Associate Professor Peter Aitken, Senior Director, Health Disaster Management Unit, Queensland Health

Healthcare in Disasters: We’ll See You Again

The healthcare system has a number of key roles and responsibilities in disaster management. There is a need to provide care to those with acute injuries or illness due to the disaster; to ensure ongoing care to those with existing injuries or illnesses; and to provide care to those with mental health issues that may continue long after the disaster.

Risk based planning is an essential component of this and encompasses hazard identification, estimation of likelihood, identification of potential impacts and mapping of vulnerabilities. Importantly this also requires strategies for managing a surge in demand, maintenance of ongoing health care systems and protection of infrastructure to minimise disruption. The spectrum of healthcare providers also extends from primary care in the community, to hospital based care at both outpatient and inpatient level, through to residential aged care and nursing homes. Each of these has an important role with the overall value greater than the sum of the parts.

All of these factors need to be considered along with development of relationships and arrangements with the broader emergency management sector through participation in local, district and state disaster management groups. Relationships between the health care system and the community impacted by disaster are equally as important. Health care in disasters is usually not simply an isolated episode of care, but part of ongoing care for existing conditions or the beginning of a series of visits to manage new injuries or illnesses.

Health care in disasters is not simply something that occurs at a point in time. Rather it is something that is built on relationships, and occurs as part of a relationship with patients. Just like the next patient visit “we will see you again”.
Defining Community Resilience: Moving Forward by Looking Back

Establishing a consensus definition of Resilience, generally, and with particular application to community impacts from disasters, is a hard nut to crack. Like many trans-disciplinary concepts [it’s] definition and ongoing use has been the focus of rigorous debate in Australia and in international settings.

The extensive development of strategies, policies and international agreements that include the concept of resilience in their terms-of-reference highlights the significant interest in and pursuit of practical applications applied to disaster risk reduction and emergency planning - particularly in relation community recovery.

The experience of living through disasters challenges the wellbeing of all those impacted and is particularly disruptive to community cohesiveness and viability. These experiences are also often personal and difficult to understand and engage with as they can cut to the core an individual’s sense of safety. So while ‘community resilience’ is referred to in many post-incident reviews we do not, arguably, fully understand its key components, how to re-create it and nurture its regrowth in devastated communities. It goes without saying that we are only beginning to fully appreciate the difficulties of how to measure it.

This paper presents a framework derived from the 1987 World Commission on Environment and Development: Our Common Future (the Brundtland Report),1 detailing a set of principles ideal for establishing a baseline understanding of a variety of factors active within viable and sustainable communities.

The paper argues that re-tasking key elements of this 29-year old United Nations sponsored work can form bases for consistent understanding of critical components of resilient communities and as a result how resilience might be evaluated in a standardised way. It further suggests that such understanding can lead to more clarity on where effort and resources can be effectively applied to enhance resilience before the disruption caused by disasters and guide efforts to rebuild and recover afterwards.
Climate change presents a number of serious challenges for disaster and emergency organisations. It is arguably the biggest health threat in the 21st Century. Already we are seeing climate disruption in many places on the globe, and without concerted efforts to reduce emissions, global temperature will continue to rise with catastrophic impacts. This would be a world of unprecedented heatwaves, severe drought, bushfires, flooding, inundation of many cities and others lands, and major storms in many regions. This extreme weather will have flow-on effects on increases in deaths and injuries, spread of disease, heat related illnesses, respiratory illnesses, and mental health and psychosocial problems. In this presentation I look particularly at the impact of climate change and extreme weather disasters on people’s mental health and psychological wellbeing. I conclude with a look at several things emergency organisations and disaster responders can do differently as they come to terms and cope with climate change, and as they engage in the major tasks of climate action: mitigation (avoiding the unacceptable) and adaptation (accepting the unavoidable).
Ms Kate Fitzgerald, Director – Relief and Recovery, Emergency Management Victoria

Resilient Recovery

The Victorian emergency management relief and recovery arrangements have been in place for many years and through good will and collaboration the sector has responded to a number of complex and protracted recovery events.

Significant work has been undertaken since 2009 to develop sustainable and efficient emergency management preparedness and response arrangements that reduce the likelihood, effect and consequence of emergencies. The need is also recognised to reform Victoria’s relief and recovery arrangements to enhance recovery outcomes for communities and meet and adapt to the challenges and opportunities of the future.

Supported by reviews, inquiries and reports, specific improvements have been made, however until now the relief and recovery system has not been comprehensively reviewed.

To achieve safer and more resilient communities, the Victorian reform will create a relief and recovery system which empowers individuals, communities, government, agencies and business to plan for and achieve recovery outcomes.

The Resilient Recovery Model proposed, introduces a new way of thinking through the concept of resilient recovery.

Resilient Recovery connects community systems and networks to plan for and support wellbeing, liveability, sustainability, and viability. It is a model that is community focused and driven. It aligns with community needs and authentically connects individuals, communities and business into the recovery process and, for the first time provides a pathway from recovery to resilience.
Ms Judy Slatyer, CEO, Australian Red Cross

Agile: On Being Humanitarian in a Disrupted World

Moving towards the end of the second decade of the 21st century, we find ourselves faced by unprecedented challenges. Climate change, political instability, masses of people on the move, rapid, disruptive changes in technology and increasing urbanisation make for complex shocks and stresses that we need to deal with. The impacts of these shocks and stresses are increasingly understood to be major, long term, and often hidden.

The Red Cross in Australia is considered the first disaster relief organisation. But the Red Cross of 1914 cannot meet the challenges of now. From relief, to much more, we have shifted what we bring to the sector; to advocacy, connection, and service delivery.

Our ability to advocate for communities is based upon generating and using evidence and working closely with communities, in the knowledge that cohesive and healthy communities are more resilient.

Other important vehicles include direct dialogue with governments at all levels, membership of the Bushfire and Natural Hazards Cooperative Research Committee, our partnership in guiding the Australian Institute of Disaster Resilience and as one of the founding organisations of the Australian Business Roundtable for Disaster Resilience and Safer Communities. We also draw upon the experience of the wider Red Cross and Red Crescent Movement.

Our ability to connect horizontally (people to people, communities to communities, agencies to agencies) and vertically (communities to agencies and government) is increasingly recognised, acting as the glue that binds. All the while we continue to support individuals and communities; pushing a deeper conversation about resilience, being innovative in how we use technology and new funding instruments internationally, responding to a breadth of community tragedies and helping communities manage their longer term recovery needs.

Red Cross aims to become more agile, targeted and focussed, to challenge ourselves with ambitious goals that make us think differently, to ramp up scale and impact, to integrate our services, to take advantage of disruption and to be flexible and responsive. Through this refreshed approach we will continue our humanitarian endeavour to help people make sense of these challenges and lead productive and meaningful lives in resilient, safer and stronger communities.
Commissioner Ian Stewart APM, Commissioner, Queensland Police Service

It’s All About Leadership

More than at any other time in history, we are connected not only at a local level but also nationally and internationally by trade, commerce, technology and the movement of people. This results in the effects of disasters being felt not only at the point of impact but causing a ripple effect through the disruption of supply chains and the balance of trade. As a result, senior leaders are confronted by an environment characterised by complexity, increased frequency of extreme events, while simultaneously interacting with a population that has a reduced appetite for failure.

The preservation of life is a function of all Police Services. This function is reflected in mission statement goals across all jurisdictions. In the context of disaster and emergency management, leadership is an integral component of effective command. Through leadership skills, effective command is the dynamic and holistic approach of a commander to direct, control and co-ordinate personnel and resources for the effective management of any incident. All the while being cognisant of the need to provide reassurance to the community, political leaders and those leading the response.

Success is reliant upon a commander’s state of mind of fundamental principles, the interaction between a commander and the surroundings of an incident, the ability of the commander to manage factors associated with the incident and the use of a particular command style relevant to the dynamic event.

An experienced commander will remain calm, exhibit improved situational awareness and leadership skills through exact and correct directions to personnel. However, the ability to lead and manage such personnel is conditional upon motivating and engaging personnel with a focus task accomplishment.

An effective commander with the necessary leadership skills can build the interpersonal relationships necessary to achieve tasks, satisfy basic needs such as recognition, self-esteem and comradeship, and provide individuals with challenging opportunities. However, it is vital that a commander also leads the community who inevitably will be looking for guidance and a sense of reassurance from those at the top.
Response and Learnings – South Australia’s State-Wide Power Outage September 2016

The state-wide mains power outage commenced on 28 September 2016 at 3.48 pm, it caused significant disruption across the community. The outage recorded the largest commercial traffic volumes on our mobile network for the 2016 year.

Telstra’s effective Business Continuity Planning (BCP) was demonstrated by the successful start of most of its onsite emergency generators (100/101), located in core network sites across the state. BCP is a common theme identified in the recommendations made in the Burns Independent Review presented to the Premier of South Australia in January this year.

This presentation will discuss pre event preparations, learnings identified as well as collaboration with, and support offered to emergency services and other Critical Infrastructure providers. The event offered a real world view on surge call volumes into Triple Zero and identified the increasing use of medical alert / pendant devices on the mobile network.

An insight to logistical challenges experienced whilst restoring the network is discussed including the provision and delivery of fuels, rotation of transportable generators, fatigue management of field staff and deployment of emergency network equipment.
ABSTRACTS

Disaster and Emergency Management Conference
A/Prof Rodney Adank, Associate Professor Industrial Design, Massey University

Design in The Disaster Context: From Adhoc Solutions to Developed Resilience

In the aftermath of a disaster, design is often used locally to provide adhoc solutions for specific purpose, in a DIY response from available materials and resources. When design is employed to address the disaster context it has produced a large amount of new product ideas and concepts. These are designed to mitigate the perceived impacts of future disaster experiences. When design reaches past the disaster context and considers resilience and preparedness as a core factor in disaster mitigation, it has greater potential to succeed. The characteristics and motivations of designs generated from these various scenarios produce different types of solutions with different types of impacts and perceived user experiences. Case study concept designs, were selected to illustrate these differences. Hybridization was revealed as a common strategy across all design scenarios, producing an array of new ideas through the combination of existing product concepts or characteristics to form new innovations.

The disaster scenario provides a rich new context for design where fresh ideas are easily formed and assumptions readily made. The viability of many designs never gets tested beyond a developed concept stage as market viability and commercial considerations come into play. Investing in some disaster products can be seen as a 'grudge purchase', however there are situations where these type of products provide a commercial advantage or profile for the investor.

This study to date into the design of disaster mitigation products, supports a design focus on resilience and preparedness and where possible through the integration of solutions into quotidian experience. This brings about awareness and understanding of the product, its use and location - readily at hand in case of an emergency.
Examining Identity Management in Disaster Response Environments: A Child Exploitation Risk Mitigation Perspective

The immediate Disaster Response Environment (DRE) exposes civilians to a multitude of risks, including identity risks. It is integral that those working in a DRE utilise an identity management system to protect the victims of a disaster especially vulnerable persons including children. This paper examines the nature of identity management systems within DREs and the way these systems acknowledge and seek to address risks of child trafficking and exploitation. The research undertaken offers a unique perspective in specifically exploring the experiences of non-State actors and the role they play in identity management systems within the immediate DRE. Through applying a case study approach in exploring Tropical Cyclone Winston and the experiences of the Fiji disaster response actors, traditional views of identity management and their relationship to mitigating risks to children are challenged.

The role of the community in identity management, verification and associated controls were geographically concentrated and not readily portable. This in itself created risks to the child of trafficking and exploitation, particularly where evacuation centres and shelters were geographically removed from the children’s community. The EAST method revealed that the actors in the disaster response environment heavily rely on information from the community and State when identifying children. When there are gaps in the information and social networks in the identity management process there are significant risks to children including exploitation. These insights are highly relevant to future disaster response planning. Identity Management is a complex system that involves a multitude of stakeholders and mitigates risk to children in disaster response environments. The understanding of the system where the community plays a large role is integral to the development of identity management systems in disaster response environments where future research must integrate the community and create adaptable systems that are geographically portable.
Mr Cameron Anderson, PhD Student & Officer in Charge, Edith Cowan University & Queensland Ambulance Service

Paramedics and Pandemics: The Use of Pre-Hospital Medical Data for Early Bioevent Detection

BACKGROUND

The threat of bioevents such as disease or bioterrorism requires innovative surveillance methods to rapidly recognise novel and obscure threats, permitting early implementation of measures to limit the spread of disease. Ambulance call and dispatch data are enticing due to their immediacy, geographic specificity, and reach into the community. However, implementing these data into functioning surveillance systems has proven problematic due to the broad, non-specific nature of ambulance call categorisation. The objective of this research is to assess disease surveillance methods used by Australian ambulance services and provide a current picture of Australia's pre-hospital disease surveillance capability.

METHODS

Each of the eight emergency ambulance services in Australia was invited to participate in an interview to establish the history, utility, and learnings from the use of call data for disease surveillance. Qualitative analysis sought to identify common issues and themes across the country.

RESULTS

One Australian ambulance service the Ambulance Service of New South Wales - uses its data for background surveillance in a surveillance system run by the New South Wales Ministry of Health encompassing several different data sources. All ambulance services participating in this research have identified the ability to undertake active surveillance during known emergencies. However, many inconsistencies were noted as to whether screening should be implemented, which callers should be screened, and what questions should be asked.

CONCLUSIONS

The potential for real-time ambulance-based disease surveillance in Australia exists. However, at this point in time, none of the Australian ambulance services involved in this research currently conduct real-time surveillance. With one exception, no services routinely perform surveillance at all; nor were any plans identified to start doing so. All services have the ability to undertake disease screening during known emergencies; but can these be made more consistent and reliable as an “all-hazards” early warning system?
Mr John Arrowsmith, Principal Program Officer, Inspector-General Emergency Management

How Good Are Your Plans? - Benchmarking Disaster Management Plans Through Annual Assessment

At the core of every aspect of disaster management, from resilience to recovery, are plans. They are found in council offices, underpin business continuity, are posted on State government websites, and are available nationally. But how do we tell if they’re any good? And how do we know what can be done to improve them?

In Queensland, disaster management plans provide a basis for mitigation, prevention, preparedness, response, and recovery activities. Since 2014, the Office of the Inspector-General Emergency Management has been tasked to undertake a legislated annual plan assessment process, and develop it to drive improvements, without creating additional bureaucracy.

The annual review of local and district disaster management plans now forms part of an assurance program carried out at three levels within Queensland’s disaster management sector. It uses the benchmark of the Standard for Disaster Management in Queensland (the Standard).

In December 2016, the Office reported on the third annual review of plans. The first review, in 2014, assessed if plans complied with guidelines dating back two years or more. Following the introduction of the Standard, the 2015 assessment moved from being compliance to outcomes-focused. This approach continues today.

One size certainly does not fit all communities in Queensland. But many small and medium-size councils, remote from each other, share common issues. Sharing their solutions and good practice provides benefits to many.

This presentation will look back over the three years of combined assessments. It will describe the collaborative evolution of the assessment process. It will show areas of strength in Queensland, those areas with opportunity for improvement and how these have changed over time.
Mr David Ayles, Disaster Management Officer, Aidtaskers

Introducing a Disaster Task Management Start-Up. The 'Uber' of Disaster Management

I will offer my research through my Bachelor of Emergency Management studies, as well as local survey and research results to argue the need for a new approach to disaster management by taking advantage of the 'share economy'.

After experiencing the devastating floods in Mackay in 2008, requiring an almost $50,000 insurance claim, I set off on a discovery adventure to see if things could be improved.

Spending months within the Mackay SES, starting at the basics due to not being able to have prior skills recognised, I began visiting rural and major cities from Adelaide to Townsville conducting market research for my start-up Aidtaskers a digital marketplace connecting disaster management professionals, general contractors and people who can assist and provide their own generators & tools with customers, businesses and government.

It's an RACQ roadside assist mixed up with an Uber for Disaster Management.

When the Aidtaskers national 1300 phone number hits the market, customers will be able to find exclusive assistance for preparing, responding to and recovering from disaster events, by submitting 'aid tasks' to the website/ mobile phone webpage, or by contacting our national call centre with first responders in each suburb available to assess and assist.

It's a modern solution to the 'difficult' options available to the disaster management sector today; with continued cuts to aid and continuous Royal Enquiries which occur when events do occur. We provide an extended service to people who say they want to pay to receive a broader and quicker response.

I will discuss and validate evidence that shows the problem exists and how my solution has demand. I will conduct more research and gain further feedback for my presentation in March, 2017 during a networking trip to New Zealand, which will help explain how and why I have launched Aidtaskers.
Mr Shaun Bennett, Solution Lead - Public Safety & Emergency Management, Noggin

People Power: Using Technology to Effectively Manage Volunteers During an Incident Response

Volunteers provide a crucial role in supporting major events, whether this be directly through planned events such as the Commonwealth Games, or responding to fire emergencies for a rural fire service, or indirectly by sharing their live experiences of emergencies and crises through social media networks. Government organisations, emergency responders or any organisation with a responsibility to manage incidents affecting their customers or the public should take advantage of this army of resources through new technologies, to reduce the risk and impact of incidents and to meet the expectations of the next generation.

Rapidly changing technology is impacting the way in which we work and communicate, which in turn provides us with new and innovative ways to plan and respond to incidents and emergencies. We now have the capability to provide more effective and efficient incident response through the ubiquitous nature of cloud services accessed through mobile and web applications. Social media provides improved real-time situational awareness from the billions of devices acting as sensors providing live video footage, geotagged images or 140 character sitreps. On-demand services, exemplified by the revolution of the private car hire and accommodation industries, allow us to call on our volunteer resources as and when we need them. Crowd-sourcing by both on-the-ground and remote volunteers can provide damage assessments and real-time updates to mapping to assist in evacuation as seen in the immediate aftermath of the earthquakes in Haiti in 2011 and Nepal in 2015.

