



EMERGENCY PREPAREDNESS REPORT 2018

State Emergency Management Committee
Western Australia



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Cover photo – Nature’s Window, Kalbarri National Park WA – Image: Lisa Allison

Images on the divider pages represent the SEMC’s six state core objectives: people, economy, infrastructure, social setting, government and environment.

[Page 5](#) **PEOPLE** – Beach at Coral Bay – Image: Greg Snell

[Page 11](#) **ECONOMY** – Iron ore train, Tom Price WA – Image: Lisa Allison

[Page 21](#) **ENVIRONMENT** – Pink Lake, Esperance WA – Image: Grant Wilson

[Page 35](#) **INFRASTRUCTURE** – Mitchell Freeway, Perth WA – Image: Grant Wilson

[Page 45](#) **SOCIAL SETTING** – Optus Stadium, Perth WA – Image: Grant Wilson

[Page 129](#) **ECONOMY** – Wheat field being harvested – Image: Wesley Tolhurst

[Page 139](#) **INFRASTRUCTURE** – Eyre Highway, WA – Image: Lisa Allison

[Page 143](#) **GOVERNMENT** – Parliament of Western Australia, Perth WA – Image: Grant Wilson

[Page 151](#) **ENVIRONMENT** – Thorny Devil, Kalbarri National Park WA – Image: Thomas Dagger

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Foreword



The theme of this year's *Emergency Preparedness Report* is **foresight**. With the complexity of issues in our state, it is **inevitable** that we will be impacted by at least one of the 27 legislated hazards over the next year. And with the choices we have made – and continue to make – it is **foreseeable** that many of us will be adversely impacted.

Some decisions are made out of necessity (such as the location of major port facilities); others are preferential (such as building an eco-retreat in a karri forest). Both types of actions, however, expose us to quite **predictable** consequences.

Port facilities are exposed to major risks from storm surge, tropical cyclone and, more rarely, tsunami. Goods in transit, infrastructure and transport mechanisms present further risks. Recognising both the risks and the importance of port facilities to the economy, steps are taken to protect these facilities. These may include higher building standards in cyclone-prone areas, intelligent engineering, and detailed safety and security procedures to mitigate danger.

While industry largely recognises risks to major infrastructure, the same cannot be said for the rest of society. Yet, the risks of disaster to the rest of society are just as inevitable, with impacts that are equally obvious.

In the contributions to last year's report (2017), a common theme was that emergencies happen '**somewhere else**' or '**someone else will sort it out**'. Unfortunately, such sentiments persisted this year.

This attitude, which can only be described as naïve, must be addressed. Many emergencies can be life threatening and/or costly but they are also foreseeable and they are **actionable** – now. We must take steps, as a society, to mount an active defence. Information describing the hazards and their impacts is freely and openly available and (for the most part) there are tools or systems that are readily accessible to help people, companies and businesses to prepare.

Unfortunately, while people acknowledge the risks intellectually or notionally, the impetus to follow up with action appears to be lacking. While risks are broadly recognised, they are often seen as a problem 'for the future'. Sometimes, long intervals between events might fuel complacency or defer preventive action. Certainly, there is evidence that people who have been recently impacted have a heightened sense of awareness and commitment to action. But this too will fade over time.

The emergency management (EM) sector has been evolving steadily. We now have a much more sophisticated, granular and quantifiable understanding of the risks we face, the capability we have to confront them, and the likely impacts that may ensue.

Despite this achievement, many communities will still experience disruptions from major events. Some will be unavoidable but, in many cases, the consequences of disasters may be repeated when they could have been avoided or at least mitigated.

EM strategies, programs and initiatives need to recognise the inherent skills, capacities and connections within our community and find better ways to harness them. The readiness, resilience and preparedness of EM agencies and people will strengthen us in both response and recovery. To this end, we must find a way to change the conversation. We must personalise and localise the message to bring about the cultural change that is needed.

Failure to recognise and act upon this knowledge and understanding is as irresponsible as it is unconscionable.

Dr Ron Edwards
Chair
State Emergency Management Committee
31 October 2018

A wide-angle photograph of a beach scene. In the foreground, there is a grassy dune with tall, green grass. Several people are visible on the dune, some looking towards the beach. The middle ground shows a sandy beach with many people, including children and adults, walking and playing. A small boat is on the beach, and a larger white boat is in the water. The ocean is a deep blue color, and the sky is a lighter blue with some clouds. The overall atmosphere is bright and sunny.

Executive Summary 01

01 Executive Summary

It is **inevitable** that we will be impacted by at least one of the 27 prescribed hazards and it is **foreseeable** that some of us will be adversely affected. Climate change modelling has consistently pointed to the facts that natural hazards are becoming more intense, less predictable and that extreme events are becoming more frequent. The only **responsible** option when confronted with both this inevitability and foreseeability is to act.

The World Economic Forum's Global Risks Report 2018 noted the world's top risks as: extreme weather events, natural disasters, failure of climate-change mitigation and adaptation and cyber-attacks. They characterised the year by citing extreme temperatures, high-impact hurricanes and the first rise in carbon dioxide emissions for four years.

In the past few months alone, we have seen frequent and severe emergency events around the globe. They have caused untold damage and destruction and have claimed many lives. Some of these have included:

- the Scandinavian heatwave and fires,
- flooding in southern India,
- a series of wildfires in Greece,
- severe flooding and a record-breaking heatwave in Japan,
- the California wildfires,
- Hurricane Florence and the subsequent flooding in North and South Carolina,
- Earthquake and tsunami in Sulawesi, Indonesia, and
- Typhoon Mangkhut crossing the Philippines, Hong Kong and China.

Closer to home we have seen a range of impacts in 2018 from unseasonal weather and weather patterns. Two prime examples are the very late bushfires in Albany in May and the early season fires in NSW prompting an August start to the fire season.

2018 marked both the 100th anniversary of the Spanish flu epidemic, that killed millions of people globally and the 50th anniversary of the 6.5 magnitude earthquake that destroyed the town of Meckering here in WA. We reflect on both their recurrence and their potential impacts today. Significant events have occurred and will likely occur again. In fact, as recently as September this year, a 5.7 magnitude earthquake hit in the Lake Muir area near the town of Walpole in the state's south west.

The best way for the state of Western Australia to protect itself from foreseeable hazards and threats is to be prepared. Emergency management has been seen by some as an additional burden that is placed upon agencies and businesses. It is the position of the SEMC that **'emergency preparedness is the cost of doing business responsibly'**. As such, it should be factored in to business as usual activities for all.

This preparation must occur in the highest echelons of government, through the various departments, across the private and not-for-profit sectors and reach directly into the community and even individual homes.

It is clear that major events and catastrophes can cause death and injury and may have adverse lifetime impacts. They can disempower people and communities and disrupt or destroy essential support systems. We must work together as a state to protect ourselves. We must harness and leverage the skills and experience that exist throughout the state and direct them towards a shared vision of minimising harm and reducing negative impacts of disasters.

The *Emergency Preparedness Report 2018* paints a similar picture to that described in 2017 and is supported by a wealth of empirical evidence. The SEMC Capability Framework has become integral and is providing the underpinning foundation for both preparedness assessment and gap analysis. Significantly the 2018 collection has captured and enables year-on-year changes, for the first time. This allows the sector more broadly to reflect upon progress, improvements and remaining gaps across a range of emergency preparedness and readiness measures.

But there is still much work to be done.

While the emergency management (EM) sector has remained highly functioning, capable, collaborative and cooperative, limitations endure. Capabilities only go so far and will likely be exceeded during large scale events or multiple-simultaneous emergencies.

Unfortunately, for the most part, we also have a passive population. Emergencies are either not recognised or only notionally acknowledged. They are often seen as a future problem (or someone else's problem) and action is either ignored or deferred.

Information describing the hazards and their impacts, for the most part, is freely and openly available. Hazard management agencies (HMA) and supporting agencies have developed and made available a range of tools or systems to help people, companies and businesses to prepare. Yet the perception is that community understanding and action remains low.

This is the attitude that must change. People must take a level of responsibility for their own safety and that of their families. We need them to choose to learn about what may impact them and what steps they can take to protect themselves. It is this action that will better prepare us and lessen impacts in the future.

The aim of the SEMC is to build a connected and resilient WA.

In seeking to deliver this vision, the SEMC focus is shifting towards the community. The future is to develop community-led projects that target and increase all-hazard disaster awareness and preparedness while, at the same time, build community capacity and resilience. The aim will be to strengthen the links between people and the services and systems that support them and allow them to function.

This shift in focus is not about transferring risk or devolving responsibility; rather, it is about sharing them more effectively and realistically. Importantly this shift can make it possible to localise and target treatments that respond to the specific needs and characteristics of an individual community.

The aim must be for WA to develop a flexible, collaborative and inclusive network that leverages the strengths of our EM sector while valuing the importance of community leadership and in particular local priorities.

As a state, we must continue to address hazards and prepare for emergencies so that they do not become disasters. Certainly, within the sector this has been occurring for quite a while; however, the reach and influence of traditional EM partners only goes so far. So the opportunity exists to change the way we think about and address the problem of preparedness. Many of the tools required already exist but have not as yet been widely adopted.

Risk

- Effective land use planning is the ultimate tool to address future risk – by simply not placing the things we value in harm's way. But this does not address existing or legacy issues and decisions can be swayed or influenced by a range of competing priorities.
- Stakeholders overwhelmingly report conducting risk assessments, with local governments (LGs) reporting improved capacity and a broadening of hazards being assessed.
- Most stakeholders identified telecommunications as the most fragile single point of failure, with minimal redundancies in place for critical ICT systems and networks.

- While major advances have been made in the capabilities and commitment to EM by many LGs, there remain pockets of LGs that are less engaged.

Planning

- Existing governance arrangements provide a robust framework to address and progress policy gaps, once identified.
- Compliant EM plans have become the norm across all stakeholders.
- Progress and status of planning:
 - state-level EM plans are comprehensive and documented
 - predetermined processes are in place for review and monitoring
 - DEMC and LEMC structures are effective.
- Caches of critical equipment and resources are stored in strategic locations around the state ready to be deployed.
- Evacuation centre planning is of high quality and represents good levels of cooperation across the sector, although redundancy of power supplies remains an issue.
- Distance and remoteness will endure as a challenge for HMAs. This matter can be effectively treated and mitigated only through cooperation and planning.

Resourcing

- Resourcing remains a common concern among LGs.
- Among agencies, resourcing is sufficient for business-as-usual and moderate-scale emergencies, but will be stretched as scale and complexity increases. (WA is party to several national plans to share resources and enhance capacity in times of ‘large’ emergencies).

- However, resources will likely be insufficient for ‘major’ and ‘catastrophic’ events.
- There is scope for all stakeholders to explore opportunities to develop agreements to share resources and provide mutual assistance.
 - This should extend beyond the traditional EM stakeholders and include some non-traditional business and community engagement.
 - For the most part, community capabilities and networks remain an untapped resource.
- Resource sharing arrangements among LGs (such as MOUs) remain uncommon. However, there are some examples, such as the resource sharing MOU between LGs in the North Metropolitan Emergency Management District.
- The need for long term sustained recovery will almost certainly eclipse the resources of any LG and likely stretch the state.

Issues for the sector

- While already well advanced, sharing, integration and coordination are the areas where most movement can be gained.
- Centralised risk and capability information coupled with data sharing may present an array of previously unconceived options for advancement.
- More work could be done in engaging with non-traditional EM stakeholders such as businesses, industries and communities.
- There is a wealth of both capacity and ability (capability) within our communities that is coupled with extensive local knowledge. The EM sector should examine how best to engage, harness and direct this resource.

- As is the case with many volunteer based organisations, the state's reliance upon volunteers is being challenged as a range of factors are combining to impact on people stepping forward.
 - There is a need for effective sector-wide strategies to address recruitment, retention, motivation and training of volunteers.

Leveraging technology

- The use of technology, particularly within the communications arena, is an area that has yet to be fully utilised by the EM sector.
- The use of social media (for the most part) remains in its infancy.
- Projects such as WebFusion, the new DFES/police CAD system and plans to take the Triple Zero (000) service digital are encouraging signs that the sector is increasingly embracing technological solutions.
- Opportunities still remain to better capture, harness and leverage the digital knowledge of the sector.

Mitigation and resilience are likely to dominate the EM landscape over the coming few years. Significant investment by the state has already been made available to treat known risks (notably for bushfire, including extending the Bushfire Risk Management Planning (BRMP) Program. The BRMP process is currently being adopted by LGs and will provide greater spatial information to direct, guide and prioritise funding.

Since its inception in 2012, the SEMC *Emergency Preparedness Report* has been identifying priority areas for consideration and future action. With every passing year, these have become more granular and tangible in nature.

Through the *Emergency Preparedness Report* the sector has an overall picture of the strengths and weaknesses of the State in the face of a major emergency. Equally as important, the process highlights innovative or effective solutions that are being employed within the sector.

The challenge is to display strategic foresight and deliver on these findings by converting this overall picture into meaningful gap reduction activities. It has been noted in 2018 that there is a gap in translating these insights into action.

Drawing upon the intent of the State Government Service Priority Review, the EM sector is now armed to better focus on community needs. While much work has been, and continues to be, done opportunities remain. We are able to better integrate the findings and align the treatments.

The next step must be to develop and progress a sector-wide business plan that aims to close these gaps. Who, how and what process will be employed will be the elements that address the insights and opportunities and deliver the benefits to the state. The existing EM structures (SEMC and its subcommittees, DEMCs and LEMCs) are known to be effective in bringing together the sector and may be leveraged to represent the path towards tracking and monitoring progress.

Future treatments and actions could be assessed, tailored and prioritised at the various levels within the committee structure. This will provide access to innovative or effective solutions that exist (don't reinvent the wheel) but not impede the development of local solutions to local problems. Reporting these back through the existing structures will deliver a level of oversight to the SEMC that will provide assurance that the state continues to work collaboratively towards the SEMC vision and mission.

SEMC

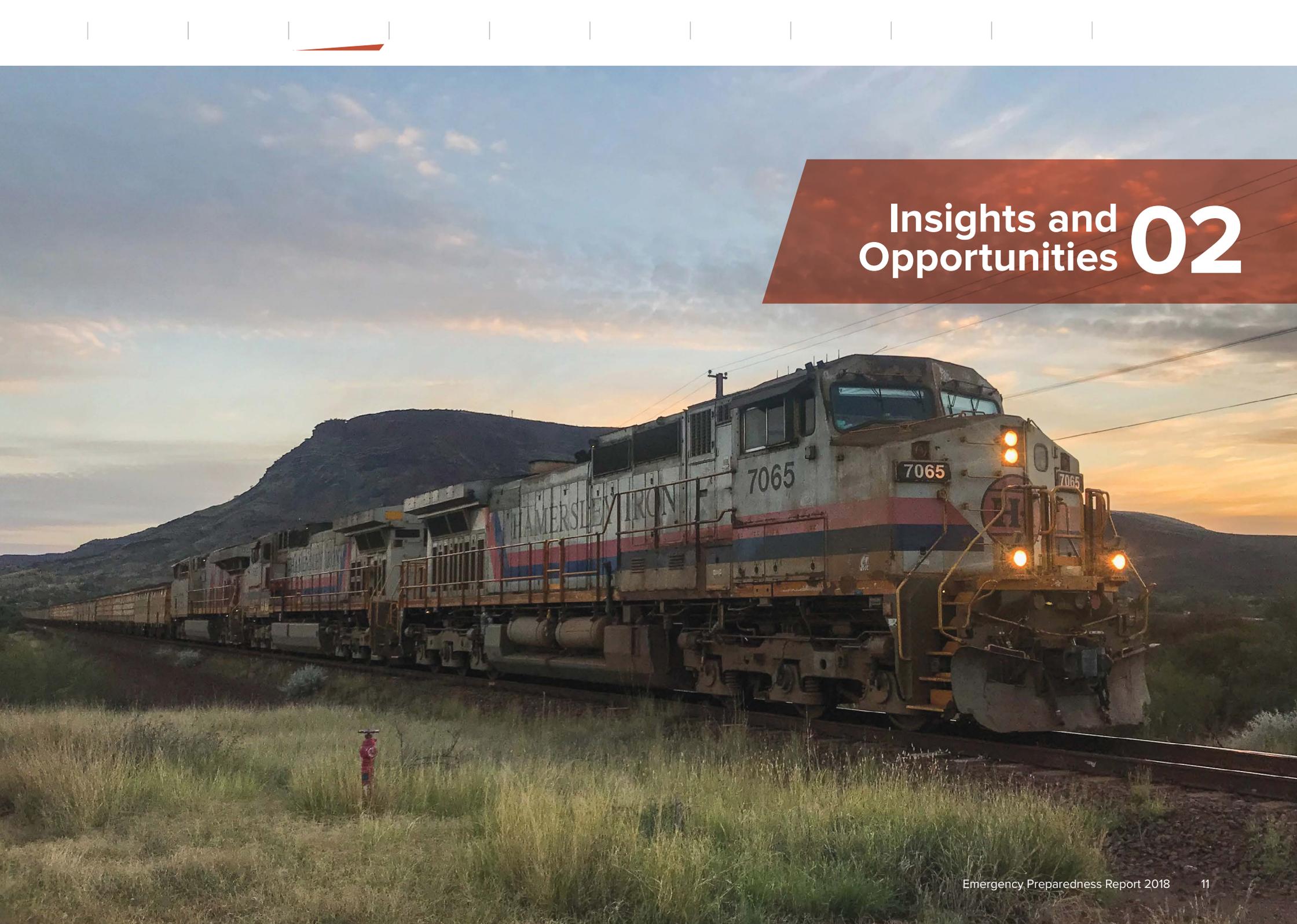
STATE EMERGENCY MANAGEMENT COMMITTEE

Our Vision:

A better prepared, safer and more resilient Western Australia

Our Mission:

To harness and optimise the knowledge, expertise and resources of the State to reduce the impact of emergencies on our people, economy and environment



Insights and Opportunities 02

02 Insights and Opportunities

1. Risk is dynamic

Risk is dynamic. It is intrinsically tied to external factors, such as climate change and population growth, and internal factors, such as capability and awareness.

Theme	Opportunity
Climate change	<ul style="list-style-type: none"> • Consider climate change forecasting in forward risk planning. • Ensure the impact of climate change on the state is understood. • Conduct pre-planning exercises to examine what resources might be required to manage an extreme climate-triggered event. • Support LGs to make smart decisions now that will reduce future risk. • Incorporate climate change considerations in urban planning.
Hazard	<ul style="list-style-type: none"> • Communicate contemporary hazard information to those who may be impacted. • Develop public education strategies to enable the community to better understand the challenges.
Exposure	<ul style="list-style-type: none"> • Consider the implications of social and demographic change on exposure. • Ensure adaption modelling considers future climate projections (including ocean warming, sea-level rise, storm surge and heat wave). • Cross-reference modelling with potential mitigation/treatment options.
Vulnerability	<ul style="list-style-type: none"> • Reassess current vulnerabilities with a focus on ‘catastrophic’ and simultaneous events. • Leverage existing state and district information (risk and capability) to inform treatment options that reduce vulnerability. • Establish a system that enables LGs to dynamically update their communities on the risks faced, with little overhead expense.

2. Data capture and maximisation

The sector is already capturing high-quality data that covers the risks we will face, the capabilities we possess to deploy against them, and impacts that major events have delivered. Opportunities remain to better harness and leverage this knowledge.

Theme	Opportunity
Risk	<ul style="list-style-type: none"> • Encourage a deeper analysis and exchange of information across the EM sector. • Share existing datasets to gain a better insight into both risk and capability. • Consider the creation of a centralised risk database across all government agencies. • Increase use of existing data repositories, such as the data.wa.gov.au website. • Make risk data more accessible through agency websites (where appropriate). • Involve and engage with the insurance sector to better understand the risk and vulnerability data. • Continue risk exposure and vulnerability work, embedding findings into planning and treatments. • Broaden engagement with non-traditional EM players to integrate alternate problem-solving approaches.
Capability	<ul style="list-style-type: none"> • Examine and establish preferred capability benchmarks. • Establish a system to capture and articulate treatment options to ensure they are both optimal and fiscally viable. • Create and promote a 'lessons learnt' database. • Encourage greater cross-agency collaboration to enhance interoperability.
Impact	<ul style="list-style-type: none"> • Leverage existing impact and vulnerability data to better inform treatment options. • Harness technology to present likely impacts in an interactive and meaningful way (virtual and augmented reality technologies). • Engage with the not-for-profit sector to identify opportunities to lessen physical and psychosocial impacts.

3. Planning strategically

We need to better leverage the accumulated data and knowledge of the sector to proactively plan for the longer term. Temporary or ill-conceived solutions will likely exacerbate costs for future generations.

Theme	Opportunity
State	<ul style="list-style-type: none"> • Enact a long-term planning approach (25 year vision). • Encourage cross-sector collaboration to ensure holistic planning. Establish a robust methodology to prioritise mitigation. • Establish mitigation priorities at the state level to guide where funds could best be invested. • Prioritise mitigation planning, to improve resilience. • Encourage broader use of the state’s official Emergency WA website. • Reduce risk by engaging with business and industry. • Make business continuity planning the norm across government, industry and business. • Encourage compliant risk assessments and their regular review (particularly among LGs). • Identify opportunities to create and deploy redundant systems in a cost-effective manner. • Develop robust LEMA guidelines that enhance capabilities, lessen risks and lead to enhanced local resilience.
District	<ul style="list-style-type: none"> • Encourage LGs to work together in planning to address risks and implement treatments. • Leverage data from the State Risk Project to better understand the cascading impacts of infrastructure failure. • Prioritise the ‘hardening’ of existing infrastructure to reduce the likelihood of infrastructure failure.
Local	<ul style="list-style-type: none"> • Carefully balance the cost/benefit of new development in areas that are deemed to be highly risk prone. • Asset harden or increase the protection of critical infrastructure in deemed risk-prone areas. • Enhance LEMA coverage to capture consideration of more EM issues. • Identify (and where possible treat) single points of failure, identified through risk assessment. • Embrace technology but ensure alternate communication plans are in place. • Encourage shared responsibility through community-based, co-designed planning. • Consider EM planning and action as part of business-as-usual activity (i.e. normal conduct).

4. Lack of resources

We do not have the resources to prepare for all hazards of all imaginable scales. In some cases, additional funding, personnel or equipment will be required; in other cases, existing assets can be better leveraged to deliver outcomes that are more favourable.

Theme	Opportunity
Securing resources	<ul style="list-style-type: none"> • Embrace the notion that emergency preparedness is the cost of doing business responsibly and proliferate this message widely. • Establish EM planning and action as part of business-as-usual activity, everywhere. • Develop evidence-based proposals in support of funding requests. • Encourage the appointment of dedicated EM staff (such as CESMs) in LGs. • Link grant funding eligibility to a demonstrated commitment to EM compliance, ideals and principles.
Leveraging existing resources	<ul style="list-style-type: none"> • Maximise opportunities presented by the State Government's Service Priority Review (multi-agency coordination of technologies and systems, and long-term interoperability). • Promote the ongoing improvement of collaboration between agencies. • Improve collaboration with non-traditional stakeholders. • Encourage development of MOUs and mutual assistance arrangements between stakeholders. • Develop mechanisms to better allocate resources when and where they are needed most. • Share EM resources between LGs. • Consider treatments that could be applied across multiple hazards rather than single-purpose treatments. • Highlight the value that mitigation delivers in terms of return on investment.

5. Understanding community capability

The SEMC and the EM sector have limited data on the capabilities that exist within the community. Current reporting is based upon agencies' perceptions of community risk awareness and preparedness. These perceptions suggest that for the most part, we have a passive population that either ignores or defers action.

Theme	Opportunity
State	<ul style="list-style-type: none"> • Establish EM planning and action as part of business-as-usual activity, everywhere. • Clearly articulate that people can and will be impacted. • Highlight the need for, and value of, preparedness to the community, business and industry. • Hold agencies accountable for failure to comply with EM responsibilities and ideals. • Consider using the Emergency WA website as the official single source for all-hazard information. • Provide evidence based preparedness programs that foster community engagement.
Local	<ul style="list-style-type: none"> • Provide LGs with relevant information and support. • Promote options for LGs to work together better. • Partner with LGs to improve risk awareness and preparedness actions.
Community	<ul style="list-style-type: none"> • Target messages to specific groups to avoid the occurrence of 'spam or white noise'. • Provide EM information to LGs to support community engagement. • Enhance public hazard education and engagement with business and community groups. • Educate people on how best they can help and utilise neighbourhood networks through awareness-raising activities. • Develop pathways to rechannel spontaneous volunteers into formal voluntary roles. • Leverage the full range of technology and social media to maximise reach. • Engage existing online community groups to broaden audiences. • Identify and include case studies of events with significant impact for use in engagement/education campaigns.
Business and industry	<ul style="list-style-type: none"> • Encourage business and industries to be prepared. • Stress the importance of self-reliance. • Highlight that their employees are relying on them to reduce impacts and minimise disruption. • Encourage business continuity planning as a normal business practice.

6. Work with the community

The community plays an important role in emergencies. Community networks are highly valued partners before, during and after an emergency.

Theme	Opportunity
Risk awareness	<ul style="list-style-type: none"> Clearly articulate that people can and will be impacted by an emergency at some time. Develop impact case studies from recent emergencies (such as the 2018 earthquake near Walpole) to be used as awareness-raising opportunities. Identify pertinent priority hazards for individual communities. Clarify messaging to make it known that (pertinent) emergencies are inevitable. Base messaging on likely hazards, highlighting foreseeable factors. Continue to provide hazard-specific information and advise people on what they can do to prepare for an emergency; highlight preparatory action can reduce impact. Clarify EM priorities and articulate the limits of the state's capabilities, highlighting the need to be self-reliant for a period (possibly extended). Harness community-based forums to better incorporate the community and local leaders.
Remedial actions	<ul style="list-style-type: none"> Leverage social media platforms to provide information to as many cross-sections of society as possible. Identify opportunities where community groups can contribute to preparation or recovery efforts (ensuring that roles, responsibilities and triggers are clarified and well understood). Work with LGs to develop EM information and preparedness programs that enable them to better engage with their community.
Impetus to act	<ul style="list-style-type: none"> Engage and encourage local groups (and individuals) to prepare for emergencies. Identify avenues where local groups (and individuals) can minimise impacts of hazards. Provide examples of successful community action (case studies) as a guide for program development. Use evidence-based strategies and case studies to increase community resilience, such as the Bushfire Ready Program and the Australian Red Cross' Pillowcase Project.

7. Volunteering

Volunteers are a vital part of our emergency services but a range of factors are combining to impact people stepping forward.

Theme	Opportunity
Challenge of recruitment	<ul style="list-style-type: none"> • Continuation of strategies to strengthen the volunteer workforce. • Review other sectors with strategies that successfully attract volunteers. • Encourage existing volunteers to promote and recruit new volunteers. • Explore opportunities to increase flexibility to encourage non-traditional volunteers. • Consider establishing role models (from a diverse range of backgrounds) to expand the volunteer base. • Consider strategies that factor in issues such as the aging population and depopulation in regional WA. • Leverage social media to increase recruitment. • Establish youth or cadet groups (through schools) to encourage volunteers in younger age groups.
Challenge of retention	<ul style="list-style-type: none"> • Establish regular training and callout options (opportunities to deploy) to crystallise the value of volunteering. • Consider the implementation of new volunteering approaches and structures. • Develop flexible volunteering opportunities (to meet the changing needs of people with competing work, travel or family commitments). • Consider cross-training volunteers for multiple roles. • Introduce variety by having people undertake a range of different tasks. • Develop strategies that better share and reward success.
Challenge of maintaining motivation	<ul style="list-style-type: none"> • Promote opportunities and benefits available through volunteering such as skills development, career progression and networking. • Build more partnerships that can assist with the delivery of new services and supports for volunteers.

8. Animals in emergencies

Animals and livestock are important to the community but in times of emergency their owners may make poor decisions or undertake risky behaviour in an effort to protect them.

Theme	Opportunity
Planning	<ul style="list-style-type: none">• Encourage owners to consider the possible impact of emergencies on their animals.• Encourage owners to plan for the wellbeing and safety of their animals without unduly risking the safety of themselves, rescue workers or others.• Develop tools that will assist the public to create plans.• Include evacuation and accommodation of animals in the LEMA for each LG.• Develop or expand systems to register animals so that LGs can better plan.
Sharing/networking	<ul style="list-style-type: none">• Leverage existing community groups and sporting clubs (such as pony clubs) to establish a network for emergencies.• Co-design plans that address the safety and wellbeing of animals.• Learn from and replicate successful programs that treat similar issues (e.g. Equi-Evac Centre Network).• Ensure evacuation messaging clearly communicates whether or not animals are allowed at evacuation centres.



Overview 03

03 Overview

3.1 Australian emergency management

Natural disasters have cost the Australian economy on average more than \$18 billion a year for the past 10 years (ABR 2017). This cost is projected to exceed \$30 billion by 2030.

Emergency and disaster management is the responsibility of state and LGs. These governments manage the response to incidents and recovery, determining the type and level of relief and recovery measures to be adopted. While state and LGs are responsible for dealing with emergencies in their jurisdiction, Emergency Management Australia (EMA) is the national body that coordinates Australian Government support, both physical and financial.

Guided by the National Strategy for Disaster Resilience (NSDR), EMA seeks to ensure that Australia is best placed to prevent, prepare for, respond to and recover from disasters and emergencies. This strategy is backed by the Natural Disaster Resilience Program (NDRP), which provides \$26 million a year to fund key resilience programs.

Since 2015, the [Australian Institute for Disaster Resilience](#) (AIDR) has been performing as a knowledge centre, strengthening collaboration, knowledge sharing and partnerships among stakeholders. It coordinates and promotes the development, sharing and use of information for anyone working with, or affected by, disasters. AIDR works with government, communities, NGOs, not-for-profits, research organisations, education partners and the private sector. The aim is to enhance disaster resilience through innovative thinking, professional development and knowledge sharing.

In April 2018, the Commonwealth announced the creation of a National Resilience Taskforce. This taskforce will lead nationwide reforms to reduce the impact and financial burden of disasters on our communities and economy. It will seek to deliver a united approach to enhancing the nation's resilience and reducing disaster risk.

3.2 National Disaster Preparedness Framework

The creation of a National Disaster Preparedness Framework (Figure 1) was recommended in the 2016 directions paper, [A Capability Roadmap: Enhancing Emergency Management in Australia](#). The paper identified the need to develop a mechanism that would encapsulate national capability in a holistic way.

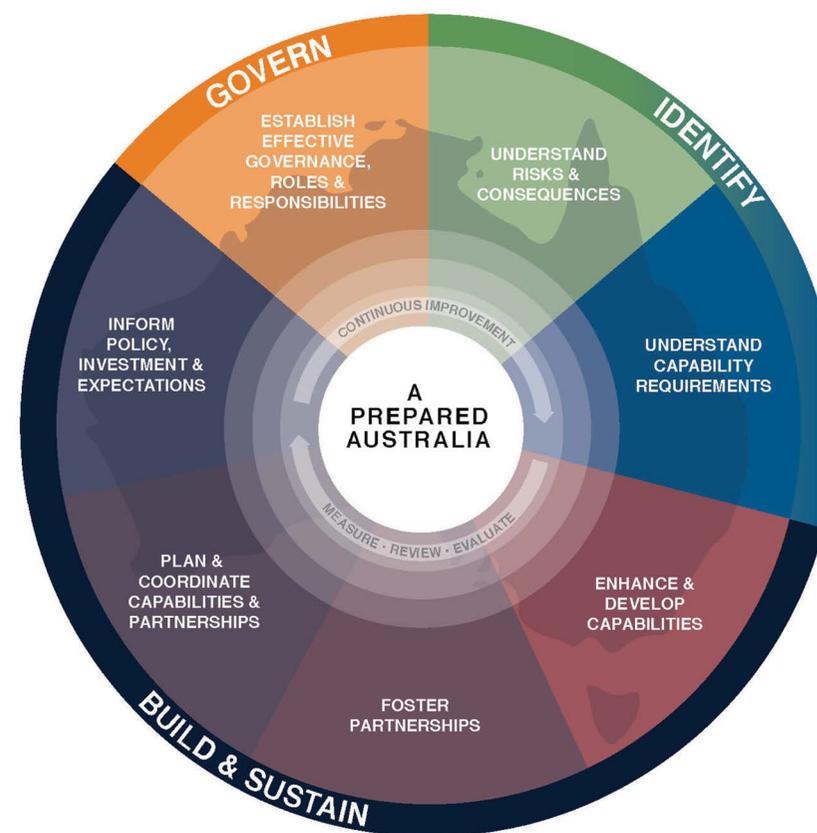


Figure 1. National Disaster Preparedness Framework

The framework under development will aim to ensure that Australia develops the required capability to effectively prepare for, mitigate, reduce and manage disasters that are rated as ‘severe’ or ‘catastrophic’.

Underpinned by the notion of continuous improvement, it will focus on seven key goals:

- establish effective governance¹, roles and responsibilities
- understand risk and consequence
- understand capability requirements
- build capability
- foster partnerships
- plan and coordinate capabilities and partnerships
- inform policy, investment and expectations.

What is the National Disaster Preparedness Framework?

The framework informs the strategic governance, policy and investment required for national disaster preparedness. It is a dynamic mechanism by which Australia prepares for severe to catastrophic disasters. It incorporates consideration of risk and consequence, and new and emerging ideas and technologies, to inform the strategic capability requirements and arrangements across governments and the private, non-government, community and international sectors.

¹ Governance in this context refers to the governance component of the framework. It should not be confused with governance as a core element of capability (i.e. a key input to be considered in generating and maintaining a specific capability).

3.3 National Disaster Mitigation Framework

In the wake of recent floods, cyclones and fires that have impacted communities across Australia, the Commonwealth, in partnership with states and territories, is developing a five-year National Disaster Mitigation Framework. The aim will be to improve Australia’s resilience to natural hazards. The framework is being developed in consultation with a broad range of stakeholders including the private sector, insurance and finance sectors. It will seek to limit risks, provide prevention strategies, and improve decision making. The framework will thus enable a collective commitment to reducing existing risk, preventing new risk, and addressing long-standing information gaps in disaster risk management. The design will focus on strengthening resilience to reduce suffering and help build trust, confidence and wellbeing in society. Key areas will include:

- understanding emerging climate and disaster risk and its complexity
- identifying where society is most vulnerable to the effects of climate and disaster risk and what capacity exists to address that vulnerability
- co-creating a framework that focuses and prioritises effort nationally
- developing governance arrangements that promote accountability and responsibility and enable better knowledge sharing and decision making
- fostering the broad stakeholder group required for a societal systems-based approach.

Development of the framework continued throughout 2018 and will help inform the design of future disaster resilience funding arrangements. The strategy recognises the importance of mitigation as a key element of a long-term plan for how we prepare for disasters. A key challenge will be to determine what information about disaster mitigation efforts is relevant and needed at each level – national, state and local – in both the public and private sectors.

3.4 Funding mechanisms

On top of the support provided by state and territory governments, the Commonwealth has a range of assistance measures to help the hardest hit communities recover from disasters.

Immediately following an emergency, funds may be made available to individuals and communities. This contribution is delivered through a number of measures under the Natural Disaster Relief and Recovery Arrangements (NDRRA) and may include:

- personal hardship and distress assistance
- counter disaster operations
- interest rate subsidies for small businesses and primary producers
- transport freight subsidies for primary producers
- restoration or replacement of essential public assets
- community recovery funds.

NDRRA assistance is provided to alleviate the financial burden on states and territories.

These arrangements provide state and territory governments with the flexibility to effectively meet the requirements of their communities when threatened by disasters and support projects that address specific local risks.

In 2015, the Australian Productivity Commission concluded that government disaster funding arrangements were not efficient, equitable or sustainable. Funding arrangements were prone to cost shifting, ad hoc responses and short-term political opportunism. Further, they were heavily weighted (97%) towards disaster recovery, thereby reducing the economic incentive for state, territory and LGs to mitigate disaster risk (Productivity Commission 2014).

In addition to recovery funding, the Commonwealth invests \$26.1 million a year to fund priority disaster risk reduction and resilience initiatives. This is achieved through the National Partnership Agreement on Natural Disaster Resilience. This funding is then matched (at least) by state and territory governments.

