Discussion Paper Synopsis: Challenges for Strategic Emergency Management

Dr Christine Owen

Dr Karyn Bosomworth

Dr Ben Brooks

June 2013

bushfire CRC

Contents

Who is this paper for?

This discussion paper is aimed at decision-makers, policy-developers and stakeholders who need to ensure that the strategic emergency management sector is able to meet future challenges which includes supporting communities to better prepare for, manage and recover well from emergency events.

What is this paper about?

The discussion paper has emerged from research undertaken through the Bushfire Co-operative Research Centre examining what enables and constrains effective performance at the strategic level of emergency management. This synopsis contains the highlights. The full paper is available, in the first instance from Christine.Owen@utas.edu.au and will shortly be available throught the Bushfire Co-operative Centre http://www.bushfirecrc.com

Emergency events that are unprecedented in intensity and geographic spread and have significant impacts on communities are called "out of scale events". In major out-of-scale emergency events there are a range of emergency management activities performed by people working at operational, tactical and strategic emergency management levels. At an operational level, first responders are working directly on the front line of the fire or incident ground. At a tactical level local incident management teams work at supporting front line responders in containing and mitigating the event – this includes enabling communities to make good decisions. At a strategic level (which may be regional state or national) there is a focus on two elements: oversight of incident management operations and consequence management for longer term recovery.

STRATEGIC

TACTICAL

OPERATIONAL

The strategic level

The research has identified that the challenges facing emergency managers working at the strategic level are different in both content and context from the challenges facing personnel working at a local incident management level. The strategic level is typically engaged in high-consequence, non-routine and out-of-scale events that are likely to have multiple (direct and indirect) consequences and high political involvement. At a strategic level there is a longer term concern about strategies post-event to support community well-being and recovery. The strategic level will be involved when there is a need to prioritise resources across potentially multiple events and regions; and when local or state level resources are likely to be overwhelmed or exhausted, requiring inter-state or international deployment requests. There is also significant engagement with political and whole of government liaison. Finally there is a focus at the strategic level on assessing the reliability of the overall response and recovery effort.

> **Strategic Level**
>
> High consequence, non-routine, out of scale events
>
> High political involvement
>
> Longer term concern
>
> Prioritising resources across multiple events and regions

The underpinning research

The research team[1] have been engaged in conducting research[2] to address a range of research questions:

1. *How is emergency management coordination above the IMT organised?*

The research undertaken (through interviews, observations, and case studies) found that each jursidication organised coordination differently, in part because each jursidiction is governed by different legislation and State government bureaucratic arrangements. Nevertheless there were some common activities and purposes that could be identified. Regional and State/National[3] level emergency coordination engaged in

- Problem detection and situation assessment

- Task execution and resource management

- Prediction and planning for future states

- Sense-giving, sense-making and the development of strategy

- Evaluation and quality assurance

2. **How does information flow to and from regional and state levels of emergency management influence the capacity of personnel to adjust to emerging conditions?**

Interviews and analyses of secondary sources (e.g., coronial inquiries) aided in identifying both information flows and their blockages in large out-of-scale events. Findings include:

- During major events decisions made at regional and state/national levels are regularly made under a good deal of uncertainty,
- When poor decisions were made this coincided with limited discussions about the level of uncertainty.
- Personnel reported that they needed to manage a number of competing trade-offs and demands from a variety of stakeholders. These included political leaders and their staff as well as relationships with other government departments, businesses and members of affected communities.

3. **How has a lack of shared mental models by key personnel in emergency incident management led to breakdowns in coordination in previous incidents?**

Interviews and secondary source analyses were employed to address this research question. A breakdown is 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 (Bearman et al. 2010). The findings include:

---

[1] Dr Christine Owen, Dr Chris Bearman, Dr Ben Brooks, Dr Roshan Bhandari, Prof Douglas Paton and PhD students Steve Curnin, Jafar Hamra and Alireza Abbasi

[2] For more details of the various research methodologies used and the research outputs, please go to http://www.bushfirecrc.com/projects/8-1/effective-incident-management-organising

[3] Some of the research was conducted in New Zealand which has a National level approach rather than a State level.