Leveraging the experience of working in partnership with several public safety organisations such as the American Red Cross, QLD SES and NSW RFS, this presentation investigates the prospects for emergency and incident responders through the changes in people's behaviours and technology.
Association Between Home Visit Programmes and Emergency Preparedness Among Elderly Vulnerable People In NSW

The purpose of this study was to examine the association between home visit programmes and emergency preparedness among elderly vulnerable people in New South Wales, Australia. The study utilized data acquired from the Home Fire Resilience Project (HFRP), which was a collaborative undertaking by three emergency agencies in NSW. The study consisted of 370, 255 and 156 older people at registration, during home visit, and during post-home visit respectively. The seven emergency outcome measures (participants finding out what emergencies might affect their area, participants' knowledge of where to find information during major emergencies, participants' knowledge of how to pack an emergency bag, whether participants were taught how to arrange for transport during an emergency, whether participants did prepare a list of people to call during an emergency, whether participants swapped contact numbers with their neighbours and whether participants had conversation with someone else about their emergency plans) were examined by adjusting for key demographic factors, using generalized estimating equations (GEE) model that adjusted for repeated measures in order to examine the association between home visit programmes and emergency preparedness. After adjusting for key demographic factors, our study revealed that 'during visit' and 'post-home visit' recorded significant improvements in the seven emergency outcome measures from the home visit programme, compared with 'registration'.

The odds of finding out what emergencies might affect one's area were significantly lower among older participants who were born outside Australia and those who were female. Additionally, older females had significantly higher odds of knowing how to pack an emergency bag compared to older males. Findings of the study suggested the introduction of periodic mobile telephone text messages interventions in order to improve emergency preparedness among older people especially among males and those older participants born outside Australia.
Interdisciplinary academic collaboration and partnerships with government organisations can lead to creative and innovative ways to enhance our understanding of resilience. An organic relationship between academic and field experts has created an innovative teaching and research model. This model has achieved positive student learning outcomes, supported disaster management practice and begun to fill the knowledge gap in disaster perception and preparation.

In 2013, a group of interdisciplinary educators at QUT took the opportunity to collaborate and design a new multifaceted subject as part of the rollout of a new undergraduate Science curriculum. This new subject would highlight the importance of understanding not only the science behind a natural disaster but also human behaviours and social factors. Individually, students conduct field research, which comprises a survey designed by academics and industry partners to explore student and community behaviours towards disasters. Student groups then use this large (n=1,904) cross-sectional panel of data, predominantly gathered across the Greater Brisbane area, to investigate specific research questions. As a final assessment, the teams present their research findings and policy recommendations to a panel of emergency management decision-makers.

This collaborative teaching and research model for disaster management has led to a number of key insights about community behaviours, including: young adult perspectives on disaster preparedness and actions to enhance their resilience; community biases to recent events; and community risk perception and decision-making during hazards. The collaboration has also opened a potential career pathways for interested students, which enables them to extend in-class disaster management competencies and gain real-world experience through an internship with the Office of the Inspector-General Emergency Management.

Overall, this collaborative teaching and research model responds to national priorities for disaster resilience, provides an evidence base to support emergency management decisions and builds disaster preparedness and professional capabilities of young adults.
Miss Jenna Buckley, Disaster Management Officer, Isaac Regional Council

Challenges Faced in Volunteer Recruitment and Retention in a Shrinking Population Base

Attracting and retaining State Emergency Service volunteers in any environment can be challenging. In the Isaac Region, identified deterrents from volunteering included the boom and bust nature of the resource industry impacting on community participation, high percentage of non-resident workers, belief they would not be suited or capable of participating and perceived lack of support from employers can deter people from volunteering.

Isaac Regional Council’s SES ‘Be Extraordinary’ recruitment campaign arose in an attempt to mitigate these barriers. The campaign was designed to address these concerns by utilising existing volunteers that represented a cross section of the community, male and female, young and old, single and otherwise, demonstrating that there is a task for everyone by showing everyday tasks that related SES functions, displaying people from all different industries, including mining, in their SES roles, targeting existing volunteers from other areas that could participate in training whilst working in the Isaac Region and partnering with major industry organisations that have an Emergency Service Leave clause in their Enterprise Agreement.

The end product was an award winning television advertisement and radio segments and resulted in an increase in volunteer numbers with 17 new members from 27 enquiries. This is 19% increase on the 89 members recorded at the end of January 2016. Expressions of interest have been received from other councils and SES units wishing to rebrand and run the advertisement in their own areas to boost their recruitment also. After evaluating the campaign, strategies have been identified and will be implemented in the future to improve the outcomes.
Mrs Lisa Cameron de Vries, Technical Director, Phoenix Resilience

The Key to Resilience is Awareness, But How Do We Become Aware?

The key to resilience is awareness, but how do we become aware?

At the AMZDMC conference in 2016 I presented the concept 'the five step plan to organisational resilience' and received very positive feedback from the attendees, but it was a lot of information in one presentation. This year I would like to take one component 'Step 1: Awareness' really focus on that to teach the attendees how to become aware and how that knowledge can be applied to benefit your organisation.

Every day in the news we see and read the tragic stories of organisations affected by adversity, like large scale layoffs, deadly accidents, fires, service disruptions or industries being crushed by competition and technological substitutes.

The Australian Bureau of Statistics reports that in Australia the national average survival rate of businesses has dropped from 86.9% in June 2012 to 61.9% in June 2015. That is a shocking drop of 25% in only three years.

Global dynamics play a big role in this, like rapid technological developments, international competition, environmental factors and political/economic instability. Additionally, organisations are dealing with national, local and internal factors that all influence the operation and performance of the organisation.

But where there are threats there is opportunity and there are plentiful examples of organisations that identified possibilities and seized them to their full potential.

Initiatives to reduce/minimise adverse impacts and optimise on opportunities can be collated under the header Organisational Resilience.

The key to achieving organisational resilience is awareness, but how do we become aware?

This presentation will improve your awareness by:

- providing you with a simple tool to map your context
- giving you a methodology for obtaining and analysing relevant context information to generate intelligence
- demonstrating ways to use that intelligence for your benefit
What is a Disaster Resilient City?

As one of few Queensland cities signed up with the UNISDR Resilient Cities campaign, Cairns takes a proactive, carefully planned approach to resilience building. Two years after its community resilience programme began, a comprehensive stocktake of the state of resilience at social and infrastructural levels was implemented. Assessment of two resilience scorecard methods was undertaken and the decision made to use both, to provide a more complete baseline understanding of resilience in the region. The Torrens Resilience Institute scorecard was used to measure representative community resilience while the UNISDR scorecard was completed by LDMG members, partners and others involved in disaster management infrastructure.

The project comprised many factors including community mapping, surveys and in depth community engagement within selected geographic communities, research, self-assessments by and workshops with LDMG members, partners and contributing organisations, shared feedback and aggregated assessments and recommendations.

Completing the scorecard exercises using a genuine engagement approach is an achievement in itself in terms of logistics, resources, gaining commitment and planning. Significant outcomes were demonstrated including clear identification of the successful, comprehensive lead role in disaster preparedness, response and resilience building undertaken by Cairns Regional Council, clear identification of the roles, responsibilities and risk assessment gaps of other organisations involved in disaster management, confirmation of sound infrastructural resilience in some areas, less in others, enhanced presence in identified communities and understanding of resilience levels and significant gaps, a greater appreciation of the critical importance of community connectedness, contact with local government and community self-help and key information gained on how to help communities better support themselves.

This unique approach contributes to many of the priority outcomes of the National Strategy for Disaster Resilience, could be utilised by other local governments and provides an invaluable guide to resilience building for the Cairns region.
Mr Mark Cattell, Manager Regional Operational Readiness, Victoria State Emergency Service

Flood Management Improvement Since 2010/11

During 2010-2011, Victoria experienced some of the worst flooding in the State’s history. During these floods, one third of the state was affected by flooding. Flooding was widespread and reached across 70 local government areas (Victorian Government, 2012). Following this emergency the Victorian Government conducted and released the Final Report of the Review of the 2010—11 Flood Warnings and Response to conduct a detailed examination of the emergency management arrangements in Victoria. A significant amount of work was since been undertaken by all agencies within the Victoria EM sector to address these recommendations, including the development of a multi-agency incident management team training program underpinned by AIIMS, and the development of a suite of predictive services and tools and, establishment of a common operating platform.

The biggest significant change for Victoria is the ability for incident management teams to be staffed by personnel from all agencies filling various roles and in having better understanding of managing incidents across all hazards, all agencies. This has seen an improvement in the sustainability of personnel to staff Incident Management Teams (IMT) for a longer period of time and access to personnel across the broader emergency management community not historically embedded within IMTs.

In early September 2016 the North East and North Central areas of Victoria experienced high levels of rainfall which led to riverine flooding across several catchments and included the Murray River. These floods lasted for a total of 102 days ending in mid-December and saw the Murray River at its highest flood levels since the 1970’s.

Presentation will discuss the way we managed this flood focussing on what was done differently, particularly in the use of multi-agency IMT’s, what were the advantages of the approach we used, what outcomes were achieved through this changed approach and new lessons learnt.

After 102 days of flood management for a slow moving river requiring cross border liaison and multiple community advice messages including health warnings as well as flood advice, community meetings and direct communication with residents isolated along the river, this flood moved on with minimal impact and fan fair.
Ms Vanessa Cattermole-Terzic, Principal Behavioural Scientist, Department of Transport and Main Roads  
Mr Bruce Budge, Inspector, Queensland Fire and Emergency Services  

**Analysing Interoperability Between Responder Agencies at Traffic Incidents**  

Effective traffic incident management optimizes road crash casualty outcomes while minimising the negative flow on effects of incidents, due to congestion. However incident scenes are complex, dynamic environments with distributed intra and inter-agency team functions. Therefore, determining best practices at individual scenes is not easily evident. Theoretical models from human factors have been shown to effectively analyse complex socio-technical environments and these may be useful for analysing emergency responder functions at traffic incidents. The aim of this study was to investigate the applicability of one such model, Cognitive Work Analysis, as a tool to analyse the traffic incident management workplace, and provide information to improve intra and inter-agency performance and collaboration at incidents. Responders from the Queensland Police Service, Queensland Fire and Emergency Services and the Royal Automotive Club Queensland’s Traffic Response Unit participated in a desktop exercise for the study. As anticipated, Cognitive Work Analysis successfully mapped the desktop exercise and identified agency functions, priorities, tasks, and resource requirements, intra and inter-agency collaboration requirements, different operational strategy requirements and produced useful recommendations to further improve traffic incident management. The success of the model as a system analysis and support tool for traffic incident management highlights the potential of using Cognitive Work Analysis to support a wider array of emergency response functions.  

Key Words: Cognitive Work Analysis, emergency response, safety, system analysis, system support, interoperability.
Miss Lucinda Coates, Catastrophe Risk Scientist, Risk Frontiers

An Analysis of Human Fatalities from Cyclones, Earthquakes and Severe Storms in Australia

This paper documents socio-demographic and environmental circumstances surrounding Australian fatalities that occurred during tropical cyclones (post-1970), the Newcastle earthquake (1989) and severe storms events (post-1990), where the latter comprises hailstorms, high wind gusts, lightning, heavy rain and tornadoes.

With funding from the Bushfire & Natural Hazards Cooperative Research Centre, Risk Frontiers' historical natural hazards database PerilAUS was updated and records analysed along with post-2000 Coronial Inquest reports. Of specific interest were demographic information; cause of death; location of the fatality; transport, activity and actions prior to and at the time of death; capacity for action, event awareness and, where possible, the severity of the event.

Of the 406 deaths identified, 254 took place between 1990 and 2015 with severe storms responsible for 200. 141 of those killed in severe storms died as a result of high wind gusts. The average decadal death rate has stayed fairly constant over the time of study for gusts and lightning and has fallen for tropical cyclones. Most deaths within hazard categories having in excess of 20 fatalities were male. Most events studied revealed the survival importance of (early) shelter in a sturdy building. Implications for emergency management will be discussed.
The Canterbury earthquakes in 2010 and 2011 had a significant impact on landlords and tenants of commercial buildings in the city of Christchurch. The devastation wrought on the city was so severe a cordon was erected around the central business district for two and a half years while buildings were demolished, repaired or rebuilt. This was an unprecedented response to a natural disaster in New Zealand. Nevertheless, despite the destruction not all buildings within the cordon were damaged; many were still capable of being occupied and used. The difficulty was that tenants could not access them. As time went on and it became clear the cordon would be in place for a significant period, tenants did not want to pay rent for buildings they could not use. They wanted to end their leases to set up business elsewhere. The problem was that landlords and tenants were unclear about their legal rights because the law was unclear; their leases did not cover an inaccessible building and neither did the legislation. Was a tenant required to pay rent for a building that could not be accessed? Could either party terminate their lease on the basis that the building was inaccessible? There were no clear answers.

This paper argues there is a possible answer to this conundrum: the application of the doctrine of frustration. This doctrine was developed to enable contracts to be terminated in situations where an extraordinary event had such an effect on a contract that it radically changed the parties’ contractual obligations. In this paper it is argued the doctrine should apply to enable landlords and tenants with commercial leases of buildings affected by the Canterbury earthquakes to terminate them. It may also provide a solution for those affected by the more recent North Canterbury earthquakes in 2016.
Mrs Julia Cook, Disaster Management Support Officer, QLD Police Service
Mrs Liane Henderson, Bushfire Safety Officer, Rural Fire Service Qld
Mrs Susan Trappett, Disaster Preparedness Coordinator, Moreton Bay Regional Council

My Resilient Community - Meat Ants and Caterpillars. A Collaborative Approach to Enhancing Resilience in High Risk and Isolated Communities

Queensland is acknowledged as the most disaster-prone state in Australia. Threats including cyclones, storms, floods, bushfires and industrial accidents take their toll on communities, infrastructure, businesses and the environment. Increased demand and the limited capacity of emergency services personnel and services means empowering individuals and communities and strengthening community resilience to natural and man-made risks is an increasing priority and challenge.

The My Resilient Community project explores the pathways taken to strengthen community resilience through improving preparedness, response and recovery capacity. Through this project, emergency services, government and non-government agencies connect with local communities to promote understanding of risks and vulnerabilities and identify skills and contributions individuals can make to further enhance community resilience.

The delivery of the project involves a number of phases including risk assessment; marketing and resilience information sharing; street meets; door knocks; mail outs and the establishment of local community groups to coordinate resilience through prevention, preparation, response and recovery activities.

The framework of the project utilises adaptable, flexible and diverse strategies to facilitate a cultural shift in communities to know the hazards, understand the risks and work with emergency services personnel and each other. This is a critical step toward enhancing community resilience.

Practical application of the project to date includes work with isolated, island, and extreme risk communities in SEQ. The case studies adopted diverse strategies according to the unique needs and capacity of the individual communities. They demonstrated how communities have gained an increased awareness of their risks, the capacity of emergency services and the role individuals and community groups can play in disaster and emergency management.

My Resilient Community uses a holistic and multi-faceted approach to building resilient communities. The ethos of this project provides a grass-root approach through collaborating with agencies and local volunteer organisations to achieve shared responsibility in community resilience.
Ms Jasmin Craufurd-Hill, Area Manager, St John Ambulance Australia (NSW)

Crucial Capital: Understanding How and Why Different People Volunteer (and Continue to Volunteer) in Emergency Services

There has been much debate in the literature surrounding generational change and what this means for volunteering in Australia but minimal research into what this means for emergency services. This research sought to understand the growing change in volunteering style and volunteer motivations being seen in St John Ambulance Australia (NSW) and what this meant for deployable capability, training and retention. The project drew upon a combination of historical demographic and performance data, previous research projects and annual HR reports, to understand longer term trends across the organisation. The project then sought to give context to this information through new member surveys, focus groups and interviews with segments of the membership, covering variations in age, length of service and location of service.

From this work it was possible to gain insight into what motivated different segments of the Australian population to consider volunteering in community and emergency service organisations, what factors supported and enabled their volunteering and what influenced their retention beyond the organisational median service length. By drawing on these findings and research methods, volunteer emergency service organisations may be able to gain additional insight into the effective recruitment and retention of their volunteer workforces and how to enable them in times where surges in staffing may be required, such as in responding to natural disasters.
Ms Heather Crawley, Manager, National Centre for Emergency Management Studies

The State of Training - One Year On

Bridging the gap between academics and practitioners in the emergency management sector is a cornerstone that will underpin future disaster management arrangements and disaster risk reduction in Australia. Our ability to achieve this is being increasingly compromised in the current training environment.

At the ANZDEM 2016 I presented a paper that reviewed of the state of training in emergency management. The 2016 paper focussed on non-operational training at level 6 of the Australian Qualifications Framework and the implications of this for the future of our sector. One year on, this 2017 paper will provide an update of the training environment and will further explore issues of curriculum, standards, accessibility, resourcing opportunities and governance in training.

This paper is based on a second national scan of training options for undertaking the Advanced Diploma of Public Safety (Emergency Management), and a comparison with 2016 offerings. It will also provide a summary of the results of a survey conducted by the Disaster Resilience Education Alliance early in 2017 and presented to Australian Industry Standards to inform a review of the qualification levels 5 and 6. Finally, it will review the state of governance and government support for training.

The scan reveals that nationwide training options are diminishing, whilst the need for appropriate curriculum, resources, delivery models, strong sectoral leadership and co-ordinated governance is growing. A number of positive initiatives have emerged to fill some of the gaps, and these initiatives and their implications are explored in more detail.

Tragically, it may take a number of catastrophic disasters to trigger effective action that could redress the capability gaps of the emergency management workforce. When resources are scarce, training and professional development are often the first functions affected. This logical but short term thinking will bite when the negative impact of disaster inquiries, intense media scrutiny and the culture of blame make evident our lack of long term planning.
Mr Nicholas de Rozario, Fire Management Officer, SA Department of Environment, Water and Natural Resources


This presentation provides an overview of the extreme weather event experienced by South Australia in September 2016. Heavy rains and strong winds across the State resulted in extensive storm damage along with flooding in and around creek and river catchments. Critical infrastructure, the road network, along with a large number of houses and businesses were affected. The peak of the event was characterised by a blackout which left the entire State without mains power supply for a number of hours. Essential services were forced to implement their contingencies and it was a number of days before more remote parts of the State had their mains power supplies restored.