3.5 Natural Disaster Relief and Recovery Arrangements

The type of assistance available and the conditions that must be met for funds to be redeemed are determined under NDRRA. Commonwealth assistance is designed to provide a 'safety net' for states and territories to support them in the event of significant disasters. States and territories are responsible for the reinstatement of essential public assets and services to a certain threshold (calculated by the Commonwealth).

NDRRA does not apply to all emergencies and strict criteria define an eligible disaster event. The event must fall into one of 10 prescribed natural hazard categories or be determined as a terrorist event. It must also exceed the small disaster criterion (i.e. eligible costs must exceed \$240,000).

WA currently applies the NDRRA through the Western Australia Natural Disaster Relief and Recovery Arrangements (WANDRRA). However, new Disaster Recovery Funding Arrangements (DRFA) will start on 1 November 2018. These arrangements have been drafted over the past two years in collaboration with the Commonwealth and all states and territories. The DRFA will significantly change several key areas of the current WANDRRA process, particularly in relation to restoring and reinstating essential public assets. Underlying processes and systems around funding will also change, affecting agencies, LGs and communities applying for disaster recovery funding. The new WANDRRA process will be referred to as the DRFA-WA.

Consultation with key stakeholders affected by the changes is proceeding. Guidelines, revised processes and supporting templates are being drafted to ready stakeholders for the new DRFA-WA.

3.6 Emergency management in WA

The EM sector in Western Australia is incredibly complex and involves the input, coordination and cooperation of at least 170 agencies and organisations. They cooperate between emergencies to increase resilience and preparedness and come together in times of crisis to lead communities and the state to effective recovery.

The *Emergency Preparedness Report* presents the combined inputs from this EM sector.

In 2018, minor adjustments were made to the categorisation of agencies contributing to the report. These changes better reflect the roles that agencies play in emergencies and reduce unnecessary impost upon contributing agencies.

HMA and LGs remain unchanged; however, agencies formerly categorised as EMAs (emergency management agencies) or SVPs (service providers) have been split into four categories:

- combat agency/support organisation
- emergency support services
- essential service providers
- industry body/other.

Details of new agency categories are shown in Table 1.

Table 1. Agencies by category

Combat agency /support organisation		
Agencies with clearly identified or legislated roles during an emergency		
Department of Biodiversity, Conservation and Attractions (DBCA)	Department of Communities	St John Ambulance
Emergency support services		
Agencies highly likely to play a role or be called upon during an emergency		
Australian Defence Force	Red Cross	Bureau of Meteorology
Essential service providers		
Owners and operators of critical infrastructure that may be impacted or required in recovery		
ATCO Gas Australia	Dampier Bunbury Pipeline	National Broadband Network – Australia
Main Roads WA	Horizon Power	Telstra
Water Corporation	Western Power	

Table 1. Agencies by category (continued)

Industry body / Other		
Industry body groups or agencies with non-legislated supporting roles		
Chamber of Commerce and Industry	Department of Education	Department of Planning Lands and Heritage
Department of Water and Environmental and Regulation (DWER)	Forest Products Commission	Insurance Council of Australia
WA Council of Social Services	Western Australian Local Government Association	

Responses

Table 2 shows the number and type of agencies that responded to the *Emergency Preparedness Report 2018* collection survey.

Table 2. Survey respondents

Agency type/Category	Abbreviation	Sent	Received
Hazard management agency	HMA	8*	16*
Combat agency/Support organisation	CA	3	3
Emergency support services	ESS	5	5
Essential service provider	ESP	8	8
Industry body/Other	IB	8	8
Local governments	LG	137	128

* Note: In addition to the generic survey, the Department of Fire and Emergency Services (DFES) completed a further eight surveys addressing capabilities against each of their specific hazards.

3.7 Organisational change and restructure

In 2017, the State Government announced extensive changes to the functions, operations and culture of the Western Australian public sector. Based on a [Service Priority Review](#), the strategies outlined below were identified as critical in delivering the blueprint for reform:

- building a public sector focused on community needs – putting issues of community priority at the forefront of everything the public sector does
- enabling the public sector to do its job better – overhauling internal systems to allow the sector to carry out work more efficiently and in the public interest
- reshaping and strengthening the public sector workforce – embedding better workforce practices to support a more agile and innovative sector
- strengthening leadership across government – applying stewardship and continuous improvement to get the best performance out of agency heads and central agencies (DPC 2017).

The machinery-of-government (MoG) changes aimed at creating collaborative departments focused on whole-of-government objectives, and delivering services in more efficient and effective ways.

In the first round of MoG changes, 34 existing departments and authorities were amalgamated into 11 new departments, the duties of five departments were changed and the duties of nine other departments and authorities remained unchanged.

As part of the second round of MoG changes, DFES underwent a number of structural changes. In addition to the creation of the Rural Fire Division (see next section), a new amalgamated division was established: Strategy and Emergency Management Command. The new division brings together an array of areas from DFES as well as functions that were formally undertaken by the Office of Emergency Management (OEM).

These structural changes to DFES are substantial but will enable the department to meet the government's financial objectives. It is also an opportunity to improve the focus across all 27 hazards, as well as on prevention, preparedness, response and recovery. The new structure has been embedded gradually and strategically over 2017-18 to minimise disruption to emergency capabilities.

In addition to the 2017 state-level MoG changes, the Commonwealth created the Department of Home Affairs. This new department incorporates and brings together a range of traditional law enforcement, border enforcement and intelligence functions. It also includes functions previously undertaken by the EM sector.

At both state and Commonwealth levels, the MoG changes seek to gain efficiencies and to better group and leverage government functions and resources to improve service delivery.

3.8 Rural fire reform

In April 2018, the State Government announced significant changes to WA's approach to bushfire management, including:

- creation of a Rural Fire Division (RFD) within DFES
- establishment of a Bushfire Centre of Excellence
- funding increases for bushfire mitigation activities
- new support measures for volunteers.

The package included substantial new investment in bushfire training, prevention and mitigation with an additional \$18 million for the Bushfire Centre of Excellence, \$15 million to extend the Bushfire Risk Management Planning Program and \$35 million to fund bushfire mitigation activities.

This funding is in addition to the existing (\$15 million) Mitigation Activity Fund (MAF) that has treated more than 350 bushfire mitigation risks since it was established in November 2017.

With the creation of the RFD, the government aims to integrate the full spectrum of bushfire activities across DFES and the wider rural fire management sector to maximise bushfire protection (Figure 2).



Figure 2. Minister for Emergency Services the Hon. Francis Logan MLA with a member of the Wallcliffe Bush Fire Brigade

The RFD has become one of four command structures within DFES and incorporates:

- Office of Bushfire Risk Management
- Bushfire Risk Management Program and its related activities
- Land Use Planning
- Bushfire Technical Services
- Bushfire Centre of Excellence.

The establishment of the RFD coincides with other structural changes within DFES designed to help manage the adverse effects of bushfire across the spectrum of prevention, preparedness, response and recovery. A significant focus will be upon localising service delivery. The development of structures and mechanisms to support the efficient and effective allocation of government funding and resources will become crucial.

The rural fire reforms included measures to strengthen the coordination and oversight of state investment in bushfire mitigation. In particular, an Emergency Services Levy (ESL) Referral and Grants Advisory Committee was announced to provide independent scrutiny of the ESL and the expenditure allocations of associated grants processes.

A new interdepartmental committee will give special attention to bushfire mitigation activities on Crown land and the Executive Director of the RFD has assumed the role of chair of the Capital Grants Committee under the Local Government Grants Scheme. The committee reviews grants to LGs for capital works for their brigades, groups and units.

3.9 Bushfire Centre of Excellence

The creation of the Bushfire Centre of Excellence will be staged to allow time to develop and implement an effective operating model. The initial focus will be on coordinating and delivering training packages in rural fire management, including:

- bushfire operations
- planned burning
- bushfire risk management planning
- role-based scenarios
- leadership programs.

The training will be designed to promote knowledge sharing across sectors and the centre is expected to take the lead in identifying best practices while supporting continual improvement in bushfire mitigation activities.

Operational planning and design of the centre is scheduled for 2018–19. Its location has yet to be determined. Capital funding to support construction of the facility is expected to become available from 2019–20.

3.10 Climate change and emergency management

As described in previous years, global trends in climate change have far-reaching implications for EM. Changes in global patterns include increases in average air and ocean temperature, wider climate variation, greater severity and complexity, and thus greater unpredictability. In WA, we are already feeling the impacts of climate change and experiencing first-hand how communities can be affected.

The risks and impacts of climate change are locally specific, highly diverse and difficult to predict. 2018 has already delivered a raft of unseasonal weather both around the world and closer to home. The northern hemisphere has experienced both a colder than usual winter in many parts and a hotter than normal summer. Record high and low temperatures have been recorded. There has been less rainfall (trending towards drought in some places) and extreme heatwaves. 2018 has also delivered extreme wildfire seasons (notably in Greece and California).

This unusual weather has also been occurring here in Australia. Drought conditions and lack of rainfall in eastern Australia have prompted NSW to bring forward the start of the bushfire season from October to the beginning of August. At the same time, Perth experienced the wettest August since records commenced in 1993. In May, Albany experienced numerous (very) late season bushfires.

The changing climate is lengthening heat and fire seasons. It is delivering more intense, less predictable and more frequent extreme events. And there is no clear end in sight. The ramifications of these events are being felt globally and the need to prepare and ready ourselves has never been greater.

In July 2018, a Climate Change Group established by AFAC (the Australasian Fire and Emergency Service Authorities Council) released a national discussion paper on climate change and the EM sector (AFAC 2018). The paper identifies current and potential implications of climate change for the EM sector and suggests ways to support climate change adaptation and reduce the sector's contribution to it.

3.11 A connected and resilient WA

The State Emergency Management Committee (SEMC) is Western Australia's peak EM body. Supported by DFES (and previously the Office of Emergency Management), its goal is to develop the best EM arrangements in Australia. The [SEMC Strategic Plan 2017–2020](#) identifies the vision to create a better prepared, safer and more resilient WA.

In seeking to deliver this vision, the SEMC is shifting its focus from traditional EM partners towards the community. This shift in focus is not about transferring risk or devolving responsibility; rather, it is about sharing them more effectively and realistically.

The aim will be to strengthen the links between people and the services and systems that support communities and allow them to function. To consolidate these links, the SEMC expects some existing policies, programs and activities will need to be realigned. The Committee recognises that cooperation between the traditional EM sector, not-for-profit service providers, the private sector and the community will be crucial for meeting this challenge.

At the same time, the 'cycle of dependence' that has formed in some parts of society should be challenged. It will be crucial to build the capacity of communities to meet future hazards and incidents. To this end, we must aim for flexible, collaborative and inclusive systems that value community leadership and, in particular, local priorities.

It is important for the EM sector to recognise the value of existing community capability and structures. More importantly, as a state we must find ways to better harness this capability to drive individual and community priorities. Partnering with existing networks and local leadership and creating a shared EM vision is the path towards creating a connected and resilient WA.

This resilience (if achieved) will enhance the capacity of individuals, communities, institutions and businesses to survive, adapt and grow, no matter what kind of chronic stress and acute shock they may experience. It is about saying to people: “We all belong, we all have a part to play and we all can be part of the solution.”

3.12 Your neighbour is likely to be your first responder

During an emergency, the people living closest to you – that is, your neighbours – will be your greatest support. Whether first out with a garden hose or the lend of a phone, they are the people most likely to help you the fastest – and who might need your help. Building relationships with the people who live around us can bring together people, resources and organisations to form stronger communities.

Recent times have seen growing dependence and reliance upon professionals – emergency services and institutional responses – to emergencies. Initiatives such as Emergency Alert (SMS messaging) were aimed at improving communication to build resilience. When released, it was made clear that Emergency Alert would be just one way of warning communities and that it could not and would not be used in all circumstances. However, in some recent cases, people failed to act in dangerous circumstances because they did not receive a text message. Waiting for an alert or someone to come and save you is the wrong approach.

Telecommunications are not failproof. During April and May 2018, major telecommunications issues disrupted both mobile and NBN services. One of these shut down the national Triple Zero (000) emergency phone lines for up to 10 hours across five states. In another incident, mobile 3G and 4G networks were unavailable for extended periods. It is clear from these incidents that technological systems cannot be relied upon in all circumstances.



While it may seem natural to rely on modern technology and professional responders during an emergency, common sense and social connectedness are more likely to keep us safe. Emergency services will do their best, but it is also true that emergencies tend to be widespread and many people may be similarly (or worse) affected. While the emergency services will come as soon as they can, it may take some time.

3.13 Non-traditional stakeholders – community-led programs

An area for improvement within the EM sector is the recognition that major capacity already exists within communities. If citizens are properly engaged and provided with sufficient knowledge and the opportunity to participate, experience has shown they can make an effective contribution to EM. More importantly, preparations for EM can contribute to building resilience and promoting the principle of ‘shared responsibility’ that is our aim.

This notion requires a significant shift away from traditional EM strategies and an acknowledgement that “many of the actions needed to improve Australia’s disaster resilience sit well outside the EM sector” (Attorney General’s Department 2015).

In 2011, the Commonwealth recognised this fact, with the National Strategy for Disaster Resilience identifying that “non-government and community organisations are at the forefront of strengthening disaster resilience in Australia” (Council of Australian Governments 2011). While such thinking may have been articulated in 2011, for the most part little has been done to give effect to it.

There are many organisations in WA with strong relationships and a deep reach into community networks. These include community service organisations (working with vulnerable people and groups), chambers of commerce (supporting small business), special interest groups, not-for-profits and local sporting associations. In the right circumstances, their local knowledge and their understanding of how the community functions and what the community values make them potentially vital partners in EM. Within this framework, the SEMC also recognises the important role of our elected officials.

Many EM groups have already adopted a multi-sectoral approach, with extensive connections and well-established community networks. For instance, during the response and recovery for the Waroona/Yarloop/Harvey bushfire in January 2016, non-traditional stakeholders provided much of the support to the community.

They included Lions Clubs, the CWA, community associations, sporting clubs, local performers, Rotary Clubs, church groups, community resource centres, home and community care organisations, local businesses and many more agencies not usually associated with EM. It is important to recognise that it was local people, some of whom were directly impacted by the event, who provided these services.

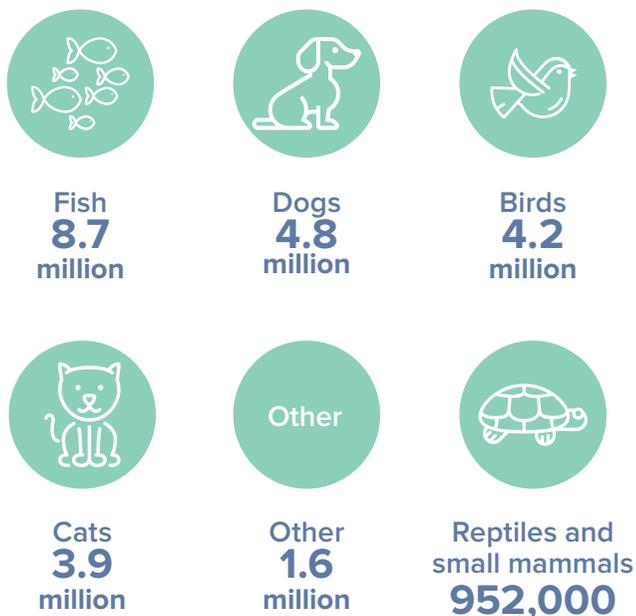
The empowerment of local groups (and individuals) strengthens community connections and builds resilience. It also delivers a proactive way for local people to contribute to their own recovery. The benefits gained from this engagement, empowerment and cooperation are likely to continue long after the ‘official’ recovery response is over.

Leveraging existing networks before, during and after emergencies enables improved risk communication and positively influences perceptions of competence and credibility in the EM sector. The pooling of resources across and between sectors can support a more efficient, flexible and coordinated response. Thus, recognising and embracing the capacity of communities and the social capital that exists within them is a key component of ‘shared responsibility’.

3.14 Animals in emergencies

The issue of animals (pets, wildlife and livestock) in an emergency is a long-standing matter that has widespread implications for the EM sector and society more broadly. In some cases, people’s attachment to their animals has resulted in poor decision making and risky behaviours, some even resulting in death. This has included refusal to evacuate, attempts to re-enter unsafe areas, and unsafe rescue attempts.

According to a 2016 report by Animal Medicines Australia (Animal Medicines Australia 2016), more than 60 per cent of Australian households include a ‘pet’. While this predominantly means a dog or cat, Australia’s pet population was estimated as follows:



In addition, rural properties and businesses rely on animals both for work and as a major source of income.

During emergencies, some people have tried to take frightening, dangerous or poorly behaved pets into evacuation centres, creating additional strain upon already anxious survivors.

While evacuation centres are set up to provide temporary accommodation during emergencies, they often do not accommodate animals other than trained assistance dogs. Proper planning by owners can protect their animals without unduly risking the owners’ safety or the safety of rescue workers, or creating undue stress for other people.

DFES and RSPCA WA have worked closely together in the management of animals caught up in emergencies, with the RSPCA noting that losing animals in bushfires could be devastating for people, akin to losing a family member. “That’s why it’s important to include pets in your preparations, to ensure that they too are safe during the chaos of a bushfire evacuation” (DFES 2018). These messages apply equally across all hazards. DFES and the RSPCA jointly recommend that community members:

- include pets in their (bushfire) survival plans
- talk to their LG about where their pets can stay during an emergency
- ask family and friends if they can temporarily care for pets until the evacuation is over
- ensure their animals are microchipped and registered
- keep their personal and business contact details up to date.

In short, when caring for animals, landholders need to consider how to be prepared for an emergency, how they will respond, and how they will recover.

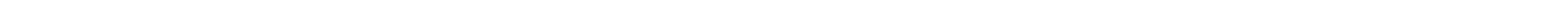
This is where the City of Mandurah has excelled. In 2017, the city won the Resilient Australia National Award for its horse evacuation plan.

The district-wide Equi-Evac Centre Network project was facilitated by the City of Mandurah and funded by the 2016–17 All West Australians Reducing Emergencies (AWARE) program. It aims to identify potential evacuation centres for horse communities in the Peel and south-west areas that may be displaced in times of disaster.

The project took six months and covered 15 LGs: Mandurah, Murray, Rockingham, Bunbury, Busselton, Augusta–Margaret River, Boyup Brook, Bridgetown–Greenbushes, Capel, Collie, Dardanup, Donnybrook–Balingup, Harvey, Manjimup and Nannup.

The project developed short-term evacuation arrangements for equestrian communities and provided the tools to help prepare for emergencies. The tools created consistent, district-wide procedures and focused on planning for equipment, transport, food and shelter. The project will also contribute towards state-level planning for animals in emergencies, as supported by the [Report of the Special Inquiry into the January 2016 Waroona Fire](#).







Risk 04

The use of credible worst-case scenarios in exercises and assessments, once viewed sceptically, has been broadly embraced by the sector as being an effective way forward. The question now becomes, “Are the scenarios being used really the ‘worst case’ or should we ‘dial them up’?”

The past 12 months have also delivered a broader stakeholder base through greater engagement in EM. This offers hope that the findings of the *Emergency Preparedness Report 2017* (see box) may come to fruition.

The community needs to accept that they can (and likely will) be impacted by an emergency. Hopefully, a new mindset will galvanise people to protect themselves better.

– *Emergency Preparedness Report 2017*

The most effective way forward for WA to be prepared for the next emergency is for everyone to play their part. The issue identified was lack of uptake, not lack of information. Heightened community preparedness will:

- strengthen individual and community resilience
- increase the effectiveness of emergency responders
- ease and possibly lessen the impacts
- shorten the recovery required.

The broader engagement this year has seen more industry representation and involvement in EM risk assessment. This engagement and acceptance of impact has prompted some players to act. For instance, the scenario-based examination of disruption to energy supplies persuaded one energy supplier to build in additional redundancy to ensure gas supplies to the metropolitan and south-west regions can be maintained during an emergency. If the assessed worst-case scenario were to occur, the extent of gas disruption would be far less severe, and possibly avoidable.

Such engagement and action is indicative of the type of involvement that is required across the state at all levels of the community.

State

With the exception of counterterrorism, all state-level risk assessments were completed on 6 June 2018. The national risk priorities for terrorism are identified and mitigated through the Australia-New Zealand Counter-Terrorism Committee (ANZCTC). The State Risk Project will be undertaking further work with WA Police Force over the next 12 months focussing on the state’s terrorism risk assessments. The completion of 26 of the 27 prescribed hazards over five years have involved collaboration with 120 different organisations in the review of 39 hazard scenarios. Freight Rail Crash was the most recently completed hazard of particular concern within the state context.

Figure 4 shows all state-level hazards assessed in the past year.



Note: (1) SAR = Search and Rescue; (2) Bio = Biological.

Figure 4. Hazards assessed at the state level in 2017–18

District

Risk assessment workshops for districts rated as high priority were completed in 2016, resulting in a series of reports published in 2017. Since that time, using the data from the risks identified, stakeholders have examined and generated potential treatment strategies to inform WA's treatment framework.

The Wheatbelt Emergency Management District Committee also took the initiative to broaden their assessed hazards by including two additional risk assessments (Human Epidemic and Animal or Plant: Pests or Diseases). Human Epidemic produced the only 'extreme' risks for the district.

Local

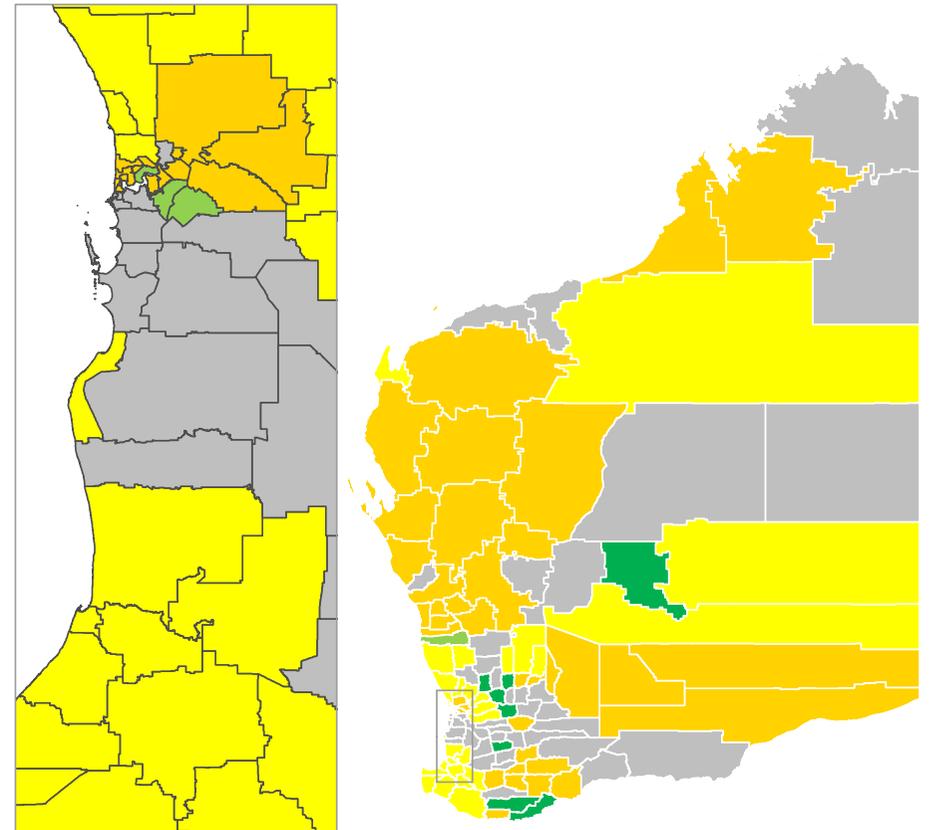
In 2018, the focus of the State Risk Project turned to the local level. While LGs have been involved in the risk process, their own assessments, until recently, have not necessarily used the same measures. The current focus is allowing the LGs to leverage the project's experience at state and district levels and bring consistency and compliance across the state's 137 LGs.

Local-level workshops were piloted in early 2017. Processes were revised and an updated handbook and other supporting tools were developed. The process 'went live' in February 2017 with an initial LG rollout in the Great Southern and Wheatbelt districts.

By the end of September 2018, at least 100 LGs had started the process, with nine having completed fully compliant risk assessments. These LGs are now considering treatment options for their identified risks.

The national focus that is developing around mitigation is becoming increasingly important and it is expected that funding opportunities will follow. Those LGs with consistent, compliant and up-to-date risk assessments will be well placed to deliver mitigation projects that reduce the risks and meet the needs of individual communities.

State Risk Project: Local – Status



- Report & register sent to DEMC and SRP team
- Report completed
- Workshops underway
- Planning
- Not started

4.3 Prioritisation

The overall aim of the State Risk Project has been for all agencies to adopt a comprehensive risk management approach to handling emergencies. This methodology has largely been embraced, with more and more agencies starting to integrate risk information into their normal business. Some have used it in internal business cases to reprioritise their schedule for upgrading assets while others have applied the same methodology to other areas of vulnerability.

A measurable goal is to assess risks from all hazards in a consistent and comprehensive manner, enabling the state to prioritise resource allocation and treatment strategies. With the first half of the goal largely completed, attention is turning to the latter half – prioritising treatment strategies.

Relevant District Emergency Management Committees (DEMCs) have begun the process of leveraging district risk data to identify treatment options and strategies. The next step will be to evaluate which strategies are appropriate and how they can be implemented and funded.

As the attention of the Commonwealth shifts to mitigation, the sector has realised that corresponding funding needs to be more effectively allocated and used. WA has placed itself in a strong position having conducted a thorough process to establish its risk profile. Now we must tackle the issue of how to ensure that these funds go to the best and most effective risk mitigation options.

4.4 Australian vulnerability profiling

Throughout 2017 and 2018, the EMA, in collaboration with the Australia–New Zealand Emergency Management Committee (ANZEMC), has led a project that explores the question: “What makes Australia vulnerable to disaster when severe to catastrophic events impact what people value?” It recognises society’s growing exposure to natural hazards, the intensification of some natural hazards and the increasing occurrence of disasters that test all limits. This nationwide project is known as the Australian Vulnerability Profile (AVP).

Risk assessment typically comprises three components:

- hazard
- exposure
- vulnerability.

Years of work have shed light on ‘hazards’. One of the key insights is that the actual impact of hazards does not create the real disaster. It is **vulnerability** to those hazards that creates the disaster. For instance, buildings (particularly in the north of the state) are exposed to the hazard of cyclone but how vulnerable they are to the impact of a cyclone often comes down to the resilience and hardness of the assets (e.g. construction type, roofing and floor elevation).

A key aspect of the AVP is to consider how Australians are preparing strategically for long-term resilience and how we can reduce and manage systemic risk. As explained above, a good example of foresight is the requirement for houses in cyclone-prone areas to meet higher construction standards, making them less vulnerable to the hazard. However, further afield, there are examples where short-term benefits, convenience or profits have overridden the opportunity to mitigate foreseeable risks (e.g. building in a floodplain).

Many of these instances are legacy issues that date back to very early planning decisions, and care must be taken to ensure that today's decisions do not have similar repercussions for future generations.

The AVP process focuses on the complexity of systems, cause-and-effect relationships and aspects that may amplify or diminish disaster risk.

The project has engaged a stakeholder group – much broader than has been traditionally recognised – to seek to build holistic, long-term resilience to disasters in Australia. The aim is to contribute to a better understanding of where to target mitigation, develop policy and direct efforts to lower vulnerability and improve resilience.

4.5 What is exposed to risk?

People, property, infrastructure, the economy and the environment are never immune to being impacted by hazards.

Over the past 25 years, WA's population has grown to 2.6 million (ABS 2018a). To support this expansion – and to produce and distribute the requisite essential goods and services for increased numbers of people – growth has also occurred in infrastructure and support services such as:

- airports
- hospitals
- schools
- ports
- roads
- gas pipelines
- electricity transmission lines
- wastewater treatment facilities
- water treatment facilities
- railways
- water pipelines
- telecommunications

The home building industry has also grown apace. The estimated total reconstruction value of residential houses in WA is \$407 billion, excluding contents, which is another \$76 billion. When commercial buildings (\$156 billion) and industrial buildings (\$37 billion) are included, the total value of building and residential contents at risk is \$676 billion (Geoscience Australia 2017).

The total value of all assets is difficult to determine, but the figures from Horizon Power (\$1.8 billion, Horizon Power 2017), Western Power (\$10.5 billion, Western Power 2017), Water Corporation (\$36 billion, Water Corporation 2017), Main Roads (\$5.5 billion of bridge assets) plus \$101 billion of mining projects (Department of Mines, Industry Regulation and Safety 2017) provide a significant value of exposed assets.

This total does not include the value of economic commodities such as agriculture (\$8.9 billion in 2016–17, ABS 2018b) and minerals and petroleum sales (\$105 billion in 2016–17, DMIRS 2017). Nor does it account for school, hospital, state or LG assets, which add further to the value of exposed assets. For example, across transport, buildings, stormwater and managed spaces, the City of Perth has \$1.6 billion of assets and the City of Albany has \$0.8 billion (Department of Local Government, Sport and Cultural Industries 2017).

The People and Property

Population



2018

2.6M



2026

3.1M



\$407B

Residential buildings
(+\$76B in contents)



\$193B

Industrial/
commercial buildings

94%

live in the
south west corner

The Economy



\$8.9B

Agriculture exports

940M

Tonnes
throughput WA Ports



\$105B

Mineral and
petroleum sales



What's
exposed
to risk?

Minimum
\$944.7B
of assets

The Infrastructure

\$12.3B

Power assets



\$36B

Water Corporation



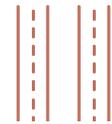
\$5.5B

Replacement cost
Main Road's bridges



19,249KM

of main roads



7,735KM

of railways



\$101B

of mining projects



151

Public and private
hospitals



802

Schools



4.6 What do people value?

A common issue around the nation is what is it that people value?

Until you are impacted by misfortune, it can be difficult to identify what things are most valuable to you personally. Photographs and keepsakes ('memories') are most commonly missed after an incident. Important documents (wills, insurance), pets and companion animals and, for children, favourite toys and games may rate highly. Because this is known, most disaster preparedness toolkits list such items for families and individuals to rescue if they have the chance.

But what assets should be listed in the 'toolkit' for whole communities?

Stories have circulated after some disasters where the things that were protected were not necessarily the things that were valued. For example, farmers are known to have complained that firefighters worked to save a house and let the shed burn – disappointment arising because the house was insured but the shed contained their livelihoods.

How do these things change from community to community?

The contents of a farmer's shed are very different from the contents of a suburban shed and in the case of the latter, the priority would absolutely be on the protection of the house. For many towns, it may be the historic buildings that are valued because they create the community's identity and attract visitors and business.

Fundamentally, people hold different opinions and value and prioritise different things, and these priorities change over time. They can also change as a direct impact of a disaster or from a near miss.

Australian society in general tends to hold in common (and value):

- primacy of life and safety
- sense of identity and purpose
- physical, mental and spiritual wellbeing
- sense of community, connectedness and place
- equity and inclusion
- honesty and courage
- governance as an enabler.

But with such a diversity of values, how do we determine correctly what is important to a particular community and what to protect first? Because people prioritise their values differently and at different times, some permanent tension is inevitable.

Through 2018–19, the National Resilience Taskforce is expected to move from the conceptual stages of assessing these questions into the development of risk reduction methodologies, including how projects are identified and prioritised and how the cost–benefit ratio of that mitigation is evaluated.

4.7 Office of Bushfire Risk Management – OBRM

The OBRM employs a collaborative approach to treating bushfire risk and increasing community resilience. The Office aims to use evidence-based strategies for decision making in both areas, with a focus on delivering the five key elements of the Bushfire Risk Management Strategy outlined below:

Key element	Aim
Development of a State Bushfire Management Policy	<ul style="list-style-type: none"> • Provide an overarching framework to support bushfire management efforts
Provision of bushfire risk mitigation funding	<ul style="list-style-type: none"> • Allocate funds to eligible LGs to support and address mitigation priorities • Allocate funds to DFES and Parks and Wildlife to undertake priority on-ground bushfire mitigation
Preparing guidelines for LG BRM (bushfire risk management) plans	<ul style="list-style-type: none"> • Ensure that LG BRM plans are consistent with the state standard (since 2016, the OBRM has endorsed 19 LG BRM plans)
Provision of a decision support system (DSS) for long-term risk reduction planning	<ul style="list-style-type: none"> • Provide leadership in a research project to develop a DSS to guide investment decisions for mitigating bushfire, coastal inundation and earthquake in WA
Assurance of organisations' risk management over prescribed burns in WA	<ul style="list-style-type: none"> • Through the OBRM Assurance Program, continue to support adaptive risk management strategies

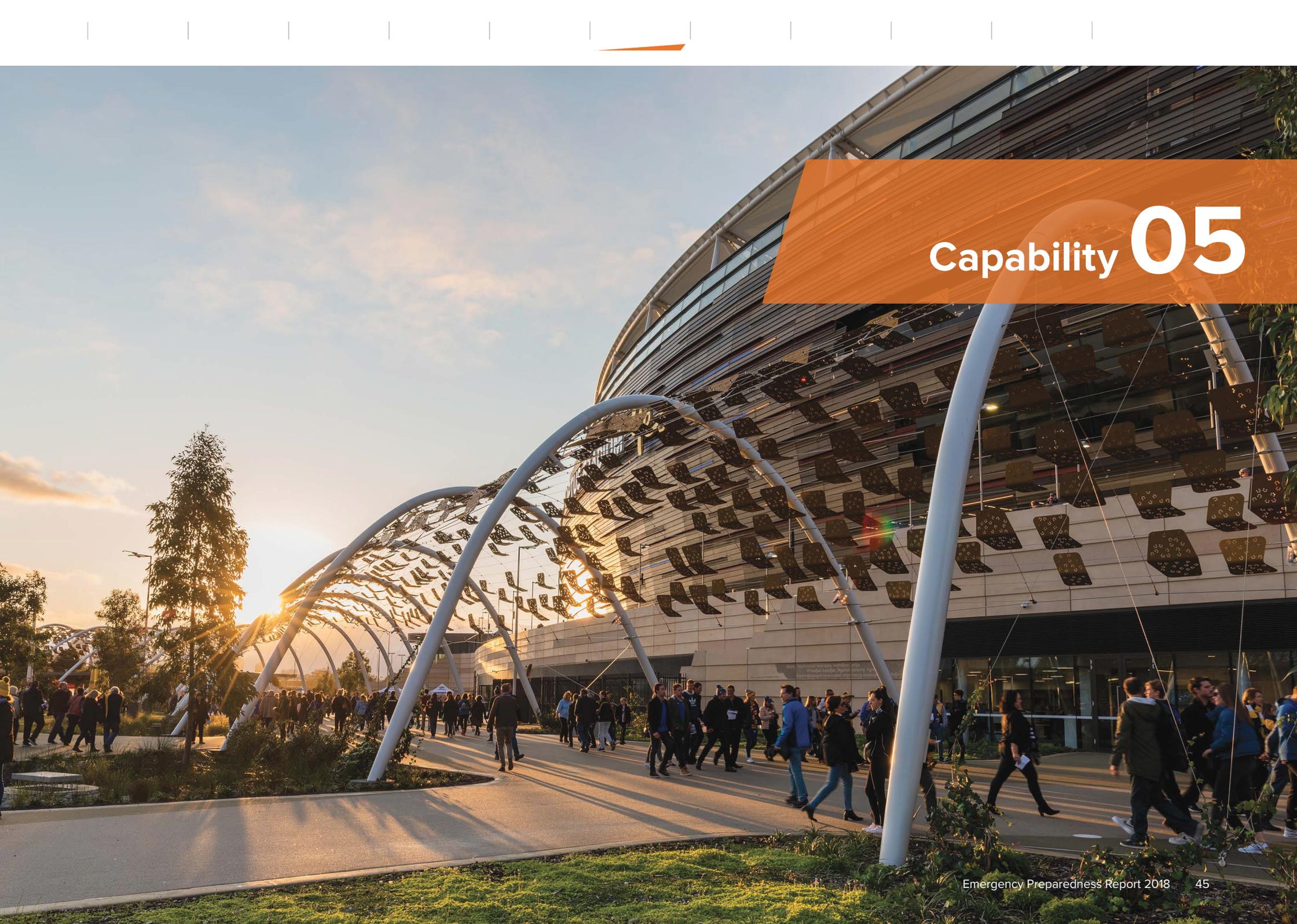
In 2018–19, the bushfire risk management (BRM) guidelines for LGs will be reviewed. This will allow the lessons learnt since their initial application in 2015 to be reflected in best practice. The revised guidelines will place greater emphasis on a community-based, multi-stakeholder approach to planning. They will facilitate shared responsibility for managing bushfire risk and encourage solutions that reflect local contexts. The new guidelines will also enhance integration of the State Emergency Management Framework, and local and district committee structures.

