not necessarily represent the views, policies, practices or positions of any of the individual agencies or organisations who are stakeholders of the Bushfire CRC.

Bushfire Cooperative Research Centre
Level 5/340 Albert Street
East Melbourne VIC 3002
Telephone: 03 9412 9600
www.bushfirecrc.com

Bushfire CRC is a national research centre in the Cooperative Research Centre (CRC) program, formed in partnership with fire and land management agencies in 2003 to undertake end-user focused research.
Bushfire CRC Limited ABN: 71 103 943 755

Australasian Fire and Emergency Service Authorities Council
Level 5/340 Albert Street
East Melbourne VIC 3002
Telephone: 03 9419 2388
www.afac.com.au

AFAC is the peak body for Australasian fire, land management and emergency services, creating synergy across the industry. AFAC was established in 1993.