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Taking a punch:
Building a more resilient Australia

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*It is not the strongest of the species that survive, nor the most intelligent,
but the one most responsive to change.*

Charles Darwin

Introduction

The Australian Government is undertaking a comprehensive review of homeland and border security arrangements in Australia. The review, being undertaken by the former Secretary of the Department of Defence, Ric Smith, will report midyear.

In response to 9/11, there's been considerable planning and investment of resources by the Australian Government focused on Australia's capacity to prevent, respond to and recover from a major terrorist attack in our homeland. The focus on disrupting the planning of terrorist acts, or to disrupt them once underway,

Floodwaters surround the town of Coraki after severe storms caused much of northern New South Wales to be declared a natural disaster zone, 8 January 2008. Thousands of people isolated by raging floodwaters may have to be rescued by the State Emergency Service as helicopters continue to fly in supplies. AFP/AAP/Eddie Safarik © 2008 AFP

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has obscured the potential for much greater deaths and casualties caused by extreme natural disasters and therefore the need for an all-hazards risk approach in understanding and responding to all associated risks: if *Cyclone Larry* had impacted on Cairns in March 2006, not Innisfail, in conjunction with a king tide and storm surge this could have been Australia's *Hurricane Katrina*.[1]

A terrorism attack in Australia remains without question a distinct possibility, but assessed against the risk of probability, we have more to fear from natural disasters, which are not exceptional events.

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Because of the scale and speed of such natural events they have similar potential to other security challenges that threaten our normal way of life across significant areas of the country. As was recently noted in the United Kingdom's national security strategy paper, the approach to these extreme events in terms of assessing and monitoring the risks, learning from experiences at home and overseas, developing capabilities to minimise the risks and the potential harm, absorbing whatever harm occurs and then returning to normality as soon as possible is similar to the approach to other national security challenges, including terrorism.[2]

Around $10 billion has been invested since 11 September 2001 on Australia's counter-terrorism programs, compared to around $500 million in managing the potential consequences of a large-scale natural disaster occurring in Australia.[3]

More importantly, when it comes to time spent planning and resources applied to managing risks on an all-hazards basis, there hasn't been sufficient effort to engage the Australian community on what Australians can do for themselves in the face of high consequence events like terrorism and extreme natural disasters.

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Sustaining a prosperous nation rests on ensuring that Australia can withstand the impact from a range of hazards, both deliberate and natural. Disasters of all kinds can't always be averted but we must do all we can to *prevent*, *respond* and *recover* from disruptive events.[4] That requires our leaders engaging the Australian people in a national resilience program to secure Australia.

Why resilience?

Resilience is derived from the Latin word *resilio*, meaning 'to jump back'. In the field of material sciences, for example, resilience refers to the ability of a material to recover its original shape following a deformation. The concept of resilience can be applied to individuals, organisations, sectors and communities. These units integrate to create a resilient society.

Overall it's about measuring how our society can adapt to a changed reality and capitalise on new possibilities offered. For industry, resilience is about being able to keep on working independently and interdependently in the face of disaster and to use the disruptive event as a focus to strengthen and grow the organisation. A resilient company will return to pre-disruption profits faster and enhance its reputation.[5]

In the case of the built environment, resilience is about designing structures that can withstand even a strong hit, or hardening what can't be quickly fixed. And for elements of our critical infrastructure that require the continuity of networked systems such as transport, energy, banking and communications it's about having systems that can be activated should there be a break or interruption.

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A resilient community has the capacity to withstand a disaster and its consequences, return to its pre-disaster state quickly and learn from the disaster experience to achieve higher levels of functioning. For individuals, it's about the ability to function at a level far greater than expected given the individuals previous experiences.

When things go wrong, Australians have traditionally shown an ability to bounce back quickly: indeed it's one of our great strengths as a nation. We are known worldwide for having a 'can-do' spirit and soldiering on in times of need. Australians don't like to see themselves as simply passive victims.

Whether it's the way we've responded to the challenges of severe economic downturns, wars, or the impacts of frequent bushfires, droughts and floods, we have been able to self-reliantly bounce back from significant disruption. We've traditionally used such events to strengthen our overall community by reacting flexibly to restore routine functioning. And we have a strong tradition of volunteerism.

The national capacity to respond productively to significant changes that disrupt the expected pattern of events is, however, coming under greater strain. No matter what the disturbance, Australians now appear to feel that somehow they will be looked after, even when caught up in overseas emergencies, such as the Lebanon war in 2006. We seem to have generated a community view of: 'don't worry, someone else will come and get you and fix the damage.'

Too many in our community believe that calling 000 will generate an instant response: 'just-in-time' shopping with instant access to banking, goods and services has encouraged a sense of public complacency.

We've come to believe that our workforce of emergency volunteers will always be there to manage all hazards. Compounding this misperception is that the community seems to believe that the Australian Defence Force (ADF) will also respond to any disaster, despite the fact such a response isn't viewed as core business by the ADF.

The complexity and the tightly coupled nature of the systems that support both our economy and our society mean that it's very difficult for individuals and some business organisations to comprehend that they might be affected, or much less, be in a situation to reduce losses and recover from disasters.

Our ability to respond to a large-scale catastrophic event, which severely impacted on critical infrastructure for lengthy periods or caused a massive injury toll or loss of life, hasn't been truly tested. The experience of the 2002 Bali bombings (88 Australians dead and 66 critically injured) has, however, left the unfortunate impression on our community, that as a nation we can deal with all range of disasters, including something on the scale of a *Hurricane Katrina*.

We've been very lucky in Australia in not having to face the 'Big One'—the catastrophic event that produces extensive casualties and loss of life, widespread damage, large numbers of displaced people, significant business failure, extreme relief and recovery costs that simply overwhelms our capacity to respond.[6] Examples might include a major earthquake on one of our big cities, a tsunami hitting a major population centre on the east coast, a major flood or dam burst in a densely populated area, or significant flooding from the impact of a major cyclone combined with storm surge that affects both urban and regional centres simultaneously.

There's little information on the record to generate public confidence that we really know what the breakpoint is in terms of surge and sustainability. History isn't a guide here. *Cyclone Tracy* devastated Darwin on 25 December 1974 with 65 dead, 150 major injuries and air evacuation of around 30,000, many deciding not to return to Darwin. The Granville rail smash in 1977 resulted in 83 deaths and 213 hospitalised. We managed these events effectively. On a comparative scale of other events which have impacted other countries and regions, these two cases are small scale.