The OBRM's Assurance Program continues to grow and develop. In March 2018, the Kimberley Land Council became the first non-government organisation to achieve OBRM endorsement. The council worked with traditional owners to develop a planned burning framework and policies that align with the ISO 31000 Risk Management standard. As a result, working in conjunction with the OBRM Assurance Program, the council has greatly enhanced bushfire risk management at a regional and local scale.

4.8 Managing the risks

In 2015, the AIDR was appointed custodian of the handbooks and manuals that are used nationally to address the risks and operations faced in Emergency Management. The collection, now known as the Australian Disaster Resilience Handbook Collection, provides guidance on the national principles and practices in disaster resilience. The current suite of handbooks includes:

1. Disaster Health Handbook
2. Community Recovery Handbook
3. Managing Exercises Handbook
4. Evacuation Planning Handbook
5. Communicating with People with a Disability: National Guidelines for Emergency Managers Handbook
6. National Strategy for Disaster Resilience: Community Engagement Framework Handbook
7. Managing the Floodplain: a guide to best practice in flood risk management in Australia Handbook
8. Lessons Management Handbook
9. Australian Emergency Management Arrangements Handbook
10. National Emergency Risk Assessment Guidelines
11. Practice Guide: National Emergency Risk Assessment Guidelines
12. Communities Responding to Disasters: Planning for Spontaneous Volunteers Handbook
13. Managing the Australian Disaster Resilience Handbook Collection
14. Incident Management in Australia Handbook
15. Safe and Healthy Crowded Places Handbook
16. Public Information and Warnings Handbook



Capability 05

05 Capability

This year's *Emergency Preparedness Report* is again based on the WA Emergency Management [Capability Framework](#) (Figure 5).

The Capability Framework reflects what it is to be 'capable' in the face of emergencies. It outlines and articulates the elements that are needed but does not prescribe how those elements should be delivered, leaving that to the discretion of individual agencies. Collection and reporting has been tailored around the achievement objectives of the framework. The utility of this framework has been recognised and forms the basis on which the preparedness of the state is judged. It is evolving to become the benchmark for LEMA (Local Emergency Management Arrangements) and parts of it represent things that could be assured.

While the Capability Framework outlines the features needed to be capable, it does not set benchmarks or targets for agencies to strive for or to achieve. These decisions are the responsibility of agencies; however, in time a consolidated statewide standard may prove useful.

Decisions around how these targets are set must be based on evidence, and interventions should close identified gaps.

The interconnectedness of the Capability Framework employs a systems approach to problem solving. Dealing with major emergencies involves multiple parts that need to be understood both individually and in their connection with the system as a whole. Once these processes are fully in place and embedded, consideration could be given to identifying and delivering against predetermined, well-understood and meaningful benchmarks and targets.

The WA assurance function and lessons management processes are being developed to 'ground truth' reported capabilities and to ensure that lessons are learnt and not just identified.

2018 will represent the first year when, for certain capabilities, a year-on-year comparison can be made to monitor and report improvements.



Figure 5. State Emergency Management Capability Framework

5.1 Legislation

Achievement objective

- Comprehensive EM legislation exists that is current, appropriate and congruent with supporting legislation.

Key findings

- EM legislation is currently being reviewed to meet community expectation of government response to emergency situations.

The *Emergency Management Act 2005* (EM Act) provides for the prompt and coordinated organisation of EM in Western Australia. It may be thought of as ‘threshold legislation’ in that specific provisions become available when an incident reaches a required level.

The EM Act formally establishes the SEMC and other bodies (such as the State Emergency Coordination Group and SEMC subcommittees) and details roles and responsibilities at a state, district and local level in relation to the four aspects of emergency management – prevention, preparedness, response and recovery. The EM Regulations support the EM Act, and provide further details of roles and responsibilities.

While current arrangements are robust and have been shown to function in times of emergency, the EM legislation undergoes ongoing review to meet community expectations of government response to emergency situations.

LGs, particularly smaller ones, have expressed concern over a lack of resources and funding to carry out EM. These resource implications might impact their ability to comply with EM legislation.

5.2 Policies

Achievement objective

- State-level policies are appropriate, useful, usable and used, and the intent of these policies flows consistently through individual supporting agencies.

Key findings

- Some issues in the policy setting need to be resolved.
- Existing mechanisms are sufficient to raise and progress these issues or amendments.

Provision of a strategic framework for EM policies is a legislated responsibility of the SEMC. To ensure that the framework is contemporary and fit for purpose, a seven-phase policy and governance review started in 2013. Since June 2016, a detailed policy content review has been undertaken addressing the 16 broad topic areas shown below:

Topic areas of policy review

State Emergency Management Framework	Recovery
Volunteers	Training
Community engagement and resilience	Traffic management
Exercising	Local EM arrangements
Emergency public information	SEMC consultation mechanisms
Evacuation	Funding for emergencies
Hazard review	SEMC set of documents
Exchange of information	LG and local/district/regional issues

In 2018, hazard management agencies, essential service providers and LGs reported minimal issues with state EM policies. Existing mechanisms were believed to be sufficient to raise and progress issues or amendments. WA Health noted that while the review was underway, the matter of coordination of multiple incidents needed to be resolved. It also noted that the overarching State Emergency Management Plan remained lengthy and contained theoretical knowledge rather than focusing on plan requirements.

Other types of agencies noted further issues within policy setting that remain to be resolved by the SEMC. For instance, Red Cross Australia noted issues with current policy in relation to WANDRRA in the recovery phase, and the former Office of Emergency Management noted that the ability to progress issues was constrained by resources.

In May 2018, changes were made to the suite of state EM documents to clarify 'emergency determination' under the EM Act.

Ensuring that internal policies, plans and processes are consistent with EM legislation and EM documents is an integral part of the responsibilities of agencies and organisations. Almost all agencies reported having plans and processes in place to monitor, review and amend their EM arrangements to ensure consistency with EM legislation:

- The Department of Primary Industries and Regional Development (DPIRD) noted that an integral part of their process of developing any policy, plan or procedure was reference to, and compliance with, the legislation and governance arrangements.
- WA Police Force reported that advisory roles within the Emergency Operations and Emergency Preparedness units supported compliance, and legislated aspects were incorporated in its good governance audit.
- Parks and Wildlife reported that their set of EM documents was continually monitored and internal documents were upgraded following approvals by the SEMC.
- The Water Corporation noted that all of its policies, standards and plans recognised the primacy of EM legislation.
- Main Roads reported that a dedicated section represented the agency at SEMC subcommittees and reference groups.

5.3 EM plans

Achievement objectives

- State hazard plans (Westplans) are comprehensive and documented, and predetermined processes and procedures are in place.
- State EM plans are regularly reviewed, exercised and tested.

Key findings

- All State EM plans are comprehensive, well documented, and processes are in place to review, monitor and exercise them.
- 87% of LGs have current LEMA, with several others compliant and awaiting sign-off.

HMA's again unanimously reported that their EM plans were comprehensive and well documented and that predetermined processes were in place to review, monitor and exercise them. This is consistent with submissions to the *Emergency Preparedness Report 2017*. All agencies confirmed that they reviewed plans following operational incidents and updated them if gaps had been identified.

Similarly, agencies reported reviewing their plans following exercises. For example, after exercise 'White Cloud', the DFES enhanced their HAZMAT capability and processes through the development of an Anhydrous Hydrogen Fluoride Transportation Plan.

Primarily a policy body, the Department of the Premier and Cabinet (DPC) reported that it has limited plans, processes or procedures that fall within the scope of the State Emergency Management Framework. However, following a recent counterterrorism exercise, the DPC conducted a substantial review and amendment of documentation relating to the capability of the State Crisis Centre, which would be activated in relation to a terrorist act or for other major security incidents.

DPIRD, as the HMA for animal and plant biosecurity, reported the existence of a range of nationally agreed response strategies (such as AUSVETPLAN). Such plans have been created for the most significant diseases and incorporate consideration of recent information, best practice and lessons learnt from past incidents or emergencies. For example, strategies applied during a response phase might also impact recovery (e.g. to vaccinate or not in an outbreak of foot-and-mouth disease).

While there have been minimal animal biosecurity emergencies in the past year, emergency recovery remains a major consideration in any review of policies, plans and procedures. However, processes for plant biosecurity are less mature.

WA's lessons management process is being developed to ensure that changes to state EM plans, processes and procedures occur fluidly rather than in response to major inquiries.

Most LGs (87%) have current LEMA, with many others compliant and awaiting sign-off. In addition, a range of LGs tested these arrangements through effective cross-boundary exercising during the year.

In 2018, many LGs rated the review and updating of their LEMA and Local Recovery Plans as one of their major achievements. Indicative comments identified that the plans were reviewed to take into account the latest information, to capture relevant updates, and to ensure ongoing alignment with the State Emergency Management Framework (LEMA Guidelines and model and State Recovery Guidelines).

5.4 Risk assessment

Achievement objective

- Agencies have the ability to regularly conduct relevant risk assessments and the findings are implemented and shared with stakeholders.

Key findings

- Risk assessments are primarily conducted for fire, storm and flood.
- Risk assessment skills among LGs have increased.
- Findings of risk assessments are increasingly being used to improve processes or implement treatments.

A record number of respondents reported having ‘substantial’ skills to conduct EM risk assessments that are compliant with national and international standards. The greatest variability in this ability occurs among LGs.

Nevertheless, the number of LGs reporting ‘no’, ‘limited’ or ‘very limited’ skills has decreased since 2017 and about 20 per cent reported ‘substantial’ or ‘comprehensive’ skills in conducting risk assessments. Several LGs commented that the State Risk Project workshops were beneficial and that they were currently, or were about to begin, working through the process.

LGs with shared resources (such as a Community Emergency Services Manager) reported greater skills in this area. This might reflect that the officer worked across multiple shires, which clustered together to undertake shared risk assessments. A lack of resources (budgetary and personnel) remained the most commonly reported limitation.

Most HMAs claimed ‘high’ levels of skills for conducting risk assessments, with those reporting ‘substantial’ skills increasing by 12.5 per cent since last year. Exceptions to this include the Department of Transport (Marine Safety) and WA Health, which reported very limited skills, with both identifying limited in-house capacity.

While WA Health routinely undertook risk assessments, these were mostly limited to clinical risk management. Only a limited number of personnel are formally trained and experienced in the application of ISO 31000:2018. The Department of Transport (Marine Safety) engaged consultants to assist with major risk assessments for marine transport emergencies.

The greatest number of risk assessments was conducted for Fire, Storm and Flood (Figure 6). Notably, a number of the sudden onset natural hazards were assessed most often because several agencies, particularly essential service providers, deemed these to be of highest risk to business continuity.

 NPW 2	 Tsunami 11	 Hazmat 29
 MTE 4	 Land SAR 17	 Biosecurity 30
 Collapse 5	 Heatwave 21	 Air crash 31
 Marine SAR 5	 Terrorist Act 21	 Earthquake 40
 Fuel 8	 Electricity 22	 Road crash 41
 Gas supply 8	 Epidemic 23	 Flood 60
 SPRED 9	 Rail crash 24	 Storm 72
 Oil Spill 11	 Cyclone 27	 Fire 86
Other 12	Includes specific Hazard plans eg. The Karijini Gorge plan and those hazards that are not prescribed in legislation, such as coastal erosion and cliff rescue.	

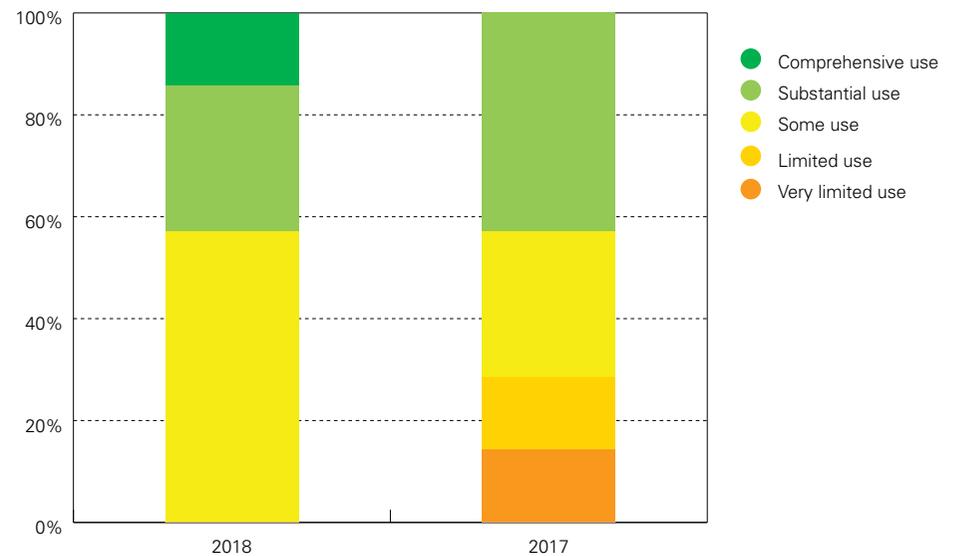
Figure 6. Number of risk assessments conducted by respondents for various hazards

Note: NPW = Nuclear Powered Warships; MTE = Marine Transport Emergency; SAR = Search and Rescue; SPRED = Space Re-Entry Debris

A number of LGs are currently reviewing their LEMAs and looking to expand their hazard assessments in response to local developments. For example, the City of Kalamunda will include rail crash in their assessments due to a new train station (Forrestfield) to be located in their LG area by 2020.

DFES reported conducting risk assessments for all of its hazards, except cyclone, and they are currently involved in the State Severe Wind Hazard Project funded through the NDRP. The aim is to gain a greater understanding of the impact of cyclones in the Kimberley and Pilbara regions. When this project is completed, the tools developed will be used to inform their processes.

HMA – To what extent are the findings of these risk assessments used?



Essential service providers and combat agencies reported ‘substantial’ or ‘comprehensive’ skills in risk assessment. This was also reflected in their use of the findings. HMAs notably increased their use of risk assessments during the year to improve their processes or implement treatments, as shown by the following examples:

- DFES Collapse risk assessment informed a review of the Westplan Collapse and guided the establishment of (Category 1) urban search and rescue (USAR) capability at the local level and the creation of a multi-agency State USAR Taskforce (Category 2).
- DPIRD developed a tool to assess Biosecurity threats and identify areas where prevention and preparedness could be improved.
- Parks and Wildlife conduct bushfire risk assessments that are regularly used to amend prescribed burn plans.

While some agencies have not conducted their own risk assessments, they have participated in almost all state-level risk assessments as supporting agencies. Main Roads WA commented that the findings have been used to inform their maintenance programs and mitigation activities.

5.5 Horizon scanning

Achievement objectives

- Organisations examine existing and ongoing hazard research.
- Pre-emergency situational awareness occurs through examination of international and interstate events that may impact locally.
- Implement best practice identified through hazard research and pre-emergency situational awareness.

Key findings

- All agencies and half of LGs report keeping informed of best practice through horizon scanning.
- A wide variety of forums, groups, committees and websites spread this knowledge further.

All HMAs, combat and supporting agencies, emergency support services, essential service providers and industry bodies reported keeping informed of best practice through reviews of recent hazard information (research, reports) that may affect their area of operation.

Half of the HMAs reported conducting substantial reviews of best practice and recent hazard information, with most noting that this was carried out through membership of various official bodies and participation in national and international specialist groups. For example, the Public Utilities Office, as the Coordinator of Energy, was involved in the National Oil Supplies Emergency Committee and the National Gas Emergency Response Advisory Committee, which collaborate on and circulate recent research. WA Police Force was active on the National Search and Rescue Council and the Australia–New Zealand Counter-Terrorism Committee.

Further, DFES was involved in research with other agencies, including projects such as the:

- Perth Earthquake Risk and Impact Project with Geoscience Australia
- Global Earthquake Model Foundation (GEM) Enhanced Seismic Capability Study for South Western Australia
- York Earthquake Mitigation Case Study and Impact-based Forecasting for Severe Weather, in collaboration with the Bushfire Natural Hazards CRC
- Severe Wind Hazard Assessment Project.

Due to the nature of the hazards of which they are a management agency, WA Health and DPIRD reported that they continuously contribute to intrastate and national monitoring and surveillance of disease outbreaks.

Only around one in six of the responding LGs reported conducting 'comprehensive' or 'substantial' reviews of recent hazard information that may affect them. Most of those citing 'some' review commented that this was mainly conducted through meetings of local and district emergency management committees, attending forums when possible, and receiving information from WALGA (the Western Australian Local Government Association), the SEMC and DFES.

LGs who cited 'comprehensive' review described various mechanisms, including:

- monitoring Australian and international news services and reports
- subscribing to online forums, newsletters and discussion groups
- engaging with stakeholders and reviewing information from the SEMC
- reviewing information from DFES
- using WALGA advisory services
- studying the *Australian Journal of Emergency Management*

- using the Australian Institute for Disaster Resilience Knowledge Hub
- engaging with the Bushfire and Natural Hazards CRC
- engaging with the Civil Defence and Emergency Management NZ
- using pertinent information disseminated through EM district advisors.

Nearly all respondents stated that they kept informed of best practice through reviews of recent hazard information (research, journal articles or reports). However, the level of review varied considerably. Over one-third of LGs reported undertaking only 'limited' (21%) or 'very limited' (15%) reviews of hazard information, citing lack of personnel and time constraints.

Many LGs that reported higher levels of review stated a reliance on others for information about hazards and best practice applicable to LG. Twenty LGs specifically mentioned the OEM, SEMC or DEMC as sources of useful information, while others relied upon the Community Emergency Services Manager to undertake research.

From this year's survey, it is clear that incidents occurring within the state were monitored to the greatest extent, closely followed by interstate events and lastly, international events. For example, all HMAs (excluding DFES who were asked specifically for their individual hazards) reported 'substantial' or 'comprehensive' monitoring of intrastate incidents or events versus 86 per cent for interstate events and 43 per cent for international events.

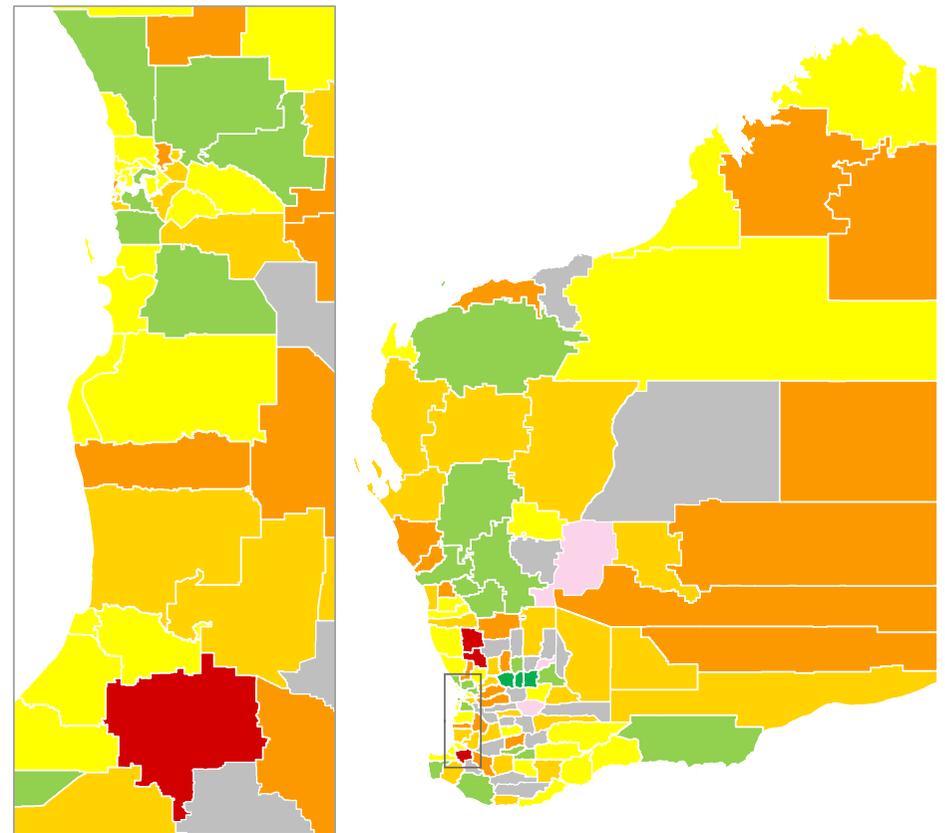
For all of the hazards for which DFES was the HMA, the department reported 'substantial' or 'comprehensive' monitoring of intrastate incidents or events. However, substantial or comprehensive monitoring of international incidents or events was only carried out for the hazards of tsunami and earthquake.

Several agencies said they monitored overseas or interstate events in case they may be required for international assistance. However, few cited monitoring these events to inform their own risk reduction strategies and knowledge.

Notable exceptions were St John Ambulance, who monitored international and national events through the Council of Ambulance Authorities and subscribed to publications sharing ideas and learnings; and Telstra, who maintained a high level of monitoring to inform their risk strategies and prevent reoccurrence.

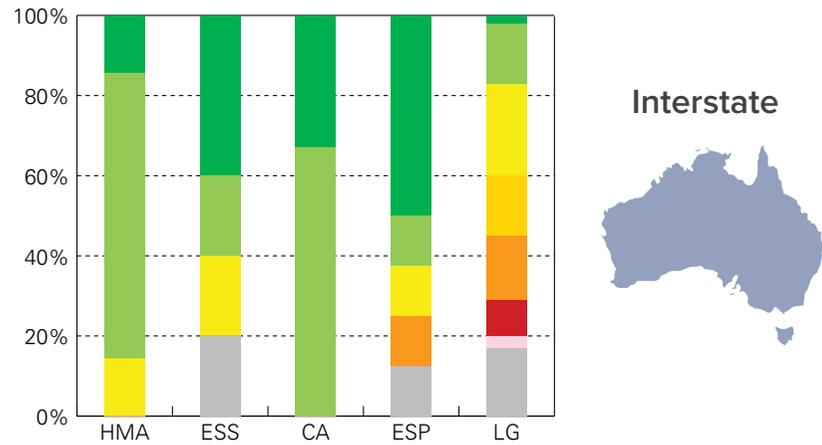
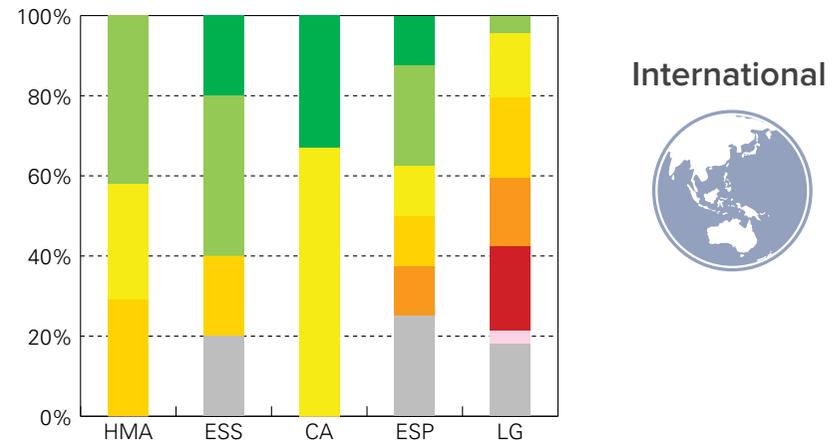
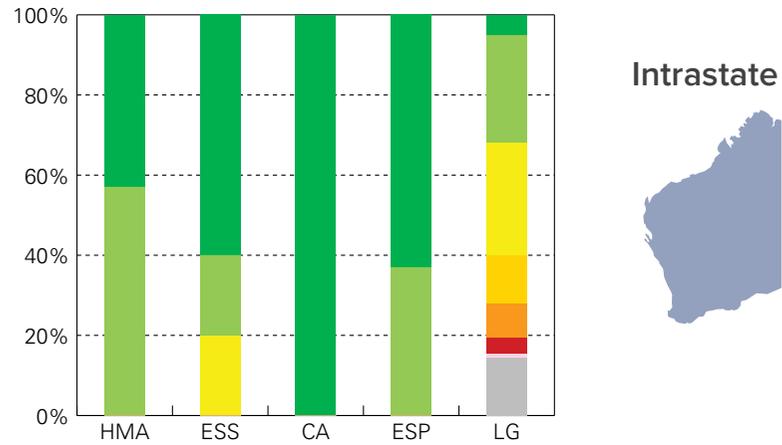
Most LGs noted they had no formal processes for monitoring events and were constrained by limited personnel.

The extent that LGs keep informed of best practice through review of recent hazard information that may affect its area



- Comprehensive
- Substantial
- Some
- Limited
- Very limited
- No
- Unsure
- No Response

To what extent does your organisation monitor incidents and/or events that may be relevant to your organisation/region occurring:



- Comprehensive monitoring
- Substantial monitoring
- Some monitoring
- Limited monitoring
- Very limited monitoring
- No monitoring
- Unsure
- No Response



SPOTLIGHT

Meckering Earthquake – 50-year anniversary

October 14 marked the 50th anniversary of the Meckering earthquake. Luckily, it struck on a public holiday meaning that many men, women and children were not at work or school. At 10.59 am, the earthquake, which registered 6.5 on the Richter scale, devastated the township, leaving hundreds homeless and cutting the goldfields' water pipeline and railway. It gouged a 40 km wound in the landscape. In places, the scarp height exceeded 1.5 m, creating a physical barrier across the Great Eastern Highway, 2.4 km west of Meckering.



Figure 7. The Meckering Hotel was destroyed by the 1968 earthquake. Source: C. Wadley – The Big Camera

Despite the intensity of the 40-second shock and significant damage to the town (Figure 7), no one was killed. It is likely that had the earthquake not occurred on a public holiday the outcome might have been far worse. Many stories of narrow escapes emerged after the event and more than 20 people required medical attention, mostly in York and Meckering. This included three people in York where the balcony of the Imperial Hotel collapsed.

Damage was reported as far away as Perth, where a 90 kg stone cross fell 30 m from the top of St Mary's Cathedral, embedding itself almost a metre into the ground (Figure 8). Many buildings in the CBD suffered cracks and broken windows. Damage was also reported to St George's Cathedral and to the Kwinana Freeway, which suffered slumping near Como, closing one lane.



Figure 8. Left: Cracks in a Perth CBD building. Right: The fallen cross at St Mary's Cathedral. Source: West Australian Newspapers Limited



SPOTLIGHT

Meckering suffered significant damage. By the end of the day, most of the town's 78 buildings had suffered significant or complete destruction. The quake also broke open the town's grain silo, spilling wheat on the ground.

The 50th anniversary of the earthquake is a reminder of the risk of future earthquakes across the state. While building standards were improved in response to the quake, the modern expansion of infrastructure and rapid population growth over the past half century mean a similar event would likely have a much larger impact if it were to occur today.

While some might not consider the hazard of earthquake to be a major risk, the potential impact of an earthquake is significant. The likelihood of an earthquake emergency is also greater than many people appreciate. The south-west of Australia is known to be the most seismically active area of the continent. While earthquake activity in recent decades has been relatively low, the potential for a large earthquake close to population centres, including Perth, remains a real possibility.

As HMA for earthquake, DFES has several natural disaster projects underway, working with agencies like Geoscience Australia and the Global Earthquake Model Foundation. They are seeking a better understanding of the potential impacts, vulnerabilities and ramifications of long-term recovery from earthquake. They are also working with Main Roads, the Water Corporation and Western Power on possible adverse impacts to critical infrastructure and exploring the costs and benefits of retrofitting historical buildings in York, the oldest inland town in WA.

5.6 Lessons management

Achievement objective

- Performance is reviewed following an incident, emergency or exercise and appropriate treatments are implemented based upon the findings.

Key findings

- Most attention is focused on incidents that have a chance of directly impacting organisations.
- Many LGs rely on externally provided information.

While many organisations monitor events close to home, the farther away an incident, the less attention is paid to it. As one LG explained: “Local incidents are more relevant, so more effort is made to take on learnings with limited time/resources.”

Representative of the situation across of the state, another LG demonstrated the extent to which they relied on externally provided information:

“[The] DFES Incident Reporting System access enables the city’s EM team to maintain accurate and timely awareness of all incidents with a potential city/regional impact. Interstate awareness of incidents is limited to news bulletins, commercial TV and radio stations.”

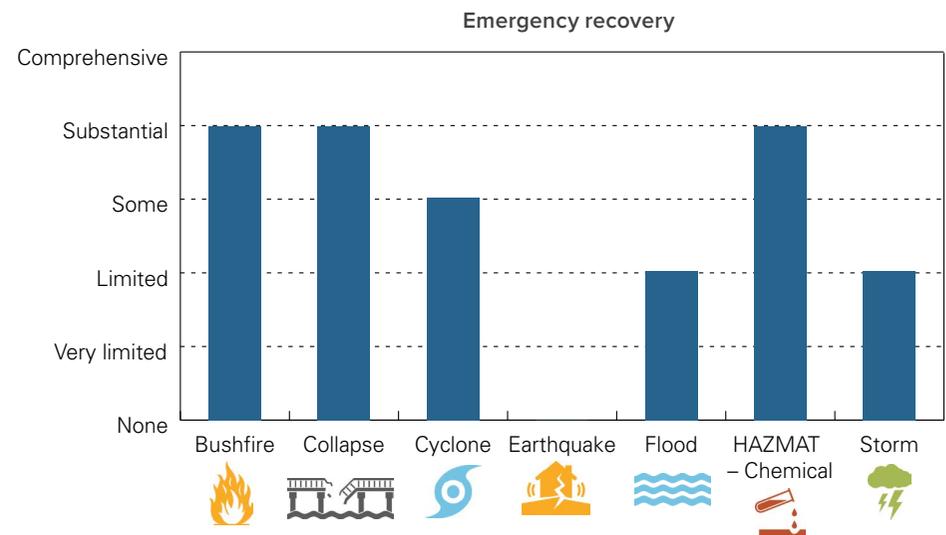
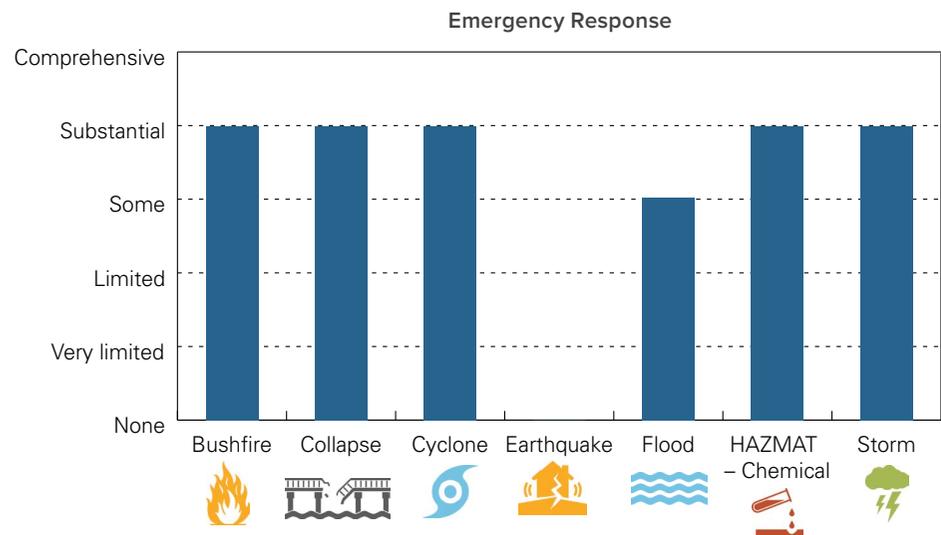
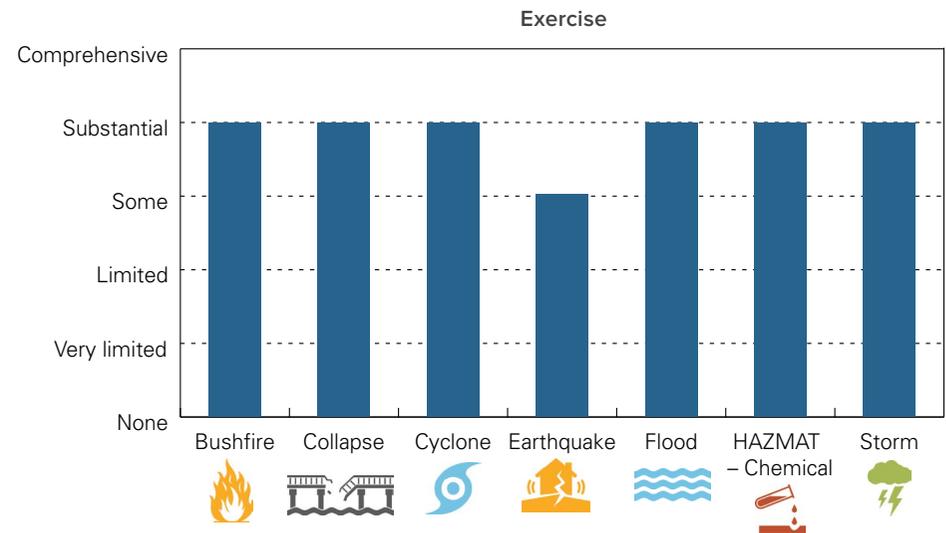
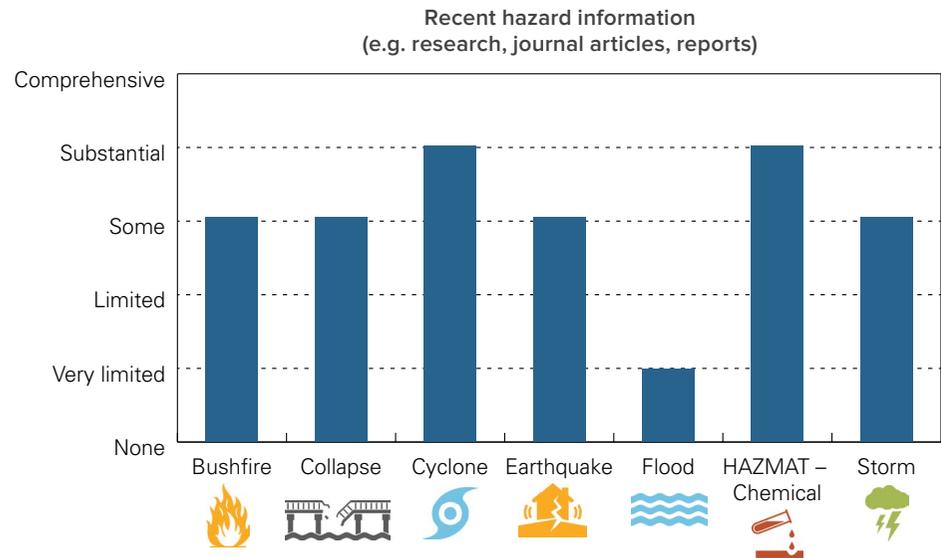
Only two agencies – the Red Cross and St John Ambulance – undertook comprehensive monitoring of interstate and international incidents. The Red Cross, in particular, indicated they drew upon their interstate and international counterparts involved in the relevant incident to provide status updates, while the Council of Ambulance Authorities facilitated similar engagement for St John.

This shows that the ability to learn from extra-jurisdictional incidents is facilitated by strong interstate and international networks that actively share information among members. For example, the Australian Defence Force noted that their Headquarters Joint Operations Command monitored events internationally and Australia-wide, with assistance from Joint Operations Support Staff located across the states and territories. WA Police Force also monitors international and interstate terrorist attacks as members of the ANZCTC.