- Breakdowns in coordination, particularly at regional and state/national levels are wide-spread, and occur at all levels of incident management and are often not resolved effectively

- There is a need to develop better ways of measuring performance and to further develop the capacity to provide oversight of IMT's, particularly in the context of increased uncertainty, complexity of events and the way these converge to increase the demands on incident management delivery

4. How might we best train and educate personnel in the most effective emergency management coordination above the IMT?

A review of existing training methods was conducted and evaluated in light of existing literature in safety management, training systems for high risk industries and emergency management competencies. Interviews were also held with subject matter experts. A number of reports have been prepared that have investigated current approaches for training and simulation within emergency management coordination in Australia and New Zealand (see Brooks & Owen, 2012). Findings include the following:

- The peer-reviewed literature on training for safe and reliable systems in high risk environments indicates the important of training to develop both Technical skills (e.g., knowledge of fire behaviour) and Non-Technical Skills (NTS) (e.g., decision-making, maintaining situational awareness, leadership, communication) and that these categories of NTS are reasonably consistent across high risk environments. In the fire and emergency services industry pathways for technical skills are well articulated. Pathways to develop non-technical skills is more limited.

- In the Emergency Management domain, training pathways for skill development for personnel working above the IMT are even more limited. In some agencies it was not possible to identify training pathways for personnel working above the IMT. It appeared that these agencies relied on the earlier skills learned at operational and tactical levels, which may have been learned 5-10 years earlier.

- There are however some localised innovations that have evolved that recognise the need for contextual learning (as indicated by the recent work by AFAC to develop human factors support material as well as the growing popularity of using the Staff or Field Ride concept as a vehicle for learning).

5. What challenges need to be managed in the future?

These research outputs have been reviewed and discussed in consultation with the senior emergency management leaders including the AFAC AIIMS Steering Committee which has been acting as a rference group. The purpose of these interviews and workshops has been to validate the key issues emerging from the research and to articulate their implications that will need to be addressed in the future. This final research question is part of the consultation process to which this Discussion Paper is directed. To begin it is important to contexualise the drivers for change influencing the industry.

Drivers for change

The drivers of change and the research findings outlined above have important implications for the future of emergency management in Australia and New Zealand. Drivers for change in the industry come from a range

of external and internal sources. External sources include, cyclic and longer term changes in climate leading to vulnerabilities to communities, industries, infrastructure and the environment. These changes intersect with socio-economic shifts in global economics, demographics and populations which can also increase vulnerability for communities. Internal drivers for change come from changing workforce demographics as well as workplace rationalisation in the context of economic restraint as well as changes driven by recommendations from inquiries.

Recent experience and future modelling of climate change suggests that the increased frequency, intensity and duration of emergency events experienced over the past 5-10 years are likely to become the "new normal". Within communities there is now increased interdependency between critical infrastructures (in energy and communications utilities, transport, water and agriculture) increasing our reliance on them and thus increasing our vulnerability to system impairment or failure. Already stressed ecosystems are likely to be more susceptible to intense fire, and alternately, less able to moderate the impact of storms, floods and storm surges (e.g., as soils become increasingly water phobic). New risks might also arise through the significantly increased probability of two or more natural disasters occurring at the same time, potentially exhausting the resources required for response and recovery. The implications of combined events must be considered when planning response strategies that assume an ability to mobilise resources from neighbouring regions – or even overseas – to assist with emergency management.

The challenges

Through the research and consultations with key stakeholders within the emergency services industry, seven challenges have been identified. These are:-

Challenges:
1. Increased uncertainty, complexity and convergence
2. Disaster Risk Reduction and policy disconnects
3. Expectations and 'resilience' of communities
4. Social media, networking, and emergence
5. The political-operational nexus
6. Measuring emergency management effectiveness
7. Development and Capability

The implications of these challenges for the future are discussed below. The first five pertain to the contextual drivers influencing the emergency management sector and the last two are enablers internal to the sector. These challenges are outlined for continued consultation with key industry stakeholders to formulate proposed strategies to address the challenges in the future. Questions for discussion have been highlighted.

1.   Increased uncertainty, complexity and convergence

Managing out-of-scale emergency events presents increased levels of complexity and uncertainty for strategic emergency management teams. Increased numbers of events is likely to lead to increased risk of physical injury to personnel and community members; increased exposure to health-related pathogens and increased psychosocial and mental health outcomes for those affected.

What are three key issues that need to be addressed for unprecedented events to be well-managed? And why are they key?

Out-of-scale emergency events are likely to lead to an increased demand for emergency services. This occurs at a time when emergency services organisations need to manage with economic cut-backs, workforce rationalisation and within a context of an aging workforce. In addition the supply of services and resources historically relied upon in an emergency from, for example, local government are no longer available due to workforce changes such as downsizing and outsourcing.