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Two reports published last year raised serious doubts about our health system's capacity to handle a large mass casualty situation—something on the scale of the London bombings—70 deaths and 600 injuries, 400 hospitalised and needing surgery.[7] If a large-scale influenza pandemic occurred in Australia and spread more quickly than anticipated then the surge capacity of our health response systems would almost certainly be rapidly overwhelmed. There's a clear need for the health sector to have much greater integration in emergency management planning with a significant emphasis on volunteer health and community service based agencies to ensure integration occurs. And the physical assets in Australian hospitals don't meet US hospital preparedness benchmarks for mass casualty incidents. In fact, we don't have minimum disaster preparedness standards for our health system.[8]

At the same time as our community and individual preparedness to absorb negative impacts from unexpected dangers and to recover from these appears in decline, more Australians are shifting to sea-change localities, often with limited infrastructure response capacity to deal with increased storm and other weather extremes arising from climate change. 'Tree-changers' moving to areas that are fire prone face similar consequences, including those related to environmental challenges. And with an ageing population in these localities it's harder to recruit emergency services volunteers to respond to hazard stress. In terms of raw numbers, people over 50 in Australia will increase from 2.5 million in 2006 to 3.3 million in 2011 and to more than 10 million by 2050. Fewer people are willing to step up to the plate, nor are they likely to be physically able to participate in voluntary emergency organisations.

The nature of post-disaster inquiries have aggravated the problems here in the way they have taken a heavy toll on the parties under review.[9] Inquiries have become very intrusive for operational first responders, including volunteers. As a result, trained people who could undertake important roles as first responders aren't taking up key posts because of the potential for public criticism and litigation.

At the local level the problem of self-reliance in the face of unanticipated disasters is made more complicated by the extent to which basic assets and services are no longer owned and managed by local government. These activities and assets have been progressively outsourced and sold off by governments to private contractors, who as profit-making institutions haven't always taken into consideration the need to readily activate assets in critical times of need. Local community infrastructure, such as halls and sporting venues which provide a means for community engagement and participation, fundamental to maintaining overall community resilience, is deteriorating.

Approximately 30% of councils in Australia are under severe financial stress with asset management and improvements urgently required. Work commissioned by the Australian Local Government Association suggests there's a national backlog of $14.5 billion in local government infrastructure renewal work.

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Climate change will compound the risks of disruption and have a direct influence on the type, scale and frequency of disasters and emergencies Australia will face, including increased flooding, more frequent and intense storms, lightning events and bushfires. More coastal zone residential developments are simply increasing these risks.[10]

Australia's national infrastructure more generally is under stress and this complicates the ability of the nation to withstand extreme natural or human-caused events without suffering devastating damage or changes to our quality of life.

In 2005, the Australian Institution of Engineers issued the *Australian Infrastructure Report Card* that examined key national infrastructure sectors. The report found many of the key sectors require immediate attention to mitigate problems arising from increasing demand. Parts of Australian infrastructure are ageing and current funding commitments are either inadequate or yet to be identified, to support the substantial costs required for renewal or replacement. Physical growth and social attitudes that have developed around ownership and usage of private vehicles are placing demands on the road system that are becoming unsustainable and are placing high costs on government.

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The highly decentralised nature of Australia's population means our transport industry is pivotal to the effective functioning of the economy. Our rail network suffers from similar congestion related problems and sea ports have limited ability for expansion due to urban encroachment. There's an absence of efficient interconnections between various state power grids and current distribution networks are not easily able to accept power from renewable resources.

Older bridges in some of our major cities and in regional Australia are vulnerable to cracking because of lack of maintenance. But the downsizing of some states' public works departments has led to a shortage of civil engineers to properly maintain

these structures. Experts suggest we need to be using sensors much more in order to continuously monitor these structures. Storm water infrastructure is old, and there's a lack of funds for maintenance, repairs and renewals. This is of particular concern: flood damage is the most expensive source of natural disasters in Australia.

The infrastructure backlog in Australia is generally thought to be about $150 billion. The OECD ranks Australia twentieth out of twenty-five countries when it comes to investment in public infrastructure as a proportion of national income.

While we have seen these cross pressures on the nation's ability to bounce back from disasters of all kinds, we have yet to see a genuine effort by our national security leaders to engage the public to frankly and openly inform them on where we face major threats, how best the community should better protect itself and improve risk reduction measures. In fact the reverse is true: a range of government reports relating to Australia's ability to respond to large-scale emergencies have been embargoed on the grounds that to share that information with the public would only serve to frighten people.[11]

It's interesting to compare here the recent commitment by the British Government to publish later this year, and update annually, a national-level risk register setting out the official assessment of the likelihood and potential impact of a range of different risks that may directly affect the United Kingdom and the safety and well-being of its citizens. The officially stated reason for such an initiative is to help local authorities, communities, businesses, and others in preparing for emergencies.[12]

In the face of possible disasters, it's Australians that should be at the centre of any societal resilience program. While the national security hotline, and websites such as *Secure NSW* and the *Let's look out for Australia* campaign are worthwhile, in order to enhance Australians capacity to prevent and recover from a human-induced disaster in the shortest time and with minimal assistance, we require a much more vigorous strategy to engage ordinary Australians on what they should be doing in the face of a range of risks and shocks. For example, we still haven't conducted a public communications campaign to inform householders on how they could cope if a human influenza pandemic occurred. Australians, if asked by their leaders, will be supportive of a call to respond productively to significant changes that disrupt the expected pattern of events and adapt to new operating conditions. Australians, more often than not, respond well when presented with a challenge.

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A fundamental shift is required, however, in moving from a 'need-to-know' national security culture to a 'need-to-share' resilience culture to get the community fully engaged in understanding what our actual state of preparedness is and asking the community to be better prepared. A well-prepared public and a focus on information that will assist at the community level leads to national resilience.[13] A more resilient Australia will be more able to absorb large shocks without significantly changing our fundamental way of life.

Towards resilience

There are nine initial steps that government, industry, the community as well as individuals can adopt to build resilience in the face of disturbances, unpredictability and complexity.

Establish clear leadership and coordination

The states and territories have constitutional responsibilities for emergency management and control most of the functions essential for effective disaster prevention, response and recovery. There's still some uncertainty, however, on who will be in charge in the situation of a major national disaster in Australia and how the response would be coordinated across borders.