This is not to say that agencies in WA do not learn from significant international emergencies. For example, the fatal fire at Grenfell Tower in West London in June 2017 brought into focus concerns about the use of potentially combustible cladding products installed in buildings throughout WA. As a result, significant efforts have been undertaken to draw lessons from the London tragedy and ensure that WA does not suffer the same fate. Actions include:

- The Western Australian Building Commission (WABC), with representatives from DFES, WALGA and LGs, developed an audit (DFES 2017a) and identified 228 high-rise buildings fitted with cladding that were at ‘medium or high risk of fire spread’ (PerthNow 2018).
- DFES worked with the Bushfire and Natural Hazards CRC to establish tactical research options relating to external cladding issues in Australia.
- The WA Health Department assessed 12 WA health facilities as part of a priority review of flammable cladding initiated by the WABC.
- The Association of Hydraulics Services Consultants Australia (WA Chapter) Inc. held a presentation on fire safety systems in high-rise buildings (DFES 2017b).
- The Shire of Mundaring conducted a review of potential fire hazards with cladding products within the shire.

To what extent does DFES assess and/or amend its plans, processes or procedures based upon the findings of:



Note: The earthquake rating for response and recovery was "N/A", as DFES reported there has been no WA earthquake incidents in recent times that have required an emergency response or recovery.

Several respondents highlighted the importance of events that facilitated networking and personal relationships as important avenues for information sharing. Such events included attendance at forums and conferences, participation in national committees, and membership of hazard – or industry-specific groups.

DFES reported their activity of amending plans and procedures against each of their hazards (see previous page). Exercising, incidents and emergency response are areas where high levels of review occur and substantial efforts are made to amend plans, processes and procedures. This fact is highly reflective of both lessons management and continuous improvement as the agency seeks to deliver best practice in its business-as-usual activities.

No responses were received about responding to or recovering from Earthquake as there have been no recent incidents. However, this has not impacted upon reviews of recent hazard information nor exercising capability against earthquake hazard.

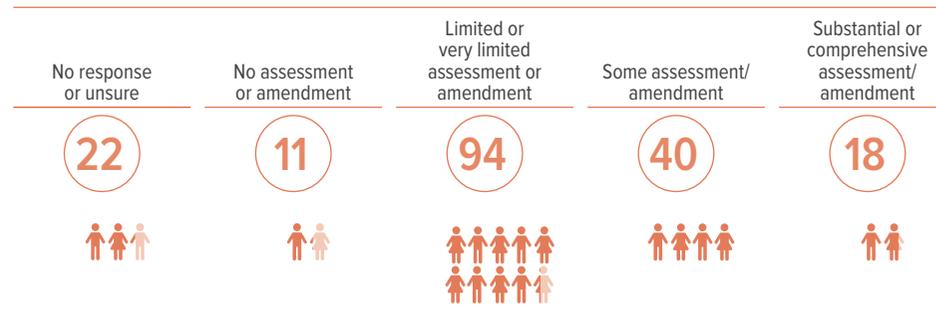
It is important to note that while respondents reported high levels of review of hazards, levels of action (updating plans, processes and procedures to reflect such information) were much lower. Similarly, low levels of action were reported based on new information gained from incidents, emergency response, and emergency recovery or exercises (Figure 9).

This demonstrates that much of the corporate knowledge of EM is located within individuals and that documentation does not necessarily keep pace. This is both a failing and a risk and reinforces that there is a difference between *identifying* a lesson and *learning* the lesson. Underscoring the difference is one of the principles of the proposed Lessons Management Framework (see Section 8.1). The sector has not ‘learnt’ that lesson until plans, processes and policies are assessed and amended based on research or new hazard information.

Review



Assess or amend



KEY
 = 10 respondents

Figure 9. Agencies reviewing hazard information and amending their plans accordingly

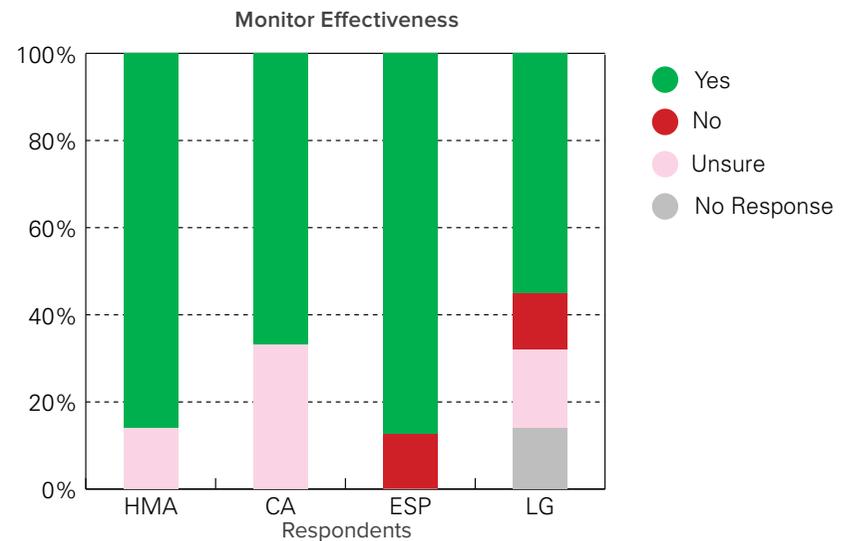
Many LGs reported regular review of incidents in which they were involved. For example, Western Central LEMC (which covers eight LGs), reported that they have a standing agenda item to discuss performance. They also shared learnings, which led to best practice amendments to their local arrangements.

Some LGs reported experiencing no incidents and therefore evaluations were limited to exercising. Similarly, WA Police Force noted that while they rated themselves as performing 'comprehensive' evaluations, this depended on the level of the incident. That is, while they performed a very detailed evaluation where the threshold for an emergency was met, they may not perform such exhaustive reviews for 'normal business' (Level 1 incidents).

Essential services providers reported very high levels of evaluation, with 100 per cent reporting 'substantial' or 'comprehensive' evaluation. For example, Horizon Power's Business Continuity Management Framework requires crisis/emergency management teams to complete a post-disruptive event debrief report. Required actions identified in the report are monitored through their risk management system. Additionally, timely reporting of safety incidents and subsequent investigations is mandatory. Similarly, ATCO runs multiple EM exercises per year and risk management action plans are developed from any findings or recommendations from incidents, emergency exercises or recent hazard information.

The EM Act requires EM policies and plans (s.19) and local EM arrangements (s.42) to be reviewed regularly. All HMAs, combat agencies and essential services providers reported they have processes in place to track the outcomes of amendments made to plans, processes or procedures.

Are the following processes in place to track the outcomes of amendments made to plans, processes or procedures?



5.7 Alerts and warnings

Achievement objectives

- Messages to communities at all stages of EM are planned, coordinated, prompt, reliable and actionable.
- Messages are clear, consistent, accessible, and culturally and linguistically appropriate.

Key findings

- Alerts and warnings are critical in the response phase.
- They must be clear, concise, timely and actionable.
- They must reach those under threat.
- They must be delivered in a manner that will be understood.

Possibly the most critical element of EM is the delivery of alerts and warnings to communities that may be impacted. These must be clear, concise, timely and actionable. But, most importantly, they must reach those under threat, in enough time for them to act. This issue became critical in May 2018 when telecommunications outages shut down Triple Zero (000) phone services in six states.

HMA provide emergency messaging to the community in the lead-up to and during events while many of the supporting agencies (combat agencies, essential services providers and LGs) direct community members to HMA websites as a single source of truth.

HMA reported using a variety of communications channels to spread emergency messages broadly and quickly. They noted that radio, television and websites were the main channels used for disseminating emergency public information, with substantial use of newspapers and text messaging:

- DPIRD reported using a wide range of media channels to direct messages at target audiences.
- The Public Utilities Office does not issue alerts and warnings, but relies upon its industry partners to inform consumers of outages.
- WA Police Force maintain a voice alert system to alert media organisations to an incident.
- St John Ambulance reported using the 'First Responder App' to alert registered trained first aiders to a collapsed person within a 500 m radius.
- DFES has a dedicated training program aimed at increased understanding of alerts and warnings. They target information to 'at risk' and vulnerable members of the community, including the elderly and people with a disability.

The Public Transport Authority and WA Health reported they have 'sufficient' communications personnel during office hours, with after-hours on-call personnel also available. WA Police Force reported that specialist police media staff were rostered over seven days but they were not available 24 hours. The State Operations Command Centre would undertake most out-of-hours media duties.

However, a number of LGs reported they did not provide hazard information to their communities, commenting along the lines: “It’s up to the responding HMA to inform the community during the response phase.”

During emergencies, LGs have an important role to play in relaying information released by HMAs and providing information on the impact of the emergency to affected communities. LGs varied greatly in how they released information to the public. Some used a broad range of channels while others used just one or two channels. Many LGs nominated their website as the main channel for dissemination of public information.

The Shire of Three Springs noted deficiencies in bulk text alerts and warnings, as mobile telephone reception could be patchy. Many organisations used a mix of traditional and social media channels.

The City of Wanneroo reported that it had sufficient capacity of communications staff, with a dedicated EM Disaster Communications Manager and an appointed deputy. This position ensured a communication strategy was in place to share information internally and externally. Staff wrote and distributed media statements and liaised with HMAs for consistency of messaging.

The advent and proliferation of the NBN is removing many of the traditional telephone services as people opt for digital or mobile communication options. This is reducing the number of landline services and is creating reliance upon network stability with little or no redundancy options.

5.8 Public information

Achievement objectives

- Messages to communities at all stages of EM are planned, coordinated, prompt, reliable and actionable.
- Messages are clear, consistent, accessible, and culturally and linguistically appropriate.

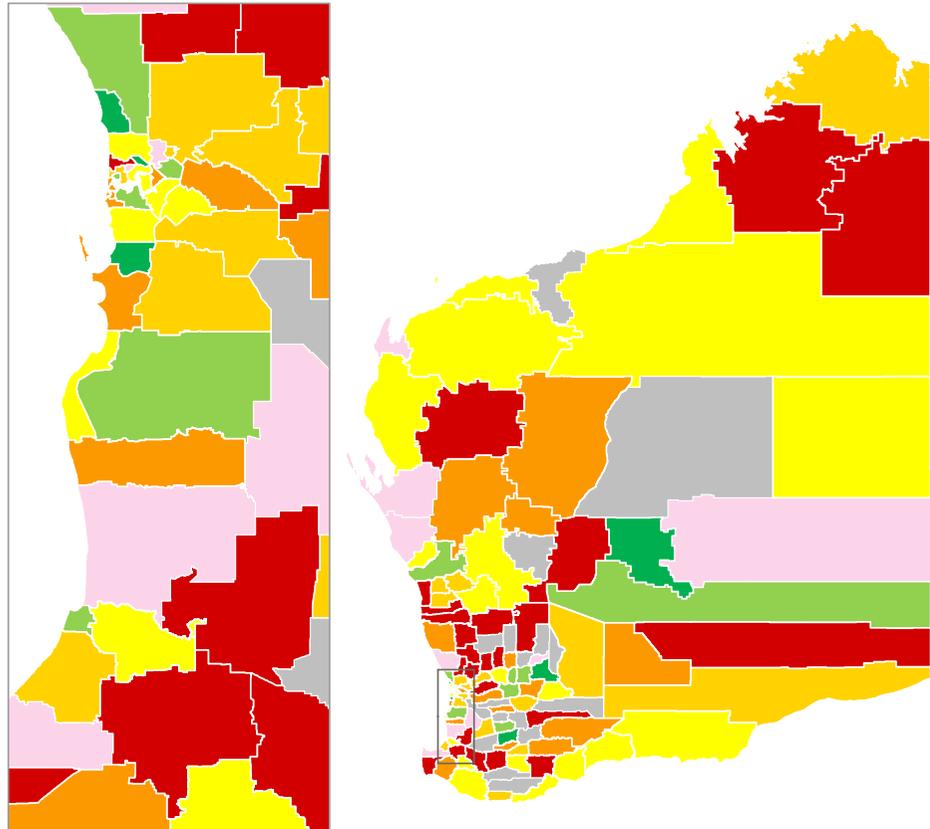
Key findings

- Public information should provide valuable knowledge on the hazard, exposure or vulnerabilities in-between events so that people can prepare and ready themselves.
- Information and tools are freely and readily available on agency and LG websites.
- Despite the wide availability of information, risk awareness and understanding in the community is still generally low.

Alerts and warnings are vital in times of crisis but so too is the need to provide readiness and preparedness information in-between events. This information should provide the community with the preparedness tools required and allow people to take responsibility for their own safety.

Most agencies reported that emergency preparedness information and tools were freely available on their websites. Many reported holding targeted media campaigns that specifically delivered hazard-specific messages (such as the DFES ‘Are you bushfire ready?’ campaign).

The extent that LG public information caters for culturally and linguistically diverse groups



- All
- Most
- Some
- Limited
- Very limited
- None
- Unsure
- No Response

This information must be clear, concise, consistent, actionable and, most importantly, delivered in a manner that will be understood. Many agencies have community engagement teams to ensure that messages are delivered in a targeted way. For example, Parks and Wildlife reported using a variety of media and visual tools (such as maps) to maximise accessibility to different groups.

Ensuring public information is provided in alternative formats for culturally and linguistically diverse (CaLD) groups is a key aspect of ensuring broader coverage of emergency information. Main Roads WA reported that it has a 24/7 customer information centre that has access to interpreter services.

Only 13 per cent of LGs reported that their public information caters for CaLD groups. The City of Wanneroo was able to use AWARE grant funding to target emergency information to new CaLD residents. Brochures about bushfire prevention were produced in six languages (Afrikaans, Arabic, Chinese, Vietnamese, Gujarati and Tagalog) and the city’s local EM arrangements contained emergency information specifically for elderly people, tourists and schools.

The City of Cockburn reported having a communications department that included media, events and marketing personnel. They incorporated the flow of information into plans and processes to ensure effective delivery of public information. Their pre-planning included a corporate crisis communications plan using various media statement templates and talking points for use by the communications team.

The City of Kalgoorlie, the Town of Victoria Park and the shires of Kalamunda and Armadale reported minor limitations in capacity, with each having a communications team. Some other LGs, such as the Town of Bassendean and the Shire of Beverley, reported having very limited capacity with no dedicated communications personnel on staff. The City of South Perth said it would struggle to sustain resourcing for a long event but had come to informal arrangements with adjoining LGs for additional support.

The Shire of Laverton noted that it had no dedicated communications personnel but shared communications duties among other staff. Similarly, the Shire of Gnowangerup compensated for having no dedicated communications personnel by using the shire's SMS system. They reported several members of staff were able to access and quickly disseminate information. The shire also used social media to get vital information out to residents and ratepayers. The Shire of Dandaragan noted that most of their staff were capable of disseminating emergency information and could update the relevant webpages.



SPOTLIGHT

Main Roads WA – social media

Social media is a global phenomenon and its popularity has soared (Figures 10 and 11) in recent years. Statistics show that almost 80 per cent of internet users now use social media, with 59 per cent accessing it daily, a number that reaches saturation point at 99 per cent in the under-30 age bracket (Sensis 2018).

Social media sites used this year

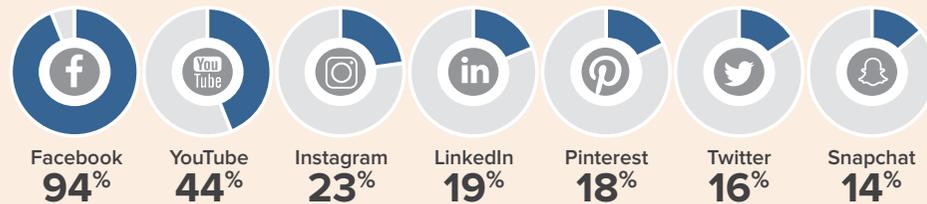


Figure 10. Social Media sites being used in WA in 2018. Data source: Sensis

With such proliferation, it is obvious that as communications patterns change, social media must become a major tool for the EM sector. Agencies are increasingly using technology for communicating crisis information widely and quickly. This key insight was discussed in the *Emergency Preparedness Report 2017*, which presented a range of opportunities for future expansion.

Usage by age

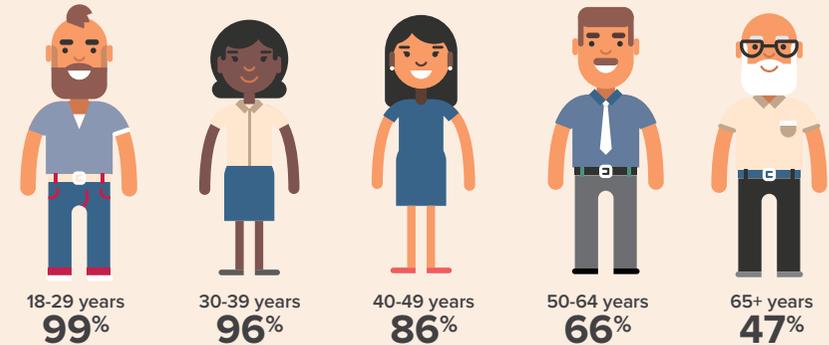


Figure 11. Social media usage across Australia by age in 2018. Data source: Sensis

The potential for social media to provide access to time-critical information to a wide audience has clear benefits for emergency services. But some agencies have harnessed the capabilities of social media to relay time-critical information to the public better than others. For example, in addition to its regular radio reports and early morning TV crosses, Main Roads WA makes extensive and effective use of social media in its public messaging (Figure 12). These include:

- Twitter (real time traffic updates)
 - Perth traffic – 65,000 followers
 - WA roads – 15,600 followers
- Facebook (traffic conditions)
 - 49,000 followers
- YouTube (major construction projects).



SPOTLIGHT

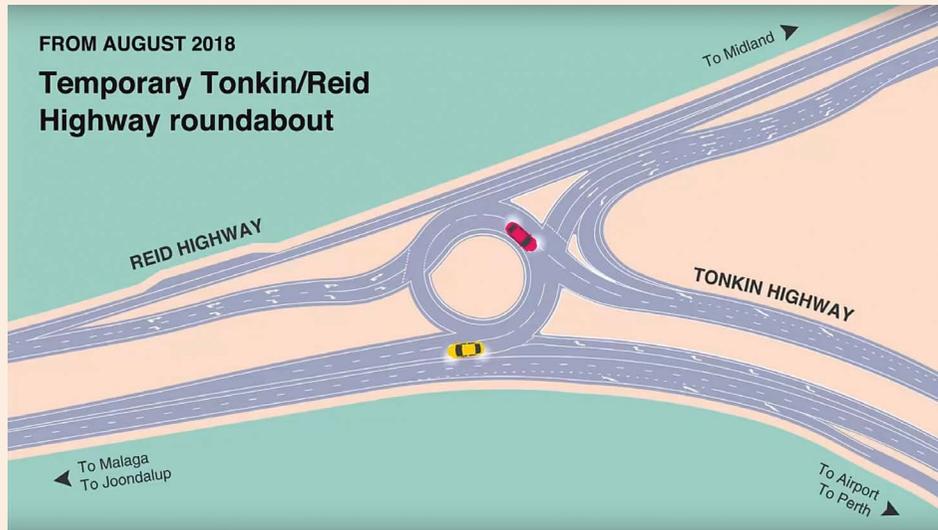


Figure 12. Screenshot from a Main Roads' social media video.
Source: Main Roads WA

An important benefit of social media is that it is not 'one way'. Main Roads leverages the 'two-way' capabilities of social media, enabling drivers to post questions about changes to road conditions, which can be responded to directly by the agency or by other members of the community.

Main Roads' use of social media, as a community engagement tool, demonstrates the potential these technologies possess to improve trust and credibility, if used appropriately.

5.9 Risk awareness and understanding

Achievement objective

- The community is aware of the hazards that may affect them and their vulnerable elements, and understands the role they should play during an emergency.

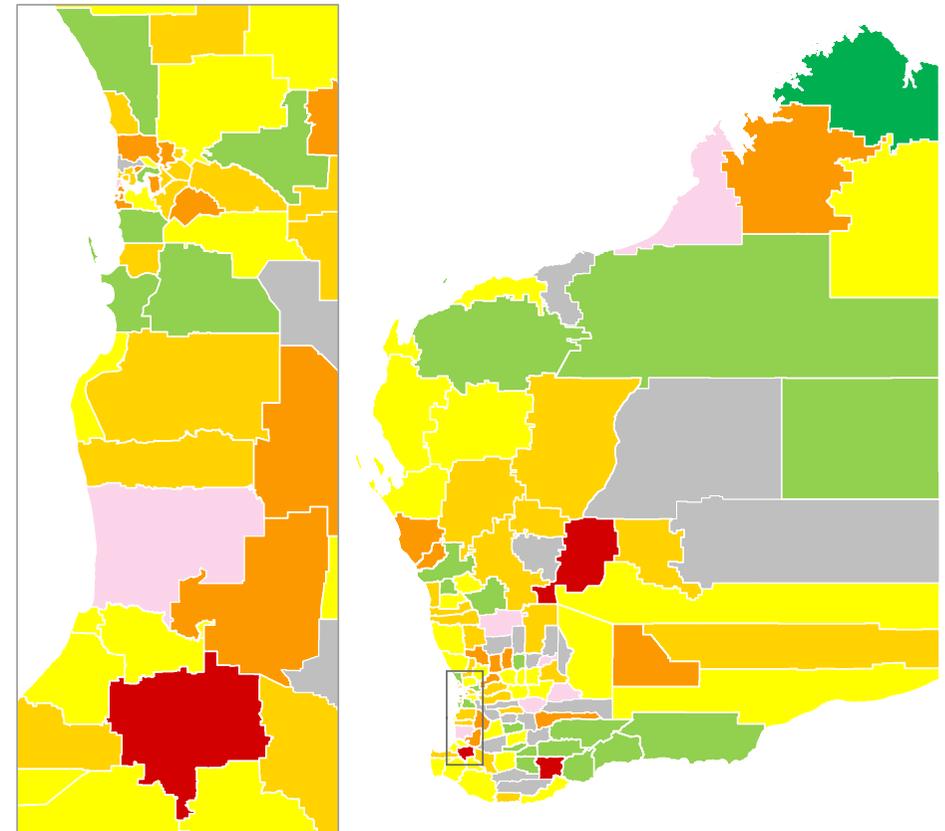
Key findings

- LG sharing of risk information is generally low.
- Despite the wide availability of preparedness information, risk awareness and understanding in the community is still generally low.
- Communities that know their risks, prepare accordingly and have supportive networks will be better placed to cope with an emergency.
- Until people accept that they may be impacted by emergencies, little progress will be made in this area.

Western Australian communities are diverse, as are the hazards and risks they face. Community information and activities that aim to improve disaster resilience need to recognise this diversity. Despite the wide availability of information, risk awareness and understanding in the community is still generally perceived to be low. LGs reported that few community members seemed to monitor, understand or respond to emergency messaging and that less than a quarter are believed to have emergency action plans. Some LGs reported that emergency events were rare and thus an attitude of “It’ll never happen to me” was common, simultaneously increasing complacency and decreasing community engagement.

It is therefore clear that while important, simply providing information and warnings about hazards is not enough to promote adequate understanding of the risks faced by a community.

The extent that LGs share information about the individual risks with communities



It is also crucial that communities are educated on how to act on their knowledge and understand the risks they live with.

To increase understanding, some LGs launched hazard media campaigns during the year.

- The City of Perth's 'Are you Prepared Perth?' helps residents, businesses and visitors think about, prepare for and react to emergencies. In the central city in particular, people may need to respond differently to emergencies because busy streets and crowding in high-rise buildings present specific challenges.
- The City of Wanneroo updated vital fire and burning-off information to help more residents understand their responsibilities in fire prevention and pre-season preparation.

These initiatives were relatively rare among LGs, with only 17 per cent reporting 'comprehensive' or 'substantial' sharing of individual risk information with the community (see previous page). While there is much information available about how to prepare for an emergency, unless the risks are well understood and accepted within the community little progress will be made.

In the contributions for this report last year (2017), a common theme was that emergencies happen '**somewhere else**' and '**someone else will sort it out**'. Unfortunately, these sentiments show no sign of abating.

Many of the risks we face as a state are foreseeable, material and actionable. Information describing them and their impacts is freely and openly available on EM agency websites, and for the most part, a range of tools is readily accessible to help people, companies and businesses to prepare for emergencies, to save lives and to prevent or limit the dangers and risks of damage from crises, such as bushfire (Figure 13).



Figure 13. Bushfire near Jerramungup, March 2018. Source: Karen Naylor

Until citizens accept that they can and will be impacted by emergencies, significant advances cannot be made. While the risks may be intellectually or notionally acknowledged, there does not seem to be enough impetus for people to act. Long intervals between events may be fuelling indifference or deferring action.



SPOTLIGHT

District leadership groups

In 2015, the Department of Communities established **district leadership groups** (DLGs) with the aim of improving the lives of Aboriginal people in regional and remote WA. Initially conceived in the 1990s to tackle local crime issues as part of the Safer WA program, the broad membership and action-oriented nature of these groups proved their utility.

As part of reform aimed to bring about long-term systemic change, the first DLG groups were established in the East and West Kimberley with the focus on responding to local issues and challenges. Membership of the groups include representatives from local, state and Commonwealth governments, the community services sector, Aboriginal community-controlled organisations, and industry.

The groups work together, sharing expertise and resources to combat complex local issues and develop community-driven solutions. The focus is always on improving the wellbeing of residents while building safer and more resilient communities.

The district leadership groups:

- coordinate effort and resources for local initiatives in housing, living conditions, education and employment
- provide local advice to the Department of Communities and relevant funding and policy agencies
- foster partnerships to link services, measure impact and share expertise and resources
- ensure a timely and accurate flow of information with key stakeholders.

The value of the DLGs was realised in 2016 following an incident in Kalgoorlie–Boulder that resulted in the death of a 14-year-old boy. Community tension was high following the incident and the subsequent Perth-based trial of a man accused of manslaughter.

The Goldfields District Leadership Group was formed in response to the crisis. A Director Crisis Response was appointed through the Aboriginal Affairs Coordinating Committee, a temporary position to help coordinate government resources. It remained active for the period of the trial of the accused man at the request of stakeholders in Kalgoorlie–Boulder and the Regional Services Reform Unit.

The Director Crisis Response, in conjunction with key stakeholders, ensured regular communication, holding daily morning briefings throughout the three-week trial. Participants included representatives of the DLGs, the Aboriginal Residents Group, the Not-For-Profit Heads of Agency Group and the WA Police Force Engagement Unit.

The briefings ensured that key agencies were updated on issues in a timely manner. Importantly, they provided a forum to discuss and plan for possible issues that may have arisen. This proved useful after the verdict was handed down in July 2017 when about 100 people marched up Hannan Street in Kalgoorlie, encroaching on the entrance to the courthouse.



SPOTLIGHT

The need to calm tension and disperse the group became urgent. Within minutes, the leadership group had developed and executed a plan that allowed the protesters to relocate to a more appropriate location. This type of plan would normally have been a slow process and involve the need for approvals for a police escort, road closures, traffic management, park use and even a budget.

One month later, the Department of the Prime Minister and Cabinet facilitated a youth summit in Kalgoorlie–Boulder to identify priority youth issues. Meanwhile, the Goldfields DLG continues to collaborate with the Aboriginal Residents Group to address some of these issues.

The value and utility of the DLG was highlighted during this incident. Drawing upon this structure, the Department of Communities will seek to develop a strategy that will identify other opportunities, including governance, membership, terms of reference, operating frameworks and support for regional services.

DLGs use a collaborative approach to solving local issues and building resilience. They have subsequently been established in the Pilbara and Goldfields, with the Mid West Gascoyne group due to come online in 2018.

5.10 Shared ownership

Achievement objective

- Individuals take responsibility to minimise the impacts of emergencies through the preparation and adoption of appropriate mitigation measures. This includes individuals who understand the nature of the hazard, have emergency action plans and who monitor and respond to emergency messaging and alerts.

Key findings

- The critical element affecting shared ownership is knowledge of and acceptance that you may be impacted by an emergency.
- HMA sharing of risk information with the community is low.
- Detailed toolkits have been developed, exist and are widely available.
- In the absence of a recent event, it is common for complacency to set in, prompting some to be less attentive to preparedness activities.

The critical element affecting ‘shared ownership’ is acceptance of the reality that you may be impacted by an emergency. Once this realisation has occurred, it is reasonable to think that action would follow. However, this is not necessarily the case.

Many people, businesses and industries are situated in high-risk areas with well-known, foreseeable and well-publicised threats. For example, every year cyclone and bushfire seasons routinely place large stretches of the state in harm’s way. Residents know the risks, yet many fail to act to protect themselves and their property. The challenge has been to provide information in a manner to engage the community and to then provide them with the tools to help themselves.

The information and tools certainly exist and any number of agencies provide and facilitate access to them. Agencies go to great lengths to ensure that the information provided is accurate and based upon the most contemporary knowledge available. Detailed toolkits have been developed and exist for businesses of most sizes, community groups and individuals alike. Some are generic enough to have broad utility while others are explicit enough to cater to special interest groups.

Within the EM sector, the principles of cooperation and information sharing are strong. The structures that are in place (SEMC, DEMC and LEMC) actively encourage shared ownership as agencies come together to identify risks and vulnerable elements, and discuss treatment options. They deploy to emergencies together and exercise their joint capabilities in-between events. The EM system as a whole is successfully designed to identify and solve problems as they arise so that they can **‘be better before the next emergency’**.

The provision of adequate treatment information is not the problem. The EM sector can demonstrate many positive outcomes. For example, most agencies report having dedicated media and public communications staff, including some who focus directly on community engagement. Their activities are specifically designed to enhance and maximise stakeholder engagement.

HMA sharing of risk information with the community is low. Only around 20 per cent of LGs reported sharing risk information (comprehensive or substantial) with other LGs and the community.

This number increased with respect to sharing with state agencies; however, it fell by half when it came to engagement with business and industry.

In 2018, some of the larger metropolitan LGs indicated that the diversity of their population (including CaLD groups) created difficulty in dispersing EM messages as well as they would like. Conversely, some smaller LGs reported that cultural diversity was no impediment. Within these smaller communities, many residents were also members of the volunteer response.

The two main areas that LGs identified for shared ownership were bushfire risk and aged care. The shires of Kent and Lake Grace reported that bushfires were common in the Great Southern and so the community tended to monitor emergency messaging and respond accordingly. Several LGs reported large ageing populations within their boundaries. This had prompted significant engagement with the aged-care industry and, in some cases, considerable proactive planning. For example, following a spike in search-and-rescue operations, WA Police Force reported holding consultations with Alzheimer's WA about the special needs of ageing residents.

DFES reported sharing information broadly about the risks faced, vulnerable elements and treatment options for bushfire emergencies. The collaboration created through the Bushfire Risk Management Planning project ensured that all stakeholders contributed to the development of treatment plans to mitigate the risks. This was coupled with a comprehensive community education strategy and a range of compliance activities.

The Town of Bassendean commented that an EM event had not occurred in their area for many years and that, in the absence of an event, it was common for complacency to set in. This sentiment was echoed across several LGs. For example, the Shire of Kalamunda reported having three mild fire seasons in a row and had found many residents were becoming less attentive to preparedness activities.

Another factor adversely affecting engagement was the perception by some of **'the boy who cried wolf'**. The frequency and inaccuracy of some emergency warnings was cited as a major factor in community inaction. This was also identified as an issue the previous year, with emergency alerts and warnings perceived in some quarters as akin to spam, junk mail or 'white noise'.



SPOTLIGHT

Whole of Community Preparedness Project

During the year, the Australian Red Cross led a community-wide preparedness and resilience-building project. The aim of the NDRP-funded project was to adopt a community development approach to preparedness that recognises the wider context.



Figure 14. Red Cross emergency preparedness pillowcase project.

Source: Red Cross

Participants in the Whole of Community Preparedness Project include agencies, individuals, community groups and some LGs (Swan, Rockingham and Nannup).

Using an underlying ‘stages of change model’, the project focused on identifying the ways in which preparedness activities can:

- build on one another
- cumulatively support a process that inspires people to get prepared
- present a method for preparation
- reinforce their decision to prepare over time.

To start the project, a multi-agency steering committee was established to develop detailed community profiles (demographics, networks and strengths of each community). The starting point was to identify which networks and communities to target, and which messages and educational resources were required, where and by whom. The committee also created valuable opportunities to build partnerships and work collaboratively with the focus on community preparedness and building resilience.

The final consideration was how to best measure behaviour change. This was achieved by conducting market research before and after the project. The researchers identified where a community was positioned along the stages of the change model before and after the project, the level of community engagement and the real level of disaster resilience.

This information allowed existing materials to directly reach the relevant audience (such as Red Cross RediPlan preparedness education, Pillowcase sessions for primary school children, and training for teenagers. See Figure 14). It also guided the modification of messaging and activities to deliver the best outcomes in terms of behaviour change within the community.

The project was highly successful and the community profile that was built proved critical to understanding established community networks.

It enabled the effective delivery of the preparedness messaging. The most important finding was the value of targeting community networks directly and leveraging their existing capabilities.



SPOTLIGHT

Community-led bushfire preparedness

Argyle-Irishtown community is located in a high bushfire risk area on the outskirts of Donnybrook in the lower south-west region of Western Australia. The actions of this community showcase how community-led approaches can build risk awareness, preparedness and the capacity to respond to an emergency.

In January 2015, after a near miss bushfire incident, the Argyle-Irishtown community expressed its interest in becoming more prepared for bushfire. DFES proposed the Bushfire Ready Program as a way for the community to become more involved. This program aims to facilitate the development of local groups that work together to plan, prepare, communicate and support one another during a bushfire. The networks that are developed through this program may also help to increase the resilience of the community more generally; enabling them to cope better should other hazards impact their region.

The Bushfire Ready Program has been successfully established within the Argyle-Irishtown community. Four members of the Argyle-Irishtown Bushfire Brigade are now trained as Bushfire Ready Facilitators and there are currently 17 Bushfire Ready Groups within the community. The Bushfire Ready Facilitators provide information on bushfire preparedness and encourage residents to join the Bushfire Ready Groups. Numerous community events have also been held with the support by the Bushfire Brigade and DFES to help residents strengthen their networks and gain the skills and knowledge they need to get prepared.

On 26 January 2017 the Argyle-Irishtown area was again threatened by a bushfire. The Gwindinup (Argyle) Fire affected several properties, but all homes were successfully protected. Following the fire, the Argyle-Irishtown Bushfire Brigade praised residents for their property preparations and noted the important facilitation role played by local Bushfire Ready Groups.

DFES undertook post-incident community research after the Gwindinup Fire. This research showed that, compared to other areas, households in the Argyle-Irishtown area tended to be better prepared and more likely to have a bushfire plan. Most people in the area knew about the Bushfire Ready Program and many had been involved in related activities. The research also found that most of those that had been involved in the program had carried out planning and preparations for bushfire. Another important finding was that Bushfire Ready Group members were more likely to have networks that provided local information during the Gwindinup Fire than those who were not members. The results of this research demonstrate the importance of community-based programs in improving household-level emergency preparedness.



5.11 Sector information sharing

Achievement objective

- Engagement occurs between government, industry and communities to inform resilience through the sharing of EM information including risks, vulnerabilities and treatment options.

Key findings

- Widespread risk assessments have provided a wealth of knowledge about risks, vulnerable elements and treatment options.
- This information should be shared so that everyone may prepare themselves.
- The EM structures (DEMC and LEMC) are a good forum for sharing information.
- There is much room for improvement in sharing information beyond the traditional EM stakeholders.

State agencies, private companies and LGs are all in possession of a wealth of knowledge about risks that may be faced, elements that may be vulnerable and ways to alleviate the impacts of disaster. Nevertheless, this information is of little use if it is not shared with those who may also be affected.

If a LG concludes, for example, that the main street of a town will be impacted by flood, then this information should be shared so that everyone may prepare themselves. Where possible, strategies should also be developed to mitigate the foreseeable impact.

For the most part, HMAs reported moderate levels of sharing information about risk and vulnerable elements with other state government agencies. This is particularly so between HMAs and combat agencies.

However, sharing drops off with respect to business and industry, and the community. This outcome is particularly concerning as HMAs actually develop and have on hand a broad range of preparedness and readiness information. Sharing information about the risks that will be faced, what property and people will likely be impacted and how to treat them is arguably critical knowledge in preparing for an emergency.