More out-of-scale events are going to lead to higher cognitive demands placed on strategic emergency management leaders and team members. The changes in demographic structures will result in a widening gap in experience for personnel working in these teams (There is an increased number with less experience than their predecessors because younger and less experienced personnel need to step up and manage sooner than typical career progression pathways available in the past, and there is a increased reliance on older personnel who are in more demand. In addition to this there will be an increased number of stakeholders who need to be engaged and involved, resulting in larger teams and an increased interdependency on coordination between stakeholder teams. These changes are likely to result in greater potential for breakdowns in coordination, particularly when coupled with the other pressures discussed below. The adversarial nature of post-event inquiries has the potential to degrade decision-making as members of emergency management teams become more risk adverse.

What changes or steps need to be taken to move us towards being able to better manage out-of-scale events? Right now? In the medium to longer term?

Converging pressures in incident management delivery

There is increasing pressure to provide seamless lateral and hierarchical delivery of services and real-time information to a variety of stakeholders. These pressures come from the increases and diversity in the information media streams available that all require servicing and resourcing; the challenges of interoperability with other organisational interfaces; and the exponential rise in expectations for real-time information from a variety of stakeholders as well as meaningful and well understood forecasts.

The changes in governance arrangements and post 2009 attempts at clarification have also drawn attention to the need to build closer relationships with those agencies/authorities. The convergence needed with other stakeholders, such as the police services was another area in need of attention.

In addition to this there will be an increased number of stakeholders who need to be engaged and involved, resulting in larger teams and an increased interdependency on coordination between stakeholder teams. These changes are likely to result in increased demands for information and a greater potential for breakdowns in coordination, particularly when coupled with the other pressures discussed below.

The implications for strategic emergency management is that these changes increase interdependencies in decision-making within and between teams as well as increasing pressures on those teams due to the tighter coupling necessary for consequence management. These increased pressures on team decision-making will also be exacerbated by the necessary increases in team size as more stakeholders need to be engaged. Greater attention is also needed to external liaison between teams for multi stakeholder coordination and to technologies to support distributed situation awareness. Addressing these challenges will provide opportunities for clarification of scope and responsibilities of various organisations and other emergent opportunities will come with breakthrough technologies to provide distributed situation awareness to aid in coordination.

2. Disaster Risk Reduction and policy disconnects

There is a bias toward emergency management response at the expense of implementing Disaster Risk Reduction strategies. Populations and the built environment continue to develop in hazard-prone areas.

Infrastructure is aging. Areas at risk of flooding continue to be inundated and transport infrastructure (e.g., roads and rail links, continue to be impacted in most years). These impacts lead to a range of consequences including disrupting travel for local populations and tourists and the transportation of resources for communities and businesses. Without suitable Disaster Risk Reduction implementation communities that have hitherto not experienced severe natural hazards are

What steps need to be taken to better connect Disaster Risk Reduction principles (defined in the discussion paper) and strategic emergency management? Why are these steps important?

likely to be exposed in the future. We are also becoming more urbanised as rural communities shrink in size. In particular, more populous urban centres may have increased exposure. It is critical that we learn from and overcome past cases of where such communities have been surprised by a non-routine event and caught unprepared.

What changes are needed to increase the effectiveness of current arrangements at local/State/National levels in emergency management response and recovery for out-of-scale events?

In addition, there is a plethora of research pointing to the problematic and disconnected nature of government policy, particularly to address complex and multi-disciplinary problems such as climate change and emergency management. In addition there is an uneasy relationship between the state and the Australian government in terms of emergency management. There are also tensions between administrative areas of responsibility when government bureaucracies typically divide up discrete responsibilities, (e.g., emergency services, the environment, public health, infrastructure etc.), which can create silo mentalities within organisations as well as horizontal rivalries guarding responsibilities and resources.

Key shifts in the emergency management policy arena has seen the opportunity arise that other bureaucracies and organisations that typically do not see emergency management as their core business (e.g., education, privatised energy utilities) to better recognise their role.

The implications for strategic emergency management teams are that they need to be engaged in a broader and longer term view of disaster planning. There will need to be better ways of conceptualising and managing unanticipated and emerging problems. There is a need for longer term strategic perspectives and a need for greater attention and engagement with Disaster Risk Reduction policies and approaches, including resilience building.