The SA State Emergency Service is the control agency for extreme weather events in South Australia – responsible for taking charge of the emergency and providing leadership to all other agencies responding. The sheer magnitude of the event combined with its duration required an unprecedented level of interoperability between agencies for managing a flood and storm event in South Australia. Supporting agencies included the SA Department of Environment, Water and Natural Resources, SA Country Fire Service, SA Metropolitan Fire Service, SA Police, Bureau of Meteorology, Local Government Association and SA Department of Communities and Social Inclusion.

As the event continued to escalate, additional agencies became involved including Emergency Management Australia, the Australian Defence Force, Victoria State Emergency Service and Western Australia Department of Fire and Emergency Services.

The presentation explores the benefits of a common incident management framework, such as the Australasian Inter-Service Incident Management System, in facilitating interoperability between agencies at both the state and national levels – building our capability to respond to these significant types of events.

The presentation concludes with a reflection on lessons learnt following this incident, as they apply to interagency collaboration during major incidents.
Mr Nigel Deans, Account Lead, Quintiq Pty Ltd

Workforce Planning in An Age of Disruption

Several issues have significantly impacted Disaster & Emergency Services in recent times, including:

- An increase in unpredicted major disruptions
- Advancements in the diagnosis & treatment of Post-traumatic Stress Disorder (PTSD)

Preparing for the worst of times

Despite the best of plans, some disruptions are inherently difficult to predict. Severe weather events, earthquakes and acts of terrorism can happen at any time, and dealing with these disruptions can quickly become overwhelming. The ability to make the right decisions in the moments when disruptions occur is critical for both your team members and the community at risk.

Organisations are made up of vital assets - its employees, infrastructure, vehicles, equipment and inventory. Asset-agile organisations are able to utilise these critical resources to its maximum potential at the most opportune time.

Sharing proven insights on the Quintiq solution

How do you prepare for the unexpected? The Quintiq solution, with day-of-operations optimisation and propagation gives you a level of required speed and agility other solutions cannot match.

Our session will explore the creation of an agile organisation that is compliant, profitable and innovative in its strategic and tactical planning of complete asset utilisation.

Quantifying fatigue for improved emergency services

Great advancements have been made in the understanding and treatment of Post-traumatic Stress Disorder (PTSD). This is relevant as it has been estimated that 1 in 10 emergency services team (EST) members may be suffering from PTSD. Planning, scheduling and allocation of tasks take on a new degree of importance with this new knowledge. EST members must be physically and mentally fit to ensure that they are capable of performing their allocated tasks at all times.

This was demonstrated in 2013 with the introduction of a new level of Fatigue Risk Management System (FRMS) by the Australian Civil Aviation Safety Authority. Historically, the fatigue management box was considered to have been ticked as long as a pilot or an air traffic controller (ATCO) had the legal award or work rule breaks. But what about the risk of fatigue? What if the ATCO was unwell or suffering from mental health issues? Could you measure the risk of fatigue and take that into consideration when planning and scheduling?

That is exactly what Quintiq is doing at Airservices Australia. The organisation’s FRMS has been integrated into the Quintiq workforce planning and optimisation solution.
Ms Carrie Dearnley, Senior Flood Engineer, BMT WBM

From Data to Intelligence: A Technological Solution to Improve Emergency Response

Immediately before and during a flood, a massive amount of data is created which must be synthesised by emergency responders to understand the likely extent, nature and hazard of the flood, and its likely consequences. Most of the data is dynamic, requiring emergency responders to integrate multiple data sets occurring over different spatial and temporal scales. As a further complication, multiple agencies are often seeking to coordinate responses and may be relying on different data sets, and responders from outside areas may be unfamiliar with local flood conditions.

In response to these challenges, BMT WBM developed the FloodIntel flood intelligence system. FloodIntel integrates a range of flood information and geospatial data in a seamless, intuitive interface that helps emergency responders make fast, consistent decisions during rapidly evolving flood events. The system minimises the burden on emergency responders during flood events by integrating multiple data sets and delivering the right information to the people who need it, when they need it.

FloodIntel accesses real-time and forecast telemetry, can run real-time hydrology and hydraulic models, assesses the data against pre-defined thresholds and trigger values, and publishes current and forecast flood impacts and maps. FloodIntel can generate reports and alerts, including integration with external messaging systems like Whispir.

The system is a fully cloud-based solution accessible to many users at once, through any standard browser, on a variety of devices. FloodIntel is fast and highly intuitive, allowing a new user to open the system without any training and quickly find the information they need. Resilience during challenging conditions is vital to the success of the system, and is achieved through a range of technical and non-technical solutions working in concert.

Although FloodIntel has been developed with real-time flood management in mind, it can be readily adapted to manage a range of natural hazards.
Mr Matt Dorfstaetter, Project Director, Operational Analytics for Community Recovery Strategy Design, Department of Communities, Child Safety and Disability Services

Integrated Operational Decision Making: A Tool for Australia's Event Coordinators

Research tells us that effective disaster response, relief and recovery programs are led by sound knowledge of the local communities and their capacities and strengths. Communities are varied in their composition and in risk exposure whereby certain community members are more vulnerable and may need tailored support to prepare for, respond to or recover from disasters. In times of disasters it is very complex and sometimes impossible to gather reliable community and event-specific information.

Facing this challenge, the Community Recovery Branch, took a leadership role in Qld, engaging the whole disaster management sector to collaboratively design an operational tool which supports event coordinators. We developed an easy to use GIS tool that draws on community characteristics, international best-practice and organisational policies to forecast the consequences of not only the disaster itself, but those of various operational strategies.

This operational tool combines hazard data, local characteristics, international best practice and state-wide organisational policies. It automatically analyses the real time information and proposes operational strategies which can be utilised to inform decision making.

Based on international best-practice and informed by academia, it is expected that this tool will be used to significantly improve transdisciplinary disaster management operations and strategies.
Ms Meagan Edhouse, Emergency Management Advisor, Community Resilience, Emergency Management Bay of Plenty
Mrs Angela Reade, Manager Community Resilience, Emergency Management Bay of Plenty
Mrs Shaneen Simpson-Almond, Senior Advisor for the Ministry for Māori Development, Waikato / Waiairiki, New Zealand

Enhancing Resilience in Māori Communities - An Innovative Approach

The Bay of Plenty region in the North Island of New Zealand is vulnerable to a wide range of hazards, including natural hazards such as severe weather events, landslips, earthquakes, volcanic eruption and tsunami. The population is 28% Māori with 38% of the region’s land in Māori ownership. There are 34 iwi (tribes), over 200 hapū (sub tribes) and more than 200 marae in the region.

These marae often become the hub for the community when a disaster strikes. It was recognised that a unique approach was required to effectively engage with Māori communities for emergency planning, taking into account their cultural practises and protocols, language and values.

Emergency Management Bay of Plenty, in partnership with The Ministry for Māori Development, and in collaboration with relevant stakeholders, agencies and local whānau and hapū, delivered a successful pilot project in marae emergency preparedness planning.

This presentation highlights an innovative approach taken to improve engagement with Māori (the indigenous people of New Zealand) and provide effective customised resources for emergency planning.

The intended outcome is to increase the levels of resilience for marae communities, through greater levels of understanding of local risks and hazards, strengthened relationships between whānau, hapū and emergency management agencies and key stakeholders, and empowerment of whānau and hapū to take ownership of their emergency planning.

The collaborative process identified the need for the development of a national resource for emergency management professionals to assist them to engage with whānau and hapū, to support readiness, response, and recovery activities in their community. The development of the toolkit was greatly informed by the sharing of resources already being utilised across different regions and the collaboration of Civil Defence Emergency Management Groups across the country.

The toolkit was successfully launched nationally to emergency management staff, and relevant stakeholders in June 2016. This resource is now utilised to deliver emergency preparedness workshops to marae across the Bay of Plenty.
Mrs Catherine Forbes, Associate and Built Heritage Specialist, GML Heritage

What Has Happened to My Heritage? Recovery in Christchurch and Kathmandu

In recent years, both Christchurch and Kathmandu have suffered severe earthquakes and the loss of culturally significant places within the cities has had a tremendous impact on their communities.

The emergency response and recovery in each case has been totally different, the result of different capacities to respond, different financial resources, different organizational structures and levels of government intervention, and different value systems.

The presentation will discuss the direct impacts of the earthquakes on the heritage of each city and the indirect impacts of the emergency response and recovery approaches adopted. It will consider why we want to hold onto our cultural inheritance and protect it in the wake of disaster, and the impact that its loss can have on a community’s sense of place, identity and wellbeing. It will also consider the how recovery of cultural heritage can contribute to a community’s healing.
Ms Rouve Forbes, PhD Researcher, Monash University

Stories from the Ashes: Exploring Young Rural Adults' Psychosocial Recovery Beyond the 2009 Gippsland Bushfires

This research is new in that it looks at long-term outcomes for young adults who have often been ignored as a target group in disaster recovery research.

The CHIME recovery model concepts; connectedness, hope and optimism about the future, identity, meaning and empowerment are used to explain the findings.

Connectedness
‘Connectedness is critical to young adults' recovery because they define themselves by their relationship with others. They cite low engagement by recovery agencies on the social media platforms they use, and by the community recovery efforts in general.

Hope - Do young adults believe that they have recovered and regained their dreams? Generally young adults are moving forward and have a positive outlook.

Identity
‘Young adults had to construct a new sense of self. As Lilly said, ‘You are not yourself after such a traumatic event.’ Harry said, ‘Going through such a major event at a young age, forces you to rapidly mature beyond your years.’ Young adults needed time to adjust to the change disaster brings. David said, ‘Friends and family constantly made me feel guilty for not 'moving on' with my life’. There was a shift in young adult roles. While viewed as dependent, young adults found themselves thrust into more responsibility for their families.

Meaning - is making sense of the disaster and finding greater life purpose. One participant responded: â€œfeel like no life challenge is impossible.’ Others struggled to find meaning.

Empowerment
‘Young adults felt disempowered due to lack of consultation and access to recovery supports. Because of their age and financial dependence on parents, young adults were often ineligible for support services, such as case management and material aid.

Additional to the CHIME model, another theme that is emerging as a key factor in their recovery is acknowledgement
Mr Andrew Gissing, Director Government Business and Enterprise Risk Management, Risk Frontiers - Macquarie University

Influence of Road Characteristics on Vehicle Related Flood Fatalities

A recent analysis of flood fatalities in Australia identified that 1859 people had died in floods since 1900 (Haynes et al, 2016). A large proportion of these deaths were the result of people entering flood water in vehicles.

There has been some effort in recent years to address this issue through educational campaigns with limited success. There has, however, been no previous research into how the characteristics of roadways influence the survivability of people in vehicles that enter floodwater.

Risk Frontiers with support from the Bushfire and Natural Hazards Cooperative Research Centre has recently led research to determine the influence of road characteristics such as: location of a roadway, height of a roadway above the surrounding ground, presence of barricades, lightning, vegetation and signage.

This research has involved the research team visiting the locations of various recent vehicle related flood fatalities and rescues to undertake an observational analysis of factors that might have contributed to the circumstances of the death. Field visits have been followed up with interviews with local emergency services and local government to ascertain further details and determine what subsequent works, if any, have been completed since the accident or are in development.

This paper will provide an overview of this unique research and provide insights to determine the level of risk posed at certain locations as a consequence of roadway design.
Volunteering in emergency response and recovery is a mainstay of emergency management in Australia. More rarely is it applied in disaster risk reduction or undertaken internationally by Australians. This presentation will outline the experiences of a 12 month (March 2015 – March 2016), professional volunteer assignment in the Policy Coordination Unit of the National Emergency Management Agency of Mongolia, (NEMA). The principle tasks of the assignment were capacity building, institutional strengthening and skills exchange. The assignment was sponsored through the Australian Volunteers for International Development, (AVID) an Australian Federal Government Initiative administered through the Department of Foreign affairs and Trade and facilitated by the Australian Red Cross.

Conference participants will hear the perspectives of Major Bazarragchaa Duudgai on the capacity building and institutional strengthening outcomes for Mongolia, (by video link) the value of international volunteering to Australia’s interests from the Ambassador to Mongolia John Langtry (by video link) and the professional development and personal growth outcomes from volunteer Darryl Glover.

The experiences highlight the opportunity for emergency service organisations to support a more extensive and coordinated program of professional volunteerism of their staff and internal volunteers, to share the strengths of Australian emergency services, and continue to develop participant’s personal and professional capabilities.
Dr Andrea Grant, Social Scientist, Scion
Mary Hart Independent Researcher, Validatus Research
E. R. (Lisa) Langer, Senior Scientist, Scion

**International Lesson for Rural Wildfire Volunteer Activities in New Zealand’s Multi-Hazard Environment**

The significant role played by volunteers in New Zealand (NZ) is recognised through volunteering advocacy group Volunteering New Zealand (VNZ) as under-researched. According to VNZ in 2004 Statistics NZ estimated the social contribution of volunteer work at over 270 million hours. Such voluntary participation is a vital component of emergency services within NZ and internationally.

The NZ rural fire forces represent a tradition of emergency services volunteering currently supporting over 3000 volunteers covering more than 90% of NZ. This 'formal' volunteer role - supported through National Rural Fire Authority training, equipment and organisational resources - aids communities' well-being, particularly in wildfire response but also with risk reduction and readiness. Formal organisation of emergency volunteering is supplemented by informal volunteering during response and recovery phases of disasters and is increasingly encouraged in emergency management readiness and reduction both nationally and internationally.

Informal volunteering has emerged in 'spontaneous' and 'digital' mobilisation of resources during disasters that may evolve into more formal structures. Governments and volunteer organisations throughout the world are being urged to plan for spontaneous and digital volunteering as part of their disaster preparedness, to ensure that best use is made of such volunteers, and that formal and informal volunteering can work together.

Overall a change is occurring in volunteering, as the way that people work and live changes, combined with an aging population and shifting values. Volunteer organisations are becoming increasingly professional and adopting business-type approaches to attract and retain volunteers. The traditional model of long-term volunteering is not so relevant for newer generations of volunteers, and it is important that policy and planning reflects this.

This presentation focuses on aspects of volunteering in international literature from which we can learn and examines how voluntary activities could contribute to critical resilience that sustains communities before, during and beyond natural disasters.
Mr Bruce Hankinson, Sessional Academic / HDR Student, Queensland University of Technology
Dr Paul Barnes, Head Risk and Resilience, Australian Strategic Policy Institute

Network Enabled Capabilities: Building Resilient Networks for The New Age

Emergency managers are experiencing contextual changes that are unprecedented in human history. Climate change has resulted in an increased frequency and severity of extreme weather events impacting larger areas. From a technological perspective, futurist have suggested the rate of technological change in the 21st century will be closer to 20,000 years of change at today's rates. Technology has created the Network Age, where we are interconnected and interdependent, changing how wealth is created, altering the distribution of power and increasing complexity.

No one organisation can affect total success in its operational space without the support of actors within its networks. According to the US National Research Council, networks lie at the core of the economic, political and social fabrics of the 21st century. Complex networks are characterised by extreme uncertainty. Emergency managers and Governments face continuing challenges of complexity when planning, responding and recovering from emergencies and yet they continue to apply intuitive linear approaches to capability development and operations with predictable outcomes of poor interoperability, communication and situational awareness. This new age of 'networked complexity' presents an exciting opportunity to create a competitive advantage through the leverage of network age concepts and capabilities. The US and UK have already realised this and established dedicated research centres tasked with goals to develop a deeper understanding of social/cognitive, information and communication networks. This commitment is directly related to lessons learned in the application of agile Network Enabled Capabilities (NEC) currently deployed in civil - military and reconstruction operations across the globe.

This paper examines a new contemporary approach to this problem through the application of Network Enabled Capability (NEC) concepts. It examines gaps in knowledge in this space and explores NEC concepts and principles and suggests a way forward for incorporating these principles into the development of future emergency management capabilities.
Mr Dean Hawkins, Managing Director, Risk & Emergency

Journey Through Contemporary Risk-Based Emergency Management and Leadership

Gain Insights into:

- Aligning emergency management and response succession planning with business strategy
- Identifying, recognising and addressing risk, hazard and strategies
- Integrating strategies to manage Risk & Hazards
- Supporting management strategies to cost efficiency and recommended principles
- Establishing effective, result driven and safety-centric performance management plans
- Exploring methods of leveraging emergency management and response processes that drive business excellence
- Engaging and inspiring key requirements through proactive requirement initiatives
- Developing systems to ensure readiness for construction and operational requirement
- Re-examining management best practice strategies from global industry leaders

What will be shared within this presentation:

- Understand recent trends and changes and the essentials of contemporary emergency management
- Explore the fundamentals of risk analysis, reduction and mitigation
- Basics of emergency response coordination
- Structure, processes and challenges of disaster recovery
- The critical role of communities, of all sorts, in building resilience and readiness, response and recovery
- A unique and insightful look into actual emergency management experiences
Ms Jennie Hill, CEO, Bushfire Bobby

Bushfire Bobby - A Case Study in The Management of Pets and Companion Animals During Times of Extreme Bushfire Risk

Bushfire Bobby was set up in response to the problem of how people manage their pets and companion animals during times of extreme bushfire danger.

Bushfire Bobby started as a Facebook page in Warrandyte, Victoria, in early 2013. The page was set up to match volunteer animal carers living in suburban areas safe from bushfire, who matched themselves with pet owners living in high risk fire zones. During days of extreme fire danger, the volunteer carers looked after animals ranging from dogs and cats to horses, goats and chickens for owners who needed to evacuate but who could not take their animals with them to evacuation centres or other safe locations.

The Bushfire Bobby Pilot addressed one of the biggest emerging issues for emergency services around the world - the management of beloved pets and companion animals. Animal owners are increasingly unwilling to abandon pets when they evacuate during natural disasters. Evidence from the Victorian Black Saturday bushfires in 2009 shows many people died trying to save animals, and this experience is replicated in other natural disasters around the globe.

After operating successfully as a Pilot for three years, Bushfire Bobby is now expanding into a formal business venture which will save many animal and human lives and provide critical education and awareness about pet management during disasters. It is also expanding services to help people during personal emergencies such as sudden hospitalisation or fleeing domestic violence, as well as various natural disasters including bushfire, floods and cyclones.