There doesn't appear to be a single point of Commonwealth tasking which can authoritatively provide the Prime Minister the combined picture of emergent needs and progress on response actions. In the absence of agreed national emergency management legislation, which would outline the accountability trail and point to key appointments with specific responsibility, it's unclear exactly who leads on what's needed from the community as a part of any response and recovery situation. We need greater clarity on the precise management and coordination arrangements in the case, for example, of a devastating tsunami impacting on southeast Australia or a large earthquake which impacts on one of our major capital cities.

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The Commonwealth agency seen to be responsible for this, Emergency Management Australia (EMA), has no mandate, legislation or Cabinet endorsement with which to take command. The delivery of EMA functions for the most part is the result of goodwill on behalf of other agencies. This is clearly not a satisfactory situation.

A motorist rides a motorcycle past a fishing ship still stranded on top of houses in Banda Aceh December 26, 2006. Thousands of people lit candles, visited mass graves and observed two minutes of silence on Tuesday two years after an unprecedented tsunami pulverised villages along the Indian Ocean and killed 230,000 people. © Tarmizy Harva/Reuters/Picture Media

There needs to be an instrument of delegation issued by the federal government, with the constitutional agreement of jurisdictions. The authority would need to be in two parts: one, in respect of directing action within the Commonwealth's jurisdiction; and two, when the event was such that a state or states agreed that the severity warranted overall command and control by the Commonwealth.[14]

We should introduce one national framework to manage and coordinate any significant disaster…

We should introduce one national framework to manage and coordinate any significant disaster, including an act of terrorism, by building on the efforts of the National Counter Terrorism Committee (NCTC)[15] but focusing on an all-hazards perspective. At the moment, terrorism is given the priority: the Australian Emergency Management Committee (AEMC) is Australia's peak consultative emergency management forum and it's self-funded.[16] The NCTC, on the other hand, has a federal budget of around $15 million per annum for meetings, exercising and equipment upgrades.

The current Director General of EMA correctly noted last year that the differences between terrorism and other kinds of natural and technological emergencies are 'not so great as to cause us to manage them outside of the arrangements used to manage all other emergencies'.[17]

While in the case of a national terrorist situation the Australian Government determines policy and strategies[18], as noted above, this role isn't replicated for natural disasters or large-scale industrial accidents that cause catastrophic damage.

There's meant to be one overarching Ministerial Council for Police and Emergency Management (MCPEM). But it meets as two separate ministerial councils—the MCPEM and another specifically on emergency management matters (the MCPEM-EM). Both are chaired by the Federal Attorney-General and mostly attended by the same minister from each jurisdiction.[19]

This should be rationalised into one ministerial council and supported by one national committee structure by amalgamating the NCTC, the AEMC and the Critical Infrastructure Advisory Council (CIAC).[20]

One of the first tasks of a newly constituted high-level national committee structure would be to set in place the priorities for addressing resilience improvement measures.[21] Such activity should be under the oversight of one ministerial council, not the current two, and provide annual reporting to the Council of Australian Governments (COAG) on progress.

Linked to this measure is the importance of having a single incident management system for command and control of emergencies, which can be adapted quickly from the routine to a nationally declared incident.

Currently there are many systems across policing and emergency authorities. If these were harmonised under a common approach it would enable all agencies to contribute through appropriate access and generate greater community confidence and resilience.[22]

And there's the related issue of warnings—we still don't yet have an appropriate, effective, timely national community information and warning system that would be capable of being used in the lead up to, occurrence of, and recovery from disasters. Recent improvements to tsunami

The Community Information and Warning System (CIWS) trial in Victoria

The Office of Emergency Services Commissioner, in partnership with Telstra, ABC Radio, the Department of Sustainability and the Environment, Victoria's emergency services and the Shires of Yarra Ranges and Northern Grampians and their respective communities, trialled and evaluated the effectiveness of innovative spatial and telecommunications technology to deliver public warning information. The trial took place between October 2004 through September 2005.

The trial was designed to incorporate Victoria's emergency management arrangements and to deliver timely public warning information simultaneously to large numbers of households and businesses using a telephone message. The ABC Radio network was used as the major secondary source of information which participating residents were encouraged to access following delivery of the CIWS trial's automated telephone messages.

The trial sought to demonstrate the effectiveness of public warning information and its links to public safety and the effectiveness of using a public broadcasting medium (ABC Radio) as a secondary information source.

The CIWS evaluation findings concluded that when people have a level of planning preparedness knowledge about emergency events, in combination with a realistic perception of their risk and a multi-faceted communication network, then a telephone emergency warning message is more likely to trigger appropriate decisions and behaviours which are likely to increase their safety and confirm their self-reliance to be prepared. The evaluation found that even if a telephone 'warning' message is only partially heard, its value for an informed and prepared community would still be high because it represented only

one source of trusted information and planning within that community's total approach to information and community safety preparedness.

People with limited understanding and awareness of their emergency risk and community safety, and who had not considered preparation and planning for emergency events, were consequently more likely to be wholly dependent on a telephone emergency warning message to determine their subsequent responses and behaviours.

Importantly, in these situations, rather than triggering increased self reliance and informed decision making, the telephone message is more likely to become a source of information which could increase their uncertainty, lack of preparedness and reduce their ability to contribute to having a shared responsibility of safety with the emergency service organisations.

The CIWS trial found that for community warning systems to be effective, the following elements were required:

- Telecommunications and geo-spatial technology needs to be seamlessly integrated within the operations of the emergency service organisation and to be incorporated as a component of state and national emergency management arrangements.

- The emergency services' knowledge of community engagement, culture and demographics and public safety principles needs to be included within their community warning communication procedures and decision making.

- The development and delivery of a public safety awareness campaign must enable individuals and communities to understand the purpose of community warning and information procedures and the means to access emergency and safety information.

monitoring are commendable, but don't help to convey the message of a potential impact to communities in the middle of the night.[23] The recent case of the impact of a chemical fire in Melbourne highlighted this problem.[24]

There must be an 'end-to-end' approach in thinking about warnings and getting this to the people who might be affected.

Some jurisdictions are attempting to develop systems in isolation (see box on previous page) but what's required is a national, not disparate, approach. Using all aspects of geographic information, which is electronically synchronised with all phone subscribers (voice/text/email) should be considered to establish one Community Information Warning System. Telstra has assessed one possible approach at approximately 60 cents per person per annum, a $14m investment. Developing this initiative will require the removal of barriers around commercial and privacy interests, especially in relation to spatial data.