Policy fragmentation undermines the potential for integrated and coordinated approaches to planning, preparedness, response and recovery across jurisdictions in strategic emergency management. Even more so when considering the longer-term and strategic perspective of Disaster Risk Reduction that also requires engagement with agencies not traditionally included in emergency management

3. Expectations and 'resilience' of communities

The research found perceptions that community and elected representative expectations were increasingly unrealistic and that while the policy rhetoric included exhortations to enhance community resilience the reality was that resilience in some communities had actually declined. This results in greater expectations on emergency services in times of need with the anticipation of individualised or personalised attention. This is consistent with a prevailing attitude that societal life should not be disrupted and somehow living within our existing landscape and environment is risk-free.

Part of the problem is that there is not a common understanding of what constitutes resilience and that there are different perspectives on what this means. However, attempts at enhancing self-reliance are also undermined by mixed and sometimes contradictory messages which both emergency services organisations and the government have historically provided.

Communities and individuals vary in their capacity to prevent, prepare for, respond to, and recover from the impact of hazards. This is because existing policies and practices are built more upon assumptions of a stable environment than on assumptions that risks in the future will change and expand.

How can emergency service agencies contribute to enhancing community resilience to live with and in hazard-prone environments?

What needs to change for community members to be fully engaged in sharing responsibility during out-of-scale emergency events?

The research also found that that there is a perception that the collective consequence of how we have chosen to live within our communities is presently not sustainable and is unlikely to bear up to the pressures placed on our society from out-of-scale events. There is an expectation on the part of both government and the community that emergency service organisations will cope with any event regardless of its scale. There is no clear understanding of how or what needs to change to address this misconception.

Senior emergency managers recognise the need to develop a concerted approach to bring about the community and behavioural change needed to facilitate wide scale resilient communities. Their concern however was also about the length of time this social change will take, if the policy vision is even achievable,

and in the immediate future, how emergency events within existing community capacity and attitudes can be managed.

There is a need for increased sensitivity to different community needs, especially groups in communities who, for various reasons, may be more vulnerable to hazards. Strategic emergency managers need to liaise with political officials to ensure messages for communities are clear about expectations and, to make nuanced judgements about the various information sources flowing to and from community members via social media.

It is also important to engage multiple stakeholders in discussion about what are realistic expectations, which includes challenging perceptions of acceptable and unacceptable risk, as well as responsibilities.

4. Social media, networking and emergence

Social media has become increasingly important in recent disaster events. In part this is because of the proliferation of multiple social media sources and the communities need to fill the vacuum if information is not forthcoming from emergency services.

How can emergency services harness the use of social media, networking and emergent groups in preparing for, responding to and recovering from out-of-scale emergency events?

With these changes come challenges in how strategic emergency management must live with the tensions of potential information distortion and self-organised emergence on the part of community members in sharing information outside the official emergency management channels. The value of social media and the engagement of social media sources within emergency management remains a controversial and contested space for senior emergency management leaders.

What are the opportunities and constraints for emergency services in engaging community social media participation as part of operational response? How might these be addressed?

The implication for strategic emergency management teams is that information from diverse sources and variable quality now needs to be taken into consideration. It needs to be both pushed out to community members, as well as pulled in to emergency management planning as intelligence to inform the operational response. This presents an opportunity for strategic emergency managers to enter into a dialogue and partnership with community members. However it also places additional strains on resourcing of information and intelligence units.

5. The political-operational nexus

Political representatives of communities have a key role to play in emergency events particularly in their relationship to

During out-of-scale events, what should political leaders do to meet community needs? And what changes are required to make this happen?

government administration and decision-making. Yet the roles and relationships between political and operational ends of an emergency management response can be challenging at a strategic emergency management level. Issues surrounding community and political expectations can come into stark relief during emergency events, especially of major disasters such as Queensland floods or Victoria's fires of 2009. Given the reciprocal importance between the arena of political engagement and emergency management operations, it is critical that there are strong connections and working relationships between the two spheres. Yet, the way this currently works in practice is ad hoc.

For strategic emergency management leaders there is an opportunity to engage political decision-making before times of crisis in order that operational goals, possibilities and constraints are well-understood and therefore there can be productively functional relationships in times of crisis.

What does the community need from political leaders during out-of-scale events?

The political-operational challenges demand that the emergency management sector engage the polity before, during and after emergency events. This could increase the skills of strategic emergency management teams as well as emphasising the need for full engagement of political representatives in the entire planning, preparedness, response and recovery spectrum. Moreover, it calls into question the roles and functions of strategic emergency management teams and how the effectiveness of tactical, operational and strategic emergency management efforts are monitored and measured.