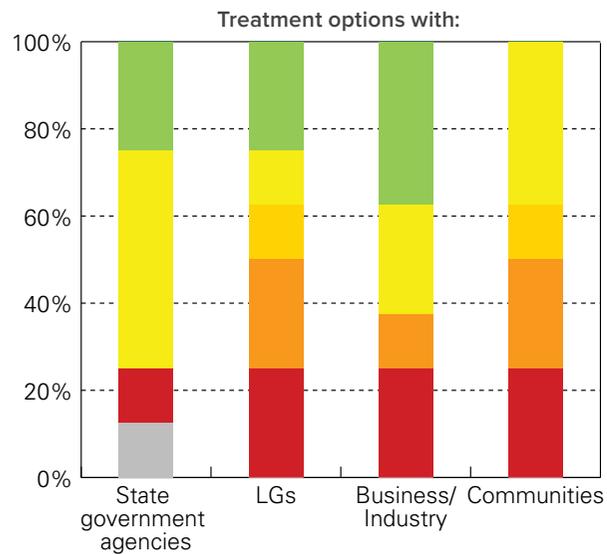
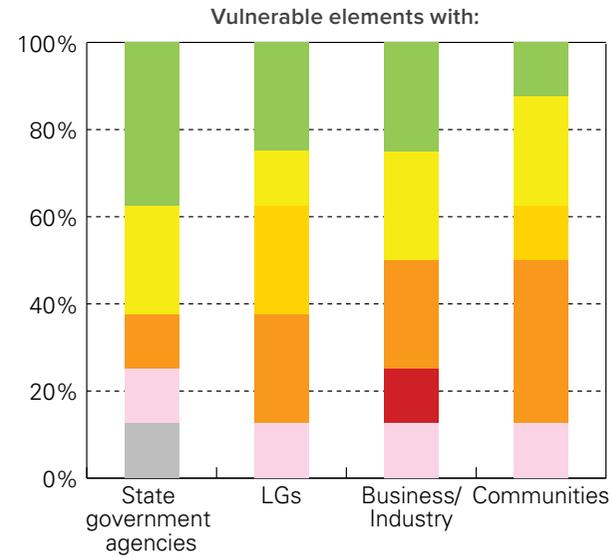
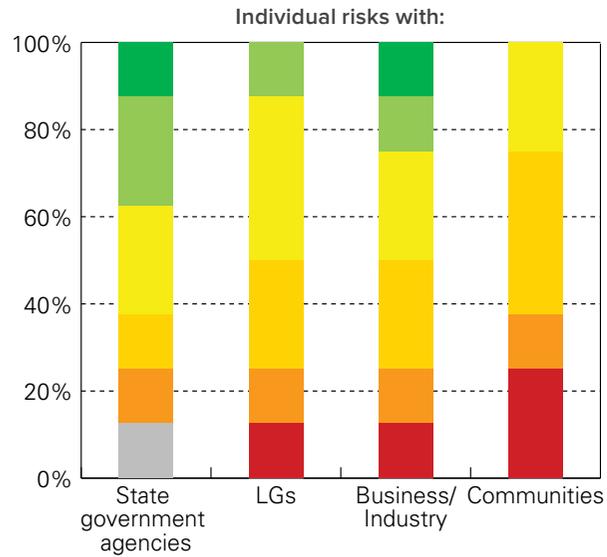
Comments received this year indicate that EM structures in place (DEMCs and LEMCs) create good forums for exchanging this type of information.

Only 17 per cent of LGs reported ‘comprehensive’ or ‘substantial’ sharing of individual risk information with their community (see next page). It is possible LGs preferred to withhold risk information to avoid creating unease in the community. However, the previous three *Emergency Preparedness Reports* have stated that, in the absence of risk information, many people assumed they were not vulnerable to disaster. They **did not believe** they would be impacted, and therefore did not act to protect themselves. This unsafe response (inaction) may be exacerbated where risk information is not shared or is limited.

Some groups have properly embraced the principle of public resilience in certain areas. For example:

- WA Police Force reported working with partner agencies to target information at high-risk groups such as paddle boarders, kite surfers and prospectors to improve safety.
- As part of a community education strategy, DFES has developed targeted programs for vulnerable groups and range of curriculum-linked school aged education resources.
- St John Ambulance has participated in a series of workshops for the aged-care industry, in both metropolitan and regional areas.
- Many Emergency Service Volunteer Services are working with their communities through initiatives such as the Bushfire Ready Program to improve preparedness and resilience.

The extent that HMAs share information about:



- Comprehensive sharing
- Substantial sharing
- Some sharing
- Limited sharing
- Very limited sharing
- No sharing
- Unsure
- No Response

- The Red Cross provides programs and resources to support psychosocial preparedness and well-being.

Several LGs reported having community engagement and education areas that actively engaged with their communities. Many had incorporated EM messaging and sharing into their forward plans:

- The Town of Bassendean identified that flood remained the hazard with the highest risk and that mitigation actions had been widely circulated.
- The Shire of Mundaring reported continuous contact and information sharing around treating and managing bushfire risk.
- The Shire of Halls Creek reported taking measures to mitigate bushfire and storm risks.
- The City of Cockburn used the BRM planning framework to provide an understanding of the city's demographics, community assets, critical infrastructure and economic values to prioritise treatments, support budget allocations and funding submissions, and engage stakeholders.
- The Shire of Quairading commented that most treatment options were too expensive for smaller LGs to undertake, limiting their actions to lower cost community engagement activities.

5.12 Land-use planning

Achievement objective

- Land-use planning is in place to manage and minimise the impact of known risks.

Key findings

- Land-use planning is perhaps the most potent policy lever for influencing the level of future disaster risk.
- Land-use planning policies apply only to new developments.
- There is a range of legacy issues that persist.
- There is growing awareness of the need to integrate disaster risk management into all aspects of the land-use planning process but this is not always achieved in practice.

Land-use planning is one of the most effective and inexpensive tools available to the state to mitigate the impact of hazards on communities. The Western Australian Planning Commission (WAPC) sets the planning framework for natural hazard land-use planning across WA.

LGs (through their local planning schemes and decision-making authority) play an important role in implementing the policies set by the WAPC.

The current set of WAPC policies that relate to natural hazards include:

- State Planning Policy 2.6 – State Coastal Planning
- State Planning Policy 2.9 – Water Resources²
- State Planning Policy 3.4 – Natural Hazards and Disasters
- State Planning Policy 3.7 – Planning in Bushfire Prone Areas

² A planned review of the Water Resources policy may result in policy changes associated with flooding risk.

Few agency respondents to the survey reported any involvement in land-use planning. Where they did, the responses related mostly to bushfire and, to a lesser extent, flooding. One notable risk – heatwave – seems to have been overlooked by most state agencies and LGs. Decision makers are starting to consider other policy matters such as urban tree canopy and its potential to both increase and mitigate heat island effects.

In 2017–18, five LGs completed their coastal hazard risk management and adaptation plans. A further three LGs have received funding to develop their own coastal plans. The interagency Coastal Management Advisory Group continued a work program that included:

- publication of the WA Coastal Zone Strategy
- completion of an assessment of coastal erosion hotspots
- ongoing development and refinement of policy guidelines
- development of tools for managers undertaking coastal hazard risk management and adaptation planning.

The Department of Planning, Lands and Heritage joined with DFES in a staged review of the Guidelines for Planning in Bushfire Prone Areas. The review resulted in an updated Bushfire Attack Level (BAL) contour map methodology, along with clearer guidance on how to present a performance principle-based solution. They are continuing to develop guidelines to facilitate tourism land uses in bushfire-prone areas.

While land-use planning is a vital tool in limiting exposure and vulnerability to future hazards, a range of legacy issues persists. Assets (including some towns) have built-in high-risk locations, representing an enduring threat to assets and residents alike. A notable example of this is encountered around coastal erosion and inundation (Figure 15).



Figure 15. Coastal erosion in Geraldton. Source: Department of Transport

Most of the state’s coast is sparsely populated but the Perth metropolitan area and the south-west region are densely settled. A changing climate is increasing the intensity and frequency of major weather events, putting these developments (and the natural dune systems) under pressure from cyclones and storm surges.

The WA Coastal Zone Strategy highlights that ‘stewardship of the coast is a shared responsibility with state and LG, public and private organisations, community groups and individuals all playing an important role’ (DPLH 2017). A key element of the strategy is to ensure that the location of facilities and infrastructure in the coastal zone is both suitable and sustainable.



Figure 16. Coastal remediation program. Source: Mike Norman

But many assets are pre-existing. Some coastal communities have already seen major coastal erosion and others are facing (or are about to face) decisions around whether to protect or retreat from at-risk tracts of coastline. Protection methods (such as dune restoration projects (Figures 16 and 17), groyne and sea walls) are both ongoing and costly.



Figure 17. Coastal remediation works North Coogee. Source: City of Cockburn

5.13 Ecosystem management

Achievement objective

- The natural buffers that aid community protection are identified, protected, monitored, maintained and/or enhanced.

Key findings

- The environment often contains natural buffers that mitigate the impacts of hazards.
- Many LGs and agencies consider natural buffers in plans for community protection.

Examples of natural buffers that mitigate the impacts of hazards include mangroves or wetlands (to mitigate flooding or storm surge), vegetation (to protect against slope instability) and dune systems (to mitigate coastal erosion). About 43 per cent of HMAs and 77 per cent of LGs reported having a role in managing the natural environment. However, only around 20 per cent of these reported actively managing the natural buffers (i.e. identify, protect, maintain/enhance and monitor) to a substantial or comprehensive level.

LGs are the main bodies that make decisions and approve how land is used within their boundaries. Good examples of preserving natural buffers for various purposes are outlined below.

- The shires of Lake Grace and Kent have preserved a number of dry lakes that act as natural buffers to the spread of bushfires.
- The City of Mandurah has joined with the Peel–Harvey Catchment Council and the Peel Development Commission to monitor, rehabilitate and preserve a number of wetland and waterway buffers.
- The City of Bayswater has maintained a project to prevent foreshore erosion and a wetlands redevelopment initiative for flood mitigation.

- The Town of Cottesloe has planted vegetation to prevent slope instability, flooding and coastal erosion.
- The City of South Perth has conducted foreshore zone restoration to manage foreshore erosion and inundation risks.
- The Shire of Dandaragan has monitored the natural environment, coastal areas and wetlands, ensuring their protection through revegetation works and weed management. Natural low fuel buffers are also used and monitored to help with fire mitigation.
- The City of Greater Geraldton has used sand-trap fencing and revegetation to help preserve the Greenough and Chapman river systems as part of their coastal management plan.
- The shires of Carnarvon and Broome have mangrove ecosystems that provide natural buffers to coastal hazards, while Carnarvon's coastal wetlands and salt marshes act as bushfire buffers around the town's environment.
- The City of Wanneroo uses coastal hazard risk management and adaptation planning processes to carry out coastal monitoring. Wetlands, vegetation management and protections were identified for managing through development processes.
- The City of Joondalup has reported having a comprehensive conservation maintenance program. They have natural area management plans for major conservation in high priority and catchment areas. They monitor natural areas, wetlands and coastal foreshore through beach profiling and vegetation condition assessments. They also share a natural waterway with the City of Wanneroo that includes wetlands and natural bush buffers that form part of the inland drainage system.

The Water Corporation reported making significant efforts on land connected to assets it either owns or manages. These included water catchment areas, landholdings for bore fields and reservoirs, and Crown land reserved for future water-asset developments. These activities primarily addressed bushfire and flood risks, and included management of erosion, fuel loads and weeds/noxious plants.

DFES and Parks and Wildlife reported using prescribed burns to reduce fuel loads, creating effective buffers against bushfires. DWER identified flood-prone areas and worked with local communities, LGs and state agencies to create floodplain management plans. These plans outlined how best to manage and assess flood-prone land and advised on appropriate development.



SPOTLIGHT

Apocalyptic sky heralds success

On 14 January 2018, Perth residents woke to an eerie sight that continued to develop throughout the day. The sky had turned orange, largely blocking out the sun as a fire burned out of control in Sawyers Valley, about 12 km south-east of Mundaring (Figure 18). More than 150 staff from Parks and Wildlife, DFES and volunteers fought the blaze that was believed to have been deliberately lit. The fire ultimately burnt out more than 3000 hectares.



Figure 18. Smoke from the Sawyers Valley fire creates dramatic skies across Perth.
Source: Daniel Schluter

The pace of the Sawyers Valley fire, backed by strong winds, meant a head-on attack was impossible. Instead, Parks and Wildlife focused on using bulldozers to ‘track’ the edge of the fire (create a new or strengthened firebreak along the existing edge of a fire).

Meanwhile, firefighters were cutting containment lines and dumping tonnes of water from helicopters.

Unknown to those tackling the blaze, a hiker was in the path of the fire, sleeping in the Helena Hut on the Bibbulmun Track. The hiker could smell the smoke and see the water bombers but did not feel he was in danger until he tried to leave and found the path blocked by fire. Parks and Wildlife were unaware of the hiker’s presence but as a matter of course sent a staff member in a 4WD vehicle along the rough track to check the hut. The advancing fire, however, forced them to turn back. With minutes to spare, a break in water-bombing operations allowed a DFES helicopter crew to make a final check of the hut. Swooping down, they saw a man standing nearby (Figure 19). The crew managed to land in steep, rocky terrain and extracted the man. Air intelligence reported the hut was destroyed five minutes later.



Figure 19. Helicopter extraction of trapped hiker. Source: 7 News



SPOTLIGHT

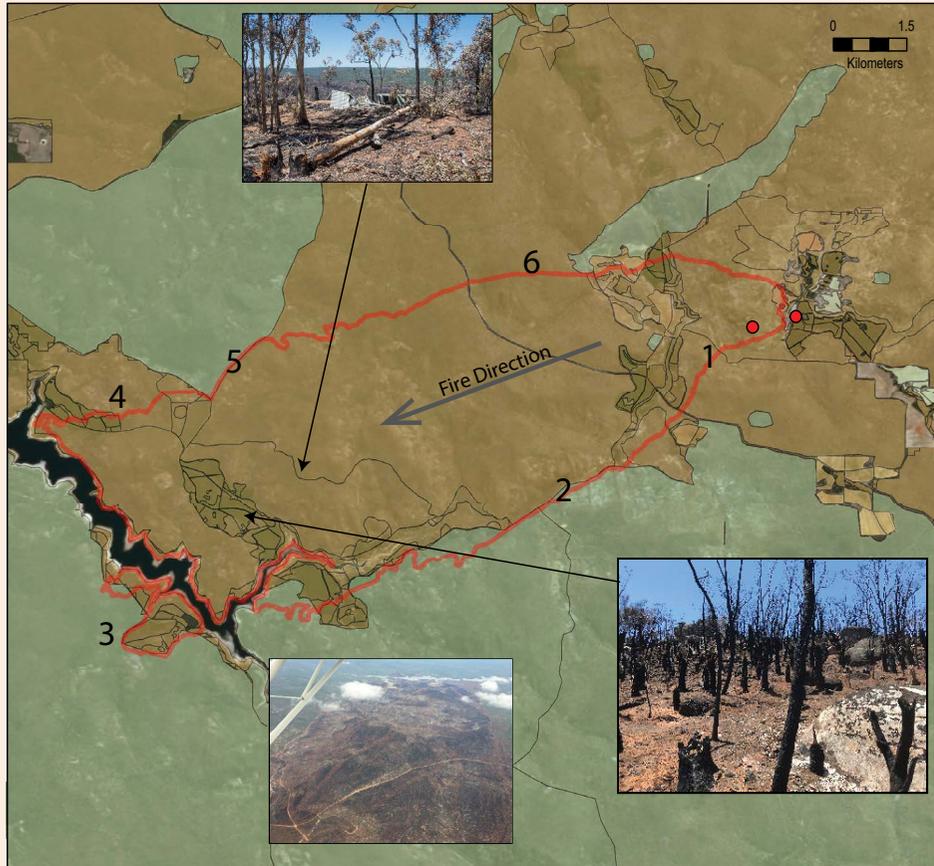


Figure 20. Overview of the Sawyer's Valley fire scar. Younger fuels are shown in green with older fuels in beige/tan. The final fire shape is shown in red. Inserts: Top: The destroyed Helena Hut. Bottom right: Completely burnt vegetation in areas of old fuel. Bottom left: The fire ground from the air showing areas of young fuel (top left of the image), which contained the fire. Source: Parks and Wildlife

While the blaze gained media attention for the dramatic sky and fortunate evacuation of the hiker, the untold story was the value that prescribed burning had played in the outcome.

The area had been the target of considerable patchwork burning over the previous five years. This meant young fuels flanked much of the fire and, importantly, a buffer of young fuel existed between the fire and the communities to the west. As the edges of the fire hit the young fuel areas, little or no suppression was required, as the fire burnt itself out.

Figure 20 shows the fire scar. The fire was thought to be deliberately lit in two locations at the eastern edge of the final fire scar (in red). While one fire burnt out, impacting less than a hectare, the second fire grew to become the Sawyer's Valley Fire.

As the fire burnt westwards fanned by strong easterly winds, Parks and Wildlife conducted tracking activities parallel to the fire's edge (Location 1 and Location 6).

Despite their best efforts, they could not keep up with the advancing fire, until it reached Location 2, where it ran up against areas of young fuel and was unable to take hold (Figure 21).

It is interesting to note that in heavy fuel load areas, the fire was able to jump the 200 m wide Mundaring Reservoir but in the low fuel area (shown in Figure 20) it failed to become established across a 5 m wide road.

On the northern side, crews tracked the fire (parallel to the fire edge) with bulldozers until Location 5, where young fuels allowed the crew to fall back to the dirt road and rapidly advance to Location 4, where tracking resumed.



SPOTLIGHT



Figure 21. Burnt bushland (right) on the south-eastern edge of the fire scar. At this location, young fuels over the road (left) prevented the spread of the fire

The fire map (Figure 20) can give the false impression that the Mundaring Reservoir stopped the fire's progression towards the metropolitan area. However, it is notable that spot fires occurred more than 1 km ahead of the main front, igniting fuel on the southern side of the weir. The fire became established in this area but burnt out upon reaching young fuel to the south-east, requiring no active suppression.

This fire provides a strong case study for the value of landscape-scale prescribed burning. It is clear that young fuels in the area had a significant impact on the outcome, allowing tracking efforts to advance rapidly to areas of old fuel and preventing the spread of fire once the reservoir was crossed. The crews' ability to move past areas of young fuel allowed tracking to occur in old fuel on the northern edge of the fire, protecting land and structures, including the Mundaring Weir Hotel and Mundaring townsite.

The imposing sky, rather than heralding doom, was actually a sign that preparedness and mitigation activity works. The proactive works undertaken over the previous five years reduced the impact of fire on the landscape and, more importantly, on residents in the vicinity.

5.14 Infrastructure protection

Achievement objectives

- Plans are in place to identify and protect critical infrastructure, community assets and individual housing.
- Effective use of building codes is in place to mitigate potential hazards, and insurance is considered as a treatment option.

Key findings

- Most agencies report having plans in place for the protection of critical infrastructure.
- An opportunity exists to increase the identification and protection of those assets of importance to communities.
- LG responses to infrastructure protection were highly variable.

Reliable infrastructure is essential to maintain our standard of living and quality of life. Incidents such as the Varanus Island gas crisis in WA (2008) and South Australia's electricity blackout (2016) underscore the immediate negative impacts that infrastructure failure can have. Such failures also can have significant flow-on impacts on the economy and people's health.

Three-quarters of essential service providers (ESPs) reported having formal plans in place to protect critical infrastructure. The remaining 25 per cent of ESPs reported having either informal and/or untested plans (but with a high degree of confidence they will be effective) or formal and/or tested plans, with further work identified.

For HMAs, there was a 14 per cent year-on-year increase (from 29 to 43%) in formalised critical infrastructure protection plans and a 29 per cent increase (from zero to 29%) in informal and/or untested plans.

In 2018, DFES reported identifying the exposure to hazards of critical infrastructure it is responsible for, except for tsunami. While they were confident that the plan for bushfire was 'high quality', they conceded plans for other hazards were either informal or required further work.

Most HMAs – including Arc Infrastructure, the Public Utilities Office and the Public Transport Authority – reported their plans were formalised, tested, effective, reliable and embedded within the organisation. The remainder reported only informal plans were in place for the protection of critical infrastructure and noted that further work was required. The Public Utilities Office noted that as a coordinator, their own plans drew on the plans of asset/system owners. All service providers (asset owners) reported that 'high quality' protection plans were in place.

Two-thirds of combat agencies reported formalised plans for the identification and protection of critical infrastructure were in place. The Department of Biodiversity, Conservation and Attractions (DBCA) commented that formal plans were considered business as usual for mitigation work (prescribed burns) and in their response to bushfires.

Organisations with land management responsibilities or a large asset base, such as the Department of Planning and the Department of Education, reported formalised plans were in place.

The Department of Health's continuity planning included all WA hospitals having power redundancy in the form of generators that can last up to 72 hours before diesel resupply was required. Newer and large facilities have more complex power and water redundancies. Food services and linen supply were mostly contracted. This may expose a vulnerability, as these contracted services may not have the same level of redundancy and contingency planning to deal with outages, if they also are affected.

LGs have an important role to play in the protection of critical infrastructure, both as owners of assets and as custodians for the wellbeing of the local community. However, their responses to questions about the protection of critical infrastructure were highly variable. Most (69%) reported having some form of plan in place to protect critical infrastructure. The number of LGs reporting 'high quality' plans has increased. Many LGs remain unaware of their responsibilities in this area. Despite this, many reported undertaking physical works to protect infrastructure.

5.15 Essential services protection

Achievement objective

- Planning for the continuity or rapid restoration of essential services are in place including for water, food distribution, power, sewerage, telecommunications, fuel and LG services.

Key findings

- A high degree of interdependency exists between essential services.
- Little recognition of this interdependency occurs.
- Agencies with essential service responsibilities have plans in place to protect the continuity of those services.
- Few agencies have contingency plans for services that are outside their scope of control.

The term 'infrastructure' in EM is broader than obvious physical structures such as wires, poles and pipes. The failure of other forms of infrastructure – such as supply chains for food, IT systems, banking and communications networks (e.g. EFTPOS or 4G) – can all have significant impacts.

Agencies that have essential service responsibilities (power, water, sewage, telecommunications, road networks, shelter/accommodation, fuel and food distribution, and LG services) reported having plans in place to protect the continuity of those services. This applied for both their organisations and the broader community. However, as identified in the *Emergency Preparedness Report 2017*, few agencies have contingency plans for the disruption of essential services that are outside their scope or mandate. Hence, a high degree of interdependency (and little recognition of that interdependency) occurs.

WA Police Force have established plans to ensure critical functions are maintained, including business continuity plans, emergency building relocation and emergency power generation. During any supply shortage, WA Police Force is prioritised for supply under state EM plans.

DFES has redundant power systems for all operational centres and uses multiple telecommunication platforms, including landline, mobile and satellite phones, radio networks with repeater towers, and direct radio capability between units in line of sight. The agency has road network mapping systems that provide information on alternative routes and has agreements in place with external contractors to provide fuel, water and sewage services. DFES also has well-established food distribution plans for the northern half of the state.

The Shire of Broomehill–Tambellup provided extensive detail on their contingency plans for essential service protection. These included:

- **Water:** (1) Three potable standpipes with swipe card access are linked to solar powered systems. (2) Tanks at the Tambellup Works Depot make 260kL of rainwater available for emergency purposes.
- **Shelter/accommodation:** Alternative operations centres and welfare centres are documented in the shire's LEMA, including within neighbouring communities in case of a widespread evacuation.
- **Road networks:** Alternative routes to shire roads have been identified, although not all are accessible to heavy vehicles. Regional routes would be nominated as detours in this instance (in consultation with Main Roads WA).

- **Power:** The shire's administration building has an emergency generator.
- **Telecommunications:** Phones at the administration building divert to officers' mobiles during power outages.
- **LG services:** The shire's business continuity plan identifies desired timeframes and actions for reinstating critical services.

The advent of non-traditional electrical networks (such as micro grids) is establishing potential redundancies to the electricity network, thereby reducing single points of failure. Western Power has trialled a micro grid in Kalbarri, meaning the town can now be 'islanded' using local generation and storage. This will reduce the reliance on the single line connecting the town with the traditional power network.

During the November 2015 Esperance bushfire, a long distribution line supplying the town was destroyed. Horizon Power opted to install solar panels backed up by diesel generation, resulting in improved reliability.

5.16 Minimise single points of failure

Achievement objective

- Exposure to hazards is limited through the minimisation of single points of failure, and mitigation options or redundancy plans are in place.

Key findings

- All HMAs identified telecommunications as an issue.
- 70% of HMAs identified that few redundancies are in place for ICT systems.
- Several LGs identified vulnerabilities in ICT networks.

Single points of failure are the Achilles’ heel of disaster planning and will significantly disrupt operations in an emergency. They must be identified (preferably in advance) and contingencies developed so that when a failure happens, organisations can move quickly to work around it.

Typically, during an emergency, single points of failure may be identified in power, telecommunications, water, sewerage, road networks, critical assets, key personnel or expertise, and IT. The fear is that during ‘peace time’ a plan may seem entirely workable. Yet, when tested, a single point of failure may arise that upon malfunctioning could render an entire system unavailable or unreliable.

To be resilient in today’s connected world, it is critical that organisations effectively anticipate, evaluate, prepare for and mitigate potential single points of failure. These can occur in a wide range of areas. They can be time and circumstance specific and they can have a seriously negative impact on performance.

Single points of failure can occur anywhere and all respondents reported this year that they had identified them for their hazards and/or area of operations. Some were infrastructure based (e.g. Arc Infrastructure identified several bridges on their rail network); others related to personnel (e.g. WA Health identified potential failures in specialist clinical expertise areas such as burns and paediatric services).

All organisations with direct control over infrastructure, such as Western Power, Horizon Power, ATCO Gas and the Water Corporation, reported having plans in place to identify single points of failure for their assets. However, the cost and logistics around the delivery of redundant systems and assets presented an ongoing challenge to maintaining connectivity.

This was evidenced on 4 May 2018 when a lightning strike to a Telstra pit near Orange in NSW caused disruptions to the Triple Zero (000) phone services in six states, including WA. As our dependence on technology and connectivity continues to grow, we will increasingly struggle when communications are disrupted.

This vulnerability was explicitly recognised in 2018 with all combat agencies identifying telecommunications as an issue and most (75%) of HMAs identifying issues with IT systems. This represents a notable increase since 2017.

A number of rural LGs again identified basic infrastructure problems, such as access via local road networks, and this year more LGs identified vulnerabilities in their ICT networks:

- The Shire of Morawa reported that it was serviced by one phone tower, one power line into town and one water line in, which means that if they are damaged the shire/community loses the service.

- The Shire of Merredin reported that they have poor communications redundancy and have had issues with a network provider failing to provide required equipment to maintain communications in the event of power failure.
- The City of Canning identified issues including networking and server/storage infrastructure, a single internet service, a single core networking switch and a single server/storage environment.

Resilient organisations must be concerned with reliability and learn to deal with challenging, disruptive events. They must identify practices that generate problems and review past difficulties as learning opportunities. Organisational success rides on resilience and the ability to dynamically reinvent business models and strategies as circumstances change.

For example, the Shire of Ashburton reported having a disaster recovery site replicating the critical servers and services to operate in case of emergency. They have daily, weekly and monthly back-ups stored onsite and in offsite locations that can be used to restore data and servers, and a cloud-based email continuity system for emergencies.

5.17 Remoteness planning

Achievement objective

- EM planning takes account of emergencies occurring in remote areas.

Key findings

- Remoteness in a state as vast as WA is a given.
- Increased transport times, rugged terrain and logistical challenges are well known, accepted and, where possible, planned for.

The ABS classifies 85 per cent of WA's land area as 'very remote'. This land area exists within the boundaries of only 33 of the 137 LGs. Despite this formal classification, 41 of the responding LGs commented that they had some form of planning in place for remote areas (Table 3).

Remoteness in a state as big as WA is a given. Increased transport times, rugged terrain and logistical challenges are well known, accepted and where possible planned for. Seven LGs that reported having informal plans also commented that their entire shires were remote so acceptance of this issue was taken for granted and allowed for.

- The Shire of Dandaragan identified three communities where, while not technically remote, response times can be considerable and access in some cases is restricted to 4WD vehicles.
- The Shire of Broome identified that, while classified as remote, they do not provide municipal services to communities outside the townsite.
- The shires of Lake Grace and Kent commented that LEMA are in place for affected remote areas, providing for the relocation, evacuation and reintegration of affected persons.

- The Shire of Ashburton’s LEMA covers remote Indigenous communities and pastoral stations.
- The City of Greater Geraldton developed a subplan within their LEMA to provide for the rural communities of Mullewa, the Kardaloo Aboriginal Community, and various remote satellite townships.

In response to a rapid rise in insurance premiums for remote areas with high cyclone risk, the Commonwealth established the [Northern Australia Insurance Premiums Taskforce](#). It was tasked with exploring options to lower insurance premiums. In the final report, delivered in November 2015, the taskforce noted that:

- Reductions in consumer premiums would incur larger cost to government as the risk was transferred.
- Policy measures that work only to reduce premiums may dampen incentives for mitigation.
- Mitigation to reduce the risk of damage is the only way to reduce premiums on a sustainable basis.
- The benefits of mitigation are:
 - lower likelihood of insurance claims
 - less vulnerable properties
 - reduced chance of physical injury
 - reduced emotional trauma.

Table 3. Status of planning for remote areas

Status of planning	All LGs	Remote LGs
Formalised arrangements, tested, effective, reliable, and embedded within the organisation	1	0
Formalised arrangements, tested, mostly effective, mostly reliable, and largely embedded within the organisation	13	5
Informal and/or untested arrangements in place, but with a high degree of confidence they will be effective, OR, formal and/or tested arrangements but with further work identified as needed	11	7
Some work completed but requires further work to develop, test, verify and/or embed in the organisation	12	4
Arrangements are either old, OR in the early stages of development, OR have considerable doubts about their current viability	4	1
No arrangements in place	17	3
Unsure	1	0
No response	17	3
Not applicable	61	0

5.18 Business continuity planning

Achievement objective

- Business continuity plans (BCPs) are in place across government, industry and business, and they consider hazard-specific risks.

Key findings

- More LGs reported having BCPs in 2018 compared to 2017.
- More work could be done in engaging with business and industry.
- Essential service providers and combat agencies stand out as having comprehensive BCPs.

All hazard management agencies, combat agencies and essential service providers, 80 per cent of emergency support services and 38 per cent of industry bodies reported having business continuity plans ready in case of emergencies. Some of these organisations have plans specifically for EM hazards; however, most have plans for disruptions regardless of the cause, which consider various aspects (Figure 22). While all hazard management agencies have BCPs, none reported having formal plans. Such plans were either informal/untested or requiring further work.

Essential service providers and combat agencies stand out as having formalised BCPs (75% and 67% respectively) that consider EM hazard-specific risks. In addition, a number of these organisations have formalised plans that have been reviewed, tested and found to be 'effective' or 'mostly effective'. For example, Horizon Power has storm and severe weather plans that are reviewed annually before the Pilbara cyclone season.



Figure 22. Various aspects of business to include in continuity plans

Slightly more LGs reported having BCPs in 2018 compared to 2017 with at least 15 LGs having their continuity plans under review or development to ensure they cover all areas of their business. Some of the responding LGs commented that their plans covered a wide range of business – and hazard-related risks, while others referred to specific hazards, such as flooding (e.g. the Shire of Broomehill–Tambellup).

When considering whether an organisation's BCP was effective, only 7 per cent of LGs responded that they had formalised plans that were 'tested, effective, reliable and embedded within the organisation'. More specifically, the City of Bunbury stated that their BCP had been tested with smaller events and, although scalable, had not yet been tested with a larger event. Some LGs (e.g. the City of Stirling) now included BCPs as part of exercises, where appropriate.

DFES reported having established a framework for crisis management and the business continuity process. This will form part of their Organisation Resilience Framework together with their EM and incident response plans. Business impact analyses have been completed for each business area to help identify critical activities, tolerances for outages and response strategies. In particular, they include the recovery and resumption of:

- critical business activities and services
- critical ICT systems
- human resource services.

Similarly, the Public Transport Authority reported they had multiple BCPs across the organisation. Other government agencies, such as the Department of Planning, Lands and Heritage, are in the process of refining and checking consistency across multiple BCPs due to machinery-of-government amalgamations.

Once again, we note that more work remains to be done in engaging with business and industry about BCPs. The Chamber of Commerce and Industry of WA has been conducting a project to determine the state of business pre-disaster readiness, focusing on insurance and BCPs.



SPOTLIGHT

Embedding risk and crisis management

A major concern of some agencies is the perception that EM places an unnecessary burden upon them in complying with yet another set of rules. Conversely, the SEMC believes that emergency preparedness and EM is just the cost of doing business responsibly. It is in fact, and should be, regarded as business as usual.

A good example of this is the Pilbara Ports Authority (PPA), which has embedded enterprise risk management into business as usual. Their annual strategy setting, business planning, and decision-making processes all examine four categories of identified risks – strategic, corporate, operational and project.

- **Scan and access the environment**
 - Every quarter to ensure their strategy responds to industry changes and customer needs.
- **Align the business plans and priorities to the defined strategy**
 - From the top, the KPIs of the CEO, Area General Manager and Directors align with the PPAs business activities.
 - From the bottom, corporate and operational risks are reviewed throughout the year in line with procedure.
- **Monitor progress and implementation**
 - Periodic reporting enables PPA to identify, mitigate or pursue emerging risks and/or opportunities as they arise.

External events, such as cyclones, are classified as ‘operational risks’. This allows the PPA to identify preventive and mitigating controls as well as to develop treatment action plans to further reduce the residual risk rating, if required. They collaborate widely to ensure that controls are understood and influence operational effectiveness. A port strategic risk review committee reviews any risks shared between the PPA and users of the Port of Port Hedland every six months.

Business interruption, emergency events and disaster risks are routinely managed as part of the authority’s Business Resilience Framework, which includes plans for risk, incident and crisis management, and business continuity. A crisis includes any adverse incident (or series of events) that may materially damage employees, stakeholders, third parties, operations, the environment, long-term business prospects, and the corporate brand or reputation. The PPA aims to conduct two crisis management exercises each financial year.

The value of crisis training in the case of a real crisis

The benefits of investing resources into maintaining and testing the PPA’s Business Resilience Framework became evident during the emergency response to a tragic accident in March 2018. At 11.50 pm on March 7, a helicopter, with two men on board, attempting to land on a bulk carrier ditched into the ocean on the outer part of the Port Hedland channel. One man was rescued but the other man died.



SPOTLIGHT

An incident management team was formed with the leader arriving at Port Hedland within 30 minutes. The full IMT included representatives of the Australian Maritime Safety Authority, WA Police Force, the Aviator Group and the PPA. Key EM observations from the crash response are as follows:

- Regular training and simulation exercises prepared members of the incident and crisis management teams for their effective response.
- The PPA's Employee Assistance Program enabled emotional support and assistance to be immediately available to the families, employees and contractors involved.
- Consistent and timely communication could be maintained between key stakeholders and PPA staff.
- The financial authority limits for the IMT and CMT members during the management of the incident and crisis enabled a seamless and simultaneous management of the incident, crisis and business continuity.

Some slight enhancements to the crisis management plan were also recognised and have since been incorporated and communicated to the CMT members highlighting the ongoing continual improvement.

The response to the crash shows that effective EM structures and preparedness do not have to be a burden. On the contrary, they can help greatly in times of crisis and, even more importantly, they are the price of doing business responsibly.

5.19 Community activities

Achievement objective

- Consideration is given to the protection and rapid reestablishment of community activities. This may include cultural and community events, sporting activities and schools.

Key findings

- The sooner a community gets back to normal functioning, the more likely it is that long-term negative impacts will be minimised.
- There remains an opportunity to better engage with communities to identify those things that are valued.

The value and importance of an asset or activity depends on your point of view. While some assets (such as power plants, gas pipelines, hospitals or telecommunications) are undeniably essential, others (such as historic buildings or landmarks) may be less vital but equally important to a specific community. But what value and importance are placed upon the activities that take place within that community?