Authorities would need to map the requirements of those with special needs in certain areas…

Authorities would need to map the requirements of those with special needs in certain areas: currently one in five Australians have some kind of disability. The system would be an 'opt out' arrangement, with members of the community receiving the warnings unless they expressly asked not to receive them.[25] Funding a national warning system ought to be shared by the federal government and the jurisdictions.

And finally we need to recognise that Australia is one of the most urbanised countries in the world: we should give greater attention to whole-of-city preparedness,

particularly issues around evacuation plans, public communications, staging areas and disaster triage hospitals. COAG could be tasked with producing standards for whole-of-city preparedness. Although some work has commenced in this area, standards should be applied to all capital cities and large regional cities.

More generally, it would be useful for COAG to be provided with an annual summary of national capability on disaster preparedness and responses from all jurisdictions and the Commonwealth.

Factor in climate change

So-called freak weather is becoming more common, including cyclones, storms, floods, extreme temperature, drought and bushfires. The impact of these hazards as a result of climate change is escalating. Fire seasons, for example, are starting earlier and finishing later, and bushfires are increasing in severity, now referred to as mega wild fires.

Our emergency services and police will confront an increased frequency and volume of emergency calls.

It will be crucial for communities to build their resilience to adapt to the impacts of accelerated climate change. Our emergency services and police will confront an increased frequency and volume of emergency calls. Heatwave is the silent, hidden disaster impacting on the young, elderly and those with pre-existing illness. We will see the need for greater urban search and rescue efforts, with building and structural collapses caused by coastal erosion. This will have implications for the quantity and type of emergency response equipment needed. There will be significant evacuation and relocation of large numbers of people.
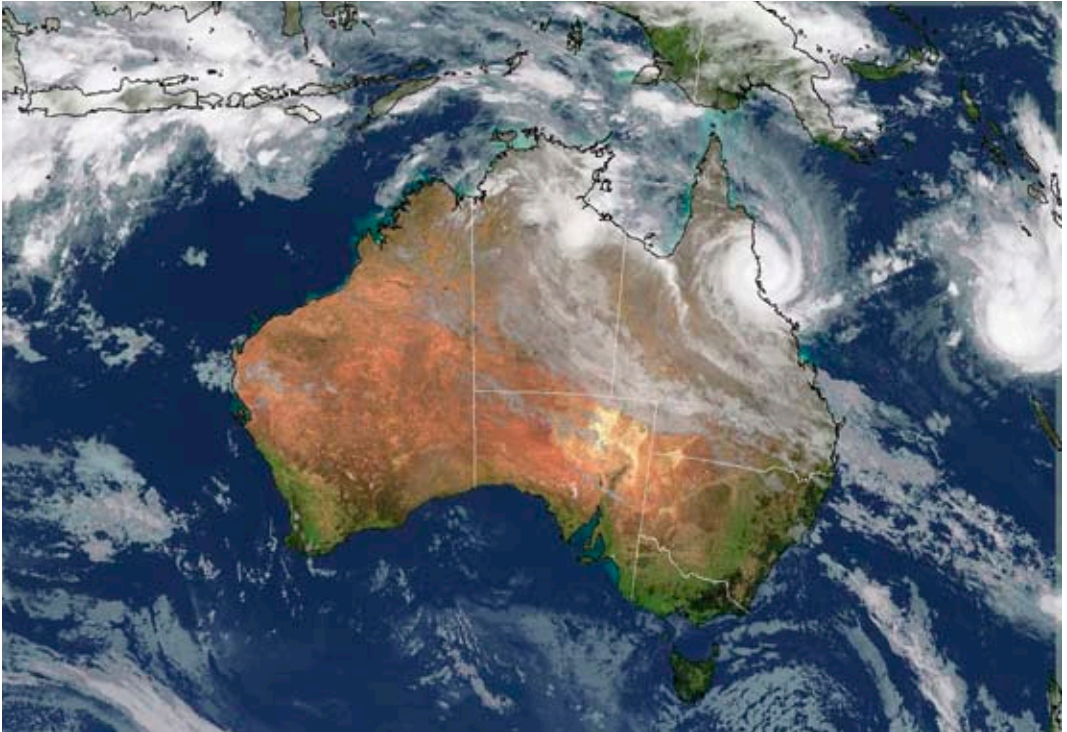
In this false colour Satellite image *Cyclone Larry* is pictured at 2033GMT on March 19, 2006 as it crosses the coast of the Australian state of Queensland. *Cyclone Larry* crossed the coast as a category five cyclone, destroying homes, leaving hundreds homeless, thousands without power and causing hundreds of millions of dollars damage to agriculture. The satellite image was processed by the Bureau of Meteorology from data received from the geostationary meteorological satellite MTSAT-1R operated by the Japan Meteorological Agency. (Illustration by Japan Meteorological Agency via Getty Images)

Emergency crews will confront more injuries due to the increased intensity of extreme events. The psycho-social costs will be ongoing: in the months after *Cyclone Larry* devastated the far north of the state, more than 300 Queensland children suffered critical incident stress. Community members with special needs will require greater involvement in emergency management. And the needs of children and the elderly need to be taken into account in managing mass disaster situations, as both are particularly vulnerable in these events.

Governments will need to climate-proof their infrastructure as they face these emergent threats.

Governments will need to climate-proof their infrastructure as they face these emergent threats. Rescue resources will be stretched

with an increased number of simultaneous disaster relief missions. We may witness more anti-social behaviour, such as the looting that occurred in the aftermath of the recent Queensland floods. While looting during crises is most often needs-based, such behaviour will place more demands on police to maintain security. Just as our police conduct counter-terrorism drills, law enforcement agencies will need to undertake more weather exercises with local emergency services.[26]

In the face of climate change induced disasters, we will have to improve our cross-jurisdictional response that involves disaster planning, emergency services, health care and infrastructure providers.

Rethink the role of the ADF

The ADF can assist in disasters as and when required with air and ground transport capability, logistics capability, medical support, special chemical, biological and

radiological response and urban search and rescue capabilities.[27] Often communications can fail during emergencies, especially in events covering wide geographical areas. The military has the capability to rapidly establish a secure radio network linking operational, tactical and strategic commanders across the disaster zone.