This Case Study will highlight how Bushfire Bobby started, how it works, what has been learned about the needs of pet owners during times of natural and personal disaster, and how critical it is for emergency services to understand and plan for the needs of animal owners during times of potential or actual disaster.
Ms Nadine Hulme, A/Director Response and Recovery, Office of Emergency Management
Ms Suzanne Gresswell, Senior Project Officer Response and Recovery, Office of Emergency Management

Impact Assessments - A Whole of Government Approach

Understanding the impacts a disaster has on a community is crucial for effective recovery operations. Historically, impact assessments have been ineffective for the two reasons, minimal or low quality data that limits useability and resource intensive processes that result in untimely and obsolete outputs.

NSW has reformed its processes to provide accurate and comprehensive impact assessments that can inform recovery operations in a timely fashion. Three products have been developed, each achieving a specific purpose within a varied timeframe.

Damage assessments provide spatial maps detailing damage to properties, businesses and infrastructure. The assessments are crucial to the recovery process by providing multiple agencies with information they require to inform their own operations. For example, Disaster Welfare Services used the damage assessments in the June 2016 NSW East Coast Low Storms to identify where outreach services should be provided.

NSW has revised its Emergency Operations Centre Impact Assessment template to facilitate comprehensive analysis of impacts to the local community. The assessment requires local agencies to provide interpretations of what the damages mean to the community. This assists with identifying what recovery arrangements are required.

The Whole of Government Impact Assessment Report synthesises information from all government data sources into a single report. The Report enables Recovery Coordinators, Recovery Committees and the executive recovery team to make operational decisions from a trusted authoritative and up to date source. The report provides maps, analysis and graphs to assist decision making.

The presentation at ANZDMC will describe the process undertaken, the learnings along the way and the results to date. Key to the project's success was the Continuous Improvement Cycle, where new ideas were trialled during disaster events to identify what works and what can be improved.
Mr Craig Hynes, Chief Operating Officer, Executive Risk Solutions

Crisis Leadership - Follow My Lead

All types of organisations should be aware of the need to be prepared for business disruptions or events that threaten their capacity to maintain operations. One Business Leader in a recent discussion with their Risk Manager said we need to be prepared for “Stuff that Happens to Us” or “When we Stuff up!”

This is a simple way of putting crisis management, for instance, the former situation can be a natural disaster such as a flood or storm affecting your business capability or in the latter case you could have made a poor investment decision or are dealing with a scandal related to your employees’ behaviours. In either situation you need to put in place your plans to counter any material effects to your ongoing business.

In most instances Leaders of organisations can deal with routine emergencies or crises, after all something will inevitably go wrong in the course of business most weeks of the year. However in those instances where you are faced with greater complexity, the challenges of the situation call for Leaders that are prepared to take charge and motivate the team towards a common goal.

It is this theme that I have recently been developing internal capability with clients. In particular the importance of leadership in non-routine events. The coordination of very large, complex, long duration, and multi-agency emergencies (what we refer to as out-of-scale events) requires that teams form and work together quickly and effectively. The Leader is integral to the success in these events and it may require a leadership style not normally displayed in the workplace.

In recent years there has been a great deal of investigation and research in to the success factors of high performing Incident Management Teams in the Disaster and Emergency Management arena. Much of this can be attributed to the emergence of research bodies such as the inaugural Bushfire Cooperative Research Centre and more recently its successor the Natural Hazards Cooperative Research Centre.

In emergencies or out of scale events that demand a more targeted and concerted response there will be pressures on the Leader that are not normally expected from their day to day roles. Some of the research previously referred to, detail the types of issues you will need to deal with in more complex situations. In particular citing different disruptive behaviours that emerge such as: lack of team cohesion through not knowing team members; people bypassing normal communications; ineffective coordination; and poor handover of control or takeover from another team.

I have focused on overcoming these areas for a number of Crisis and Emergency Leaders in recent months with some great outcomes.
Mr Shoni Maguire, Manager (acting), Flood Warning Strategy and Policy, Bureau of Meteorology

FLARE - Supporting Local Agencies to Utilise Current and Emerging Technologies in Flash Flood Warning

Floods are the second-highest cause of natural hazard deaths in Australia, a major source of property damage, and the most expensive type to recover from. Flash floods account for most flooding fatalities in Australia.

While the responsibility for flash flood warning lies with states and territories in partnership with local government (where appropriate), the Bureau of Meteorology has specialist expertise that may assist agencies to utilise technologies in flash flood warning.

This presentation showcases the Bureau's commitment to assist state and local agencies to manage flash floods.

A web and telephone and email based advisory service, the Flash Flood Advisory Resource (FLARE), was recommended by an independent taskforce set up under the Australian New Zealand Emergency Management Committee to help standardise Bureau hazard services to emergency services. FLARE was implemented in September 2016 to support local agencies to utilise current and emerging technologies to develop, implement and operate sustainable and fit-for-purpose flash flood warning systems. FLARE currently has users from around 45 organisations across Australia.

Available to registered users, FLARE provides a wide range of resources such as case studies, interactive forums, and standards and guidelines. FLARE is not an operational service. The Bureau provides a range of operational products that support flash flood warning, such as Severe Weather Warnings and Severe Thunderstorm Warnings, rainfall predictions, radar and specialist weather products.

The presentation also describes the Bureau's efforts to improve detection of potential and severity of flash flooding using radar technology, satellite imagery, nowcasting and high resolution weather modelling.
Dr Karen Klockner, Senior Lecturer, Central Queensland University

**Developing Organisational Resilience: Organisational Mindfulness and Mindful Organising**

Organisations today face more complexity in the management of their socio-technological systems than ever before. Organisations are required to go above and beyond a focus purely on controlling or mitigating risks to the extent that they must also pursue an almost nervous anticipatory approach to dealing with unexpected fluctuations. The ability to manage system fluctuations enables an enduring form of organisational resilience and reliability in dealing with the unexpected when it arises.

Research into how organisations can maintain resilient functioning is borne out of the writing on High Reliability Organisational (HRO) theory, which demonstrated a requirement for a workforce that has the capability and attributes to make it 'collectively mindful' which points towards a focus on a readiness to respond through stable cognitive processes and variability in actions.

Recently an organisational resilience model has been proposed (Vogus & Sutcliffe 2012) which identified that in fact within an organisation, two separate actions systems may come into play, that of 'Organisational Mindfulness' and 'Mindful Organising'. They postulate that there are differences between top administrators who perform more of a strategic 'Organisational Mindfulness' role, compared to the front line workers who undertake a more 'Mindful Organising' role, with middle management playing a translating and enabling role between the two levels.

Organisational resilience and the ability to plan and respond to unexpected events is well recognised as being highly sort after as organisations become more complex however the value of just how the collective workforce play a key role in the management of the unexpected when it happens is only just beginning to be fully explored. There remains value in driving and informing high level strategic organisational resilience endeavours by understanding how organisational mindfulness principles should be embedded within the workforce of tightly coupled and complex modern day organisational systems.
Mr John Lane, Coordinator Emergency Management, WA Local Government Association

LG Risk Vision an On-Line Emergency Risk Management Tool for Local Government

Emergency risk management programs for the Local Government sector have for many years produced a wide variety of reports of questionable veracity and effectiveness. Local Governments across Australia as key players in the emergency management field need to have access to a reliable, NERAG and ISO 31,000 compliant risk management tool. WALGA as the peak body representing Local Government in Western Australia, has engaged with local government and the Office of Emergency Management to produce such a tool.

LG Risk Vision is the culmination of three years of research and development and is now freely available to all local governments across Western Australia. LG Risk Vision will assist officers in Local Government who have responsibility for emergency management to assess each of the State recognised hazard types, build credible worst case scenarios, analyse and report their Council’s emergency risk management programs. LG Risk Vision leads the user through the entire risk management process from initial identification of hazards, assessment and analysis to risk mitigation.

LG Risk Vision uses NERAG risk criteria and formulae relating to Annual Recurrence Interval and risk priority operate within the system based on user provided information. With very minor editing LG Risk Vision can be used by all Councils across Australia.
Mr Anthony Madigan, Disaster Risk Management Consultant, RISConsulting

Managing Risk - The Common Denominator

Managing risk; universally acknowledged as the core of emergency & disaster planning and operations. But just how well do we apply risk principles? Are we good managers of risk? Are good outcomes the result of good risk management or good luck? Is risk embedded in our organisations, and what actually does that mean?

It is now 21 years since the dawning of a new era in risk management with the release of the 1995 Australian/New Zealand Standard 4360 - Risk Management. This Standard released risk from the domain of consultants to provide organisations with a guide to developing internal capacity and capability in the discipline of risk management. In 2009 the ISO Standard 31000 Risk Management – Principles and Guidelines was released, based upon the 4360 standard, but reflecting the learnings of the previous 14 years with input from a global stakeholder group.

When we look to our neighbours, these questions regarding risk management are just as valid. In March 2015 the Sendai Framework for Disaster Risk Reduction was adopted at the third UN World Conference in Japan, the successor instrument to the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. The Sendai Framework is designed around 4 priorities, the first priority being 'Understanding Disaster Risk'. With Australia as a signatory to the Sendai Framework, what is 'our' view on this Priority? Does it apply to us, or is it only applicable to others in our region who we traditionally assist in terms of aid and operational response?

The session will take a practical look at the management of risk and provide participants the opportunity to reflect on the manner risk is managed within their own environments.
Ms Jennifer McMahon, Principal Consultant, Communities Respond

When Diversity Meets Disaster - Engaging Communities as Active Participants in Preparedness

Community is the centre piece of any emergency event. An untapped resource which has enormous potential to influence outcomes and experiences before, during & after events. Given the ever changing nature of emergencies, it is increasingly important that we recognise the need to develop the skills required to engage effectively with diverse communities. How do we identify and understand the diverse nature of communities and use this enhanced knowledge to facilitate community preparedness education. Defining community preparedness as a sustainable and translatable concept allows for the development of a shared understanding of collaborative participation as part of enhanced emergency management practice. Including a focus on developing a suite of skills which engenders the principals of the Recovery Framework. Developing skills which allows us to demonstrate an understanding of social vulnerability and equity of needs. Additionally we need to reflect upon the potential of vicarious trauma and explore protective behaviours from a perspective of self-efficacy of ourselves as emergency management practitioners.

Thus, by engaging the community in an empowered partnership we have the potential to mitigate the impact of crisis, critical incidents and emergencies upon both the individual and the community matrix.

This presentation will explore these complex issues and suggest thoughts on how to navigate such complexities within a capacity building framework. And in doing so we can potentially harness the energy and diversity within communities to encourage their active participation in becoming more aware and more prepared to respond in times of crisis.
Mr Brendan Moon, Chief Executive Officer, Queensland Reconstruction Authority
Ms Rachel Nibbs, General Manager, Queensland Reconstruction Authority

Disaster Recovery in Queensland

Queenslanders are all too experienced in the impacts of natural disasters. In the past 15 years the state has experienced a series of events, such as severe tropical cyclones, devastating floods and bushfires and oil spills which have necessitated deliberate and well-coordinated recovery operations across all sectors of the community and all levels of government.

In Queensland, disaster recovery is acknowledged as a complex and often lengthy process which requires a collaborative, coordinated, adaptable and scalable approach. Queensland emphasises a shared responsibility approach for its disaster recovery efforts, incorporating all sectors of the community including individuals, families, community groups, businesses and all levels of government.

The Queensland Reconstruction Authority (QRA) has lead agency responsibility for disaster recovery policy, with its Chief Executive Officer, Mr Brendan Moon, appointed to the position of State Recovery Policy and Planning Coordinator (SRPPC) by the Queensland Premier in 2016.

The QRA was established in February 2011 following the unprecedented natural disasters that struck Queensland over the summer months of 2010-11, including widespread flooding and Severe Tropical Cyclone Yasi. This presentation will discuss disaster recovery in Queensland since the QRA's establishment. It will include a discussion on the disaster recovery framework in Queensland, including key recovery positions and the use of recovery groups to plan for and conduct recovery operations across the five functional areas of recovery: Human and Social; Economic; Environment; Roads and Transport; and Building.

Queensland's experience in disaster recovery will be demonstrated through a series of case studies. These case studies will highlight the benefits of recovery planning that incorporates local consultation and engagement, recovery assistance to impacted communities, businesses and industry, and resourcing options. They will also illustrate Queensland's initiatives to build resilience after a disaster event through more resilient infrastructure and community development activities.
Community Resilience, Effective Community Engagement and Community Led Recovery - Myth, Mystery or Achievable Goals?

The aspiration consistently expressed in Australian disaster and emergency management frameworks, policies and plans is the desire to create and support resilient communities, capable of withstanding or adapting to any disaster that might affect them. ‘Community led disaster recovery’ is also talked about, but is not currently the norm. The question is whether community led planning, preparation, response or recovery is even desirable, let alone possible.

This presentation will explore and answer the following specific questions:

- How (effectively) do we engage with communities to support them when disaster strikes?
- What is community resilience and how do we build and enhance it?
- Is effective planning sufficient and what else needs to be added to the mix?
- Is community led recovery possible and what might this look like?
- How can individuals, communities, organisations and governments contribute to the outcome of a more resilient Australia?

This presentation will explore and propose answers to these questions based on extensive research and community engagement with communities across Australia who have been affected by fire, flood and cyclone. Importantly, this presentation will propose an effective and practical approach, for policy makers and practitioners.

This implementable and practical way forward will bring together the following elements:

- The findings of key research based in Australian communities
- The principles and practices of asset/strengths based community development
- A discussion of current and potential models for community engagement
- A pragmatic understanding of what is possible in each phase of the disaster experience (planning, preparation, response, early recovery and long term recovery) and
- Lessons for policy makers, disaster focused organisations, and communities themselves.
Mr John Moy, Executive Manager, Volunteer Emergency Services Training Command, Queensland Fire and Emergency Services (QFES)

There's a Dinosaur in the Room! Retaining Emergency Service Volunteers Through a Training Approach

The Volunteer Emergency Services Training Command (VESTC) within Queensland Fire and Emergency Services (QFES) is established to provide nationally recognised training and assessment opportunities to over 42,000 emergency services volunteers in Queensland, across more than 1,300 delivery sites, issuing more than 50,000 individual units of competency, via over 100,000 learning instances each year!

This contemporary Case Study will outline the approach being taken to ensure the 'Dinosaur' is kept out of the room. It will highlight how a training approach is contributing, not only to broader operational capability, but specifically to meet the increased risk posed to our communities by global warming and other factors, such as an ageing population. This case study will identify what we are doing to encourage the retention of emergency service volunteers now, and into future, through a training approach.

Finally, it will outline a new training framework, as part of a broader contemporary volunteerism strategy that ultimately contributes to the ongoing quest to ensure that the Dinosaur remains extinct, and there is a safer Queensland for all!
Ms Andrea Murray, Speech Pathologist/ Infant Mental Health Clinician, QLD Centre for Perinatal & Infant Mental Health

Birdie and Mr Frog: New Resources to Help Young Children Aged 0-4 Recover from Natural Disasters

During and following a natural disaster, young children aged 0-4 years may experience even more fear and anxiety than adults due to their limited intellectual understanding of events (Akhter et al., 2015). Parents and caregivers, overwhelmed by their own experience of the disaster, often miss signs of distress in young children, or struggle to know how to support them (Gaffney, 2006). While resources are available to help teenagers process their experience of a natural disaster (youthdisasterrecovery.com.au), until now there have been limited equivalent resources to support babies, young children and their families.

The Queensland Centre for Perinatal and Infant Mental Health (QCPIMH) recognises that early childhood educators are in a unique position to identify children showing signs of stress related to a natural disaster, and to refer families for assessment, intervention and support as appropriate. QCPIMH has developed resources that educators and parents can use to help young children process their emotional experience of the disaster, and build resilience to cope with stressful events in the future.

The resources include fact sheets and information for parents and educators; a series of books for 0-4 year olds which follow Birdie and Mr Frog through various natural disasters; an interactive online game based on the book characters; and a staff manual for early education centres. The resources are evidence-based (e.g. Gaffney, 2006) and align with the recommendations of Psychological First Aid (http://www.nctsn.org/content/psychological-first-aid). Strategies for dissemination and implementation of the resources will be shared.

Note on stream: this paper would also suit 'Understanding and Enhancing Resilience' or 'Psycho-social implications of disaster management'
Mr Tetsuya Okada, Researcher, Risk Frontiers

Acknowledging Local Sociality in Disaster Recovery

Formal recovery, reconstruction and risk reduction efforts put in place in response to major disaster events are designed to help recover living environments and livelihoods of, redevelop infrastructure and services for, and improve the longer-term safety of, the affected populations. However, these efforts often rely on top-down approaches that neglect the impact on and the presence of local people's everyday lives in and with their communities (local sociality). This can lead top-down recovery and reconstruction approaches to misjudge engagement with disaster-impacted communities. Existing and emerging power-relations tend to influence the aims and processes of the recovery and marginalise the voices of the affected populations, particularly the most vulnerable.

This study explores these issues in four case studies, the towns of St George and Grantham, in Queensland, Australia, both of which were severely impacted by flooding events between 2010 and 2012, and the Japanese towns of Koizumi and Namie, which sustained devastating damage from the Tohoku earthquake and tsunami and in the case of Namie, contamination from the Fukushima nuclear reactor in 2011. This study identifies a critical coherence in the human, social and political issues and challenges across all study areas, despite differences in the country, physical attributes of the hazards, types of damage and responses. In particular, the commonality identified across four different cases illuminate the importance of local sociality that is highly valued by the disaster-impacted people but often overlooked or downplayed by others.

The adopted qualitative, longitudinal research approach using semi-structured interviews through multiple site visits captured and identified long-term impacts and transitions in each study area involving individuals, households, local community groups, support persons and organisations and government officials.
Project AF8: Partnership Between South Island CDEM And Alpine Fault Scientists to Plan for a Future Magnitude 8 Alpine Fault Earthquake

The Alpine Fault (South Island, New Zealand) is a fault with the potential to produce a magnitude 8+ earthquake in the near future. It is the largest seismic hazard known to exist in the South Island. In June 2016, Project AF8 (Alpine Fault magnitude 8) received $245,000 from the New Zealand Ministry of Civil Defence & Emergency Management’s Resilience Fund. The funding will support the development of a collective and coordinated plan for South Island-wide responses to a future Alpine Fault earthquake.