The 'social fabric' is a common metaphor used to describe how well community members (the threads) interact among and between themselves. The tighter the weave (the more frequently and positively members interact with each other), the stronger the fabric. These bonds become increasingly vital during and after an emergency.

While it is comparatively easy to focus on the physical things that get broken during an emergency, psychosocial wellbeing can be overlooked. The existing networks within a community can be crucial in getting the community back to the normal patterns of life following an emergency.

They can greatly aid and hasten a recovery. Whether these are social groups, religious organisations, sporting teams and clubs or educational links is not important. Individuals and communities will both rely upon and be strengthened by these existing networks, groups and structures.

The continuation of services, or minimisation of disruption, is important not only from an economic perspective, but also from a social perspective. LGs (74%) overwhelmingly reported that they had identified the likely impact that hazards might have on important 'community assets'.

Fewer than 40 per cent reported having any strategies in place to protect cultural assets such as heritage sites, memorials, churches or sporting facilities. About half had plans for the timely reestablishment of community activities (e.g. cultural and community events, and schools) following an emergency. The City of Busselton noted that a recent fire at the Old Butter Factory Museum resulted in the loss and damage of irreplaceable historical documents and memorabilia.

The value of protecting and restoring community activities following an emergency is critical to a successful recovery. The shorter the disruption and the sooner the community can get back to functioning normally, the more likely it is that long-term negative impacts can be minimised.

There remains an opportunity to better engage with communities to identify those things that are valued. Once identified, these places and issues can be included in local-level response and recovery plans. For example:

- The City of Canning reported having in place a Cultural Heritage Strategy.
- The Shire of Leonora said they understood the importance of significant cultural sites and activities and had plans to support all viable strategies to manage and protect those sites and activities.
- The cities of Stirling and Wanneroo both reported that places of heritage significance were now included in the LEMA.
- The Shire of Dandaragan reported having a Municipal Inventory of Heritage Places, which prioritised categories for protection or restoration.
- The shires of Kent and Lake Grace reported having strategies documented within their LEMA to address the community’s need for emotional, social, economic and physical wellbeing.

5.20 People

Achievement objective

- Agencies have appropriate levels of trained, capable and supported people to effectively undertake all aspects of EM.

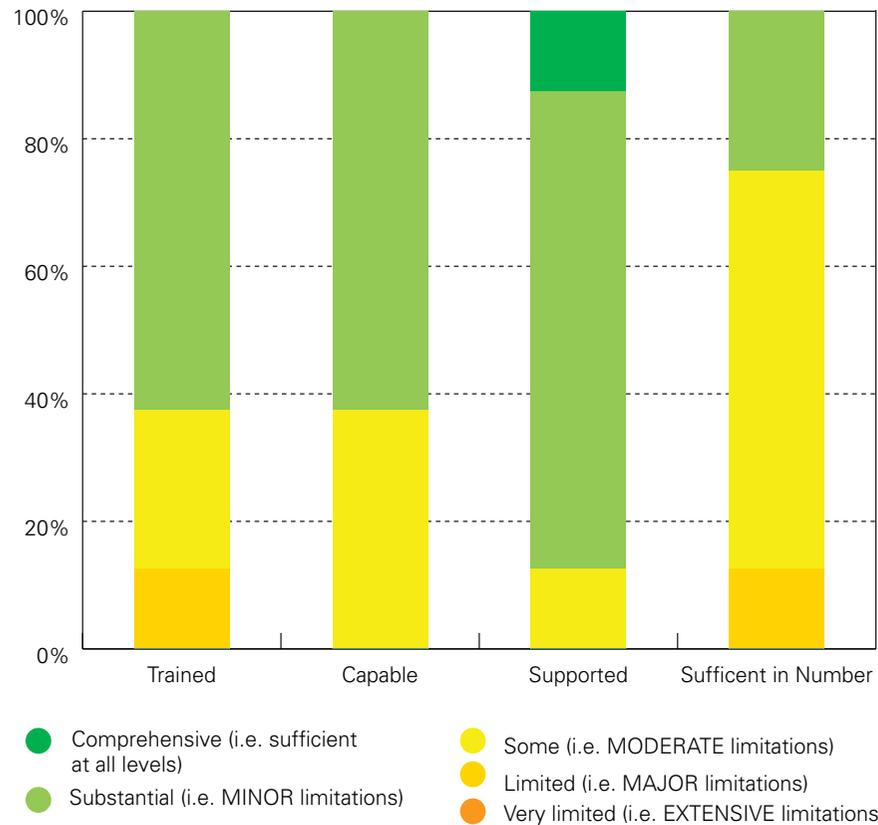
Key findings

- Organisations report that their personnel are well trained, capable and supported.
- At the catastrophic consequence level, the capability for all hazards is expected to be strained and likely inadequate.
- Protracted or simultaneous events are expected to also strain resources.
- Challenges exist in maintaining sufficient numbers of volunteers in regional/remote areas.
- Sufficiency of personnel was noted as an issue, particularly in the recovery setting.
- Northern Metropolitan LGs have entered into MOU arrangements to share resources in the event of an emergency.

Hazard management agencies reported that their response personnel have ‘substantial’ training, capability and support (i.e. minor limitations). A more pressing area for improvement was in maintaining adequate numbers of personnel, with all agencies noting at least ‘moderate’ limitations.

The Department of Health commented that in an emergency, maintaining response coordination beyond a period of 36 hours would be very challenging. Conversely, WA Police Force have ensured sufficient personnel through developing ‘surge plans’ to mobilise an additional 100 or 500 officers to support an emergency response.

Extent that HMA response personnel are:

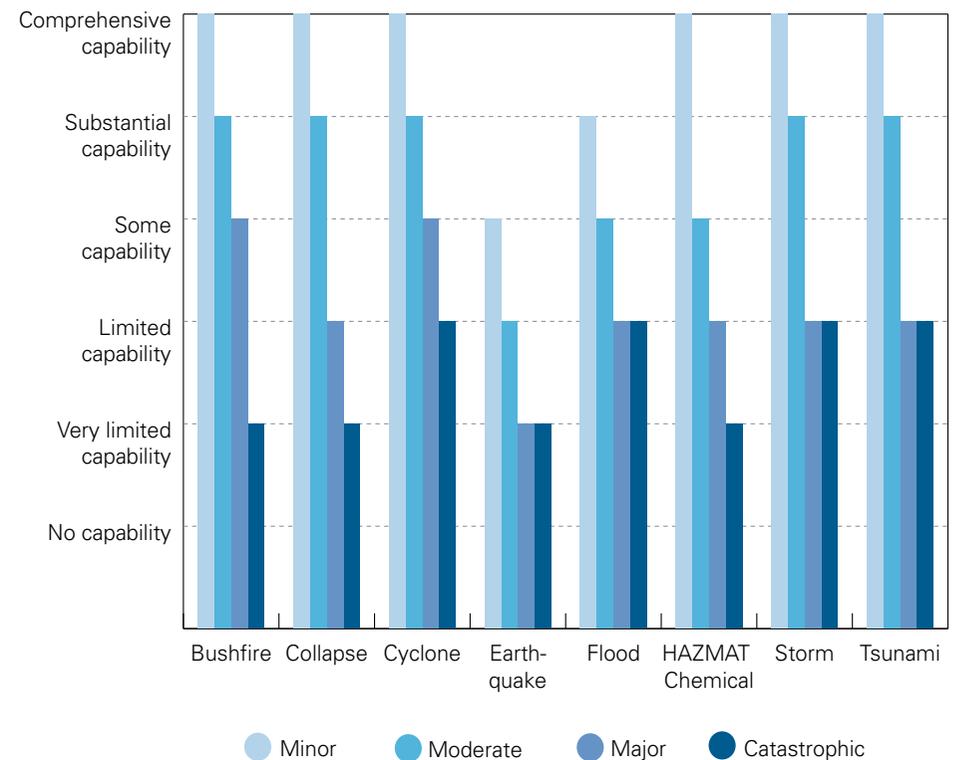


DFES once again provided greater precision, reporting on their capabilities against each of their eight designated hazards (bushfire, collapse, cyclone, earthquake, flood, HAZMAT– chemical, storm and tsunami). Each hazard was assessed against the consequence levels that may be delivered on a scale from minor to moderate, major and catastrophic.

DFES generally reported high levels of capability for most hazards assessed to have minor or moderate consequences; however, they noted that flood and earthquake events would stretch this capability the fastest. The hazards with greatest capability were bushfire and cyclone.

For events at the catastrophic level, DFES acknowledged that capability for all hazards would be strained and likely inadequate.

The extent that emergency management personnel in DFES are able to manage an emergency resulting in these consequences:



This shortfall would also apply to protracted or simultaneous events, noting that additional assistance would be required from other states, the Commonwealth and possibly international agencies. However, DFES reported that arrangements were in place for other organisations to assist in the event of a catastrophic emergency.

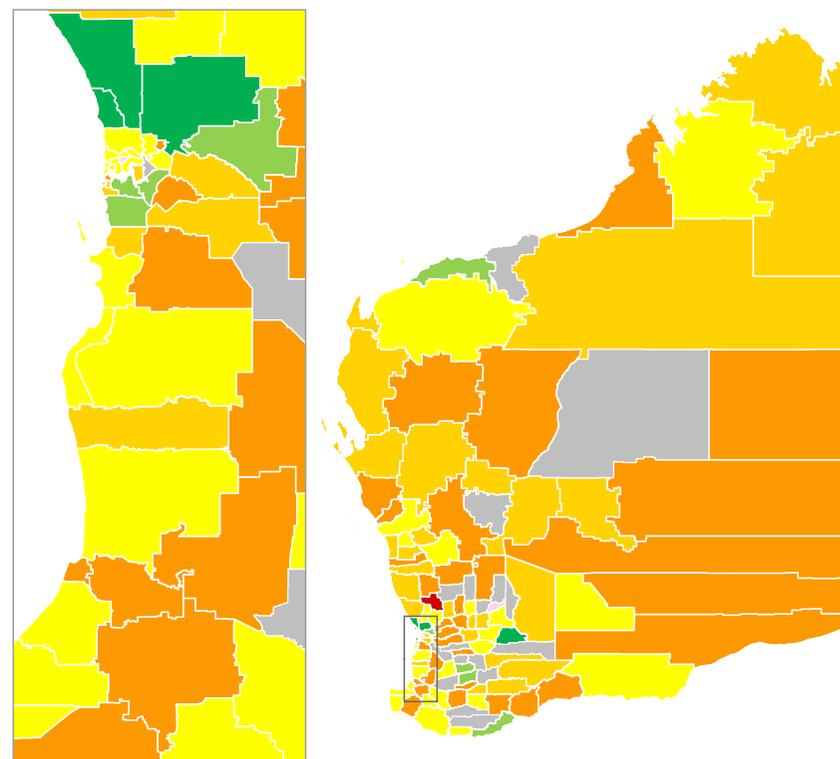
DFES noted that challenges existed in maintaining sufficient numbers of volunteers in regional and remote areas, particularly where the resources sector influenced employment trends (i.e. fly-in/fly-out workers).

The ‘people’ category, as it applies to LGs, generally applies to recovery personnel. That said, sufficiency of EM personnel has also been raised as an issue by many LGs.

Staffing levels were a significant issue among most LGs, with fewer than one in 10 (9%) declaring ‘substantial’ or ‘comprehensive’ numbers of recovery personnel. The LGs with higher personnel levels were typically in the Perth metropolitan area, with the North Metropolitan Emergency Management District reporting the highest average levels. (This factor may have been influenced by the fact that LGs in the North Metropolitan district have entered into MOUs to share resources in the event of an emergency.) Fewer than half of other LGs (45%) reported entering into MOUs for support. There has been no reported growth in this area since 2017.

The City of Stirling reported that all of their senior staff (from supervisor level to the CEO) had completed WALGA’s online EM training and that staff members had completed face-to-face EM training and attended recovery exercises.

Numbers of recovery personnel in LG



- Sufficient personnel (i.e. sufficient capacity at all levels)
- Substantial personnel (i.e. MINOR limitations in capacity)
- Some personnel (i.e. MODERATE limitations in capacity)
- Limited personnel (i.e. MAJOR limitations in capacity)
- Very limited personnel (i.e. EXTENSIVE limitations in capacity)
- No personnel
- Unsure
- No Response

5.21 Volunteering

Achievement objectives

- A clear strategy exists for the recruitment, retention and ongoing training of volunteers that addresses motivation and barriers.
- A strategy exists to manage Good Samaritans and spontaneous volunteers.

Key findings

- Volunteers are a vital part of our emergency services.
- The ageing of the volunteer workforce is becoming an issue.
- A range of factors influences the ability of agencies to attract, motivate and retain volunteers.
- The ability of the sector to adapt will be pivotal to the ongoing delivery of essential services.

Each year, more than 35,000 people volunteer to serve in WA's emergency services, responding to over 20,000 incidents across the state (Table 4). These volunteers provide a range of response, education, communications and administrative services that support the community's ability to prevent, prepare for, respond to and recover from emergencies. Volunteers are the backbone of our emergency services, particularly along our coastlines and in regional areas.

The ability to attract and retain volunteers is fundamental to the delivery of essential services. However, our ability to maintain services is being challenged by a range of factors as follows:

- ageing population
- flexible working arrangements (fly-in/fly-out and drive-in/drive-out)
- increased demands on people's time
- both partners in a family required to work

- increased after-hours activities for children
- technological change (how people choose to engage)
- migration towards urban centres
- growing focus on short-term 'experiential' volunteering
- growing expectations that volunteering will increase skills development or provide networking or other career-related links.

Table 4. Number of active volunteers and deployments across different organisations

Organisation	Active Volunteers*	Deployments 17/18
DFES (including Bush Fire Brigades (BFBs) under MOU)	7240	9804 ³
Local government (BFBs)	19,369	6765 ⁴
Red Cross	400	159 ⁵
St John Ambulance	9140	63,979 ⁶
Surf Life Saving WA	5801	472

* These statistics do not include the contribution of 'non-responding' volunteers (e.g. Surf Life Saving WA have indicated that 6995 non-patrolling members volunteer about 3 hours per week to their club).

³ This figure accounts for the total number of deployments per Brigade, Group Unit. For instance, if three units are deployed to one incident, this will appear as three deployments.

⁴ Ibid.

⁵ This figure includes preventive and responsive actions.

⁶ 21,529 cases were seen by volunteer-only subcentres and 42,450 cases were seen by career subcentres where paid and volunteer staff work together to deliver services.

While the number of people who volunteer has been increasing, the number of hours they have to give has been decreasing (Our Community 2018). Both DFES and WALGA have identified 'ageing workforce' as a core issue for emergency services. In 2018, the average age of volunteers working with DFES or LGs was 48 years. This raises concerns about safety, the increased impact of injuries among older volunteers and the potential for large-scale future retirements.

These factors are driving agencies to reevaluate their approach to volunteering. The ability of the volunteering sector to adapt is pivotal to the ongoing delivery of essential services. In response, a range of initiatives has been created to build a stronger understanding of the current and future development of volunteering. The aim is to develop an effective strategy to address recruitment, retention and gaps.

More than 70 per cent of LGs reported managing volunteers before, during or after an emergency (a total of 18,000 volunteers). Of the 22 LGs that reported not managing volunteers, these were predominantly in the central metropolitan area (Cambridge, Claremont, Cottesloe, Mosman Park, Peppermint Grove, Perth, Subiaco, South Perth, East Fremantle and Fremantle) or in very remote areas (Laverton, Ngaanyatjarraku, Broome, Derby – West Kimberley, Halls Creek, Wyndham – East Kimberley, Cue, Meekatharra and Shark Bay).

In 2016, DFES released its Volunteer Sustainability Strategy that outlined 101 actions to develop the volunteer workforce and build its internal ability to respond to changing community attitudes. It has also joined with the Bushfire and Natural Hazards CRC to explore recruitment strategies and build diversity within the State Emergency Service. Similarly, the Volunteer Marine Rescue Service has explored strategies to reduce the age of the volunteer workforce.

Emergency Services brigades, groups and units have developed schedules that can be adapted to support a range of shifts, including fly-in/fly-out structures. These enable volunteers to maintain participation while also managing competing external priorities. Surf Life Saving WA, the Red Cross and DFES all raised challenges associated with establishing flexible, short-term volunteering opportunities for the 'experiential' volunteer or to meet the changing needs of volunteers.

The State Wide Operational Response Division (SWORD) of DFES combines a range of response and specialist capabilities and provides a surge deployment capacity. For example, in October 2017, the SWORD was deployed to provide support to the Tom Price Fire and Rescue Service and Bush Fire Brigade that were battling multiple bushfires, impacting their ability to respond to other incidents in the area.

Surf Life Saving WA conducted research into trends in recruitment and retention for their volunteer systems. In addition, they are conducting a cost-benefit analysis to assess the economic value of surf life saving to the community. The outcomes of this research will inform the development of a new volunteering strategy in 2019.

DFES has instigated further partnership building initiatives to strengthen their volunteer workforce. It is hoped this will enable DFES to deliver new services and offer more support for volunteers. While the partnerships are fledgling at this stage, they illustrate a trend towards more complex approaches to volunteering that incorporate a broader cross-section of society.

In 2017–18, Volunteering WA and DFES initiated an online volunteer recruitment portal using Volunteering WA's VIKTOR platform. The platform integrates and uploads volunteer role data to a range of volunteering websites and search engines. Additional partnerships are being explored with both the Smith Family and the Department of Corrections to trial new concepts for emergency services youth programming.

An emerging challenge for the sector is how best to engage with new and emerging organisations that prefer to work outside the established EM structures. Relationships with organisations such as Team Rubicon represent a significant opportunity but may also present some challenges for the existing emergency services sector

Spontaneous volunteers (people who offer their help following an emergency or crisis) remain a challenge to most services, often diverting resources from response or recovery efforts. For the most part, these are well-intentioned people who are motivated to assist in the immediate aftermath of an incident or disaster. Spontaneous volunteers are not generally affiliated with established groups and disengage very quickly after an event. Volunteering WA noted challenges in maintaining their interest beyond two weeks.



Team Rubicon⁷ is a US-based non-profit organisation that draws upon the skills and experiences of military veterans to rapidly deploy emergency response teams. Originally designed to help the reintegration of veterans after they leave the military, the organisation seeks to provide three core things:

- a purpose – gained through disaster relief
- community – built by serving with others
- identity – from recognising the impact one individual can make.

This is coupled with leadership development skills and other opportunities, as teams provide immediate relief to those impacted by disasters and humanitarian crises.

Initially only deployed to local emergencies, Team Rubicon has begun branching out, providing assistance with international disasters. Assistance provided so far include deployments to Ecuador, Chile, Sierra Leone, Greece, Turkey, Pakistan, Mozambique, Nepal and the Democratic Republic of the Congo.

Team Rubicon Australia completed its first operation in the wake of Cyclone Debbie with over 40 volunteers conducting disaster relief operations in far north Queensland. Since then, they have also deployed to support the recovery efforts in Tathra following a major fire in March 2018 and were due to provide Strike Teams on the ground in Dubbo NSW, contributing to drought relief efforts.

⁷ <https://teamrubiconusa.org/about/>

5.22 Finance and administration

Achievement objectives

- Robust financial and administrative processes exist to capture and track EM expenditure.
- Funding for proactive measures and mitigation is available, sufficient and accessible.
- Adequate funding arrangements are in place to manage the response and recovery of a large scale emergency.

Key findings

- While a range of funding sources is available, the perception remains that funding is insufficient.
- Considerable extra funds were made available in 2018 to support mitigation initiatives (particularly for bushfire).

Across all agencies, resourcing is constantly reported as a challenge. Responses to the *Emergency Preparedness Report 2018* survey indicate that while response and recovery funding is both available and accessible, the perception remains that funding is insufficient.

WANDRRA remains the primary source of recovery funding. HMAs reported a good understanding of WANDRRA, although the responses of other agencies varied. This may be reflective of the fact that 35 per cent of all responding LGs reported not facing a significant emergency within the past decade. Among the 120 responding LGs, only half declared having a reasonable understanding of the mechanisms of WANDRRA.

At present, grant funding is available under three disaster mitigation schemes that seek to reduce vulnerability to disasters by supporting proactive mitigation measures and activities.

These schemes are as follows:

- NDRP – Natural Disaster Resilience Program (\$9.4 million over three years to 2021)
- AWARE – All West Australians Reducing Emergencies (\$200,000 per year)
- MAF – (Bushfire) Mitigation Activity Fund (\$15 million over three years to 2020).

The launch of the DFES Rural Fire Division has included substantial new investment in funding for bushfire training, prevention and mitigation.

This includes an additional:

- \$18 million for the Bushfire Centre of Excellence
- \$15 million to extend the BRMP Program
- \$35 million to fund bushfire mitigation activities.

Recommendations from the newly developed National Resilience Taskforce are likely to impact the mechanisms and priorities for distributing national mitigation funds in the future.

Many LGs (58%) reported that the mitigation funding programs in general were insufficiently resourced.

DPIRD commented that national cost-sharing arrangements were in place for pest and disease emergencies of national significance. These included nationally coordinated mechanisms that allowed for government/industry cost-sharing arrangements such as the Emergency Animal Disease Response Agreement and the Emergency Plant Pest Response Deed.

In September 2017, the Economic Regulation Authority delivered the final review of the state’s Emergency Services Levy (ESL). Recommendations covered how the ESL should be governed and administered, and suggested the levy should also fund prevention and mitigation. The State Government recently announced new levels of transparency to be introduced through the ESL Grants and Referral Advisory Committee.

5.23 Equipment/Critical resources

Achievement objectives

- Organisations have or can readily access appropriate infrastructure and equipment during an emergency.
- Equipment can be mobilised during an emergency and plans are in place to address predeployment, peak surges and redundancies for outages.

Key findings

- HMAs expressed concern about their ability to manage multiple simultaneous events.
- Several agencies reported that caches of critical equipment and resources are stored in strategic locations ready to be deployed.
- The major area of concern identified by LGs was having enough equipment to manage a major evacuation and the subsequent recovery.
- Several national plans to share resources in an emergency are in place.

All HMAs, combat agencies and most essential service providers considered that response funding was 'available, sufficient and accessible'. They were also confident that they could manage multiple concurrent emergencies with existing equipment. However, they raised concerns about their ability to handle simultaneous Level 3 (state-level) incidents.

WA Police Force reported that the *Police Manual* was in itself a documented action-planning database that included deployment plans (100 and 500 Officers Plans) that encompass rapid deployment in the event of emergencies. In addition, a range of formalised plans covered a variety of specialist areas. For example, the Tactical Response Group had highly formalised and well-tested plans relating to counterterrorism responses that included plans for equipment and resource deployment.

DFES advised that, for most hazards, equipment had been stored in strategic locations around the state, able to be deployed as required. For HAZMAT incidents, caches of equipment were available statewide, with backup equipment on standby in the metropolitan area for deployment at short notice. Where peak surges had been experienced, stock levels were adjusted accordingly.

WA Health reported they were well equipped for mobilisation, with significant stores of medical and self-sustainability equipment maintained centrally to support the WA Medical Assistance Team (WAMAT) and hospitals. These stores included medical consumables, pharmacy, biomedical equipment, and protective personal equipment. The cache is deployed at least annually during exercising. St John Ambulance has emergency supplies predeployed in the regions and throughout the metropolitan area. Key WA Country Health Service sites have Health Response Team (HRT) capability, which includes deployable medical and personal equipment.

Parks and Wildlife reported that infrastructure in rural WA was usually adequate to support small to moderate events but was often too small for large incidents. They reported having good mobile infrastructure to support emergency responses, but said concurrent incidents would impose constraints.

In addition to equipment and resources on hand in the state (Figure 23), HMAs have entered into a number of agreements with interstate and international counterparts to provide assistance in times of emergency. The major Commonwealth plans include:

- ComDisPlan – Australian Government Disaster Response Plan
- DACC – Defence Assistance to the Civil Community
- DFACA – Defence Force Assistance to the Civil Authority
- AUSTRAMA – Domestic Response Plan for Mass Casualty Incidents of National Consequence.

WA Health has various national health emergency plans in place that articulate responsibilities and describe interstate assistance that is available, such as the AUSTRAMA plan. The Australian Medical Assistance Team (AUSMAT) is a national cohort of skilled clinicians and support personnel that can be deployed to other states and territories to assist. The Commonwealth coordinates international plans and arrangements.

The Public Utilities Office reported that the National Gas Emergency Protocol MOU 2016 is in place and that they have recently developed an MOU with WA Police Force to use the Maylands Incident Command Centre in the event of a major incident.

Just under half (45%) of LGs were confident they could manage concurrent emergencies with existing infrastructure but only 26 per cent were confident they would have sufficient equipment to do so. Most reported that they would have to source extra equipment locally or from neighbouring councils but they noted that this would very much depend on the nature and scale of the emergency.

The major area of concern with respect to equipment and critical resources was in managing evacuations and any subsequent recovery operations. The evacuation issue becomes particularly acute with regard to people who choose to evacuate with their animals (pets or livestock).



Figure 23. Department of Transport (Marine Safety) deploy the 'NOFI Current Buster' to collect floating oil. Source: Department of Transport

5.24 Command, control and coordination (C3)

Achievement objective

- Pre-established and well-understood protocols and structures exist that define the interrelationships between stakeholders during an event and facilitate effective command, control and coordination (C3).

Key findings

- The C3 system of command, control and coordination is highly effective in times of crisis.
- The concepts of C3 cascade effectively throughout the EM sector and they are well understood.

The effective management of an emergency requires the following properties:

- acquisition of necessary resources
- coordination of staff and equipment
- direction of specific operational tasks
- delivery of resources to incident sites
- sharing of information with other agencies and the public.

To deliver these functions effectively, EM in Australia uses two compatible incident management systems (AIIMS or ICCS+). In any emergency, multiple agencies or individuals may be able to perform required tasks but the absence of pre-determined roles could create inefficiencies, redundancies or omissions. The basis of EM arrangements, including C3, is to avoid such uncertainty.

- **Command**⁸ refers to the statutory or regulatory authority to direct people and agencies to do things in response to the emergency.
- **Control**⁹ refers to the span of the command authority (including limits) of the agency or individual.
- **Coordination**¹⁰ involves the mechanisms to ensure cohesion among the different agencies and individuals contributing to the response and recovery.

In 2018, all HMAs, combat agencies and support agencies (and 72% of LGs) reported having well-established protocols and structures that define the interrelationships between stakeholders. All HMAs, combat agencies and support agencies (and 73% of LGs) reported that their C3 protocols and structures were effective and well understood. Of the LGs, 69 per cent reported that C3 protocols and structures were fully understood but only 55 per cent of these had been tested. They noted that while arrangements were in place, many LGs had little or no exposure to major events in their districts to confirm whether these arrangements were effective.

DPIRD reported developing and adopting a comprehensive Incident Management System based on AIIMS. The Biosecurity Incident Management System (BIMS) is a national system that has been developed to provide guidance on contemporary practices for the management of biosecurity incident response and initial recovery operations in Australia.

⁸ Adapted from FEMA, Incident Command System Review Material, FEMA Emergency Management Institute, ICS Resource Center, course title 'Comparative Emergency Management, session 21, Command, Control, Coordination, and Disaster Declarations', US.

⁹ *ibid.*

¹⁰ *ibid.*

While not directly involved in the command and control aspects of emergency response, the Department of the Premier and Cabinet may be involved in coordination through participation in the State Emergency Coordination Group (SECG) and the State Disaster Council. They noted that relationships between stakeholders at this level (e.g. relationships between HMAs and the SECG, and between the SECG and Ministers) were clear and well understood.

WA Health identified that policies outlining responsibilities for EM governance were in place. The State Health Emergency Response Plan and WA Health's Emergency Management Arrangements articulated relationships between stakeholders and C3 structures. There was a separate Infectious Disease Emergency Management Plan and State Hazard Plans for Heatwave and Human Epidemic that outlined state-level, multi-agency coordination arrangements. A rostered Director General's Delegate would assume coordination of the system during an emergency.

Most agency respondents identified that their coordination structures were effective, interoperable with other agencies, functional and both manageable and serviceable.

5.25 Situational assessment

Achievement objective

- Situational assessments are undertaken to accurately inform decision makers about the nature and extent of the hazard, vulnerable elements and what resources are required.

Key findings

- Seeking to maintain situational awareness is a major focus for most responding agencies.
- Situational awareness drops off considerably among LGs.
- The effectiveness of situational assessments is reported as 'variable'.
- Impediments to situational awareness generally relate to system and communications interoperability.
- Many LGs believe situation assessment is the sole responsibility of the HMA.

Maintaining situational awareness during emergencies is crucial to an effective response. Situational awareness is being aware of what is happening around you in terms of where you are, where you are supposed to be, and whether everyone or anything around you is unsafe. It requires the ability to identify, process and comprehend critical information about what is happening during an emergency. Agencies reported that this element worked at HMA level and extended to other agency types. For many agencies, situational assessments or incident plans were developed at the onset of an emergency and regularly reviewed to ensure the most up-to-date information was available at all times.

The aim of situational assessments is to determine the nature and extent of the hazard while identifying vulnerable elements and the resources required. While every effort is made to develop this information, agencies reported that their effectiveness was not maximised.

Only half (52%) of LGs reported they developed situational assessments during emergencies, with many believing it was solely the responsibility of the HMA. This attitude is counterproductive, as the LG will almost certainly be impacted. This response is even more troubling as LGs have responsibility for managing the recovery from such an emergency. Despite this, most of those responding believed that situational assessments were at least 'somewhat effective'.

Some LGs reported setting up their own groups (e.g. crisis management groups) for specific hazards within their areas. These groups controlled and coordinated the resources of the LG based on all available situational information. Others reported attending meetings of incident support groups to obtain situational awareness during emergencies.

Respondents were also asked if they had identified any impediments to interagency effectiveness during an emergency. Most organisations and LGs reported they had not identified any impediments. Those that did tended to cite the lack of interoperability of different systems and the failure of communication systems during emergencies. Some improvements are being made through continual improvement of relationships within and between organisations, the development of common doctrines and upgrades to communication technology.



SPOTLIGHT

Air intelligence

In 2018, DFES transitioned their aerial surveillance and reconnaissance capability from traditional localised fire mapping to a layered, all-hazard, whole-of-jurisdiction approach. Technology for thermal imaging for mapping fires became available to DFES in 2004. Mapping systems and GPS were integrated in 2005 and video broadcast and mapping data transmissions were incorporated in 2006.

Three generations of aerial reconnaissance systems have been used, primarily for fire seasonal mapping. Year-on-year technological improvements have been included. The existing 'Air intel' helicopter (Figure 24) with its thermal imaging and mapping capabilities has proved indispensable for localised incidents including:

- the Parkerville Fire in January 2014



Figure 24. DFES 'Air intel' helicopter. Source: Matt Hayes

- flood mapping during the 2017 Avon River flooding
- many other fires and major incidents throughout the metropolitan area.

As well as fires, aerial reconnaissance crews have trained to use the aircraft and equipment to pinpoint marine oil pollution.

The January 2016 [Ferguson Review into the Waroona bushfire](#) identified an opportunity for improvement, proposing that DFES and Parks and Wildlife investigate options to improve the gathering of aerial and satellite-based intelligence to combat bushfires.

In 2018, DFES complemented the existing aerial reconnaissance helicopter with remotely piloted aircraft ('drones') and wide-area, sensor-equipped, pressurised, fixed-wing aeroplanes (Figure 25). DFES is continually seeking opportunities to improve their air intelligence capability.



Figure 25. FIRESCAN Learjet



SPOTLIGHT

At times, demand for aerial intelligence has exceeded capacity and capability. While helicopters have unique capabilities, they cannot deploy quickly to regional areas. In 2015, a King Air FIRESCAN aeroplane mapped the extensive Lower Hotham (Boddington) and O'Sullivan (Northcliffe) fires on a single flight from Perth, a task that would have taken several days using the helicopter or drones. The aeroplane had to be deployed from another state.

In May 2018, DFES and Parks and Wildlife trialed a Linescan-equipped aircraft while it was in WA to support Navy exercises. DFES intended to use prescribed burns to evaluate the effectiveness of the imaging products and integration requirements. Coincidentally, unseasonal bushfires in Albany, Augusta and Peaceful Bay provided the opportunity to evaluate the FIRESCAN capability operationally.

The FIRESCAN Learjet was able to map the Augusta and Albany fires on a single two-hour flight, and performed a similar task the following day (Figure 26). This task would have taken several days using the helicopter or drones and was achieved despite very poor weather conditions.

While aerial intelligence and response capabilities continue to improve, a troubling trend has been identified. In two separate incidents in February 2018, members of the public were found to be flying drones where fire bombers were in operation.

At Port Kennedy, a drone was sighted metres from the rotors of a firebomber as it drew water from a lake at the golf course. Obviously, if the drone and helicopter had made contact, the aircraft, crew and a significant number of onlookers would have been in danger. At Australind, a drone was seen flying near the fire front of a bushfire where aircrews were working.



Figure 26. Infrared Linescan image from FIRESCAN 122 operations 25-26 May 2018



SPOTLIGHT

DFES and the DBCA operate both fixed-wing and rotary-wing water bombing aircraft. Even the smallest drone colliding with or obstructing a bombing aircraft could have catastrophic results. Fire bombers fly at around 200 km/h, often manoeuvring in poor visibility, close to each other and other obstacles such as trees, radio masts and power lines.

A statement from a senior firefighting official following these incidents concluded: “While it might be tempting to record footage, drones pose a major safety risk to firefighting personnel in the air and people on the ground, who are often drawn to watch water bombers in action. If a helicopter goes down, the crew as well as any nearby onlookers will not survive.”

Both incidents were reported to Civil Aviation Safety Authority (CASA) with drone pilots facing possible fines of up to \$9000 for breaking CASA Regulations. For more information about laws surrounding the flying of drones near bushfires, visit the CASA website at www.casa.gov.au.

5.26 Evacuation

Achievement objectives

- Agencies have the resources and skills to undertake both directed and voluntary evacuation of both people and animals.
- Suitable sites have been identified and are available that maintain the provision of critical goods and services (e.g. food, potable water, shelter).

Key findings

- WA Police Force may assist with most evacuations.
- The Department of Communities takes responsibility for establishing and running evacuation centres once evacuations have occurred.
- Maintaining power is a major issue for evacuation centres.
- Many welfare centres are not equipped to connect to portable generators.

EM recognises as its guiding principle ‘the primacy of life’. Evacuation involves the movement of (and provision for) people to a safer location during an emergency. Due to the range of hazards likely to be encountered in WA, four of the eight HMAs reported they were involved in evacuations. They also reported they had the ability, plans and resources to accomplish both directed and recommended (voluntary) evacuations.

WA Police Force may assist with most evacuations, either directly or in support of an HMA. The decision to evacuate is generally made by the incident controller within the relevant HMA. The Department of Transport (Marine Safety) cited that while they may have to order evacuations and/or exclusion zones, they would rely on WA Police Force to execute any such order.

Where Parks and Wildlife are the controlling agencies for an incident, they are involved in the decision to evacuate, but would likely rely on resources from DPIRD and WA Police Force to execute.

Once people are evacuated, the Department of Communities (in conjunction with LGs and various non-government organisations) take responsibility for establishing and running evacuation centres. These centres shelter evacuees and provide essential services in times of crisis and in the immediate aftermath of an emergency.

If a Defence Aid to the Civil Community (DACC) request is received (and authorised), the Defence Force would assist with evacuations, mainly through the supply of resources.

The Department of Health’s involvement in evacuations is confined to hospitals but they may also provide support to aged-care facilities and through patient transfers. Similarly, St John Ambulance is limited to providing transport and clinical support for the evacuation of hospitals, aged-care facilities and to people living with pre-existing conditions. They do not partake in the planning of evacuations.

Most (74%) of LGs acknowledged their role in evacuations, however 11 per cent did not believe they had a role. LG involvement primarily involves the provision of, setting up and staffing of suitable sites to host evacuation centres. The site or sites are generally identified well in advance (with the Department of Communities). The planning considers a range of potentially complex situations and provides multiple alternate options, to ensure that those impacted by an emergency can remain safe.