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We need to debunk the public expectation, however, that the ADF will always be ready and able to assist for a sustainable period. Most of the resources of our armed forces are committed to operational activities. If they are in Australia, they are strategically located in the northeast and west of the country, so when and if they can be released there are vast distances and large logistic challenges.

It would be timely, however, for the new Defence White Paper, which has been commissioned by Defence Minister Joel Fitzgibbon, to consider if contemporary approaches to securing the nation now require disaster response by our military to be regarded as core business, along with its war-fighting role and if so what would that mean for the selection of military equipment and dispersal and interoperability of military assets around Australia.

Current deployment of military helicopters around Australia, for example, is unbalanced, with most assets located near Brisbane and Townsville, with some in Sydney and Nowra, on the south coast of New South Wales. Water bombing to fight fires is a task performed by military forces in some other countries. This is a force multiplier for civilian or state government emergency service air operations. Helicopter squadrons near our capital cities could be deployed to support police, emergency services and disaster management agencies.[28]

The Rudd Government has proposed to establish a new centre to focus on improving our military coordination with civil agencies on international missions. This body should look at developing a whole-of-nation capability for operations at home: civil–military cooperation is essential during the response to any catastrophic disaster scenario. And the military expertise in network centric warfare could be shared with first responders to develop network centric emergency management.[29]

Conduct realistic/no-notice exercises

Consider the following scenario occurring in a regional centre: a small structural collapse due to earthquake resulting in fifty killed, 120 hospitalised with injuries ranging from spinal crush, internal organ bleeding, major fractures and severe burns.

It's this sort of scenario which needs to be played out in realistic, no-notice exercises to test the adequacy of arrangements, not only in terms of surge capacity and capability but also planning, integration, cooperation and coordination of all our health and emergency response assets. We still haven't undertaken tough and realistic testing of our existing health assets, (even by creative modelling and simulation), including what mobile mortuary means and skill sets are available. And we need to think more creatively about improving the capacity of our emergency responders to manage large-scale events (see box on the next page).

Improving emergency medical response capacity

We should introduce an emergency medical system that sees firefighters, trained in basic life support, providing rapid response to medical emergencies in order to carry out life-saving interventions pending the arrival of paramedics.

The two service Australian system—ambulance and fire—has hindered this approach. In 2000, however, the Melbourne Metropolitan Fire Brigade, in conjunction with the Metropolitan Ambulance Service (and in some areas the Country Fire Authority and volunteer firefighters), commenced an integrated emergency medical response program. This leveraged the rapid response times of the fire service and the clinical expertise of ambulance paramedics to provide better pre-hospital care.

Due to an ageing population, demands on Australian ambulance services are growing: by 2036 it's predicted that one quarter of Australians will be over 65. In most jurisdictions ambulance response times are deteriorating, having a direct effect on the chances of survival.

On the other hand, urban fire services are experiencing some reduction in the number of fires occurring in residential and commercial buildings, leaving some 'down-time'. An opportunity exists to better utilise firefighters through the provision of rapid response to medical emergencies prior to the arrival of paramedics.

Get down to business

Some useful steps in tapping the resources of the private sector in emergencies have been undertaken by the banking sector and in the area of precinct security (see box on the next page).

But we need to investigate ways in which the resources of the private sector can be integrated into government emergency management arrangements at all levels to assist the provision of community needs in the initial response and to create an additional surge capacity. The private sector can move quickly, without the constraints of bureaucracy. The first radio installed on the Superdome in New Orleans was by FEDEX. Home Depot and Wal-Mart responded with thousands of staff to restore community infrastructure, while government officials debated what actions to be taken. The US Government has contracted FEDEX as a major logistics arm for future disasters.

We should analyse the regulatory and legislative framework within which emergency management services are provided to identify any impediments to developing public and business management partnerships.

A more pressing initiative should be to map for industry a regular timeline for the national emergency services capability requirements.

Emergency services need to engage the large operators, such as the Coles Group, Woolworths, Bunnings, Linfox, Westfield and similar-size providers of goods and services to the community. They also need to engage Engineers Australia (the peak national body for all engineering disciplines)

and Master Builders Australia (the major Australian building and construction industry association), organisations which will find many of the skills and resources in the private sector needed in a catastrophic disaster.

EMA and state emergency management services should consider establishing Business Liaison Units to advance this agenda and business should be brought much more into emergency crisis centres.

Improving resilience: the banking sector and precinct security

The Banking and Finance Infrastructure Assurance Advisory Group (BFAG) was formed in 2004 as part of the Trusted Information Sharing Network for Critical Infrastructure Protection. Members include the major banks and insurance companies, the Australian Securities Exchange, the Reserve Bank of Australia and regulators. BFAG implements measures to strengthen the banking and finance sector's ability to continue its role in the economy and meet its obligations to customers in the event of major disruption. This includes facilitating community access to cash for trade where electronic banking systems are either destroyed or cease to function for extended periods of time. Whilst for most natural disasters the process works well, during *Cyclone Larry* the banking sector experienced some difficulties in competing with the recognised services to re-establish facilities to provide cash which is an essential service for disaster affected communities.

BFAG has undertaken discussions with the Victorian and NSW police and emergency services on the establishment of cordons, duration of exclusion zones, forensic investigation and first responder processes. Financial organisations provided information on protecting staff and maintaining business operations. A major lesson from BFAG's work is that the key to achieving resilience is having

strong working relationships with all interdependent parties.

In late 2006 the NSW Police, in association with transport agencies and business, developed Transport Security Precinct Committees.

Inter-modal passenger precincts were identified as areas of specific security interest: there's a convergence of passenger transport systems at a single location, mass movements of people at predictable times and places and significant commercial and/or residential operations.

There's no single regulatory agency that has responsibility for the security operation of inter-modal passenger precincts. There is a need, therefore, to establish a designated authority to coordinate security planning across private and public sector owners and operators.

The NSW Ministry of Transport has established eleven precinct committees to develop strategies to prevent, respond and recover from security events that might impact on a precinct. They coordinate organisations within the precinct to ensure risk assessments are reviewed and emergency response arrangements are in place. They are chaired by NSW Police and comprise all public sector and business stakeholders that impact on the function of the precinct.

A more pressing initiative should be to map a regular timeline for the national emergency services capability requirements for industry. This would be similar to the way Defence shares its long term defence capability requirements to industry, thereby enabling industry to participate and assess future business opportunities.