In the past, each CDEM Group, their member local authorities and partner organisations have worked largely in isolation, preparing plans and commissioning scientific work on an ad-hoc basis. This project brings science and emergency management together to identify the consequences of a large Alpine Fault earthquake for all CDEM groups in the South Island, and applies a science-based scenario foundation to multi-agency, inter-regional response planning.

The project builds on knowledge gained from response to the Canterbury earthquake sequence, other recent significant emergency responses in New Zealand and elsewhere ‘going beyond the generic ‘all-hazards’ approach to response planning that has dominated emergency management internationally for the past two decades. The main output of the project will be the SAFER (South Island Alpine Fault Emergency Response) plan, providing structure and clarity to coordinated response actions for CDEM groups within the first seven days of an Alpine Fault earthquake. We present the aims and objectives of the two-year project, and report on progress to date, including the development of a hazard model, and expert impact assessment panel.
The M7.8 Kaikoura Earthquake: Lessons in Social Media and Communication

At 12.02 am February 14 2016 the ground began to shake on the South Island of New Zealand. When the shaking ended, 150 kilometres were ruptured and 12 faults at the surface rose above ground, lifting sea bed off the coast of Kaikoura, and leaving the township cut off by landslides. Wellington, the capital of New Zealand, was also shaken severely with many buildings damaged.

The first communication from a government organisation was from GeoNet (New Zealand's geological hazard monitoring agency), via Twitter and then Facebook at 12.05 a.m. Social media was very active, as GeoNet began to access the size and location of the earthquake, and it rapidly became clear that this event was significant in size and impact. To complicate matters, a localised tsunami was generated off the coast of Kaikoura, and the national emergency management agency called for evacuations of coastal zones as a precaution.

The successful Kaikoura social media response was built on years of dedicated work on social media platforms, beginning in 2010. Following the devastating earthquakes in Canterbury 2010/2011, GeoNet became a household name and we discovered the importance of social media to get information out to large numbers of people quickly. New Zealand's geological activity has kept pace since the Canterbury earthquakes, including volcanic eruptions on Tongariro (2012/2013), White Island (ongoing), and large earthquakes including Cook Strait (2013) and Eketahuna (2014). With more than 100,000 people on Facebook and 60,000 people on Twitter, GeoNet has become one of the most followed public agencies in New Zealand. We have also engaged on other social media forums including Reddit to ensure personalised voice and perspectives.

This presentation will examine at the various forms of social media and how we have used them to get information out during earthquakes, volcano eruptions and tsunamis, and will include lessons we learned along the way.
Mr Chris Quin, Director, Resilient Projects

Before the Storm: How You Can Use the Good Times to Prepare for the Bad Times

Time is our most precious commodity. When minutes matter, even seconds count. The period directly after disaster impact is one of the most time-critical environments most of us will ever have to face. So it makes sense to use the time we have before a disaster to prepare for when time is not available after disaster impact.

With a focus on how you can optimally use the period before an event to reduce disaster impact, this presentation is designed to help you reduce the amount of response and recovery work required after an event. Good decision-making in prevention and preparedness will give you the time to make better decisions in response and recovery. PP definitely comes before RR.

Pre-disaster work should also focus on saving lives and protecting property, not just on preparing communities. There are many, often familiar, tools that we all have at our disposal for undertaking this sort of work. Often they just need to be viewed in a slightly different way.

Using real examples from around the world, this presentation aims to give you ideas and tools to enhance the effectiveness of your pre-disaster planning. This will help increase the effectiveness of the time you spend on disaster preparedness, and will help build the resilience of your organisation or community.
Dr Yenny Rahmayati, Postdoctoral Research Fellow, Centre for Design Innovation, Swinburne University of Technology
Dr Matthew Parnell, Senior Lecturer/Researcher, School of Design/CDI, Swinburne University of Technology-Australia

Finding Better Designs for Temporary Shelters and Facilities in Response to Annual Flooding Disasters in Jakarta, Indonesia

Urban disasters have contributed to the complexity of urban problems such as illegal settlements, slum areas, water and sanitation, urbanisation, internal migration, job opportunity, waste management, infrastructure and so on. Annual flooding is a common urban disaster occurring in many Asian and Pacific countries, especially during the rainy season. Jakarta, the capital city of Indonesia, is a megapolitan city with a population of approximately 10 million, and has been dealing with regular flood disasters for the past few decades. More specifically, Jakarta floods have affected most of the vulnerable communities situated on the riverbank of Ciliwung River, the main river that runs through the inner city of Jakarta. A limited number of solutions for sheltering people have been proposed in response, but they still have not been able to answer the needs of the community.

While a majority of studies argue that socio-economic factors support the resilience of communities in disaster prone areas, this study found that cultural and historical connections enable ‘connecting to place’ as a significant factor that helps people survive disasters and adapt to their impact. Therefore, relocating affected communities to new safer locations is not the answer and contributes to more urban problems. Finding a solution through innovative design that accommodate the needs of the community without disconnecting them from their place permanently or temporarily becomes critical in addressing this challenge.

This paper outlines preliminary outcomes of a study examining the resilience of communities responding to annual flood disasters, focusing on the Eastern part of Jakarta as one of the most affected areas. The aim of this study is to find innovative designs for temporary shelters and facilities for flood disasters through a community-led design approach, not only for affected communities in Jakarta, but also for any flood disaster cases in Asia and the Pacific Regions. The main method used for this study is through field observations including site visits and conversations with communities, as well as through in-depth interviews with key persons including urban experts, architects and planners, NGO representatives and government representatives for disaster management.
Miss Vienna Richards, Founder, Amenes Media

Emergency Risk Communications: Learnings from New Zealand's Major Earthquakes 2011 - 2016

Historically New Zealand has experienced many large earthquakes. In the last decade alone, since 2007, data collected by GNS Science show that New Zealand experienced 12 large quakes.

This paper draws on practical experience and training in an emergency risk communications response role during major New Zealand earthquakes. The magnitude 6.3 Christchurch Earthquake on Tuesday 22 February 2011; the magnitude 6.2 Earthquake 2015 which shook the top half of the South Island and citizen experience going through the 7.8 Kaikoura Earthquake which also affected Wellington are discussed.

Based on real world experience and insights in a communications response role, the author argues that the application of, and training in, successful emergency risk communications and collaboration begins well before the emergency occurs. That this multi-pronged communications framework helps in a number of areas in disaster and emergency management including making it easy to work effectively with media in a news media and social media-driven environment that demands immediate attention. Equally important, the principles of emergency risk communication help organisations to get their messages out and heard by traumatised households and families so they can make the best possible decisions for their safety and well-being and know they are not alone.
Mr John Richardson, National Coordinator-Preparedness, Australian Red Cross
Ms Shona Whitton, Senior Project Officer, Australian Red Cross

Psych-Social Preparedness: Preparing People for All the Consequences of Emergencies

After a review of Red Cross’ Rediplan in 2014/5, we focussed upon supporting people to build resilience around their thoughts, and feelings, and their relationships and networks. These two elements are at the core of what is defined as psycho-social.

Red Cross provides psychosocial support before, during and after emergencies; which is based on five basic principles; promoting a sense of safety, promoting a sense of calm, promoting a sense of self and community efficacy, promoting connection, and instilling hope.

Applying these principles in a pre-emergency context helps link recovery directly with preparedness.

Most disaster preparedness programs focus upon how to survive a hazard. Few programs focus upon the consequences of the hazard. Surviving the hazard is but one element of a person’s disaster journey.

To help people to prepare for the hazard, and its consequences, Red Cross has adopted a psychosocial approach to its preparedness activities. Psycho-social preparedness refers to the practical, psychological and social actions a person takes to prepare themselves for the impacts of an emergency. These actions include: acquiring knowledge about threats; building their capacity to take care of themselves and others, both psychologically and practically; and increasing their social networks.

This paper will outline how Red Cross uses the principles of psycho-social support in possibly a world first way to guide its preparedness activities and how this complements hazard survival programs conducted by emergency services agencies.
The Use of Immersive Technologies for Public Engagement

Effective public engagement should be part of day-to-day business in the prevention, preparedness, response, and recovery phases of disaster management. Communities need to be engaged before, during and after disaster events. Consistent and committed public engagement builds understanding and trust between entities and the broader community.

Technology has provided us with new ways of engaging communities and sharing information. It has become a crucial part of day to day life and has changed how people think and apply knowledge. Engagement is an essential part of building resilience and helping communities to understand their role under a model of shared responsibility.

Stakeholders within the emergency management sector, such as local government, state agencies and non-government organisations, are now looking to innovative technologies to aid community engagement about risk, self-preparedness and resilience. Emerging immersive technologies, such as virtual and augmented reality, have the potential to support more efficient and effective communication and engagement with communities.

These new technologies are swiftly become part of everyday life through commercial, retail, entertainment, education and social media applications. Expansion into the emergency management space has been largely international, although recent applications in Queensland demonstrate that the technology is available and being utilised. While a number of challenges still exist, much of the potential of these technologies to support public engagement for emergency management in Queensland is yet to be explored.

This paper/presentation, achieved via a collaborative Internship Program with the Office of the Inspector-General for Emergency Management and Queensland University of Technology, examines current and potential applications of virtual and augmented reality in emergency management.
Ms Delia Riley, Community Advisor, Emergency Management Southland

Employer Supported Volunteering

When you spend time with organisations operating volunteer programs you’ll often hear the same thing. Where have all the volunteers gone? Society’s changing and agencies need to be smarter in the way they work with volunteers. Organisations also need to be clear about the reasons they are operating these programs. Just having a program with people participating in volunteering doesn’t make it valuable or worthwhile for either party. Focused, outcome based volunteering is more likely to appeal to volunteers today. Emergency Management Southland has recently developed a program which focuses on the management of spontaneous volunteers.

We know that during any large scale emergency event people will come forward and they will want to help. Without effective coordination these spontaneous volunteers will go ahead without direction, without correct health and safety and without us even knowing what they’re doing. The key focus of this volunteer program has been to create business partnerships to engage Spontaneous Volunteer Coordinators to manage these spontaneous volunteers in the event of an emergency situation. Employers nominate leaders from within their organisations who they believe are the right fit for the position. These volunteers are then trained and encouraged to feel part of our operations team.

Our employer organisations have agreed to pay their staff to take part in a set number of training hours annually, as well as up to three days during a response.

The program is manageable, sustainable and successful. There are several benefits with this type of employer supported volunteer program. We have been able to build closer relationships with local businesses, we have trained people in areas which may be isolated during a response and we have coordinators who are able to take other key emergency preparedness messages back into their workplaces and communities.
Queensland Emergency Risk Management Framework: A Clear Line of Sight to Risk Based Planning

The management of risk is one of the cornerstones of modern society and in the context of disaster management, a foundational element in the development of effective mitigation and resilience strategies. Additionally, hazard sources are measurably changing based upon climate science. The climate has warmed including the atmosphere and oceans, sea levels have risen, and the concentrations of greenhouse gases have increased.

The recently developed Queensland Emergency Risk Management Framework (QERMF) is a methodology that informs risk based planning through embracing science, technology, risk methodology and most importantly by taking heed of both global and local knowledge.

The QERMF is derived from underpinnings of AS/NZS ISO 31000 Risk management, the National Emergency Risk Assessment Guidelines 2015 and meets the Sendai Framework for Disaster Risk Reduction’s “Priorities for Action”. QERMF also reflects international best practice as championed by the United Nations Office for Disaster Risk Reduction and the Global Facility for Disaster Reduction and Recovery.

The aim of QERMF is to provide a consistent approach to the identification and assessment of risk, which can in turn:

- link broad area natural hazard risk assessment with disruption related risk assessments of critical infrastructure;
- articulate residual risk; and
- directly supports risk based planning across the 3 levels of governance that comprise Queensland’s disaster management arrangements.

The risk assessment process within the QERMF methodology enables the literal identification of risk via geospatial analysis of landscape, hazard manifestation, exposure and vulnerability. Explicitly analysing vulnerability assists planning for mitigation strategies aimed at reducing residual risk. Application of this approach at all levels of disaster management arrangements can lead to a range of enhancements to community resilience.
The Night the Lights Went Out in South Australia - An Environmental View

On 28 September 2016, South Australia experienced an extreme weather event bringing thunderstorms, destructive winds, large hailstones and heavy rain, which damaged 23 transmission towers and at 3.48pm triggered a State-wide power outage - a code black event. Electrical power is often taken for granted but modern society is heavily reliant and dependent on it. Large areas of the State remained without power for several days.

This weather event was forecast and public warnings had been issued. State emergency arrangements were in place and appropriate briefings had been provided yet there was significant loss to businesses and the community caused by the consequences of the loss of power.

The SA EPA incident management team set about assessing the environmental impacts, e.g. waste water treatment, drinking water availability, Uranium mines, hospitals, Nystar lead smelter were all severely impacted. Local councils had many businesses with no power and even when the lights came back on what about all the waste. The EPA worked closely with Local Government Association, State Recovery committee and Emergency Services and its licence holders. A ministerial waiver was gained for the waste levy; identified impacted sites were visited and assessed.

There were problems associated with loss of power, including; access (lack of) to food, medications, fuel, credit card payments, cash, telecommunications, essential home appliances and water.

Many business continuity plans (BCPs) proved to be inadequate there is no plan for or widespread, extended duration power outage and the associated consequences.

All indications are that, increased frequency and severity of severe weather events are part of the 'new normal', and the SA will need to adapt to ensure that prevention, preparedness, response and recovery activities are sustainable in the long-term.

Business SA estimated the cost of the blackout to South Australian businesses at $367 million.
Dr Samantha Sharpe, Research Director, Institute for Sustainable Futures, University of Technology Sydney
Ms Louise Boranyak-Vasco, Senior Research Consultant, Institute for Sustainable Futures, University of Technology Sydney
A/Prof Brent Jacobs, Research Director, Institute for Sustainable Futures, University of Technology Sydney

**Forced Adaptation: Innovation and Business Recovery After Natural Disasters**

The impact of extreme natural and climate events such as bushfires, floods and droughts can be devastating and disruptive to economic activity. Economic system losses can be extreme and include business closures, loss of skilled employees and decline and delay in investment in business assets and innovative activities. Much of the empirical research on business recovery post natural disasters has focused on how businesses return to business-as-usual and the costs and timing of this process. However, the innovation capacity and processes of firms, both individually and collectively as a business community are critical in recovery, and also transformational change; change that means businesses are more innovative and resilient to future shocks, including future natural disasters. Critical innovation activities include the galvanising and strengthening of business networks and knowledge exchanges, accelerating investment in innovations that build business resilience and contingency.

This presentation details a case study of the Blue Mountains and the response of businesses in the aftermath of the 2013 bushfires. The case study highlights the activities of businesses and business organisations, before and after the fires, and reflects on how individual businesses and the business community changed in response to the fires. The paper concludes with recommendations for planning for business and economic recovery in natural disaster prone areas. Business and economic resilience planning is not done with the same emphasis as community, or infrastructure recovery, even though the business community is pivotal to post disaster recovery. This type of planning will be of increasing importance into the future as climate change increases the severity and frequency of extreme weather events and natural disasters.
Dr Petra Skeffington, Senior Lecturer, Murdoch University

Factors Impeding Resilience Research with Australian First Responders: What is Keeping Us from The Cutting Edge?

Australian’s are proud of being on the cutting edge in both research and industry. Many of our top ranked first responders work on programs of continuous improvement and continuous development. Clear statements from first responder organisations and in government white papers about the important of caring for the mental health of our first responders, the possibility of liability for mental health issues in high-risk professions and the need to pursue primary prevention and resilience programs, have motivated only limited quality research and innovation. There are some factors that impede the progress of research within the fields of emergency services and law enforcement. Some of these factors are fixed, or difficult to resolve, such as limited time and resources.

Robust research needs funding and funds are always limited. Other factors are in the control of universities, academics and researchers, who may need to adjust their 'status quo' to become accessible and flexible for industry collaborators. However, some factors, such as poorly designed research and low response rates can be easily changed to improve the power and validity of the research drastically. This presentation will outline the factors impeding quality research, drawing on case study experiences to explore ways in which academics and industry can move forward together to place Australian emergency services on the cutting edge. This will include an overview of the successful collaboration between clinicians, researchers and the Department of Fire and Emergency Services (DFES) in Western Australia, to establish a PTSD prevention program within the DFES recruit school.
The Disaster After 9/11: First Responders and Their Families Share Their Stories

Background:
One of the painful legacies of 9/11 is the lasting impact on the physical and psychosocial health of thousands of individuals who survived the attacks - including the first responders. The fifteenth anniversary marked an important milestone in our collective remembrance of 9/11. First responders and their families reflected on the unique impacts experienced by this group. This research explores the ongoing consequences of responding to the terrorist attacks amongst medics and their families.

Methodology:
This research employed qualitative methods to compile and review 62 first-person accounts from 9/11 medics and their families who recounted their experiences of 9/11 on the fifteen-year anniversary.

Results:
Responding medics continue to be plagued by nightmares, vivid recollections of Ground Zero, survivor guilt, post-traumatic stress disorder, anxiety, depression, problems sleeping, negative impacts on relationships, addictive behaviours, and suicidal thoughts. They are experiencing a range of health issues such as respiratory disorders, eye problems and cancers. Medics report having access to a range of peer-support services, but most delayed in seeking help. Of note, medics and their family members identified considerable negative impacts for their families including problems sustaining significant relationships, risk-taking behaviours, suicidal ideations, and mental health problems amongst family members. The ongoing impact of 9/11 has shattered families and continues to destroy lives in a never-ending reverberation of pain and suffering.