As with most areas of EM, to be effective, evacuations must be pre-planned, formalised, understood and tested before an emergency occurs. Most LGs cited that the locations of evacuation centres were identified in their LEMAs, including details on capacity and amenities.

In 2018, the City of South Perth highlighted that they assisted with the provision of animal welfare at evacuation centres. The Shire of Esperance detailed their management plan for spontaneous volunteers.

While a high proportion of LGs are aware of their role in evacuations, only 38 per cent of these reported that they have the ability, plans and sufficient resources to assist directed evacuations. Several suggested that while they may have plans to support an evacuation, they did not have the resources. Another 19 per cent reported not having the ability, the plans or the resources needed to carry out evacuations.

Over half of LGs that identified suitable evacuation centres reported they could manage two or more evacuation centres simultaneously. Eleven of these said they could manage four (with existing resources), depending on the scale and context of the emergency event.

Of the LGs that have identified suitable evacuation/welfare centres, 50 per cent have redundancy in all four of the following aspects: food, potable water, shelter and power. Almost three-quarters of LGs have redundancy in at least three of these elements.

The Shire of Broomehill–Tambellup reported that the nominated welfare centres in their area are shire-owned buildings, which had the appropriate facilities to support the needs and functions of a welfare centre. While food, water and bedding for an extended period or large numbers of evacuees and back-up generators would need to be sourced from regional centres, these requirements had been factored into the shire's welfare planning.

Across all LGs, it is evident that the greatest redundancy is in shelter itself, while there is the least contingency for power. Several LGs reported that back-up power is only available through back-up generators; however, many identified welfare centres were not equipped to accept power from these generators.

5.27 Public protection

Achievement objectives

- Necessary measures exist to control access and verify the identity of personnel or members of the public seeking entry to critical locations.
- Organisations have the ability to protect against unwanted activity within an impacted area.

Key findings

- The sector has implemented a range of new measures to verify identity and address traffic management practices.
- A state-level review of traffic management policy is complete.
- Arrangements for managing traffic during emergencies are equivalent to best national practice and perhaps best international practice.

It is necessary during an emergency to restrict access to some people (curious onlookers) while freely allowing access to others (responding personnel and volunteers). The HMA has the ability and responsibility to establish Restricted Access Areas or Exclusion Zones. The measures taken to verify the identity of and to control access to people seeking entry are the responsibility of the incident controller.

Authorisation of access has created significant challenges in the past. As a result, DFES reported establishing doctrine relating to restricted access permits. This doctrine provides detailed explanations and procedures to assist and guide the incident controller, particularly with regard to the use of powers to:

- prohibit movement within, into, out of, or around an incident area
- direct the evacuation and removal of persons from part or all of an area
- close roads and access routes.

In addition, DFES was continuing to roll out official identification cards, with about 5300 volunteers receiving their ID card so far. The restricted access permit system has yet to be tested operationally during a large-scale emergency.

At a state level, a review of traffic management policy is complete. A report has been produced that benchmarks current traffic management practices in the State Emergency Management Framework. The report found that EM arrangements for managing traffic during emergencies were at least equivalent to best national practice and perhaps best international practice. The report also identified some minor opportunities for improvement.

5.28 Agency interoperability

Achievement objectives

- Effective and interoperable communication systems (including incident management systems) exist to allow seamless communications during an emergency.
- Interagency cultural differences are identified and managed so as not to impede or inhibit effective response.

Key findings

- 85% of HMAs indicated there are no major impediments to interagency effectiveness during emergencies.
- Failure to test or deploy capabilities was seen as a detractor to agencies' confidence in the effectiveness of their arrangements.
- The three combat agencies all reported that impediments still existed.
- DEMC and LEMC structures were reported as breaking down barriers through greater understanding and enhanced relationships.

The seamless operation of EM agencies in times of crisis is vital. The ability to methodically prepare and respond in a coordinated manner can be the difference between success and failure. During a major emergency, State EM arrangements define and outline the structures used to facilitate interoperability and information sharing between stakeholders.

- State
 - SECG (State Emergency Coordination Group)
 - SRCG (State Recovery Coordination Group)
 - SDC (State Disaster Council)

- District
 - OASG (Operational Area Support Group)
- Local
 - ISG (Incident Support Group)
 - LRCG (Local Recovery Coordination Group)

The efficient and effective flow of information and actions during major emergencies relies on early implementation and coordination between the respective groups. Having the right people in the right places, clear and established communication channels and clarity of purpose achieves positive outcomes.

In the 2018 survey, 57 per cent of HMAs and more than 50 per cent of LGs indicated these structures were somewhat effective, interoperable, functional and manageable. The Shire of Broome employed some of these structures throughout 2018 in response to tropical cyclones Hilda, Joyce and Kelvin and a tropical low. They indicated “these structures were tested during the three cyclones and tropical low that affected Broome earlier in the year and worked well”.

Interestingly, 28 per cent of HMAs and 19 per cent of LGs reported a lower level of capability and capacity because they had not enacted or operationally tested local arrangements. DPIRD commented that structures were “untested in a biosecurity emergency” while the Shire of Gnowangerup stated: “LEMA in place but these structures were never activated in the past, so unsure how we would be able to cope.” Multi-agency local, regional and state-level exercising should target these areas of concern to bridge the gap and build confidence at all levels.

Commitment between agencies to interoperability is being demonstrated across most segments of the EM sector, ranging from verbal ‘in principle agreements’ up to and including formal MOUs. Due to the size and complexity of the state’s geography, capacity and capability gaps remain. Predetermined support arrangements are key to ensuring a timely and appropriate weight of response.

Most HMAs judged there were no major impediments to interagency effectiveness during emergencies, a notable increase from 2017. Three-quarters of essential service providers (75%) and 56 per cent of LGs concurred.

DBCA, however, noted that “some cultural and operational barriers remain between organisations”. Of the other agencies that identified interoperability issues, most cited communications systems as a major contributor. The Department of Communities identified that effectiveness would be affected if the mobile phone network failed. Those organisations that identified impediments to internal and/or interagency effectiveness also noted that these were being positively addressed. With the exception of the three combat agencies (Parks and Wildlife, the Department of Communities and St John Ambulance), all other respondents reported a drop in impediments.

St John Ambulance identified continual improvement of relationships and reported that it had well-established relationships with Health, DFES and WA Police Force and good networks through the DEMCs.

Most HMAs reported having formal MOUs with other agencies for intrastate assistance and slightly less for interstate and national assistance. In a similar result as last year, 45 per cent of LGs reported having an MOU for cross-jurisdictional assistance. Further, most LGs without them referenced having informal arrangements, with some in the process of formalising.

The benefits in developing local relationships and networks between agency personnel cannot be underestimated and are often only realised retrospectively (i.e. post-emergency). The local and district EM committees are recognised as key elements for achieving this outcome. For example, the Shire of Chittering commented: “All neighbouring governments and beyond support each other in the spirit of neighbour helping neighbour.”

Conversely, both HMAs and LGs believed communications systems and hardware interoperability were far less effective. The common themes identified are outlined below:

- The two primary state radio networks – WAERN (WA Emergency Radio Network) and WA Police Force – are not interoperable.
- Other state agencies also lack radio network interoperability.
- Concerns remain over coverage and the resilience of the telecommunications network.
- There is limited ability to operationally enhance radio and telecommunications infrastructure in remote areas.
- The adoption of interoperable Incident Management Systems (IMS), while improved, is not universal.

Some initiatives in progress to address these concerns and interoperability more broadly include:

- State WebFusion (WebEOC) System
- Public Safety Mobile Broadband Project
- SEMC Emergency Services Communications Strategy
- DFES/WA Police Computer-Aided Dispatch (CAD) Project and proposed Interagency Collaborative Program
- DFES Rural Fire Division, bushfire risk mitigation activity and Bushfire Centre of Excellence
- State Bushfire Level 3 pre-formed teams
- Recovery Waste Management Project
- State Bushfire Consultative Committee.



SPOTLIGHT

State-level health exercise – Centum

In May 2018, the Department of Health’s Disaster Preparedness and Management Unit (DPMU) hosted a multi-agency mass casualty exercise. The aim was to assess the capacity of WA emergency services to manage a ‘casualty surge’ during the response to a pretend terrorist act. The exercise was undertaken in three stages:

- a series of Health Response Team drills
- a multi-agency field exercise
- a functional hospital exercise.

The field exercise was held on 1 May at Claremont Showgrounds and involved more than 250 personnel, including 90 volunteer ‘casualties’ with realistic injuries using special effects make-up techniques called moulage (Figures 27 and 28).



During moulage



Finished product

Figure 27. The application and result of special effects make-up.
Source: Department of Health

Exercise Centum was more than nine months in the planning. The steering committee was led by the DPMU, with representatives from WA Police Force, St John Ambulance, DFES, Red Cross and seven metropolitan hospitals.

The complex EM scenarios covered in the set of exercises involved a series of mock terrorist attacks in the metropolitan area, including a car vs bus scenario, multiple armed offenders, an explosive hazardous chemical device, a siege, and simultaneous coordinated attacks on the metropolitan rail network.



Figure 28. Multi-agency response to Exercise Centum scenario.
Source: Department of Health



SPOTLIGHT

The exercises sought to measure and test six strategic objectives along with a further six agency-specific objectives and 54 hospital-specific code brown (external emergency) objectives. The strategic objectives tested:

- activation and deployment of the Health Response Team
- command, control and coordination
- hospital code brown plans
- interagency and intra-agency communication
- Register Find Reunite
- deployment of the WA Police Force Forensic Division Hazardous Area Response Team.

The field exercise enabled Health Response Team personnel from across the metropolitan area to experience deployment to the field, working with other agencies to manage casualties before transport to hospital. This included liaising with agencies at the scene, establishing command structures, and working closely with ambulance personnel to quickly and effectively triage, treat and transport over 150 casualties.

The functional exercise was held on 17 May with more than 300 personnel in attendance. They participated in an Emergo Train System (ETS) disaster simulation exercise. ETS is an internationally recognised healthcare exercise tool that uses 'guber' magnets (Figure 29) on a series of whiteboards (Figure 30) to track movement and care within a hospital. The gubers depict different departments within the hospital as well as the staff and resources available to manage those casualties.

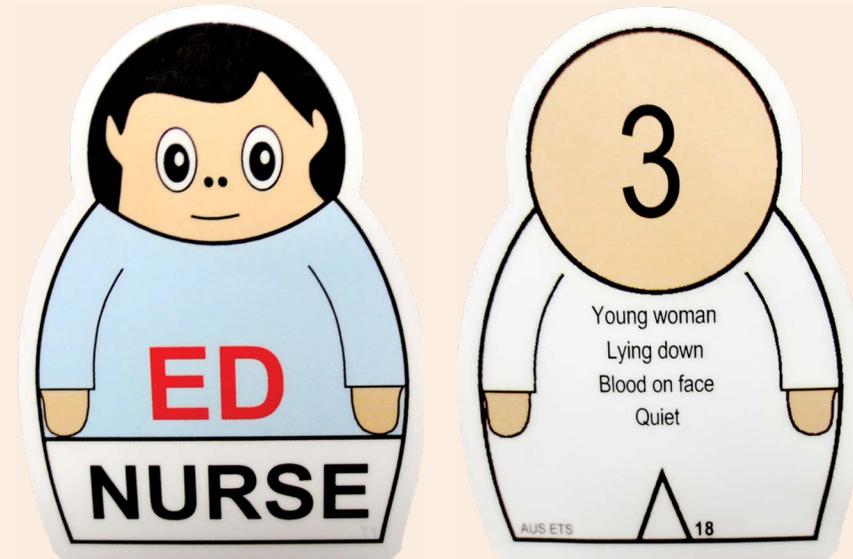


Figure 29. Emergo Train System (ETS) – guber magnets.
Source: Department of Health

The system replicates in real time each individual patient's journey from their initial presentation to the emergency department through to radiology, operating theatres, intensive care, and general wards. This type of exercise is designed to assess clinical and resource-based decision making and time management during a casualty surge.



SPOTLIGHT

The functional exercise focused on receiving over 650 casualties into the metropolitan health system, and tested and evaluated the plans in place to cope with a casualty surge. This occurred across emergency departments, operating theatres, intensive care units, medical imaging departments, wards, and emergency operations centres.

A key benefit of Centum has been strengthened working relationships between emergency response agencies and the opportunity to promote awareness of the role and capability of the Department of Health in mass casualty response. The exercises also provided key agencies with an opportunity to exercise their own response plans as well as to assess the level of integration and interaction with health services in the field.

The evaluation and outcomes of Centum will inform future initiatives and continue building on the state's capacity, preparedness and capability to respond to mass casualty incidents in the future.



Figure 30. WA Health staff track 'gubers' through the system.
Source: Department of Health

5.29 Mass casualty management

Achievement objectives

- Pre-hospital – mass casualty management services are available, timely and sufficient during an emergency event. This includes pre-hospital treatments of first aid (physiological and psychological), ambulance, aeromedical retrieval and medical teams.
- Hospital – mass casualty management is considered within workforce and surge planning, including the provision and maintenance of specialist services, community health and early discharge programs.

Key finding

- St John Ambulance and WA Health are the primary agencies involved in dealing with and managing the impacts of a mass casualty event.
- In a regional setting, the capacity and available resources drop off more quickly than in an urban setting.
- A high volume of demand on specialist services would quickly outstrip available capacity.

Dealing with a mass casualty incident involves a range of activities as people are treated and triaged at the scene and then transitioned through the health system – from immediate first aid and triage onsite to transport (by ambulance or aeromedical services) first to hospital response teams and then through to specialist and general hospital services.

WA Police Force and DFES reported a role in the provision of first aid and on the periphery of aeromedical evacuations. The Department of Defence reported significant additional capabilities that are available and can be brought to bear if called upon during a major emergency.

Apart from minor roles identified by other agencies, St John Ambulance and WA Health are the primary agencies involved in dealing with and managing the impacts of a mass casualty event.

A major failure of information gathering for the *Emergency Preparedness Report 2017* was that the difference between metropolitan and regional responses was not appropriately recognised. In determining the relative size and impact of an event, the overall population of the state was used (consistent with National Emergency Risk Assessment Guidelines or NERAG). This meant that the calculation produced consequence levels that were virtually impossible to achieve within a rural or regional setting.

This miscalculation was remedied in 2018 by splitting the regional and metropolitan populations to reflect both population size and density. As a result, the amendment means that an event categorised as ‘catastrophic’ is possible in regional areas but only during large events (such as major show days) when populations both converge and swell (Table 5).

Ambulance

A critical element that was introduced in 2018 was the notion of delivering injured people to a ‘point of definitive care’. This term is well understood within medical circles but not as well known outside. The point of definitive care involves delivering a patient not just to the nearest hospital but to the nearest destination where they can get the care (e.g. burns, paediatrics) they actually need. This distinction is vital in the assessment of the care and management of impacted people.

Both St John Ambulance and WA Health reported that ambulance personnel and services were available, sufficient, accessible, maintained and, where possible, predeployed to high-risk locations. It is interesting to note that there were differences of opinion about the regional capacity that was available. St John Ambulance commented that some regional areas were well resourced but others, due to isolation, would be challenged.

Table 5. Sufficiency of personnel to manage mass casualty incidents for three incident scales

Perth metropolitan area			
Number of injuries to manage*	Moderate	Major	Catastrophic
	202 injuries	2022 injuries	20,220 injuries
WA Health	Substantial	Some	Limited
St John Ambulance	Sufficient	Substantial	Some
Regional WA			
Number of injuries to manage	Moderate	Major	Catastrophic
	54 Injuries	537 injuries	5369 injuries
WA Health	Some	Limited	Very limited
St John Ambulance	Sufficient	Sufficient	Unsure

* Number of patients to manage and transport to an appropriate hospital within an acceptable timeframe.

St John Ambulance noted that while surge and redundancy planning was in place, as the scale of an emergency event escalated, impacts would be felt on business-as-usual service delivery. St John Ambulance have five emergency support vehicles and several response trailers capable of dealing with mass casualty emergencies. A sixth emergency support vehicle was due to be operational by July 2018 with a seventh to be built and delivered in mid-2019.

Aeromedical services

The Royal Flying Doctor Service (RFDS) is the main agency providing aeromedical evacuation and transfers in WA.

Contracted to WA Health, the RFDS services more than 2.5 million square kilometres using 17 aircraft at five separate bases at Jandakot, Kalgoorlie, Meekatharra, Port Hedland and Broome.

The State Government, with sponsorship from the Royal Automobile Club (RAC), funds the emergency rescue helicopter service. This service is managed by DFES and operates two helicopters (R651 and R652) from Jandakot and Bunbury. Each aircraft has a pilot, an air crew officer and a St John Ambulance critical care paramedic.

Resource companies also operate a range of aerial assets around WA. While not directly involved in the EM sector, these assets have been both offered and called into action as surge capacity when required. In addition, the Australian Defence Force has considerable aerial assets that may also be called upon, if required and requested.

Health response teams

WA Health reported high levels of planning for emergency incidents. They noted formalised plans for health response teams that were tested, effective, reliable and embedded within the organisation. Further, they reported significant capacity within the metropolitan area, while acknowledging limitations as the scale of any incident increases.

Within a regional setting, planning for emergencies remained high; however, the capacity and available resources dropped off more quickly. Equipment in the metropolitan area is available to all hospitals. In regional WA, however, it is only available at select sites, depending on which local risks have been identified. Personnel numbers heavily restrict capability in remote areas.

WA Health also identified that a high volume of demand upon specialist services (such as burns and paediatrics) would quickly outstrip available capacity.

5.30 Mass fatality management

Achievement objective

- Services are available to deal with a mass fatality incident. This includes body recovery, disaster victim identification, mortuary, burial and cremation services, and the management of information.

Key findings

- HMAs report having the capability to fully deal with moderate and major events.
- For catastrophic events, they would need to draw upon plans in place and obtain interstate and Commonwealth assistance.

In Australia, we have been getting better (or more fortunate) at reducing the death toll of major emergencies. While property damage still occurs, large numbers of casualties and deaths are less common. The EM sector across the country has widely embraced the doctrine of **'primacy of life'** while noting the need for more coherent, sophisticated, coordinated and timely emergency messaging to the community.

The 2009 Black Saturday fire disaster in Victoria resulted in the deaths of 173 people and the destruction of 2000 homes. Since this time, nature has continued to generate major events across the country that resulted in catastrophic consequences. While the economic consequences of these emergencies have been high, the loss of life has not been as great. Certainly, the sector has increased its preparedness and emergency messaging, but people have also learned the **'leave early and live'** message (Emergency Management Victoria 2015).

While increased awareness may be the case for bushfire in Victoria, the same level of alertness to consequences is unlikely across the entire country. Alertness to all 27 hazards (prescribed within WA legislation) is even less likely.

Within an EM context, only WA Police Force, DFES and WA Health play an active role in mass fatality management. WA Police Force and DFES engage in both body recovery and disaster victim identification (DVI); WA Health and the police deal with mortuary services for victims. The management of burials and cremations takes place outside regular EM engagement, conducted and coordinated by funeral directors and the Metropolitan or Regional Cemetery Boards.

For body recovery and DVI, WA Police Force reported having the capability to fully deal with moderate (25) and major (258) level events. However, for a catastrophic-level event (2580), they would need to draw upon plans in place to obtain interstate and Commonwealth assistance.

WA Police Force and WA Health both identified that existing mortuary services would cope adequately with a moderate event. They also noted that arrangements were in place to establish a temporary emergency mortuary to meet any surge occurring from a major event. A catastrophic-level event would need planning to achieve additional or surge capacity.



SPOTLIGHT

The Spanish flu – 100-year anniversary

It has been 100 years since the Spanish flu infected over one-third of the global population (an estimated 500 million people) and killed between 10 and 20 per cent of those infected (50–100 million people). The Spanish flu was an antigenically novel (changing over time as the virus replicates) subtype of influenza with a case fatality rate of five to 20 times higher than any other flu pandemic. This strain was able to simultaneously infect both the human population and swine (Figures 31 and 32).

Could a 1918-like pandemic appear again?



Figure 31. A gym in Iowa, US, transformed into a temporary hospital during the 1918 Spanish influenza epidemic



Figure 32. Edvard Munch's Self-Portrait after the Spanish Flu. Infectious disease medicine has come a long way, yet Munch's spectre of the flu is alarmingly current

The founding treaty of the League of Nations that was formed after World War I listed the prevention and control of disease as one of its matters of international concern. The subsequent methods they adopted are still in use today:

- early warning systems (at that time communicated by telegraph)
- health-related research
- standardised use of vaccinations
- crisis response with on-the-ground prevention and health education.

All flu pandemics since that time have been caused by descendants of the 1918 virus. Certainly, our medical knowledge has come a long way.



SPOTLIGHT

Improved medical care, antiviral and antibacterial drugs and vaccines, coupled with advanced surveillance systems, have limited death rates.

But at the same time, people's mobility has increased. We travel more often, more quickly and more widely than ever before. It is possible that a comparable strain of influenza could affect the entire globe within a matter of weeks. With the global population growth that has occurred since 1918, a similar infection rate would see over 2.5 billion people affected today, with a potential 500 million deaths.

How prepared are we?

Australia has had a formalised Pandemic Influenza Plan since 2005. Key aspects of the plan are the importance of making use of existing systems as the basis of a response, risk analysis to support evidence-based decision making and an emphasis on communication. Previously, pandemic planning was aimed at worst-case scenarios but the 2009 H1N1 outbreak brought to the fore the need for flexibility in the scale of response.

The new *Public Health Act 2016 (WA)* provides a modern framework for the prevention and control of infectious diseases. It also introduces serious emergency powers to be used in the event of an outbreak, such as pandemic influenza or the Ebola virus. These emergency health powers include the power to:

- search, inspect, disinfect and/or close premises
- direct people to remain quarantined and undergo medical management
- direct the movement and evacuation of people
- control the flow of drugs, vaccines and vehicles.

In August 2014, the World Health Organization declared the outbreak of Ebola virus disease in West Africa a 'Public Health Emergency of International Concern'. This declaration tested WA's Westplan Human Epidemic and prompted a review of Ebola preparedness. The review amounted to a state-level, multi-agency examination of procedures that included:

- updating guidelines
- employing intra-agency and interagency communication strategies
- rolling out training in the use of personal protective equipment
- reviewing designated quarantine hospitals
- examining metropolitan hospital emergency departments.

A new State Hazard Plan Human Biosecurity is currently being developed. The plan will combine an updated Westplan Human Epidemic and the Biosecurity components of Westplan Chemical, Biological, Radiological and Nuclear. It will include guidance around the accidental release of a biological substance and clarify stakeholder responsibility.

WA Health's Infectious Disease Emergency Management Plan outlines how the health system will undertake its legislative responsibilities to prepare for and respond to an infectious disease emergency. This plan would be activated in parallel with Westplan Human Epidemic and includes strategies to manage a flexible, scalable and proportionate response with appropriate and timely interventions and allocation of resources.

5.31 Welfare

Achievement objective

- Welfare and social services are available, timely and sufficient during or immediately after an emergency event. This includes critical support services and communication plans to inform affected people of impacts.

Key findings

- LGs are confident that appropriate evacuation centres have been identified in their districts.
- The one element of welfare that is unknown is how long services will be required.
- Most LGs believe that less than one-quarter of their communities have a plan in place.

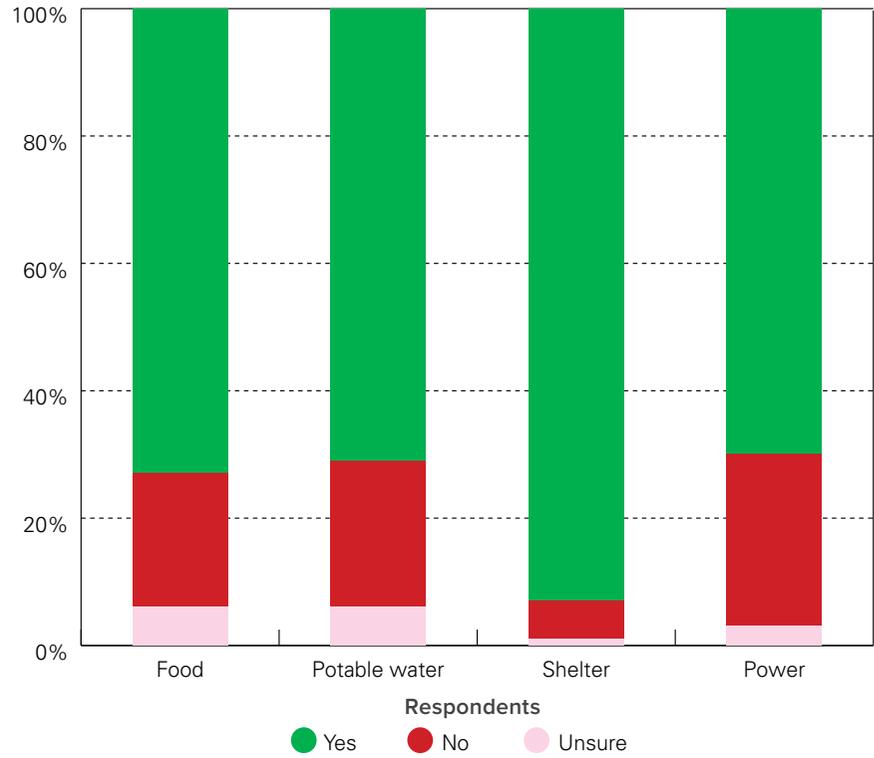
Lack of community preparedness may be linked to a greater reliance on welfare services during the evacuation phase. When asked whether community members had emergency action plans in place, 81 per cent of LGs said they believed that less than one-quarter of their communities had a plan in place.

Almost three-quarters (73%) of LGs reported that appropriate evacuation centres had been identified. Interestingly, 15 LGs claimed not to have a role in evacuations. However, maintaining the provision of essential services might be an issue for some of these centres, particularly in relation to accessing food (21%), potable water (23%) and power (27%).

LGs reported that community services were available (92%), timely (85%) and sufficient (75%). Across the board, this was an improvement from 2017.

The Department of Communities have plans in place and estimate that they are able to provide welfare support for all displaced community members for moderate-level and major-level disasters in both metropolitan and regional areas. While capabilities for catastrophic-level events remain untested, the department noted that the machinery-of-government changes since 2017 had provided a larger workforce pool to draw upon.

Redundancies within evacuation/welfare centres to maintain essential services:



Acknowledging a training component (and the associated lag time), they have increased capacity significantly and established effective structures. Red Cross is also well placed to fulfil their role of supporting displaced people as outlined in the State Welfare Plan. Both agencies have formalised plans to support displaced people for up to 18 months post-emergency.

The Department of Communities reported having formalised plans in place to support people (and their friends and family) who are directly impacted by an emergency. The plans capture provisions for the people's wellbeing and ongoing mental health.

LGs varied in their responses, with some believing that welfare was the singular responsibility of the Department of Communities. Others, however, acknowledged the important role that they could play in providing ongoing coordination and support for their communities.

One LG noted they had programs in place to identify vulnerable residents and that their LEMA contained detailed information of special needs groups. Several organisations noted that organisational support was available to their staff and volunteers and their families. It is encouraging to know that those who respond to emergencies and protect our communities have emotional and psychological support available for both them and their families.

The one element of welfare that is unknown is how long support services will be needed. For example, some victims of the 2009 Victorian Black Saturday fires continue to need ongoing emotional and welfare support almost a decade after the fires.

5.32 Impact assessment

Achievement objective

- Agencies have the ability to undertake and complete comprehensive impact assessments (CIAs) across the natural, built, social and economic environments. These findings inform recovery coordination and future EM planning.

Key findings

- The CIA process continues to evolve.
- Impact assessment is of most use when it is done collaboratively.
- LGs highly value the CIA process.

To assist recovery from a major emergency, the EM sector has developed the process of comprehensive impact assessment (CIA). The process captures information about what is lost or damaged during an emergency. It identifies significant impacts and guides recovery activity. The CIA, which is the responsibility of the Controlling Agency and is to be completed before the cessation of the response phase, should:

- provide an understanding of the current circumstances
- facilitate management of the recovery efforts
- aid in prioritising recovery activities.

Due to the frequency and nature of emergency events, HMAs have different levels of experience in coordinating impact assessments. For example:

- DFES has well-practised templates and Rapid Response teams trained to undertake initial assessments.
- The Department of Health and DPIRD expressed concern that the CIA template may not be fit for purpose for hazards such as Heatwave, Human Epidemic and Biosecurity.

Accordingly, the CIA process and template is due to be reviewed in 2018 to ensure it is suitable and scalable for all event types and contexts.

Learnings from recent events have shown that a CIA is of most use when it is developed collaboratively and in consultation with key stakeholders (incident support group members, affected LGs and the State Recovery Coordinator).

Almost all essential service providers and 68 per cent of LGs reported having the ability to contribute to the comprehensive impact assessment process. Qualitative responses indicated an apparent variation in capability and understanding of the CIA. There was a tendency among some LGs to focus on the infrastructure and environmental health components of the assessment, whereas others reflected a solid understanding of the need to assess impacts across all four key areas of the ‘recovery environment’ – built, social, economic and natural.

LGs highly valued the completed CIA because it informed their EM practices:

- recovery coordination (74%)
- EM planning (72%)
- prioritising prevention/mitigation (66%).

The perceived value of the CIA is further endorsed by qualitative responses: “This assessment forms the basis of all decisions involved in recovery” and “The issues in the CIA are examined and used to develop and improve City plans and other relevant documents.”

Ensuring that the CIA process is efficient, scalable and applicable to all hazards and contexts will be a valuable contribution to the EM sector in WA.

5.33 Recovery coordination

Achievement objective

- Agencies have the ability to undertake and complete comprehensive impact assessments across the natural, built, social and economic environments. These findings inform recovery coordination and future EM planning.

Key finding

- LGs are well acquainted with their obligation to manage recovery and reported having plans in place.
- Many LGs perceived resource limitations across all four recovery environments.
- Many LGs in Western Australia have limited resources to sustain recovery efforts over the long term.
- The reestablishment of community activities should be prioritised.

Recovery activities after an event take place across four key areas that have become known as the ‘recovery environment’. These are the built, social, economic and natural environments.

The vast majority of LGs are well acquainted with their obligation to manage recovery and they reported having recovery plans in place. However, they again expressed concern about the level of resources available at the local level to undertake recovery. Many LGs perceived resource limitations across all four recovery environments.

Around half of LGs (apart from the 12% that did not respond) categorised themselves as having ‘none’, ‘very limited’ or ‘limited’ resources to reconstruct/restore services:

- Built (46%)
- Social (46%)
- Economic (55%)
- Natural (50%).

They reported more confidence in the skills of their people to support recovery; however, few reported the level of those skills reached the ‘comprehensive’ or ‘substantial’ class.

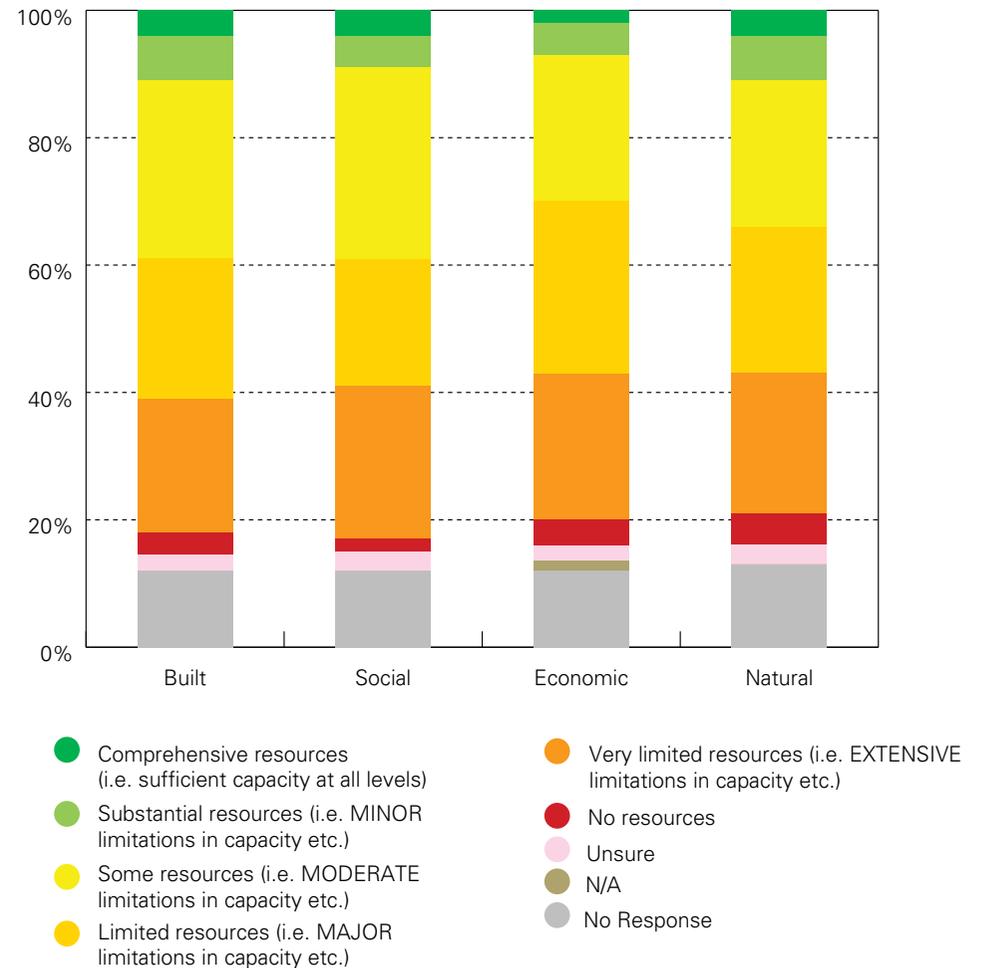
The National Principles for Disaster Recovery (newly reviewed) reiterate that successful recovery requires “a long-term sustained effort as needed by the community”. Many LGs in Western Australia reported having ‘no’, ‘very limited’ or ‘limited’ resources to sustain recovery efforts over the long term:

- 3 months (39%)
- 6 months (51%)
- 12 months (56%)
- 18 months or more (57%).

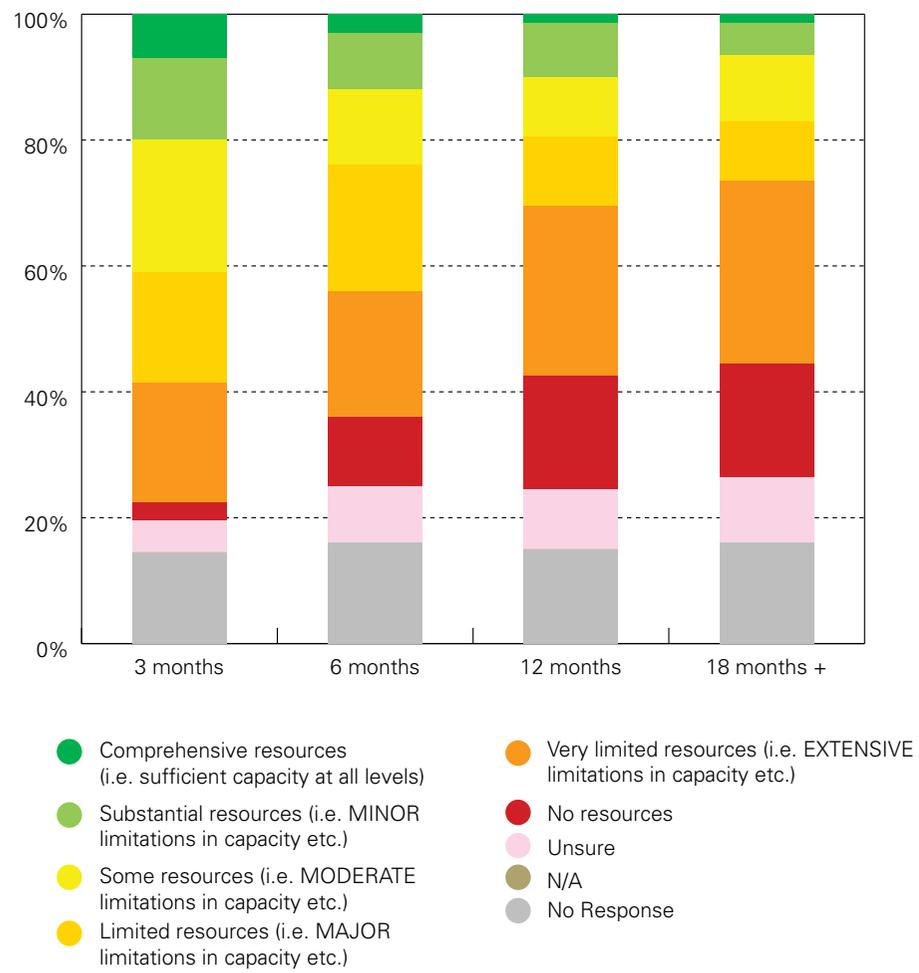
Between 5 and 10 per cent of LGs reported they were ‘unsure’ about their resources to sustain a recovery response. Many also reported limitations in the number of recovery staff.