Key suppliers could cooperate to build an online virtual warehouse of relief supplies to assist responders to know where goods are in times of great need. Within their own organisations, business should develop the capability of resilience champions, and bring them together to enhance resilience thinking. Industry might consider sponsoring a resilience awards program.[30]

Support volunteers

To develop a more resilient Australia, we should recognise that a lot of our response and recovery effort is reliant on volunteers and the non-government sector. How we nurture and maintain this workforce will be a substantial challenge. The overall

cost if we had to fully fund our emergency management volunteer effort—if we had to pay the volunteers, including overheads—is in the order of $12 billion a year. There's over 500,000 emergency management volunteers in Australia. They are predominantly male, average age 47 years, with very few from Asian, Eastern European, Middle Eastern or indigenous backgrounds. How we reinvigorate and replace the ageing volunteer emergency workforce and get young people to step up will be a key challenge.

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We need some clever ideas to attract, retain, recognise and protect these people to maintain Australia's world standard in volunteer effort. This should include addressing volunteer costs in meeting

First aid service volunteers in action in Western Australia. Photo courtesy of St John Ambulance Australia

training standards. Volunteers don't want to be paid, but we ought to consider a scheme that reimburses basic personal expenses and provides some assistance with fuel, public transport charges or childcare support.

This could be considered on a cost-share basis between the Commonwealth and jurisdictions. The total average cost per volunteer is around $500 per year per active volunteer member.[31] The total cost of such an initiative would be around $150m per annum.

Supporting volunteers in this way won't be enough, however, if we don't recognise the substantial costs volunteerism has on their employers (or the volunteers themselves if they are self-employed) in releasing individuals at short notice. Victoria has acknowledged this problem in 2007 and announced payroll tax exemptions for businesses that have employees away from work as volunteer firefighters.

But we need a national strategy similar to Defence support for employers and self-employed reservists whereby employers qualify for financial compensation if they face difficulties in releasing employees to undertake reserve duty.[32]

Given the regular deployments of emergency volunteers in support of community safety, often performed in urgent and dangerous circumstances, there's a strong case that similar support should be made available for the employers of our emergency volunteers.

EMA might take a lead and bring employers of emergency service volunteers together through a network of Emergency Service Support Councils to inform employers of emergency service matters relevant to them. Employers could be invited to take part in emergency management exercises to familiarise them with the sort of training emergency service volunteers undertake.

The investment for future emergency management capability for Australia lies in volunteerism—retaining and maintaining the half a million Australians who make this sacrifice.

Build robust infrastructure

The Rudd Government has announced *Infrastructure Australia* as its method to address Australia's infrastructure requirements. *Infrastructure Australia*, chaired by Sir Rod Eddington, is a statutory advisory council with twelve members drawn from industry and government, including local government. The council's immediate task will be to audit the nation's infrastructure shortfalls and provide an infrastructure priority list to guide billions of dollars in public and private investment. Audits will focus on the adequacy, capacity and condition of nationally significant infrastructure, including transport, water, communications and energy.

In selecting projects, *Infrastructure Australia* should examine interdependencies in our infrastructure and take into account any weak points. There must be public confidence that the infrastructure selected will work, within certain parameters, consistently through time if we have a disturbance. A good start might be to re-examine the Longford gas explosion in 1998 and its impact on Victoria against a scenario of limited supply for one month in the middle of winter.

Common resilience criteria ought to be part of the selection criteria for projects in terms of their underlying soundness in design and structures: it's much harder to retrofit resilience into infrastructure systems. *Infrastructure Australia* should have as part of its advisory team experts in building resilient infrastructure. Such an expert group could examine vulnerabilities related to possible projects.

Emergency broadcasting will be critical in disasters...

Emergency broadcasting will be critical in disasters (see media section below). ABC Radio and television transmissions are made via transmitters and towers which are operated privately by *Broadcast Australia*. Not all the transmitters which serve high density populations in Australia have reliable back-up generators. The ABC Radio signals are delivered by satellite or land line, but no attempt has been made to ensure that all transmitters have two pathways, providing redundancy. If the Optus satellite network went down, all national ABC Radio networks and some local radio programs will be put out of action. If the Telstra lines are dug up by accident or in some other way interfered with, the local radio network in that region will be out of action. The federal government needs to ensure there's redundancy in the local radio network to provide reliable emergency broadcasting.

The Critical Infrastructure Protection Modelling and Analysis Program (CIPMA) is an initiative of the Attorney-General's Department, working with CSIRO and Geoscience Australia, to protect critical infrastructure through modelling and simulating the dependency relationships of critical infrastructure systems. It provides an opportunity for owners and operators to understand interdependencies with other sectors and identify risks to the resilience of infrastructure.

CIPMA has, however, focused mainly to date on terrorism risk. It should be regarded much more as a cost–benefit tool to enhance business resilience across the spectrum of risks. There's a tendency by business to view CIPMA only as part of the counter-terrorism world, not part of the world of enterprise risk management or broader economic security: that's the context in which the feedback should be provided to business. More could

be done to make the information available to business in a useable form, even if it's sanitised and provided in a secure way.[33]

There's also an issue related to the resilience of built infrastructure for large gatherings of people. Owners of such facilities need to provide an environment of best practice across a range of security and safety requirements. Those who provide best practice on a voluntary basis ought to have a way to promote that best practice. At the same time, potential patrons should be able to make judgements on which venue is safe and secure. A 'star' type rating could be developed similar to that used for accommodation providers. In the energy sector, providers of appliances have a greenhouse rating system and houses are star rated for energy efficiency. A provider with good security, fire protection, emergency evacuation and close proximity to public transport might achieve a five star rating, where providers who didn't meet the standards would receive a lesser rating. The rating could be reviewed and upgraded if extra work was carried out. If the condition of the venue decreased the star rating might drop.

Another possible approach would be to issue *resilience impact statements* as a way for resilience to be incorporated into designs. They would be developed along similar lines to environmental impact statements, but with a focus on robustness issues. This idea might be considered by the Australian Building Codes Board.

Engage the media

The National Emergency Protocol describes the communication arrangements between the Prime Minister, Premiers, Chief Ministers and the President of the Australian Local Government Association during a national emergency. This all-hazards protocol was designed to ensure leaders coordinate key messages to the public during a national emergency.

Communication is a critical issue for building community resilience and trust. It's an area, however, where we could do better.