6. Evaluating emergency management response effectiveness

Developing criteria to evaluate the outcomes of how emergency events are managed is in need of attention. Whether or not an emergency event is managed successfully is currently judged by external sources (such as the media) in an often post-hoc and arbitrary manner and depends on whether or not what happened in the end was a good outcome. Relying only on whether the outcome was good has been found to be flawed in a number of other safety-critical industries. The outcome from an emergency event might have been successful despite risks and unsafe practices being undertaken. Conversely, all the best measures and processes might have been in place and performed well but the outcome might have still had negative impacts because of the nature of the event. These may have indeed been worse and harm minimised.

If risk cannot be eliminated, what steps need to be taken to develop an agreed set of measures of the effectiveness of preparedness, response and recovery management?

It is also important to come to grips with the fact that emergency management operations are frequently degraded (e.g., communications failure; insufficient resources; escalating and uncontrollable conditions) and that there is a need to support personnel in managing despite these conditions and to recognise migration from safe to unsafe conditions. What is required is adaptive behaviour, effective teamwork

At a strategic level, what constitutes an appropriate set of objectives for out-of-scale events?

What are the indicators of movement toward vulnerable or unsafe conditions?

coordination, learning as part of the process of adaptive coordination and flexible strategies.

There is a need to develop agreed process and outcome measures for risk, risk mitigation and the efficiency and effectiveness of emergency management policy and operations to aid in the assessment of emergency management performance and to manage expectations.

> *There is a need to develop a suite of process and outcome measures tailored to the sector. Strategic emergency management teams need ways of gaining real-time operational feedback on progress to monitor workload conditions for contingency planning. A future challenge is a need for shared mental models within and between teams at all levels of the emergency management system (including politics and media) as well as strategies to monitor performance within complex networks of arrangements. The opportunity to develop process- and outcome- measures appropriate to the sector can assist personnel and external stakeholders to better recognise the challenges; including the migration from safe to unsafe operational boundaries under degraded conditions. These pre-agreed measures would provide personnel with some protection from post-hoc adversarial inquiries.*

7. Development and capability

There are challenges in managing within the current emergency services environment that can be considered as chaotic and constantly changing. Part of the challenge in developing a proactive strategy is the traditionally reactive and operational modus operandi of emergency services culture. In addition, these constraints are exacerbated by the expectations of community and political leaders, the change fatigue brought about by responding to major events and then recommendations from various inquiries and an increasing risk aversion to managing future events for personnel concern fearing exposure to litigation.

What development capability (e.g., leadership skills and training, policy enablers) are needed to strategically manage unprecedented events?

The demands associated with incident complexity, increasing expectations that need to be managed and the changes in cultural identity, set up new challenges for leadership and the development of capability. A number of reports suggest that training at local incident and operational level are well established and that this is particularly so for routine events. However the same cannot be said for novel or out-of-scale events or for those operating within strategic emergency

What steps need to be taken to facilitate and share learning across the sector?

management. A lack of training and support for out-of-scale events at all levels (operational, tactical, and strategic) of the emergency management places undue stress on people who care deeply about the outcomes.

It is important to develop higher skill expertise in multi-jurisdictional strategic emergency management. It is also important to consider cross-agency training to facilitate the relationships needed as well as the skills

required. There are opportunities that can be built upon in contextual learning, human factors and leadership education that are occurring within the industry.

There is a need to identify strategies to enhance the sector's capacity for reflection and learning, and to overcome the tendency for reactive acting within narrow perspectives of problem solving. From this perspective, there is a need to change occupational identity beyond reactive "command and control".

More 'out-of-scale' events are going to place higher physical and cognitive demands on strategic emergency management leaders and team members. Demographic changes will mean younger and less experienced personnel will need to step up and manage emergency events sooner than was typical in career progression pathways of the past.

The implications for strategic emergency management teams will be increasing pressure to integrate and coordinate approaches to preparedness, response and recovery across a range of different hazards/agencies. This requires a longer term strategic perspective and an engagement and improvements in jurisdictional coordination, including agencies not traditionally part of the process of traditional emergency management response.

The leadership and capability needs for strategic emergency management teams require skill, capacity and leadership development; including the ability for personnel to recognise shifts towards degraded conditions and requirements for collective recovery.

Conclusion

This synopsis has outlined seven key challenges facing the emergency management sector for out-of-scale, non-routine emergency events. These challenges need to be confronted if leaders are going to face the internal and external drivers of change in the future. Feedback on the discussion paper will be used to inform a change framework as part of the research utilisation from the research project to facilitate the continued development of a resilient emergency services sector.