Conclusion:
These findings suggest that 9/11 medics and their family members need ongoing monitoring to protect their physical and mental health. The testimony of this research is to ensure that an important voice is not lost, and that the deeply personal and richly descriptive experiences of the 9/11 medics and their families are not forgotten.
Ms Hayley Squance, Associate Dean Programme Director, Massey University

Prepared the Ark: Hazards and Animal Safety in Barrow, Alaska

The integration of animal management and care into emergency management and planning is a relatively new area of interest. The perplexities of the human-animal bond contribute significantly to human evacuation failure and risk to humans by re-entering hazardous areas to save or retrieve animals, and humans risking their lives to save animals. However, this bond can also be manipulated to encourage communities to engage in emergency preparedness and response planning. Animals can facilitate better access to vulnerable community groups, counter social isolation, provide motivation for communities to prepare and act and facilitate recovery by providing companionship, comfort and relieving stress. This study aims to assess the level of animal inclusion in emergency preparedness in the North Slope Borough, especially Barrow, Alaska to understand how animal attachment and diverse perspectives will influence disaster preparedness within indigenous and diversely ethnic communities. This can assist with introducing animal emergency management, which benefits the risk management department, veterinarians, and community organizations to develop appropriate disaster preparation and planning. Outcomes of the risk assessments with government and community groups in Barrow, Alaska, are reviewed and how to incorporate the results in disaster planning in a changing climate with adverse cascading hazards.
Dr Malinda Steenkamp, Post Doctoral Research Fellow, Torrens Resilience Institute
Mr Terry Dwyer, Senior Project Officer, SA State Emergency Service

**South Australian Emergency Management Workforce Capability Mapping Project**

In 2015, the South Australian State Emergency Service (SASES) conducted the Emergency Management (EM) Workforce Mapping Project. The project was funded through the National Disaster Resilience Program and overseen by the SA State EM Training Committee. The Torrens Resilience Institute assisted with the surveys and data analysis.

The project aimed to determine the makeup of the SA EM sector and to identify the capabilities (skills, knowledge and abilities) required by EM practitioners.

A literature review, two online surveys and 17 face-to-face interviews captured relevant information. Survey One targeted members of the various State EM Committees (68 respondents) whilst Survey Two (36 respondents) focused on members of the regional Zone EM Committees (ZEMCs). Interviews were conducted with some of the survey respondents by the SES Project Manager.

The project found that the SA EM workforce can be classified into three levels: 21,835 work in operational roles; 803 in operational management and 190 in EM governance. About 150 people are involved in one or more of the committees. The literature review found limited literature on EM practitioner capabilities. Survey respondents considered formal qualifications to not be as important as leadership skills and experience. Opinions about project management and community engagement skills and experience were related to the specific committee involved. Interviewees stated that EM training needed to be improved across the board. Engagement in targeted, role, or level-specific training, supported by mentoring, was considered important to maximise efficiency. Induction processes were also seen as in need of improvement. Exercises were considered a good strategy to improve coordination between agencies and embed training.

The SA EM sector's workforce is not well-defined. There is a need for individual development and a better understanding of required EM capabilities at organisational levels. A broader workforce development approach for the State is needed.
Ms Sally Steward, Founder and CEO, Leadership Emergency Services

Organisational Commitment of Excellence - A Responsibility We Can’t Ignore

An organisation that relies on volunteers to attend emergencies, disasters, rescues and searches has a huge responsibility. The onus is on organisations to ensure volunteer capacity, capability and sustainability, this is our duty of care to our communities and we need to get it right. The statistics are staggering, in some emergency service organisations 50% of volunteers become inactive within the first twelve months, the financial and operational implications can be crippling.

Organisations rely heavily on the commitment of their volunteer workforce and it is crucial we foster a highly valued, experienced and focussed volunteer workforce. As one of 42,000 emergency service volunteers in Queensland who collectively make up 89% percent of the Queensland Fire and Emergency Services workforce I appreciate the enormity of an organisation’s responsibility.

Our lives are changing and so are the lives of our volunteers. Organisations are recognising the shift in volunteerism, noticing more.....

- Transient lifestyles
- Career changes
- Desire for personal satisfaction
- Technology advances
- Industry effects on populations
- Cultural Change
- Conflict Management

Recruitment, Retention, Culture and Leadership all have a profound impact on a providing a sustainable volunteer workforce. Sustainability of our emergency service volunteer workforce will be a direct reflection on how effectively we adapt to these changes. Creating professional and committed volunteers is more than providing training and a uniform. It requires organisations to connect at a grass roots level, maintaining excellence and support.

Volunteers are far less tolerant of poor leadership than in paid occupations. This presentation provides strategies to assist organisations to support and cultivate effective leaders who highly value their team, embody accountability and are a catalyst for cultural improvement.

Cultivate a commitment of excellence for all emergency service volunteers in your organisation - a responsibility we can’t ignore.
Dr Kathy Tannous, Senior Lecturer, Western Sydney University  
Mrs Susan Broomhall, Program Evaluation Analyst, Fire & Rescue New South Wales  
Mr Michael Ollerenshaw, A/Assistant Director, Community Safety and Research, Fire & Rescue New South Wales

The Health Impact and Economic Cost of Residential Fires in New South Wales

In most western industrial countries, the vast majority of fire deaths and a high percentage of fire related injuries occur in the home. In New South Wales (NSW), according to Fire & Rescue NSW (FRNSW), between 2010 and 2015, there were 23,766 residential fires with 115 deaths and 3,311 injuries. However, these figures are based on reported residential fires and do not include unreported fires, and related injuries or deaths. According to the 2014 NSW Population Health Survey, two-thirds of households were unwilling to call FRNSW when they had a residential fire. This retrospective cohort study will aim to determine the number of residential fires and their associated injuries and fatalities, both reported and unreported, in NSW during the period 1 January 2005 to 31 March 2015. This will be undertaken by examining reported fire incidents from FRNSW, ambulance service use, health service use (emergency and hospital admissions), and mortality data for people who had fire incident related injuries in that period. The three aims are to:

- Determine the number of reported and unreported dwelling fires that occurred between 1 January 2005 and 1 March 2015.
- Determine the number of injuries and fatalities, by mechanism, profile, and health service utilisation that occurred in NSW between 1 January 2005 and 1 March 2015.
- Quantify the economic costs to FRNSW, the health care system, and the wider community associated with residential fire.

The research will provide a better understanding of number, mechanism, nature, spatial variation, and risk factors of injuries and fatalities following residential fire and their economic impact. This information will be used to identify priority stages for research as well as inform and influence policy and planning in this area in NSW and beyond.
Dr Melanie Taylor, Occupational Psychologist / Project Leader, Macquarie University / Bushfire and Natural Hazards CRC (BNHCRC)

Tracking Debbie’s Track: One Weather System, Two Countries, Four Disasters, Seven Local Councils, and More Than 100,000 Animal-Owning Households

Increased public and responder safety, improved community resilience and longer-term disaster recovery, and better animal welfare outcomes are all guaranteed benefits of a stronger focus on the integration of animal emergency management into the emergency management system.

This presentation will follow the chronology of the impacts of (ex-) Tropical Cyclone Debbie across four disaster regions through the lens of animal emergency management and the experiences of animal owners and responders. Starting with the days leading up to TC Debbie’s landfall in the Townsville-Whitsunday-Mackay areas of Queensland, focus will move to the flooding in the Northern Rivers area of New South Wales in Lismore and Murwillumbah, to the slow-onset riverine flooding in Rockhampton, and finally the flooding event in the North Island of New Zealand at Edgecumbe.

Animal emergency management will be discussed using a combination of data from official emergency services and local council public information messaging, traditional media coverage, social media, and the direct accounts of animal owners and responders.

The goal of the presentation is to compare the response to animal issues across these four locations; identifying best practice and challenges for emergency management. By considering the perspectives of formal responders, local government, professional animal rescue, spontaneous rescuers, and the significance of this issue for farmers, animal owners, and communities, it is hoped that the need for improvements in formal animal emergency management arrangements and community preparedness and planning for animals will be reinforced.
Mr Tuan Nordisham Bin Tuan Hussain, Fire Chief, Cefs Response

Five Magical Factors in Emergency Response

Established since May 2004, CEFS Response is a full time professional industrial emergency response service organization providing fire, hazmat, rescue and emergency medical services (EMS) to 16 member’s facilities. The facilities consist of oil refinery, gas processing, marine facility and various petrochemical plants located at Kerteh, Malaysia. Been responded to hundreds of incidents with an average of 80-100 cases per year, generally the experiences and lessons learnt acquired were the typical founded in most training modules, fire related journals, standards, procedures and also many papers presented in conferences and seminars. The important of good emergency management system, knowledge, skill, training, good equipment, proper contingency planning blended together with human subject such as great leadership were among others normally highlighted as the key factors in managing any emergency incident. Beside all those general influencing factors, based on our experiences there are 5 magical factors that normally will determine whether the incident can be controlled, stopped or otherwise escalated to a major emergency, which is beyond our control and required extensive external assistance from government authorities or other mutual business partners. The 5 magical factors are:

1. Response time
2. Master stream
3. Equipment pin point
4. Fire and incident behavior
5. Fire fighter’s heart

The above looks simple and many parties/people are not really appreciating the points which are actually the key factors or to me are the really magical factors that can switch and/or deciding the level of the emergency.
Mrs Sarah U'Brien, Manager, Dungog Shire Community Centre

Dungog 2015 Floods: A Case Study of Spontaneous Community Coordination and Community Led Recovery

The Dungog Shire Community Centre (DSCC) found itself in the position of spontaneously coordinating volunteers and community efforts that emerged during the initial response and early recovery operations within the Shire following the severe storms affecting the Dungog and surrounding areas on 21st April 2015.

These activities included provision of emergency accommodation, food, clothing and other welfare support to those community members in need, along with coordination of donations and volunteers, and establishment of information registers during the initial phases of the event. These services were delivered in a timely and efficient manner due to the extensive relationships and networks the centre has developed within the local area over its 35 year history in the area.

While neither the community centre nor its staff were part of any formal response or recovery plans within the local emergency management arrangements, the centre and its staff adapted to the needs of the local community and delivered a swift, professional response with the community. Isolation and lack of communications in the 4 days after the event created the need and opportunity for true community led recovery actions.

However this response and activity did not fit with the predefined existing local arrangements, causing some integration issues.

The response by DSCC created mechanisms for spontaneous volunteers and local community members, both directly and indirectly impacted by the storm event, to have control of and influence on their own recovery. The Dungog community’s response and actions demonstrate the importance of empowering the community to recognise their strengths, create their own solutions and build sustainable support processes through their recovery.

Lessons learnt from this experience may offer opportunities for local capacity to be fostered in relation to spontaneous community coordination supporting and aiding community led recovery.
Communications in Future Disaster Events: Best Practice Policy for Older People

We undertook a study of policy-driven decisions made during the Hazelwood mine fire in Victoria in 2014 which explored the impact of the mine fire event on older people living in the Morwell community. We were able to gain an understanding of older residents’ experiences using a mix of research methodologies. We combined the findings from focus groups with over 90 local older people and interviews with 17 decision-makers and service providers, with reviews of relevant literature and government policies.

It was apparent that little attention was paid to the voices of older people, especially those usually robust older people living independently in the community. While service providers worked effectively to ensure that older clients were well supported, there was little support for older people who were not already receiving health and community services and support.

The consistent focus was on communication and engagement, reinforcing the statement that the event was a crisis of communication. From the older person’s perspective, future disaster event communications policy should draw on the evidence now available around the critical issues of who is delivering the message, how the message is delivered, who is being targeted, and the importance of communication to build and maintain resilience, confidence and trust.

These policy considerations in relation to communication and engagement with older people are based on conclusions drawn from the research. They have important implications for stakeholders, best practice policy development and program planning to improve preparedness for, and response to, a future disaster event.
Mr Jan Wandek, Managing Director, Emerg Solutions

Meeting the Needs of Our Volunteers

Volunteers are an essential component of our communities, all across Australia. Our history is filled with millions of accounts of personal heroism by volunteers, with those working within the emergency services being particularly vital for the safety of our community.

Although governments have provided our volunteer fire fighters and rescue personnel with appliances, equipment, clothing, training and pagers, resources are still usually limited.

With technology-based resources working their way into volunteer culture for both young and old, we’re finding better, faster and more accurate ways to achieve community resilience.

This presentation will offer a short account of how technology can be used within the emergency services, both now and into the future. It will cover the historical and current issues facing those who work in developing grass roots IT solutions for volunteers, helping to achieve better interoperability and communications for those who help protect our community.
Building Resilient Communities: A Collaborative Approach

Aim - The Resilient Communities in Disaster (RCD) course is designed to increase resilience in disaster situations by capacity building individuals to provide support within the current preparedness/response/recovery framework and provide adhoc support within their family and community.

Project - Designed with Australian Red Cross, four key elements for community resilience underpin the RCD course: Knowledge, Wellbeing, Connecting and Security. The course contains an online component which introduces people to working in disasters, formal disaster management arrangements, and foundational first aid, as well as 3 days of face-to-face instruction in resilient communities in disaster, Psychological First Aid, and disaster First Aid assessment.

To test the workshop a pilot study was conducted with 15 student nurses which included a pre and post course evaluation and participant interview. A second interview will be conducted in 12 months to elicit use of knowledge and in particular how the course might have prepared them for various roles in providing support in the community before, during and after a disaster.

Relevance - In line with the NATIONAL STRATEGY FOR DISASTER RESILIENCE, general consensus is that community resilience is a 'shared responsibility' of all sectors of society including community members, and that a resilient community is one which is able to recover from disaster situations quickly, function well under stress, proactively protect themselves and successfully adapt under changing conditions. A resilient community can prevent loss of life, reduce property damage and reduce business interruption thereby lowering emergency response and disaster recovery costs.

The question is not IF a disaster will impact but rather WHEN. Although many individuals (including healthcare students) have no formalised roles in disaster or emergency situations, we propose the support they could provide, might be a valuable asset to the current disaster risk reduction plan and further build resilience in the community.
Dr Rachel Westcott, Veterinarian, Researcher, (SAVEM) Inc, Western Sydney University and Bushfire & Natural Hazards CRC

Mitigating Action Inertia and The Bushfire Awareness-Action Gap: Findings from A South Australian Case Study

This presentation summarises a three year PhD study as part of the BNH CRC project, Managing Animals in Disasters - and outlines the proposed translation of research findings into practical applications to benefit individuals and communities in all-hazards emergencies. The purpose of the study was to investigate the interactions and challenges facing animal owners and emergency responders, to expand current social theory, and to explore new or enhanced mitigation and preparedness measures which may be integrated into arrangements to promote human safety, support community well-being and narrow the persistent, and concerning, bushfire awareness-preparedness gap.

The research site for this practical, pragmatic, academically rigorous qualitative study was the Lower Eyre Peninsula in South Australia. This location was determined by several distinguishing factors, such as the area's recent and severe fire history and its diversity of animal ownership. In a climate of worsening natural hazards, Emergency Services' public education campaigns have necessarily escalated to keep pace with perceived public threat. The primary factor driving research design was the need to arrive at practical answers to issues of preparedness, policy and practice. Research questions across the study included:

- How can bushfire emergency responders' experiences with animal owners help improve owner safety and survival?
- What preparedness initiatives can be learnt from emergency responders' perceptions and observations of animal owners, which may also be usefully applied to other groups in a bushfire at-risk community?
- How can an enhanced understanding of the aetiology of animal owners' decision-making facilitate the saving of human life in a bushfire emergency?

A strength of adaptable social theory is its ability to successfully bridge exploration and problem-solving. Actively applying theory to enquiry, and using the results to form practical strategies beneficial to animal owners and others, could help narrow the awareness-preparedness gap overall, illuminate other research possibilities, and ultimately help save human life.
Ms Shona Whitton, Senior Project Officer, Recovery, Australian Red Cross

Post Disaster Temporary Memorialising: Psychosocial Considerations for Disaster Managers

Temporary memorialising after community crises is ‘the rule, rather than the exception.’ Participation in collective memorialising provides people affected by crisis with a safe space to express their grief, shock, sadness and can be an important first step in the grieving process.

In the last 12 months in Australia, and around the world, we have seen many examples of temporary memorialising after range of sudden, unexpected critical incidents. Examples include the flower tributes in Melbourne, following the Bourke St incident in January this year, after the Dreamworld accident in October 2016, and following the truck attacks in Nice in July 2016 and Berlin in December 2016, among others.

Despite the predictability of temporary memorials their occurrence and evolution is rarely considered in emergency management. This can have implications for community healing as well as the psychosocial wellbeing of those working to manage temporary memorials.

In 2016, I completed a Churchill Fellowship to explore the implications of temporary memorials on psychosocial recovery. Key findings from my Fellowship relate to the increasing public desire to preserve temporary memorials, the role of archivists, the financial, psychosocial and management implications of preserving memorial items and the psychosocial impacts of supporting people at memorial sites as well as collecting and collating memorial materials.

In addition, this paper will also include practical considerations for disaster managers, government workers and others who may find themselves managing temporary memorials after a critical incident.
Mr Michael Wright, Principal Consultant, ER Consultants Pty Ltd

Recovery from The Yarloop Bushfire of January 2016. ‘Contamination & Clean-Up’ – It’s Not Just About the Science

The most devastating bushfire in West Australian history destroyed Yarloop and surrounding areas on 6 January 2016. Consequently, the largest and most complicated clean-up ever undertaken by the WA Government followed. ERC was appointed by the WA Government to design, oversee, validate and report on the clean-up, having unmatched expertise and practical experience in the science of contamination and clean up in WA following a bushfire disaster. However, this clean-up project went beyond the science and much was learnt.

This presentation will outline the nature of the January 2016 disaster, the impact and resultant contamination, the clean-up process, the outcome and an update on the future of Yarloop. It will include how contamination, from the historical use of Yarloop as the central hub of the WA timber industry with contaminant sources over 100 years old, was discovered and managed during the clean-up operations.

From a scientific perspective, the clean-up project has been a resounding success. All residents can safely return to their properties and the broader town in general, with no cause for concern for contamination and no associated restrictions for rebuilding.