Communication is a critical issue for building community resilience and trust. It's an area, however, where we could do better. There's a need for the 'talking head', providing the calm operational perspective regularly to the public: saying what they know, what they are doing, explaining what is unknown and what the public should do and not do. The community would expect that in such a situation the Prime Minister and Premiers/Chief Ministers would be united, but these leaders don't possess, nor can they be expected to have, a first-hand appreciation of the total operational picture. So there's also the need to promote strong local voices that are trusted and known in local areas.

Action should be formalised nationally with the ABC to be the approved emergency broadcaster with the ability to interrupt immediately any program to provide community advice on any aspect of a likely or resultant disaster.[34] Extra funding needs to be provided to enable ABC Local Radio to provide live broadcasting throughout Australia at all times.[35]

A large number of people rely on television for their information during emergencies, with 'crawlers' providing alerts about weather and other emergencies. The ABC should be funded to provide 'crawlers' throughout its entire network at all times. At present it cannot reliably provide crawlers for more than a few hours each day in any state, except New South Wales.

The Australian Government should establish a strategic communications forum to bring together emergency management and security officials with representatives of media organisations on a regular basis. The forum would increase confidence building between government and the media through developing awareness of each others' responsibilities and by identifying ways to improve communication. And the media should participate both in emergency management and counter-terrorism exercises to build trust with crisis managers and first responders. The integration of media representatives into exercises will improve the preparedness of both journalists and first responders.

At the same time emergency agencies have to create trusting relationships with the community: some still withhold essential information, worrying that the community might panic. Providing information as it arrives assists the media with timeliness and thereby helps the community to take responsibility for its own behaviour.

When it comes to preparedness, the average Australian family has little concept of planning for a situation where they may have no access to food, water or power for three days or more.

Value family and individual preparation

Preparedness at the family and individual level is important. Take fire prevention as an example. Generally, people don't perish in houses with sprinklers. The simple adaptation to fit sprinklers in all new homes coupled with cisterns which can capture storm water is one way to contribute to family resilience.[36]

When it comes to preparedness, the average Australian family has little concept of planning for a situation where they may

A Spanish policeman walks past a hole blasted through a train in an explosion at Madrid's Atocha train station after an explosion March 11, 2004. Simultaneous explosions killed at least 173 people on packed rush-hour trains in Madrid in pre-election attacks. © Andrea Comas/Reuters/Picture Media

have no access to food, water or power for three days or more. We should consider the adoption of the New Zealand initiative, *What's the Plan Stan?* where schools and communities are encouraged to plan on how they would cope in their homes without essentials and for how long.

Consideration should be given to making available in all supermarket checkouts, the recently produced emergency pantry list prepared by the Australian Food and Grocery Council which outlines the sorts of product and food items people should stock for urgent times of need.[37]

In terms of individual resilience, consideration might be given to the investment in basic first aid training for all year 5 school children, at a cost of around $10 million annually. This should be pursued in partnership with all levels of government and the providers of first aid services.

The MCPEM and the Housing, Community and Disability Services Ministerial Council should jointly progress these ideas.

Concluding remarks

The *9/11 Commission Report* by the National Commission on the Terrorist Attacks upon the United States pointed to several kinds of failure in terms of governance with respect to problems in imagination, policy, capabilities and management.

An underlying theme of this paper is that it's the first point that's the most critical—failing to imagine what could happen, failing to anticipate and taking the necessary preventive measures.

In a dangerous world, there's no national champion for resilience, even though developing national resilience may be the most effective approach to manage Australia's exposure to an increasing number

of potential shocks, systems failures, extreme natural hazards and terrorism.

In the face of mega disasters an important component of resilience is an informed and prepared community. In this sense, resilience involves engaging communities by helping them help themselves.

Most Australians are unlikely to find themselves the victims of a terrorist attack, but many Australians will face the risks posed by a natural hazard, agricultural or health crisis, or a significant failure in our critical infrastructure, such as power or water. And given the environmental impacts of climate change the odds will rise as far as natural disasters are concerned: limiting loss by a resilient community will become an increasingly important focus of public policy.

Building a more resilient Australian society should be a core national policy objective.

Endnotes

1   At least 1,836 people lost their lives in *Hurricane Katrina* and in the subsequent floods. More than a million people were displaced and it's estimated that it caused over US$81 billion in damages. Australians, along with others, were reminded of nature's fury when the Indian Ocean tsunami took more than a quarter of a million lives and left many destitute in December 2004.

2   *National Security Strategy of the United Kingdom*, Cabinet Office, March 2008, p. 15

3   The majority of funding here being health protection measures and pharmaceutical stockpiling for potential Avian flu.

4   Prevention measures include communication plans, public awareness of plans, multi-agency coordination, adequate training and equipping of emergency services, evacuation planning and stockpiling. The response phase includes deploying first responders. A clear command and control structure, good communications and operational flexibility is required. Volunteers and non-governmental

organisations may provide immediate practical assistance. The aim of the recovery phase is to restore the affected area to its previous state. These efforts involve rebuilding destroyed property, mitigating trauma, communicating about the progress of recovery, resuming business operations and repairing essential infrastructure.

5   See *Transform. The Resilient Economy: Integrating Competitiveness and Security*, US Council on Competitiveness 2007; Yossi Sheffi *The Resilient Enterprise*, MIT Press, Massachusetts, 2005. For a discussion of resilience in one sector see Anthony Bergin and Raspal Khosa, *Terrorism and the Australian tourism industry*, Policy Analysis, ASPI, February 2008.

6   Such an event could be of sudden impact or a sustained impact over an extended timeframe.

7   See Matthias Traub, David A Bradt and Anthony P Joseph 2007 'The surge capacity for people in emergencies (SCOPE) study in Australasian hospitals', *Medical Journal of Australia*, 186 (8): 394–398; Anthony Bergin and Raspal Khosa *Are we ready? Healthcare preparedness for catastrophic terrorism* Special Report, ASPI, April 2007.

8   See Traub, Bradt and Joseph, note 7.

9   The Canberra and Eyre Peninsular fires of 2003 and 2005, for example, took over three years to report.

10   Cottesloe Council in Perth, for example, fears that storms in the coming decades could wash away the beach and cause major damage to infrastructure. http://www.abc.net.au/am/content/2008/s2215033.htm

11   Reports covering national hospital audits, national aero-medivac capabilities and Australia's ability to respond and recover from catastrophic disasters fall into this category.

12   *National Security Strategy of the United Kingdom* Cabinet Office, March 2008 p. 43. The United Kingdom established the Civil Contingencies Secretariat in 2001 to play

a more forward-looking role in assessing potential risks to national resilience.

