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I am making this submission as	Resident
Submission type	Personal
Organisation making the submission (if applicable)	
Your position in the organisation (if applicable)	
Consent to make submission public	Public
Your story	This paper offers a method of defining contributors to the fire season events we have just seen. I can add personal input if you'd like to talk - [REDACTED]. I have sent the paper to "inquiries@bushfireinquiry.nsw.gov.au"
1.1 Causes and contributing factors	
1.2 Preparation and planning	
1.3 Response to bushfires	
1.4 Any other matters	
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Bushfire Failure Analysis Considerations

A Structured Approach to the Situation

Overview

Over a career of analysing various failures, it has become clear to this author that situations like the one Australia now faces with respect to the unusual bush fire losses being experienced are ALMOST ALWAYS related to “system failures”, instead of equipment or “mechanical failures”. Some baseline points set the tone for designing any hope of resolution. Whether different viewpoints are true concerns or not, the following points must be addressed in order to move to a lower risk of such events in the future:

- The Country will almost certainly drive through the current fire season – that means this situation should be treated like a “near miss” in industrial terms and thus should be approached with a consideration of “lessons learned” if we want to prevent it happening again.
- One can debate whether the current situation can be attributed to global climate change or whether such changes are related to any human activities from the past. At the very least, these fires reset the definition of “extreme catastrophic events” – new records are being revisited for temperature, drought, water supply restrictions, loss of agricultural productivity and impacts upon food production. The notion of “100-year events” has been redefined in many cases. Whether this relates to past human activity or not, it is clear that new and different human activity is called for now.
- A “near miss” can be looked at as a line of dominoes – all arranged such that if one falls, the chain of events unfolds toward a particular outcome. The dominoes are usually system contributors to the situation. For example, when an engine fails we can blame the mechanical part for wearing out – but the systems that contribute may have been the metallurgical selection, design criteria in the first place, lubricant selection or maintenance schedules. Changing ANY one of these contributing factors will change the likelihood and frequency of future failures. So, what needs to be done now is to define the dominoes that have stacked up in a way that allowed the current events to unfold.

Recommendations

This is a complex problem and thus may have many contributors that need consideration. After defining the stacked dominoes, a prioritization of responses can be undertaken with actions to follow. Perhaps this approach can bear fruit:

- First, no single person has all of the dominoes on a list. We need to cast our net widely in a brainstorming fashion to identify possible contributors or enablers.
 - Such brainstorming can best be conducted by a group that is trusted by stakeholders across the area – I suggest that is the NSW Office of

Emergency Management be used for this effort. By holding stakeholder meetings with groups of Councils, Community leaders and Concerned Citizens, we get the best opportunity to identify major contributing dominoes.

- Such a mission for the Department can be immediately undertaken. The angst that currently exists across the Country is an indicator of the importance and urgency for holding these sessions. Facilitators may need some definition of goals and techniques to underpin the meetings.
- A Management Tool that can be used to help guide these brainstorming sessions is the “Ishikawa Diagram” – which visually demonstrates the process being considered and helps open the brainstorming discussions. Sample templates and an explanation of usage can be found at <https://www.lucidchart.com/pages/landing/fishbone-diagram>.
- Once assembled, the brainstorming ideas can be assessed by prioritizing criteria – cost, time requirements, social impact, life and property impacts, etc.
- Then an action plan would be initiated, and a group authorized to follow up on planned activities.

All of this could be led by the NSW Office of Emergency Management and set an example for other States or the Federal Government.

Examples of Items (Dominoes) to Consider

Just briefly, these ideas might be seeds for the Brainstorming Sessions:

- Does “back burning” in the cooler and wetter seasons help? How can that be conducted safely?
- Can terrain be catalogued in terms of firefighting equipment and alternative approaches to saving life and property?
- Does this season teach us anything about approvals for the location of future housing or roadways into remote areas?
- Can maintenance be undertaken now to reduce the risk of road blockage and should those considerations be built into future road construction specifications?
- Can firebreaks be designed and implemented now in a way that would assist the future control of any fires?
- Should communications systems be overhauled in light of cell tower and radio signal losses? Is there any change required to how those items are constructed and defended against fire?
- Should refuge sites be more carefully designed in light of recent experience? Should those sites stock medications, food, water and other materials since Australia is aging and these items become more needed? Should these sites be more “handicapped accessible”?
- What lessons have been learned about petrol and diesel supplies, since they can be affected by road closures? Can grocery stores have access to more emergency stocks or can Companies reconsider their distribution plans and logistics in light of these recent events?

- Are fire response teams designed correctly, considering the deaths of firemen from road accidents? How many volunteers and what skills are required?
- How do we encourage volunteers to enlist?
- How can individuals be encouraged to evacuate when such advice is announced? Should Emergency Response teams be able to compel compliance? What is acceptable? Are there “carrots and sticks” that can be applied?
- Is the crime of arson appropriately penalized? Are there legal implications from recent events?
- What role should the military play in fire response? Are there other resources needed?
- Administrative support, planning and strategy involvement, food and sleeping logistics for firefighters – all need to be resourced and thought through. What skills might be needed for these roles? Are current skill restrictions appropriate considering the number of potential volunteers who could not help in this situation because they did not meet the skill requirements as currently defined?
- Is there anything to learn from the experience of the US in the 1950’s and 1960’s with nuclear-attack refuge shelters that were administered by the Civil Defence Authorities of that period – food storage, water supplies, medical training and leadership and management training for those facilities?
- Is there an impact on holiday travel, camping facilities, educational holidays and people-movement in particular areas or time periods? Should some roads be re-designed or “escape routes” defined to take these influences into consideration. Since few people are travelling toward a fire, should roads be opened up to multiple lane one-way outgoing travel to help relieve congestion. Again, the US has done this (in Southern States especially) to cope with traffic needs during hurricane and major storm events. How can people get out of harms way with slow, one lane movement restrictions? How is traffic control affected by fire-front changes? Are new road signs or other communication systems needed for Fire Management Authorities?
- What support should be made available for people emotionally during and after these events?

Note that these examples are only intended to help spark brainstorming discussions. Items do not need to be solved or action plans defined at the early stages of these sessions. Once assembled, the fish-bone Ishikawa Diagrams can be prioritised and action plans developed. The process can become bogged down if “fixing the problem” is undertaken too early. Also, the Facilitators must walk a fine line between getting many brainstorming ideas and getting drawn into or trapped by individual agendas.

Obviously I am available to clarify or help define any approach that might be the result of this paper.

J. David Capers