However, the project was much more than just a scientific outcome, and at times 'the science' was actually ignored because it simply couldn’t carry the 'human factor' or tell the full story of the property being assessed at the time. No compromises were made with respect to safety, health or the final clearance outcomes; but the project required significant focus and attention 'beyond the science', for not only the locals but also the recovery project personnel themselves. Such as: empathy, patience, confidence, professional integrity, endurance, flexibility, caution, constant risk analysis, varied communication methods and language, mental health awareness, trust, personal security and safety, a very thick skin and of course an 'Aussie sense of humour'.
FORUM PRESENTATIONS
Mrs Natalie Botha, Managing Director, Janellis Australia

Building Resilience Within Australia’s Critical Infrastructure

In January 2017 the Federal Government announced a new focus on the ownership and resilience of critical infrastructure assets and the Victorian Government continue to have legislation in place to ensure critical infrastructure providers can provide assurance to key stakeholders.

The increasingly diverse number of threats that critical infrastructure owners and operators face and; the independences within the supply chain and with emergency service providers, presents significant challenges.

Janellis have been working with owners and operators of critical infrastructure since 2006 and have pioneered an integrated organisational resilience framework that has been embedded within critical infrastructure industries in Australia and overseas.

This framework was developed in conjunction with and for critical infrastructure providers and continues to be enhanced and embedded across industries including: aviation; banking and finance; utilities; water; transport and government agencies.

The framework has many elements but for the purposes of this paper the discussions include:

The role of the Executive and Board in a crisis. This includes their role in ensuring the organisation is prepared for an emergency or crisis.

Scenario-based planning at the Executive and Strategic Level to identify and mitigate key “catastrophic” risks the organisation may face.

Multi-agency Emergency Management Capability Awareness Program for the protection of key assets.

The development of integrated Critical Thinking capabilities at the Incident, Emergency, and Crisis Management levels.

Resilience reporting to provide assurance to the Executive, Board and other key stakeholders.

We propose to use client case study examples of key projects to illustrate the five key points.
Civil Military Interoperability Through Preparedness: Its Importance, Its Necessity, And the How To

The Australian Defense Force and militaries across the globe, are increasingly involved in the delivery of humanitarian aid both nationally and internationally. When related to ‘natural’ disasters, particularly in a domestic context, this aid is rarely contentious. Since the end of the Cold War however, the rising use of the military as a ‘humanitarian’ strategy, including in complex emergencies and armed conflict, alongside increasing private, for-profit security contractors has drawn criticism.

Critics argue contrasting views of the presence of military actors in the humanitarian space: that it erodes the concept of an apolitical ‘agency space’, founded upon the principles of neutrality, impartiality and independence, or that it can enable interventions that could not otherwise be delivered safely. Regardless, the military are now part of the humanitarian landscape, making the space in which humanitarian aid is delivered complex, highly political, dynamic and contested.

In the field, the military do not always apply the mandates of the International Committee of the Red Cross and the United Nations agencies to their modus operandi, nor fully understand the role of non-government organisations and the diversity of non-government actors. Non-government actors often deem the military presence hampers their ability to deliver humanitarian aid and reject the military as legitimate humanitarian actors, highlighting the negative consequences for impartiality and community involvement. These different perceptions are often influenced by experience in the field, including difficult coordination meetings, limited, or miscommunication, and different values and understandings of promoting civilian protection. In this paper, we discuss the need to better understand and separate the roles of the military and non-government organisations and to reach agreed positions and actions. We argue that bringing together military and civilian actors is essential in this, and provide examples of how this occurs and present a framework of civil military interoperability through preparedness.
Ms Amanda Lamont, Manager Policy & Planning, Australian Institute for Disaster Resilience

**Australian Disaster Resilience Knowledge Hub - Supporting Collaboration and Knowledge Sharing**

As we continue to look for ways to build our resilience and do better to prevent and prepare for disasters, we understand that an important part of being prepared for and building our resilience is to better understand the history, risks and nature of disasters. The key to further develop inter-operability between agencies, organisations and individuals is an understanding of lessons from previous events and how they can help to prevent / recover from future disasters.

This presentation will demonstrate the Australian Disaster Resilience Knowledge Hub to the Disaster and Emergency Management sector in Australia and New Zealand and share information about how to use it and contribute to the collections.

The Australian Disaster Resilience Knowledge Hub is a central collection of information, news and resources relating to disasters and disaster resilience and emergency management in Australia. The Hub is managed by the Australian Institute for Disaster Resilience.

The Knowledge Hub brings together official data, new research, and historical collections to provide people with information to support building a safer Australia. It includes Australian disaster information, the Emergency Management Library, the Australian Journal of Emergency Management, the National Disaster Resilience Handbook Collection and other resources, reports, research, statistics, stories, photos, video and media about disaster events in Australia. Resources and information will be added and updated regularly, including guest collections from emergency services agencies and relevant national and international organisations.

The Hub is an invaluable resource for a broad cross section of people wanting more information and to build their knowledge around disasters. It is intended for use by those who have been affected by disaster, those wanting more historical information about disasters in their region, researchers, historians, students and teachers, and practitioners who will use information to support development of plans, processes and other information for emergency services staff and volunteers.
Ms Rowena Richardson, Director Standards, Best Practice and Evaluation, Office of the Inspector-General Emergency Management
Mr Anthony Lee, Disaster Management Officer, Mackay Regional Council

Capability Enhanced Through Interconnectedness: A Case Study in the Mackay Disaster District

The Office of the Inspector-General Emergency Management Queensland is mandated to provide assurance to on the effectiveness of Disaster Management in Queensland. In 2016 the Office engaged with the Mackay Disaster District, the local governments and disaster management groups of Isaac, Mackay and Whitsunday, to assess their capability to meet legislated disaster management obligations. This region encompasses a diverse community and economy, including tourism, mining and agriculture. A variety of hazards are faced, including cyclone, flood, fire, dam failure, animal or plant disease, mining or transport accidents. Recent major floods and cyclones provide a valuable reference point capability assessment.

The review revealed highly effective disaster management capability across this District. The Office saw evidence of a disaster management culture built on trust, collaboration, good practice, innovation and a focus on community outcomes and public safety. Well developed and tested partnerships, maximise capacity and capability. Partnerships have not required formalisation between councils to flourish, but have developed through active relationships. A palpable spirit of cooperation was evident. Where one group may have had a deficit in skill, they were able to draw knowledge and expertise from the others across the District.

There is a strong a culture of interconnectedness across the entire Disaster District and this has increased the likelihood of capable and effective disaster response and operations. All entities within the Disaster District balance their disaster management arrangements with the normal variability of relationships, interests and competing priorities. This balance enables them to be adaptable and interoperable during disaster operations.

The presentation will address the evaluation methodologies employed by the Office to provide comprehensive analysis of a complex and dynamic system that involves multiple agencies and multiple levels of government. The presentation will also showcase examples of interconnectedness and consider the underlying culture for this to flourish.
Mrs Anna-Maria Rochester, Consultant,

**Cooperation Under Pressure**

In a multi-agency response to a disaster or crisis cooperation is essential for an effective response. Cooperation is sometimes seen as a necessary evil and there can be tension between resources for the agencies’ own needs and resources needed for cooperation.

Based on experiences from development of inter-agency cooperation in the Swedish National Crisis Management System, this presentation will explore what makes cooperation efficient and how it can enhance the overall response to an emergency. It will also address some of the psychological aspects of cooperation in stressful situations.

Research shows that successful cooperation requires the ability to make a conscious mental shift from an agency specific view to a holistic view of a crisis. This will also minimize overlapping and missing activities, something that is particularly important when dealing with rare or new types of crises.

Another concept that will be examined is comprehension of perspectives. Knowledge of different agencies’ roles and responsibilities promotes an understanding of how different agencies interpret and act in response to a crisis.

Other aspects that will enhance cooperation will also be outlined, for example the importance of a citizen centred approach. As well as practical tips on how to incorporate knowledge about behaviour in stressful situations to promote efficiency in crisis.
Mrs Juliette Wright, CEO and Founder, GIVIT

The Perfect Partnership

Effective partnerships between government, not-for-profit organisations and corporates are critical to enhancing disaster response, recovery and resilience.

National Strategy for Disaster Resilience 2011, by the Council of Australian Governments states: Working together and drawing on the expertise and capacity of various partners produces far greater results than do individual efforts alone. Partnerships across and within governments, businesses, the not-for-profit sector and the community, will create a well-informed, integrated and coordinated approach to increasing disaster resilience. The result will be a more resilient nation.

A key priority listed in this strategy (p6, 3.4) is for communities to improve partnerships between government, businesses and not-for-profits to develop innovative risk management approaches, and create a shared understanding of disaster resilience.

Not-for-profit online giving platform GIVIT, founded by Juliette Wright in 2010, has created an award-winning model which enhances the interconnectedness between multiple Disaster and Emergency Management and recovery agencies to improve disaster response, recovery and resilience.

During times of disaster and emergency, GIVIT facilitates the coordination between government agencies, local councils and not-for-profit organisations to identify the immediate and long term needs of the affected community. GIVIT then uses its online giving portal to communicate these needs with the public, and match donation offers from individuals and businesses to ensure people in need get exactly what they need, when they need it most.

GIVIT is funded and established to manage donations during the response and recovery of disasters in Queensland and Western Australia. The GIVIT model is able to be replicated in other states and territories, with a national rollout underway.

This forum presentation by GIVIT’s CEO will help agencies understand the importance of interconnectedness, provide the tools needed to enhance working relationships within their community and emphasise GIVIT’s proven results of interconnectedness resulting in the most effective response.
POSTER PRESENTATIONS
Metrositi: Public Shelter System

Metrositi is a modular shelter designed for community resilience. The holistic design meets the daily needs of commuters and provides support and reassurance for a community when stricken by disaster. The Metrositi concept takes advantage of the significant number of public transport shelters interlinked across a metropolitan area providing information, equipment and direction in the event of a natural disaster, or as an event unfolds in the case of a tsunami.

**Metrositi can be deployed in a variety of configurations including:**

1. Info Hub + seating
2. Small shelter + Info Hub + seating
3. Large shelter + Info Hub + seating

In the event of a natural disaster the design provides: shelter, warmth, first aid facilities, water and emergency supplies. The ability to extend the shelter provides privacy and shelter from nature’s elements for emergency medical attention. Solar panels power the interior lighting and cellphone charging. The two-part seating design houses the first aid and personal survival kits.

In everyday use the information hub provides interactive touch screens to allow people to search and select public transport information. The language settings allow home language selection. Regular interaction with the screen enhances familiarity of its function - an advantage for stressed and anxious people in times of emergency.

The larger modular shelter structures placed in areas categorized as ‘green zones’ such as parks, sports grounds, and schools, provide safe zones for people to move to after a disaster to get further support. The modular design of the shelters allows extension to create more covered space to protect and provide a sanctuary during emergency events.
Miss Asrar Alrajhi, Student, Monash

**Perspectives on Ethical Nursing Practice in Disaster During the Hajj 2015**

**Introduction:**

Saudi Arabia faced two major disasters following a crane collapse when 111 pilgrims died and a stampede which resulted in the deaths of more than 2000 pilgrims during the Hajj in Mecca 2015. Many hundreds who were injured. It is important to understand the nurses’ experiences of ethical preparedness for their role in order that patient care can be optimised.

**Aim:** This study aimed to explore the ethical issues associated with disaster nursing as perceived by nurses working in two major hospitals in Mecca during the Hajj in 2015.

**Method:** Qualitative, descriptive method was utilised. Semi-structured, face to face interviews was held in two hospitals located in Mecca city from June to July 2016. There were eight participants; six were female and two male, of which 3 three were Saudi, three Filipino and two Indian. All the collected data were collected in Arabic, transcribed and translated into English. The transcripts and a summation of primary results from codes, sub-themes and themes were analysed by the researchers to understand their level of ethical preparedness for disasters.

**Result:** Subthemes and themes were generated in order to describe the ethical challenges experienced during the disasters. The four themes generated were nurses ability, determination of the intensity of the disaster, the existence of barriers and development of strategies.

**Conclusion** Ethical knowledge and ability was associated with experience, and ethical practice was seen as core to practice in disaster and essential to the proper support of survivors. The nurses felt that health professionals should be better prepared, have a higher level of awareness of ethical practice in disaster. Ethics education and training content and provision are recommended for future research.
Embedding Design Thinking in Humanitarian Education

The inclusion of design thinking, user-centredness, and design for sustainability frameworks in education can contribute to the effective coordination and implementation of intricate systems and processes in humanitarian intervention.

Embedding strategic design principles and methodologies in humanitarian practices enables a clear understanding of macro and micro context issues affecting a particular humanitarian situation. One key element of design approaches is the capability to mediate the various and complex objectives and needs of those involved in a humanitarian situation. Further, design can facilitate working in cooperation with communities and key stakeholders to deploy relevant solutions through the effective use of participatory methods.

**Background** - A high level of coordination is required among those involved to actualise relevant and permanent solutions for communities. It also requires that consideration of the external and internal factors and a clear understanding of the different contexts and complexity of the consequences in a humanitarian situation. Current practices in the humanitarian sector adopt more strategic approaches to appropriately intervene on a case-by-case basis.

**Aim** - By reviewing key areas of current practices in the humanitarian sector, this paper highlights the key role that the notions of design for sustainability and user-centred design principles, as well as participatory methodologies in education can play in effectively dealing with the complexity of the situations faced in humanitarian practices.

**Methods** - Through a series of qualitative interviews and interdisciplinary workshops with relevant stakeholders, key areas within the humanitarian practice were identified as critical for effective interventions. A conceptual framework around user-centredness, local empowerment and sustainable change was created challenging the status quo of practices.

**Relevance** - Around the world, there are an increasing number of agencies, organisations, and initiatives involved in disaster relief and management activities. These organisations have been critised due to their inability to effectively achieving their common goals: alleviating suffering and ensure the well being of communities in both the short and long term. Lack of coordination and duplication of services has been identified as a major barrier for effective disaster management.

**Results** - Critical issues in humanitarian practices were identified and discussed: Effectively addressing the needs of communities through stakeholder interconnectedness and engagement; Local empowerment of communities using participatory approaches; Proposition of relevant and adequate short and long-term solutions.

**Conclusions** - Design, situated as an advocate for improved human experiences, can successfully mediate the often-competing needs of individuals and the complexities of their environments.
Ms Sally Baisden, Program Manager - Emergency Services Cadets, PCYC Queensland/QFES

Building Community Capacity and Resilience Through Emergency Services Cadets

The Emergency Services Cadets Program (ESCP) is a unique experiential education program delivered in partnership by QFES and PCYC Queensland which helps build resilient individuals who build resilient communities. The ESCP engages with young people aged 12-17 years - the majority of whom face the challenges of living in rural, remote and urban disadvantaged Queensland communities. Emergency Services Cadets aims to build capacity and resilience in individuals, families and communities by providing young people with opportunities to develop skills, increase confidence, foster greater connection and belonging to community, and provide a sense of purpose through emergency preparedness.

The sustainability and success of the program is grounded in the ethos of supporting communities to organically build a Cadet unit; assembling the program based on an understanding of local needs, community strengths, significant historic events and harnessing an all-agencies approach to program support.

This presentation will explore how the ESCP positively impacts on Cadets lives by delivering a resilience building program which: teaches disaster response and emergency management skills; provides equal opportunity for young people regardless of life circumstances; draws on the training & mentorship of personnel from multiple emergency services, local councils, schools, businesses, community resources and dedicated volunteers; and promotes a lifelong passion for volunteering, sparked in the teenage years.

By positioning young people as capable and competent and supporting them to learn and demonstrate their skills and knowledge within their community, the ESCP delivers specific and tangible outcomes for young people and their communities. Specific outcomes discussed include the promotion of cross-agency collaboration; the strengthening of the community’s resilience through collective knowledge; the addition of young people to the volunteer emergency services workforce (and the benefits to the workforce of valuing young people’s contributions); and the enhanced image of young people in the eyes of the community.
Ms Kayla Brereton, Head of Communications, GIVIT

The Perfect Partnership

Effective partnerships between government, not-for-profit organisations and corporates are critical to enhancing disaster resilience and response.

National Strategy for Disaster Resilience 2011, by the Council of Australian Governments states: “Working together and drawing on the expertise and capacity of various partners produces far greater results than do individual efforts alone. Partnerships across and within governments, businesses, the not-for-profit sector and the community, will create a well-informed, integrated and coordinated approach to increasing disaster resilience. The result will be a more resilient nation”.

A key priority listed in this strategy (p6, 3.4) is for communities to improve partnerships between government, businesses and not-for-profits to develop innovative risk management approaches, and create a shared understanding of disaster resilience.

Not-for-profit online giving platform GIVIT, founded by Juliette Wright in 2010, has created an award-winning model which uses the interconnectedness between multiple Disaster and Emergency Management agencies to improve disaster response and resilience, as well as mitigate risk.

During times of disaster and emergency, GIVIT facilitates the coordination between government agencies, local councils and not-for-profit organisations to identify the immediate and long term needs of the affected community. GIVIT then uses its online giving portal to communicate these needs with the public, and then match donation offers from individuals and businesses to ensure those in need assistance get exactly what they need, when they need it most.

GIVIT is now funded and established to manage donations during the response and recovery of disasters in Queensland and Western Australia. The GIVIT model is able to be replicated in other states and territories, with a national rollout underway.

This poster presentation by GIVIT’s Head of Communications, Kayla Brereton, will heavily replicate the forum presentation provided by GIVIT’s CEO Juliette Wright. The post presentation however will be much more interactive and use graphics, examples and an iPad to showcase GIVIT’s interactive website. This will help agencies to understand the importance of interconnectedness, provide the tools via GIVIT’s website (on the spot!) needed to enhance working relationships within their community, and emphasise GIVIT’s proven results of interconnectedness resulting in the most effective response.
Mrs Meagan Edhouse, Emergency Management Advisor, Community Resilience, Emergency Management Bay of Plenty

Enhancing Resilience in Maori Communities - An Innovative Approach

The Bay of Plenty region in the North Island of New Zealand is vulnerable to a wide range of hazards, including natural hazards such as severe weather events, landslips, earthquakes, volcanic eruption and tsunami. The population is 28% Māori with 38% of the region’s land in Māori ownership. There are 34 iwi (tribes), over 200 hapū (sub tribes) and more than 200 marae in the region.