13 See Brigit Maguire and Patrick Hagan 'Disasters and communities: understanding social resilience', *The Australian Journal of Emergency Management*, Vol. 22 No. 2, May 2007.

14 There is the Commonwealth Government Disaster Response plan (COMDISPLAN) that provides a structure for inter-jurisdictional request, approval authority and coordination mechanisms: it doesn't, however, detail the precise national authorities, roles and responsibilities in a major disaster. At the March 2008 meeting of the Ministerial Council for Police and Emergency Management, the Council endorsed draft Australian Emergency Management Arrangements. This would bring together emergency management arrangements across all jurisdictions but does not confer any additional authority.

15 The NCTC coordinates a nation-wide cooperative framework to counter-terrorism and its consequences. The committee is comprised of representatives from the Australian Government and state and territory governments.

16 AMEC is chaired by the Secretary of the Attorney-General's Department and comprises chairpersons and executive officers of state emergency management committees, the President of the Australian Local Government Association and the Director General of Emergency Management Australia. It considers strategic policy and operational priorities, including planned exercises.

17 Tony Pearce, 'All hazards planning for Australia's security' speech to *Security in Government Conference 2007*. The same point was made by Sir Michael Pitt in his interim report on the unprecedented floods that occurred in the UK in 2007. *Learning Lessons from the 2007 floods: an Independent Review*, 17 December 2007, available from the UK cabinet office website.

18 This role stems from the Inter-governmental Agreement on Australian National Counter-Terrorism Arrangements 2002.

19 There are a few exceptions where the police minister may not have emergency services responsibilities.

20 The Critical Infrastructure Advisory Council advises the Attorney-General on the national approach to critical infrastructure protection and provides a link with Australia's counter-terrorism arrangements. In introducing such change, we are mindful of the importance around meeting both crime scene preservation and evidence requirements in the case of a terrorist act. EMA's National Emergency Coordination Centre, the Protective Security Coordination Centre Watch Office and the National Security Hotline recently amalgamated their incident notification and government communication functions into the new Attorney-General's Department Coordination Centre.

21 By way of comparison, the US Office of the Inspector General has just reviewed the Federal Emergency Management Agency's (FEMA) ability to respond to a catastrophic disaster. See *FEMA's Preparedness for the Next Catastrophic Disaster*, Department of Homeland Security, Office of the Inspector General, 28 March 2008.

22 Any new arrangements would require testing as soon as possible, preferably under a no-notice situation.

23 A $70 million early warning system is being set up to record any earthquakes that could trigger giant waves to strike the NSW coast but it's not clear how communities get informed, particularly if a night-time incident occurred. See 'Tide turns on tsunami alert', *Sun Herald*, 13 April 2008.

24 On the morning of 22 December 2007, a chemical fire left a large plume of toxic smoke drifting over three Melbourne suburbs. A community forum was held with emergency services and relevant government agencies in February 2008 to explore community views on the

incident. Community alerting, information and warning systems were felt to be inadequate by those impacted by the event. See *Westpoint Chemical Fire Report to the Community*, Office of the Emergency Services Commissioner, Victoria, March 2008.

25 VOIP (voice over internet protocols) technology is becoming of much greater importance so there will be challenges in reaching those who rely on internet access for all communications.

26 See Chris Abbott, *An uncertain future law enforcement, national security and climate change*, Oxford Research Group, January 2008.

27 Requests for ongoing Defence Assistance to the Civil Community (DACC) are made by authorised officials in each jurisdiction through EMA to the Attorney-General. There are quite separate arrangements which involve the use or potential of armed force under Defence Force Assistance to the Civil Authority (DFACA). See Andrew Smith and Anthony Bergin *Australian domestic security: the role of Defence*, Strategic Insight, ASPI, November 2006.

28 Limited ADF helicopter support has been utilised for fodder drops and people relocation during flooding and in some situations of support for bushfire suppression operations. Most of the aerial support provided by the ADF in bushfire containment has been fire spotting, inserting/deploying specialised firefighters and communications.

29 One of the key weaknesses in emergency response at state level is rapid damage assessment followed by effective information collation, analysis and intelligence distribution. A networked emergency management approach would allow all agencies to contribute to data collection.

30 The Federal Attorney-General's Department has been working with business leaders to consider organisational resilience. The group is formulating an action plan which includes the development of a resilience standard.

31 This would include partial transport costs related to training and deployments.

32 An amount based on average weekly earnings can be paid after a reservist has completed two weeks full-time duty. The strategy would also need to consider employee protection arrangements in the context of the impact of short notice release of employees on employers.

33 Critical infrastructure owners and operators have provided sensitive information and have done so because they believe in the value that CIPMA will return as models mature and become available for sector tasking.

34 Some jurisdictions have concluded arrangements with the ABC.

35 ABC Local Radio aims to provide an emergency warning service throughout Australia and can do so reliably from 0600–2200 Monday–Friday and 0600–1800 on weekends in all states and territories. Outside these hours South Australia, Northern Territory, and Western Australia (and in summer Queensland and Tasmania) can't provide immediate warnings as they are broadcasting 'in delay'. It takes 20–40 minutes to interrupt the programs, depending on how soon a staff member can get into their offices to make the switches. This means places like the west coast which is vulnerable to a tsunami and South Australia which is vulnerable to bushfires and earthquakes can't be provided with urgent warnings outside these hours.

36 Costs are around $2,000 for a new home or $10,000 to retrofit an existing three bedroom home. Another example in fire prevention, that could be adopted nationally to build resilience in fire prone areas, is the NSW Community Fire Unit Program. These units protect property prior to the arrival of the fire service, when resources are stretched. After a fire front has passed through, they monitor and extinguish remaining remnant fires, releasing the fire service to move to areas of greater need.

37 www.pantrylist.com.au

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David played a central role in the whole of government response to many major emergencies in Australia and the region, including bushfires, extreme storms, cyclones, earthquakes and floods, including critical infrastructure failures. He also coordinated the Australian Government's emergency management response to international crises such as the 9/11 terrorist attacks in the United States; the Bali, Madrid and Jakarta embassy bombings; Australia's response to the tsunami in Southeast Asia and the London bombings in 2005. David contributed to national health emergency planning issues such as the Severe Acute Respiratory Syndrome epidemic in 2003, and more recently Avian Flu pandemic arrangements.

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