These marae often become the hub for the community when a disaster strikes. It was recognised that a unique approach was required to effectively engage with Māori communities for emergency planning, taking into account their cultural practices and protocols, language and values.

Emergency Management Bay of Plenty, in partnership with The Ministry for Māori Development, and in collaboration with relevant stakeholders, agencies and local whānau and hapū, delivered a successful pilot project in marae emergency preparedness planning.

This poster presentation highlights an innovative approach taken to improve engagement with Māori (the indigenous people of New Zealand) and provide effective customised resources for emergency planning.

The intended outcome is to increase the levels of resilience for marae communities, through greater levels of understanding of local risks and hazards, strengthened relationships between whānau, hapū and emergency management agencies and key stakeholders, and empowerment of whānau and hapū to take ownership of their emergency planning.

The collaborative process identified the need for the development of a national resource for emergency management professionals to assist them to engage with whānau and hapū, to support readiness, response, and recovery activities in their community. The development of the toolkit was greatly informed by the sharing of resources already being utilised across different regions and the collaboration of Civil Defence Emergency Management Groups across the country.

The toolkit was successfully launched nationally to emergency management staff, and relevant stakeholders in June 2016. This resource is now utilised to deliver emergency preparedness workshops to marae across the Bay of Plenty.
Ms Yuki Ishikawa, Former Primary School Teacher, Student, University of Wollongong

How Can Education Revitalize the Minds of Distressed Children? An Analysis Of Expressive Writing In Japanese Schools

In recent years, natural disasters such as earthquakes, tsunamis, floods, and fires have occurred frequently all over the world. Victims of these natural disasters can be traumatized by the sudden loss of loved ones or the substantial destruction of their livelihoods. These negative experiences can deeply impact a child’s development in a range of ways in both the short and long term. However, each child will have their own individual response to such an event: many children are resilient and recover relatively quickly, whereas some children show serious reactions even years after the traumatic event.

Accordingly, schools are expected to conduct education to improve students' resilience and provide long-term support. Teachers, because of their deep understanding of their students and their extended interaction with them, are in a unique position to identify when their pupils are experiencing difficulties following a natural disaster. Once teachers have observed their students' difficulties, however, what can they do to assist those students?

This essay provides an overview of the Great East Japan earthquake and tsunami in 2011 and a case study of potential recovering education. After the disaster in Japan, many schools held activities where children wrote about their own experiences. It was not only for records, but also to help children work through difficult experiences by putting their thoughts and feelings into writing. "Expressive writing" is personal and emotional; it does not concern itself with form or other writing conventions such as spelling, punctuation, or grammar. In Most Japanese school education, there is a historic and practical expressive writing method called "Seikatsu tsuzurikata." This study examines the effects of expressive writing through analyzing over 300 pieces of writing by the children who fell victim to the massive disaster before mentioned in 2011.
Mr Nicholas Kuster, Planning Coordinator, NSW SES

**Tsunami Preparedness for NSW SES Surges Ahead: Waving Goodbye to Outdated Maps**

For the first time NSW residents have the ability to see the evacuation areas for tsunami thanks to new maps developed by the NSW State Emergency Service (NSW SES), the legislated combat agency for tsunami. The Minister for Emergency Services David Elliott released the NSW SES tsunami evacuation mapping platform to the public 3 June 2016.

The online maps are available at www.tsunamisafe.com.au, which give local communities a clearer idea of what areas might be evacuated in the event of a land threat tsunami. It is important to note that the maps do not depict areas that would be inundated in a tsunami but help residents to familiarise themselves and be aware of the evacuation areas.

Areas are based on NSW SES tsunami safety advice that states people go to higher ground, at least 10m above sea level, or if possible move at least 1km away from all beaches and the water’s edge of harbours and coastal estuaries. The evacuation areas depicted in this mapping platform extend 10km up estuaries. They do not depict inundation areas.

These broad evacuation areas will be used by the NSW SES for tsunami response planning in the event of a land threat tsunami, and may change depending on the type of tsunami forecast. They are conservative and based on the best information available at the time. From point of release, the mapping platform will be refined and added-to incrementally to reflect local arrangements, new research and future inundation modelling. The mapping release is consistent with the NSW Open Data Policy mandating that government information be publically available.

On the back of this release, NSW SES will be undertaking longer-term community and stakeholder engagement strategies including examining current best practice and exercising at the strategic and local level.

Through collaborative partnerships, the work that NSW SES has done can assist other jurisdictions undertake their own tsunami preparedness.
Ms Amanda Lamont, Manager Policy & Planning, Australian Institute for Disaster Resilience

The National Disaster Resilience Handbook Collection - Promoting Knowledge Sharing and Consistency Across Agencies and Jurisdictions

In 2015, the Australian Institute for Disaster Resilience (AIDR) was appointed custodian of the Australian National Disaster Resilience Handbook Collection. The Collection represents the body of accepted knowledge in disaster resilience across different disasters, jurisdictions, contexts and stakeholders. It continues to evolve as the leading authoritative collection of nationally agreed principles and guidance for disaster resilience in Australia.

The Handbook Collection encourages collaboration and knowledge sharing across agencies and jurisdictions and supports continuous organisational learning and improvement. By promoting common use of terminology and language, interoperability between individuals, organisations, and jurisdictions and across different disaster contexts is enhanced.

The Handbook Collection is organised to provide links across the collection and to other national and international collections to facilitate interconnectedness and knowledge sharing by a multitude of users across disaster and emergency agencies.

By informing and supporting state, regional, local and community level planning and operations it promotes consistency and supports multi agency collaboration, while still accommodating different jurisdiction and disaster contexts.

The Collection expands current emergency management doctrine to more fully encompass activity before, during and after disasters and include audiences beyond the traditional EM agencies and governments, to include others involved in disaster resilience including the not-for-profit sector, the private sector, education, academic and research institutions, community groups and individuals.

The principles presented in the Collection are the result of expertise, experience, learning, theoretical analysis, data analysis, research utilisation and collaboration amongst agencies, organisations, governments and communities which provide and receive services and support in disasters. National consultative committees representing a range of state and territory agencies, governments, organisations and individuals involved in disaster resilience are involved in the review of the Handbook Collection.

Handbooks in the collection which enhance interconnectedness between multiple agencies to coordinate effective response include Evacuation Planning, Emergency Management Arrangements, Community Recovery and the Glossary.
Mr Glenn Richards, First Officer, Tallebudgera Rural Fire

Taking Responsibility: Are We Putting Our Communities at Risk?

I will discuss the idea that physical preparedness & response is delaying communities that have experienced a disaster psychologically recovering.

A Volunteer Rural Fire Brigade First Officer (Tallebudgera Valley) I experience the panic our community feels during the emergencies we respond to, Although a major emergency for the land owner/property resident we see & treat these incidents as minor incidents. The community is grateful for our response & express their need to be protected. We educate them on how to practically prepare, but does this make them more reliant on an emergency response?

In my paid profession as a Clinical Nurse Consultant in the Psychiatric Emergency Team in an Emergency Department, I see the effects personal disasters have on people. As part of my role responding to major disasters in the Disaster Mental Health Team I have seen communities that cope & recover & communities that struggle.

My anecdotal experience with Cyclone Larry & Cyclone Yasi, communities that had a strong identity, people who knew each other & were well prepared recovered emotionally, physically & economically quicker.

Having read Dr Danielle Every's article, Psychological Preparedness and Vulnerability, I felt reassured by the program we support of facilitating community events with a focus on the community coming together. At these gatherings we promoted Bush Fire Awareness but the focus is on getting to know your neighbours.
Ms Kate Roy, Senior Project Officer, NSW Office of Emergency Management

Local Recovery Toolkit

The Local Recovery Toolkit is a collection of resources that has been developed to assist local councils, community service organisations and individuals involved in the provision of recovery services following an emergency, perhaps for the first time and under the pressure of time constraints. The Toolkit is a practical, ‘hands on’ document aiming to strengthen recovery capability in NSW.

The needs of the community will vary depending on the nature and intensity of the disaster, the capacity of the community and the stage of recovery the community is in. As such, the Toolkit has been developed to be flexible and responsive to meet current and changing community needs. Each guideline within the Toolkit provides tools and templates which can be tailored to specific recovery events.

The toolkit contains a number of guidelines with specific information relevant to that subject matter, and are designed to be read independently. The guidelines are not prescriptive in terms of providing answers to all the issues which confront disaster recovery workers, but rather aim to raise awareness of the issues and establish guidelines for recovery management.

Each guideline contains a statement to articulate its purpose and provides a context which expresses the set of circumstances or facts that surround a particular subject.


The content draws on the Emergency Management Australia Recovery Manual and from recovery documents of other jurisdictions. The Toolkit provides detail on the operational aspects of the NSW Recovery Plan and includes a wide range of information, policies and procedural documents, protocols, facts sheets, checklists, forms and templates.
Mr Mitchell Scovell, Postgraduate Researcher, James Cook University

**Investigating Factors That Influence Cyclone Mitigation Behaviour: A Pilot Study**

In cyclone-prone regions like North Queensland, insurance premiums are priced to reflect the high potential for economic loss from cyclone events. To address premium affordability, insurance companies (e.g., Suncorp) have begun offering their customers discounts for installing or performing mitigation measures aimed at reducing property damage. However, there is still a significant at-risk population who choose not to invest in mitigation measures. It is therefore important to further understand factors that facilitate or impede an individual’s decision to invest in cyclone mitigation measures (e.g., experience, risk perception and coping appraisal), so that preparedness messaging and incentive programs can be optimised for the population in which they are to be delivered. In 2016, James Cook University (HABITT and Cyclone Testing Station), Suncorp and the Queensland Government commenced a research project to investigate factors that influence mitigation behaviour.

This presentation reviews findings from the first project study, which investigated the results from a pilot study of a self-administered questionnaire. The pilot study was delivered at an annual community cyclone awareness event in Townsville (Cyclone Sunday). A total of 72 respondents were recruited at the event and asked to complete the questionnaire assessing variables hypothesised to be of interest including age, homeownership, perceptions of risk and cyclone mitigation status. Preliminary data from the pilot study suggest that respondents tended to perceive future cyclone related property damage as likely but not severe. It was also found that while relatively low-cost preparedness activities were commonly performed, few respondents had installed more costly mitigation measures specifically aimed at reducing cyclone related property damage (e.g., cyclone shutters). The pilot study findings provide needed insight for the Phase I study into psychological drivers of cyclone mitigation behaviour which will take place later this year.
Ms Deb Sparkes, Project Support Officer, AFAC

Towards a More Holistic and Consistent Approach to Prescribed Burning: The National Burning Project

Through the National Burning Project, AFAC is undertaking a major national collaborative project to bring together inter-related aspects of prescribed burning to design guiding frameworks and principles for a more cohesive approach to prescribed burning.

Developing national frameworks and approaches has taken extensive consultation across agencies and jurisdictions and has fostered shared knowledge and networks amongst those that strategise and operationalise prescribed burning objectives. The project aims to aid in communicating these approaches to fire management practitioners and the wider public to gain acceptance of the science and practices that underpin prescribed burning programs.

The benefits of national frameworks and guidelines lie in developing consensus collaboratively, developing relationships, the improved strategies that come from accessing best practice, the ability to align varying approaches, a greater economy derived from using common standards and through achieving improved performance.

This poster presentation provides an overview of the National Burning Project, featuring products that address prescribed burning principles, frameworks, tools and best practice guidelines, including:

- The National Position on Prescribed Burning;
- National best practice guidelines for planning and implementing prescribed burns;
- National frameworks to address prescribed burning risks associated with ecological, fuel management, smoke, greenhouse gas emission and operational safety issues;
- Training manuals to support a range of prescribed burning competencies;
- Objectives and monitoring frameworks;
- Case studies; and
- Reviews of science, best practice and capability.
Dr Harvey Stern, Honorary Fellow, University of Melbourne

Developing Financial Market Instruments to Protect Against What Could Be Dramatically Escalating Costs, Should Certain Possible Future Climate Change Scenarios Be Realised

The cost of protecting against global climate change may be established by applying financial market mathematics to data associated with drivers of that change. This approach is used to derive a risk management model that evaluates the cost of protection. Data employed to develop the model include long-term time series of measures associated with such drivers. The data are statistically analysed to establish their relative importance. It is found that Atmospheric Carbon Dioxide is of profound importance, but that other drivers do have an influence. The findings are then applied to derive the statistical distribution of possible future trends out to 2030 of the Global Mean Temperature, based upon a set of Monte-Carlo-generated scenarios. These scenarios show that it is much more likely for the Global Mean Temperature in 2030 to be higher than that in 2015. The statistical distribution is then interrogated to provide estimates of what are the ‘fair value’ prices of put and call options on Global Mean Temperature futures contracts set to expire on Dec-31 in each year out to 2030. The options considered include European style options (exercise only on expiry date) and Bermudan style options (exercise on any Dec-31 prior to expiry date) with the ‘fair value’ prices of the call options with particular expiry dates shown to be higher than those of the corresponding put options. To summarise, the paper demonstrates how to evaluate the cost of hedging and speculative instruments related to climate change. Whilst their development allows those who wish to place ‘bets’ on their views as to the likely future climate, the real value of the foregoing to those involved in disaster and emergency management lies in the instruments providing the opportunity to protect against what could be dramatically escalating costs, should certain possible future climate change scenarios be realised.
Mr Angelo Paolo L. Trias, Charles Darwin University

**Connecting the Actors, Discovering the Ties: Exploring the Organizational Networks Behind Disaster Risk Reduction (DRR) Projects in Asia and the Pacific**

The purpose of the research is to explore the organizational network behind disaster risk reduction (DRR) projects in Asia-Pacific using network science and social network analysis (SNA). First, the research will map and analyze the organizational network structure to gain a more accurate understanding of its complexity. Second, it will visualize the organizational network and explore its properties to gain a deeper understanding of its underlying dynamics. It will examine how the network is arranged and how it functions based on interconnections (i) between donors, the projects they support, and the countries they aid and assist, as well as those (ii) between donors, the lead organizations managing the projects, and their implementing partners.

The study aims to support organizations working in and within the region in making more effective use of available resources, and in adopting more efficient means for achieving shared objectives. There are two key questions directing the exploratory research. First, how is the Asia-Pacific DRR organizational network structured and how does it function? Second, how will understanding the network help in improving projects and strengthening coordination?

The outcome of the study could lead to a better understanding of disaster governance and the interconnectivity of organizations in the region. It may assist donors and decision-makers in discovering alternative ways to allocate resources and direct efforts. This could help them determine how to address disaster risks in the region while still meeting policy and programming priorities. It may also assist regional project planners and DRR program managers in identifying opportunities for cooperation and in designing measures that strengthen coordination in the region.

The research also seeks to contribute to the development of models and techniques that will help us further study structures and functions of social networks behind complex DRR systems and eventually manage it in a predictable manner.
Wrong Place at The Wrong Time - Independent Coincidence

Globalisation of businesses, highly mobile commuters, increased middle classes with disposable incomes and fly in fly out workers are all examples of why people may be at the location of an emergency without being a permanent member of the impacted community. Emergency management concepts recognises the value of ‘community’ when people are preparing for and recovering from a disaster. But what happens for the recovery of those who are not permanent members of community when a disaster occurs? How do emergency management planners plan for and prepare temporary members for a disastrous event?

This presentation and related research paper proposes the concept of ‘Independent Coincidentals’. Independent Coincidentals are defined as people who are not regular or consistent members of an emergency or disaster impacted community, however they are present in the community at the time of the emergency event and subsequently affected to some extent. The conceptual paper and presentation uses narratives as an illustrative catalyst in conjunction with problematised questions to focus on aspects of emergency and disaster management, which may have impacted on Independent Coincidentals as individual groupings or as a collective. Problematised questions are used to stimulate future thinking, generate discussions and meaningful conjecture, with the objective of ensuring that those included in the conceptualised group are not forgotten when planning for disaster risk reduction and are visible for inclusion in support initiatives, data collection, analysis and post emergency research.

The problematised questions are 1. What are the possible risks and consequence of emergencies and disasters for Independent Coincidentals? 2. Are Independent Coincidentals likely to be affected in the short and longer term by their experiences of emergency or disaster? 3. What short and long-term effects does the experience of an emergency or disaster have on Independent Coincidentals and their social and relational networks?
Miss Susan Woodhouse, Environmental Security Officer, Lake Macquarie City Council

Lake Macquarie FloodWatch System

- B McPherson1, S Marshall1, D Chapman2, S Woodhouse2
- 1 Manly Hydraulics Laboratory, Sydney, NSW
- 2 Lake Macquarie City Council, Speers Point, NSW

The NSW Government Flood Policy is directed towards providing solutions to existing flood problems in developed areas, and ensuring that new development is compatible with the flood hazard and does not create additional flooding problems in other areas. Under the policy, the management of flood-prone land is the responsibility of local government. The state government subsidises flood management measures to alleviate existing flood problems and provides specialist technical advice to assist councils in the discharge of their floodplain management responsibilities.

Installation and/or upgrading of current flood warning systems in the Lake Macquarie LGA has been identified as high or medium priority actions in a number of floodplain risk management plans (FRMP), including the revised Lake Macquarie FRMP, Cockle Creek, Stony Creek, and revised Dora Creek Waterway FRMP (2015).

The Lake Macquarie FloodWatch System includes a suite of instrumentation, modelling tools and web based information dissemination. This paper describes the development of the system including review of current flood stations, installation of additional instrumentation / upgrade of some existing instrumentation, and development of near real-time flood modelling. The system utilises previous flood study models, catchment conditions, flood monitoring data and oceanic conditions to produce flood level estimates for government agency response and to assist the public with managing their behaviour during a flood.

The information portal provides one source of available information which includes current flood conditions, estimated impacts of flooding based on various scenarios and contact details for the relevant agencies to assist in flood emergency management during an event.

This paper will also highlight future developments which could improve the system and its effectiveness, including implementation of a City-wide Flood Warning System Community Engagement program.