It is well recognised that the sooner a community returns to its normal functioning after an emergency, the sooner it begins to heal from the trauma of it. The [Community Recovery Handbook](#) (2018) highlights the importance of reconnecting people with their families, friends and community networks as soon as possible after an emergency.

LG resources to support reconstruction/restoration in these environments:



LG resources to sustain a recovery response for:



Many LGs noted that while their recovery plan considered reestablishing some community activities (e.g. cultural and community events, schools), the information tended to be generalised rather than specific.

Only 10 per cent have recovery strategies firmly in place. More than one-quarter (27%) reported having no strategy at all.

Given the importance placed on the value of community networks, the reestablishment of community activities is an area to be prioritised among recovery stakeholders.

Some LGs reported they had access to a range of internal emergency recovery funds. These included reserve funds in general revenue, municipal funding and annual budget allocations to a 'recovery fund'. However, depending upon the size and scale of an emergency, these funds may be insufficient, with councils requiring further assistance under WANDRRA.

Most LGs (61%) reported that funding was available for recovery activities following an emergency and half viewed it as 'accessible'. Only 28 per cent believed it was 'sufficient'.

The national handbook *Communities Responding to Disasters: Planning for Spontaneous Volunteers* identifies that recovery is more effective when events are 'anticipated, planned for and integrated with the formal EM system'.

Many community members want to help after an emergency and finding ways to harness this goodwill is an important aspect of effective recovery coordination. Poor management of recovery efforts, however, can create a burden for both the impacted communities and the organisations helping them.



Impact 06

06 Impact

2017–18 was a very busy wet season in the Kimberley with some of the highest rainfall since records began. Strong winds uprooted trees, which caused damage to some buildings. However, the most severe damage was caused by flooding to the road network.

6.1 Flooding in the Kimberley

The Kimberley wet season brought record-breaking rainfall (Figure 33). The entire district was affected by weather events to some degree, with most storms and cyclones influencing the western Kimberley. The frequent wet weather events saturated the ground, exacerbating the impact of subsequent incidents.

This frequency of occurrence, coupled with saturated soils, resulted in extensive damage, including the uprooting of large trees from already drenched soil. Significant damage was sustained, particularly to state and local roads, as floodwaters eroded the shoulders and embankments. These left some communities (including the towns of Broome and Derby) isolated on a number of occasions. Supermarkets across the Kimberley ran low on fresh food because trucks transporting goods were unable to service the region.

WANDRRA was activated for four of the five identified wet season weather events. All Kimberley LG districts were subject to at least one WANDRRA proclamation, with the Shire of Broome being cited in all four. The total cost for repairs to roads and associated infrastructure throughout the region was estimated at \$30 million.

Staff from Main Roads and shires within the Kimberley worked throughout the wet season, in often challenging conditions, to ensure roads were opened in a timely manner and with appropriate consideration for drivers' safety. Sometimes, only temporary repairs could be made due to the regularity of the weather events, but this allowed road access for locals, tourists and transportation companies. Permanent repairs were undertaken in the following dry season.

Rainfall Deciles (AWA grids 1900-pres.) 1 November 2017 to 30 April 2018
Distribution Based on Gridded Data
Australian Bureau of Meteorology

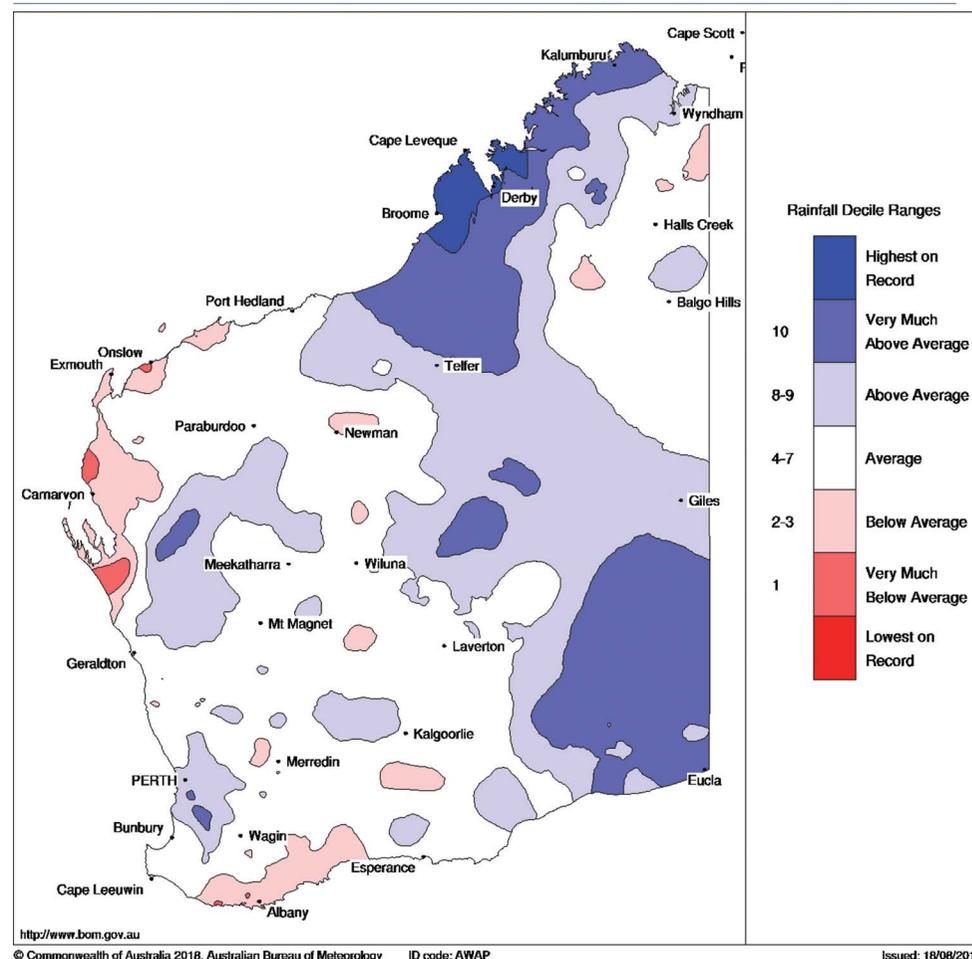


Figure 33. Rainfall deciles from 1 November 2017 to 30 April 2018.
Source: Bureau of Meteorology

Shire of Broome

The Shire of Broome was impacted first by Tropical Cyclone (TC) Hilda in December 2017. TC Hilda was followed by TC Joyce in January 2018, a major tropical low in late January and TC Kelvin in February. Much of the shire experienced its highest rainfall since records began.

TC Hilda brought 94.4 mm of rain to Broome and surrounding areas. Ensuing events delivered rainfall totals of 158.8 mm, 697.2 mm and 504.8 mm respectively, resulting in a wet season record of 1455.2 mm. West Roebuck (south of Broome), which captures rainfall data for Roebuck Plains, recorded an overall wet season rainfall of 1730.4 mm, the highest on record.

Local roads within the Shire of Broome were damaged by numerous events (Figure 34), with impacts often compounded by the preceding event.



Figure 34. Road closure at Town Beach Reserve, Broome. Source: Main Roads WA

The Cape Leveque Road is the main route to the Dampier Peninsula. Nearly half of the road is unsealed and it is regularly closed during the wet season due to flooding. The record-breaking rainfall during the 2017–18 wet season resulted in major damage to the road, leaving remote Aboriginal communities isolated on a number of occasions. This prompted the Commonwealth and State Government to fund the sealing of the remaining 90 km of the Cape Leveque Road. This project will enhance resilience and lessen the impacts of future events. The completion date has been set for November 2020, with the project costing more than \$65 million.

The Great Northern Highway is the main transportation route in and out of Broome and is the lifeline that ensures food stocks and other essential supplies to the community. During the wet season, the Great Northern Highway was closed on several occasions due to extensive damage, delaying the delivery of road freight into the region.

Alternative means of transportation were considered to ensure the continued supply of essential goods. For example, a major supermarket commenced air deliveries to ensure supplies reached Broome. Main Roads WA issued permits to travel the Great Northern Highway to freight companies with vehicles of a suitable height to safely make the journey.

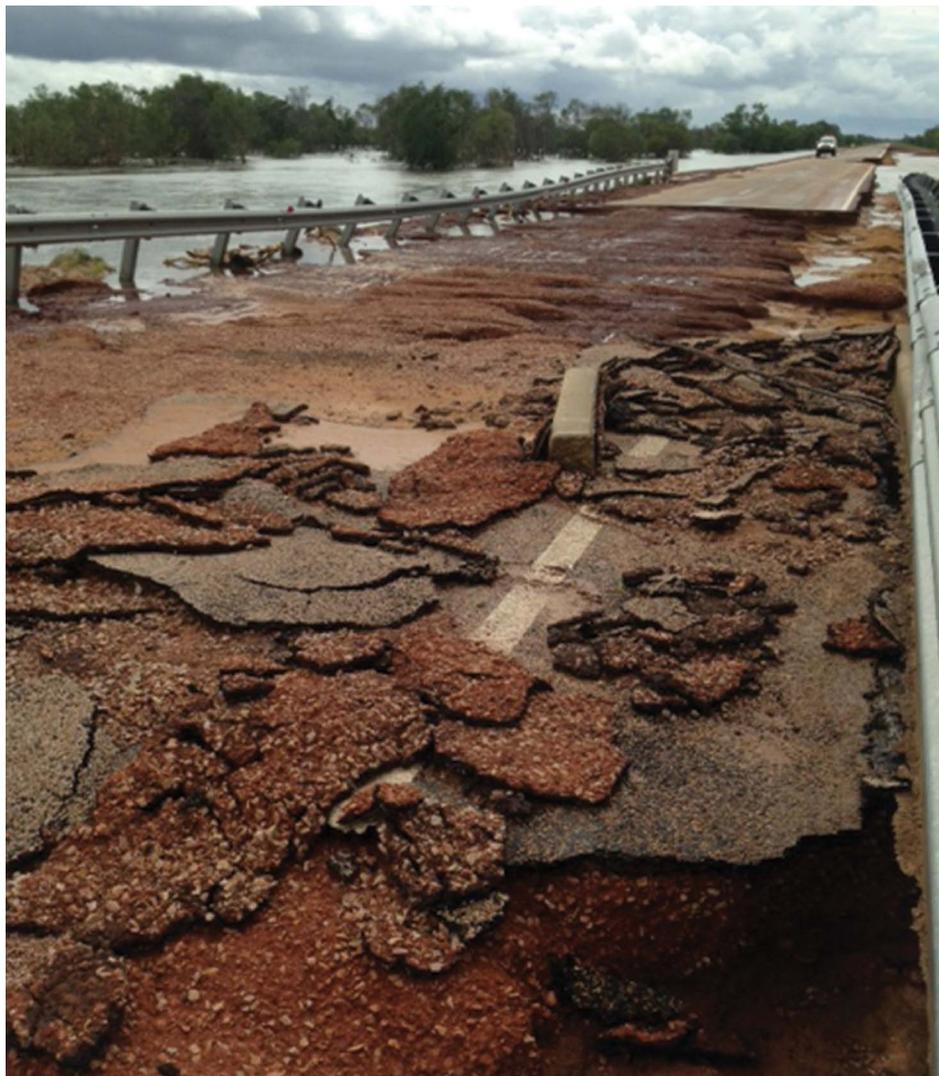


Figure 35. Flood damage to the Logue River bridge in the Kimberley.
Source: Main Roads WA

Shire of Derby – West Kimberley

The Shire of Derby – West Kimberley sustained major damage to state and local roads from rainfall generated by TC Kelvin and a major tropical low in January 2018 (Figures 35 and 36). The shire was included in WANDRRA declarations for both of these events.

The region experienced a ‘very much above average’ (Bureau of Meteorology) wet season rainfall with a total of 901.6 mm. The shire’s local roads were significantly impacted, including a number of roads in the Hamlet Grove subdivision, about 10 km from the town centre. The volume of floodwater in Hamlet Grove was so great that the shire had to construct temporary drainage to divert water away from roads and properties in an effort to mitigate the impacts.

The closures of the Great Northern Highway left the town of Derby cut off to the south and unable to receive essential supplies by road; however, the town did not suffer significant food shortages.

Shires of Wyndham – East Kimberley and Halls Creek

While the eastern Kimberley had a relatively mild wet season, rain events did warrant two WANDRRA declarations due to damage sustained to local roads. The Shire of Wyndham – East Kimberley was named in WANDRRA activations for the tropical low, as it was for TC Kelvin in February 2018. The Shire of Halls Creek was named in the WANDRRA declaration for the January tropical low but did not proceed with a claim.

Closure of the Great Northern Highway, over Roebuck Plains, resulted in delays of food and other supplies into Kununurra and Halls Creek. At one stage, Kununurra was being resupplied via the Northern Territory.



Figure 36. Flood damage near the Logue River bridge in the Kimberley.
Source: Main Roads WA

The final wet season weather event was TC Marcus in March 2018. This cyclone impacted the remote Aboriginal community of Kalumburu in the Shire of Wyndham – East Kimberley, with the impacts limited to uprooted trees and strewn vegetation.

6.2 WANDRRA

Most post-disaster state and Commonwealth funding is supplied to reinstate essential public assets, predominantly state and LG roads. The cost of WANDRRA works undertaken in 2017–18 was \$87.2 million. Repair and reinstatement of the road networks made up 99 per cent of the estimated claim for WANDRRA in 2017–18.

These costs followed major flooding the preceding year that affected more than 92 LGs.

In the 2018 survey, LGs indicated they had a limited understanding of WANDRRA. As part of the rollout of new funding arrangements that were announced in June, consultation with LGs is occurring to improve the overall awareness of the disaster funding arrangements available.

WANDRRA eligible events during 2017–18 include:

- AGRN 768 – Flooding in the Great Southern
 - 25 and 26 September 2017
 - Albany, Denmark, Plantagenet
- AGRN 780 – Tropical Cyclone Hilda and associated heavy rainfall in Broome and West Kimberley
 - 27 December 2017
 - Shire of Broome

- AGRN 781 – Rainfall following Tropical Cyclone Joyce
 - 11–16 January 2018
 - Dandaragan, Upper Gascoyne, Victoria Plains, Wongan–Ballidu, Moora, Gingin, York, Cunderdin, Quairading, Dalwallinu, Northam, Broome, Murchison, Meekatharra, Chapman Valley, Beverley, Ashburton
- AGRN 787 – Tropical low and associated flooding in the Kimberley and East Pilbara regions
 - 29–31 January 2018
 - Broome, Derby – West Kimberley, Wyndham – East Kimberley, Halls Creek, East Pilbara
- AGRN 793 – Tropical Cyclone Kelvin and associated flooding
 - 17–19 February 2018
 - Broome, Derby – West Kimberley, Wyndham – East Kimberley, Laverton

6.3 Cross-sectoral initiatives

Structure

Significant structural change has taken place in the EM sector during the year, at both Commonwealth and state level. In one example, as part of WA's Review of Government Services, the Office of Emergency Management (OEM) was integrated into DFES from 1 July 2018.

Considerable progress has been made in implementing the recommendations and opportunities for improvement from the 2016 Ferguson Review into the Waroona bushfire. The most notable of these was the April 2018 announcement of the establishment of a rural fire reform package that included:

- the establishment of the Rural Fire Division (RFD) within DFES

- the establishment of a new \$18 million Bushfire Centre of Excellence within the RFD
- additional funding for bushfire mitigation activities
- new support measures for volunteers.

The package will further enhance bushfire management in WA, placing greater emphasis on training and mitigation activities, and strengthening partnerships with volunteers.

Collaboration

The Commonwealth has discussed new Disaster Relief Funding Arrangements with the states and territories, due to commence on 1 November 2018. In summary, the two main drivers of the arrangements have been to:

- improve the assurance process underpinning disaster funding
- implement a process based on estimates for the repair of essential public assets rather than the actual reimbursement of costs.

Both of these will require significant changes to state processes and systems. In addition, much consultation was required to support all state agencies and LGs in preparing for the new regime.

The State Government held a Bushfire Mitigation Summit in Mandurah in June 2017. The summit addressed a number of bushfire management issues, including how a rural fire service could operate. The rural fire reform package reflects some of the outcomes from the summit. A Bushfire Management Advisory Forum, with a greater focus on volunteers, is proposed for October 2018.

The SEMC created the Recovery and Community Engagement Subcommittee by merging two previous subcommittees. This move reflects changes in Commonwealth arrangements.

The State Bushfire Advisory Council was established. The council took over and expanded the remit of the previous State Bushfire Coordinating Committee (SBCC). A draft State Bushfire Management Policy has been developed to guide decision makers in bushfire management.

Dealing with animals in emergencies has been a difficult issue for response agencies for many years. The SEMC has assigned DPIRD responsibility for animal welfare in emergencies. A State Animal Welfare Emergency Coordinator was appointed in February 2018 and a draft State Emergency Animal Welfare Plan has been produced for consultation with stakeholders.

A State Waste Management Project was conducted to clarify issues around waste management following an emergency (such as disposing of asbestos). The project identified and clarified the skills, equipment, systems and licences/approvals required. This has now progressed to a Local Waste Management Project that has established a preferred client panel that will identify appropriate waste contract providers.

Through the Public Communications Management Project, three organisations (WA Police Force, the Public Information Reference Group (PIRG) and the Recovery Communications Project Advisory Group) completed the development of Communicating in Recovery Guidelines.

Risk awareness and treatment

As reported in previous *Emergency Preparedness Reports*, weather and climate factors in EM are accelerating. Weather events are becoming larger and more frequent and their impacts are increasing.

The State Risk Project focused first on local-level rollouts and treatment workshops. These workshops have significantly increased understanding by LGs of their EM risks and what is required to ameliorate them. LGs have made encouraging progress; at the time of writing, almost 100 LGs had commenced local-level rollout.

The higher level stages of the process had assessed a number of risks as 'high' or 'extreme', so potential mitigation options were developed. Who owns these risks and who can treat them are the next matters to be tackled. Some treatment strategies fall outside the authority and scope of LGs, and they have little influence over those with the capacity to treat them. Hence, the SEMC endorsed a proposed new risk treatment model for consultation.

DFES represents WA on the National Resilience Taskforce, which was established in April 2018. The aim is to enhance and better target investment in mitigation and building resilience so the overall cost of disasters is reduced.

The work over the past five years to determine our risk profile and existing capabilities sees WA well placed. Representation on the taskforce will ensure the national framework accommodates the circumstances of our state and that we are able to capitalise on the investments we have already made in understanding our risk, capability and preparedness level.

Resourcing

EM stakeholders regularly raise funding and resourcing for mitigation and recovery as issues. Substantial additional funds for bushfire mitigation activities were provided during the year as follows:

- DBCA and Parks and Wildlife was in receipt of \$20 million in funding (progressive over four years) from Royalties for Regions for a prescribed burning program. This specifically targeted works in the south-west.

- In November 2017, the Government established a \$15 million bushfire Mitigation Activity Fund (MAF) to proactively treat extreme, very high and high bushfire risks. This mitigation activity is occurring along with the rollout of the DFES Bushfire Risk Management Planning Framework. Funding has been specifically allocated to expand the treatment of bushfire risk. The focus will be on state-held lands in and around regional town sites.
- In April 2018, as part of the rural fire reform package, the Government announced an additional grant of \$35 million for mitigation on Crown land through the Rural Fire Division.
- The Natural Disaster Mitigation Program fund has been established to reduce vulnerability to natural hazards. The program, which aligns with the National Strategy for Disaster Resilience, makes up to \$5 million available as part of a competitive grants program.
- Together with the establishment of the Rural Fire Division, an additional \$18 million has been set aside to establish the Bushfire Centre of Excellence. This funding will become available once a suitable location, format and design for the centre have been determined.

Interoperability

On 3 December 2017, an IT platform to link each agency's WebEOC capability together went live. The launch of WebFusion brought to a close a long-running project that ensured the interoperability of the State Crisis Information Management System. The system will now be monitored by the WebFusion Owners Group, which is chaired by WA Police Force.

Emergency Alert is a telephone-based national emergency warning system managed by Emergency Management Victoria on behalf of all states and territories. Contracts for the current service will expire on 30 June 2019. Negotiations are continuing to provide a new solution (Emergency Alert Phase 4) by 1 July 2019. The national governance body for Emergency Alert will continue to work to ensure the new solution meets the requirements of the state.

The Commonwealth, state and territory governments are continuing to work to develop a Public Sector Mobile Broadband capability. This capability refers to the use of mobile (wireless) data communications by law enforcement and emergency service organisations. At present, no public safety-grade mobile broadband service can be relied upon to support mission-critical communications.

In May 2018, the East Asia Summit International Disaster Assistance Workshop was held in Perth (Figures 37 and 38). The summit brought together 18 member nations to explore closer regional EM integration and cooperation. The Perth workshop focused on how nations would receive and respond to calls for disaster assistance.



Figure 37. Group break out session at the East Asia Summit International Disaster Assistance Workshop was held in Perth



Figure 38. The East Asia Summit Rapid Disaster Response Toolkit is an ongoing initiative since 2013



A wide-angle photograph of a long, straight asphalt road stretching into the distance. The road is flanked by dry, reddish-brown earth and sparse vegetation, including several large, leafless trees on the left and some green trees on the right. A white truck is visible in the distance on the road. The sky is blue with scattered white clouds. A teal banner is overlaid on the right side of the image, containing the text 'Conclusions 07'.

Conclusions 07

07 Conclusions

Similar to previous years, the EM sector has remained highly functioning, capable, collaborative and cooperative. However, it is noted that large-scale or multiple simultaneous emergencies will exceed the capability and resources of a single agency or jurisdiction to cope. Capacity will be stretched for ‘major’ events and likely eclipsed in the event of a ‘catastrophic’ emergency. MoG changes have partially altered the face of the sector; however, streamlining and mergers have potentially increased the pool of resources available for some agencies to draw upon.

Risk avoidance (where possible) is the best and cheapest solution. In this regard, land-use planning by LGs and developers is the best treatment. However, planning deals with future risk and does not address existing or legacy issues. In these cases, coordination and planning – coupled with (where possible) physical protection or ‘asset hardening’ – are the main alternatives left. In many cases, this is done well and to a high standard but this is by no means universal.

Compliant EM plans have become the norm across all stakeholders, with many LGs rating the review and updating of their LEMA and Local Recovery Plans as one of their major achievements. But there is still work to be done.

Stakeholders overwhelmingly reported conducting risk assessments. In 2018, LGs reported having improved their capacity to conduct compliant risk assessments and expanding the number of hazards being assessed. This enhanced risk assessment is feeding into strengthening the value of many LEMAs.

Risk awareness and understanding within the community and non-traditional EM stakeholders is still perceived to be low. While agencies report high levels of preparedness information and materials being produced and available, they simultaneously report low levels of sharing risk information. Facilitating preparedness is more than simply making information available to the public.

Perhaps the sector should divert some of their attention from **HOW** and **WHAT** you need to do and focus upon **WHY** you need to act. This change may establish realistic expectations about the capacity of emergency services and instigate action, thereby allowing people to make informed decisions to protect themselves and their families.

Most stakeholders identified telecommunications as the most fragile single point of failure, with minimal redundancies in place for critical ICT systems and networks.

7.1 Matters for the sector

Sharing, integration and coordination are the areas where most movement can be gained within the sector. It must be noted that this area is already well advanced; however, centralised risk and capability information, coupled with data sharing, may present an array of previously unconceived options for advancement.

More work could be done in engaging with non-traditional EM stakeholders such as businesses, industries and communities. There is a wealth of both capacity and ability (capability) within our communities that is coupled with extensive local knowledge. The sector should examine how best to harness and direct this largely untapped resource.

A major factor coming into focus at a national level is around the things that people value. This is a relatively new piece of work that may warrant exploration at state, district and local level.

Mitigation and resilience are likely to dominate the EM landscape over the coming few years. This will heighten the need for tangible and meaningful data to direct, guide and prioritise treatment options. This will become increasingly important so that the sector can show that government expenditure is being directed where it can do the most good.

While current arrangements are robust and have been shown to function in times of emergency, the EM legislation is undergoing review to meet community expectations of government response to emergency situations.

As is the case with many volunteer based organisations, the state's reliance upon volunteers is being challenged as a range of factors are combining to impact on people stepping forward. The need for effective sector-wide strategies to address recruitment, retention, motivation and training of volunteers will become increasingly important.

7.2 Technology

The use of technology, particularly within the communications arena, is an area that has yet to be fully utilised by the EM sector. Use of social media (for the most part) remains in its infancy. While there are some notable exceptions, the sector has been slow in keeping up with and taking advantage of new and emerging communications technologies.

In addition, most agencies operate and maintain individual systems that do not interact and connect across the sector. Often, datasets used for exposure and vulnerability are duplicated or replicated in multiple agencies. While many attempts continue to be made to unify the sector (e.g. projects such as WebFusion and the new CAD system), significant opportunities remain to better capture, harness and leverage the digital knowledge of the sector.

In an ever-growing era of 'big data', the EM sector is ripe for digital transformation – to streamline processes and to hasten access to critical information in times of crisis. Unfortunately, efficiently delivering integrated systems can be impeded by a number of factors. These include privacy concerns, the complexity of EM operations, breadth of government services and data, the difficulty of coordinating projects across departments, and the scarcity of digital talent within the public sector. These factors contribute to make digital evolution and integration projects costlier and slower than they ought to be. Meanwhile, digital transformation must be accompanied with a cultural one, with organisational cultures evolving to meet the new challenges.

7.3 Matters for the HMAs

Distance and remoteness will endure as a challenge for HMAs. This matter can only be effectively treated and mitigated through cooperation and planning.

Resourcing is sufficient for business-as-usual and medium emergencies but there is a perception that resources are insufficient for larger scale and catastrophic disasters. With this in mind, there is scope for all stakeholders to explore opportunities to develop more resource sharing and mutual assistance agreements. This should extend beyond the traditional EM stakeholders and include some non-traditional business and community engagement.

7.4 Matters for local government

Resourcing remains a common complaint among LGs with some of the smaller LGs expressing concern about their ability to carry out their legal and moral responsibilities.

Resource-sharing arrangements among LGs (such as MOUs) remain uncommon. Such mechanisms are highly valuable and can go a long way towards addressing the resource restrictions that continued to be identified by LGs in 2018. For the most part, community capabilities and networks remain an untapped resource.

DEMC and LEMC structures were reported to be effective. LGs said they broke down barriers through greater understanding and enhanced relationships. There is scope to better leverage these existing mechanisms to address resource issues and improve both local knowledge and interoperability.

While major advances have been made in the capabilities and commitment to EM by many LGs, there remain pockets of LGs that remain either disengaged or disinterested.

7.5 Matters for the community

The main issues for the community are to:

- acknowledge and embrace that they can be, and likely will be, impacted by an emergency
- take responsibility for their own safety
- choose to learn and act.



Strategic Direction 08

The Capability Framework describes the skills and knowledge needed to make WA safer, more prepared and more resilient to emergency events. However, it purposefully does not describe how an individual organisation should fulfil those capabilities. As such, agencies can leverage their unique culture and expertise to achieve improved outcomes rather than simply implementing an externally controlled process that may or may not suit all circumstances.

Throughout the consultation process, stakeholders agreed that the sector had been good at identifying lessons but not at learning them. The challenging question was, “If we identify repeated issues, can we honestly say that we are learning?”

The Lessons Management Framework provides the SEMC with a mechanism to evaluate the continuous improvement of the sector’s capabilities.

8.2 Exercise framework – ensuring readiness

Exercises (or ‘drills’) are a vital tool used in the EM sector to test and prove readiness against given scenarios. To be truly effective, such exercises should be capabilities-based, objective-driven and, most importantly, convert lessons identified into lessons learnt.

An NDRP-funded initiative to deliver an EM Exercise Management Framework (EMF) for the state has commenced. This framework will integrate with the Lessons Management Framework and assurance function while drawing on the findings of *Emergency Preparedness Reports*.

The EMF aims to provide a structure that will close the loop between identifying issues and implementing solutions, ensuring that exercises are part of a coordinated approach to building, sustaining and delivering core capabilities. The framework will seek to enhance sector-wide resilience by reviewing existing EM exercise arrangements and developing a comprehensive framework for WA that:

- builds resilience in the EM sector
- integrates with the state’s Lessons Management Framework (under development)
- includes policy and processes for the establishment of protracted state-level exercises to test state coordination arrangements – for multi-agency, multi-hazard and concurrent emergencies
- updates EM exercise policy to ensure it is risk-based, contemporary and fit for purpose
- identifies an effective committee model to manage the framework
- considers a more inclusive model for planning, resourcing (including funding), development and delivery of EM exercises
- includes the exercising of both response and recovery arrangements at state and local levels
- considers the need to establish and maintain a cadre of trained and engaged exercise management personnel that contribute to EM exercising in WA
- incorporates the national Emergency Management Exercise Framework.

8.3 Catastrophic and cascading events

Attention to the notion of catastrophic and cascading events has increased in recent years. Historically, EM agencies have tested their capabilities against medium-sized emergencies of a single type – and have tended to pass with flying colours. This level of testing and exercising is excellent for business-as-usual activities and skills. However, this may not be a sound approach for managing a catastrophic or cascading event.

History suggests that response strategies that routinely work in smaller events will be quickly overwhelmed and rendered ineffective. The role of EM agencies becomes focused on providing leadership, facilitation, subject matter expertise, public information and warnings, and specialist resources (BNHCRC 2018).

It is also clear that emergencies affect many things simultaneously and, further, that as the magnitude increases so too does the complexity of dealing with the event. It has also become accepted that catastrophic events present circumstances that may eclipse the knowledge, skills and experience of those charged with combating them.

In addition to heightened scale, catastrophic events can also have cascading impacts. Situations might develop where the wind and rain from a cyclone can cause widespread power outages and flooding, and destroy critical infrastructure such as roads. While each of these events may be appropriately managed, the cascading nature and interconnectedness of the impacts will greatly affect the overall complexity of managing any response or recovery.

From the outset of the State Risk Project (2013) the risk assessments conducted in WA have used credible worst-case scenarios as their basis. This concept has been broadly embraced and has proliferated throughout the wider EM sector. A study by the Bushfire and Natural Hazards CRC, which started in July 2017, aims to better understand the nature of catastrophe and identify ways to improve management approaches in the Australian context.

In 2015, the then Director General of Emergency Management Australia, Mark Crowweller, said that catastrophic-level events for an individual area may be rare. However, “looking at a national level, the frequency of a catastrophic-level event is around every four to five years and it appears to be increasing”.

8.4 The Australian Natural Disaster Resilience Index

Resilience is the concept that has captured the EM sector in WA at almost all levels. Resilience – or our collective capacity for recovery – has become the focus of all natural hazard programs, plans and policies and yet to date there has been no evaluation of the whole country’s state of disaster resilience.

To address this shortcoming, the University of New England, together with the Bushfire and Natural Hazards CRC is developing an Australian Natural Disaster Resilience Index (ANDRI). This index will be the first nationwide assessment of disaster resilience that seeks to identify areas of strength and areas of weakness. It will provide a reference point for evaluating progress and guide future programs, plans and policies.

The ANDRI will focus on the influences on disaster resilience arising from:

- social character
- economic capital
- emergency services
- planning and the built environment
- community capital
- information access
- governance and leadership
- social and community engagement.

The index will allow community members to see the broad factors influencing disaster resilience in their local area. Results of the national assessment could inform evidence-based decision making at both national and state levels. Expected outputs will include maps showing Australia's current state of disaster resilience and a *State of Disaster Resilience Report*.

The resulting evidence base will provide a baseline for measuring national progress and will be critical in assessing regional strengths and weaknesses. It will identify areas for improvement and inform initiatives, plans, program delivery and policy development.

8.5 Target setting – how do we benchmark our capabilities?

A critical conversation that is emerging within the sector is “What does it mean to be capable?” and “What does success look like?” “How do we ensure maximum protection for the state and how do we deliver this within a tight budgetary environment?”

These questions are complex. For example, while it is known that reinforced concrete bridges are less susceptible to fire and more resistant to flood than wooden bridges, is it reasonable to replace every fully functioning wooden bridge in the state with a reinforced concrete one? Where is the line between safety, pragmatism and economic rationalism, and who gets to make that decision?

Nobody disputes that foreseeable impacts should be mitigated. Nevertheless, more is not always better – or faster. Does having an extra 10 hospital beds available make you more capable? Does an extra fire truck mean better service? Should we carve a duplicate road across the Nullarbor in case the Eyre Highway washes out? On the other hand, what is the cost of having assets sitting idle?

Some suggestions for increased protection are entirely sensible while others are wasteful. For still more, costs are so prohibitive that they are unachievable or impractical. In many cases, potentially vulnerable assets are identified but must remain in use until after the next emergency when higher engineering standards can perhaps be employed to rebuild them.

While the State Capability Framework outlines the features needed, it sets neither benchmarks nor targets. At present, these decisions are the responsibility of agencies. In time, however, a consolidated statewide standard may prove to have utility.

Any development of benchmarks or targets must be based on evidence, and should be both rational and pragmatic. They must acknowledge that the required capabilities will depend upon the type of hazard, location and the magnitude of the event. It would be highly inefficient and wasteful to invest in full capability for all circumstances in all localities. However, reasonable and verifiable targets could be established that agencies can work towards. This in turn should lead to a potential reduction in disaster impacts.

The assurance function of EM, and the lessons management process, has been developed to 'ground truth' reported capabilities and to ensure that lessons are learnt and not just identified. The Exercise Management Framework in development will test these capabilities. Once these processes are fully in place and embedded across the EM sector, consideration could be given to identifying and delivering against predetermined, well understood and meaningful targets.

8.6 Business and industry

In the US, a government-centric approach to confronting large disasters has been recognised as insufficient to meet the challenges posed. For example, in 2005, all levels of government understood the potential consequences of a large-scale hurricane on the Gulf coast. But those same governments were unprepared for the devastation of Hurricane Katrina. The lesson is that government is only one part of the team and EM arrangements must leverage *all* available resources (Bushfire and Natural Hazards CRC 2018).

The engagement, commitment and even acceptance of responsibility for EM by business and industry across WA are highly variable. In the north, major industries such as resource companies own the majority of the assets and employ many of the residents. Because of this sense of ownership, they tend to take steps to protect both assets and people more broadly. For example, many companies participate in district-level EM planning and exercises, and willingly share resources.

The Pilbara Ports Authority is actively involved in the EM sector within the region. They provide an emergency response capability while offering coordinated assistance, communications and marine expertise to HMAs. They facilitate training, development and response planning along with exercise analysis, incident review and response capabilities. They contribute to both planning and response to marine oil pollution incidents and post alerts and warnings on their website in the event of cyclones.

This level of commitment diminishes as you head south to more densely populated centres and more diversified communities. For EM agencies, this means that one-on-one engagement becomes no longer practicable. They begin to lean towards mass media or bulk information campaigns to alert people to hazards and issue general appeals for them to engage.

While in some circumstances such campaigns achieve the desired goal, in many others they do not. Sometimes the message simply gets lost or is 'tuned out' as white noise or spam.

A lot more needs to be done to properly embrace the principle of emergency preparedness. Far from being passive receivers of the EM message, communities must be thoroughly engaged and supported by EM agencies as sources of resilience, solidarity and cohesion.

It is the belief of the SEMC that emergency preparedness and EM is the cost of doing business responsibly.

Pathway to Resilience

Preparing for a disaster is a shared responsibility and we must all do our part to protect ourselves, our families, communities and businesses. Building our resilience to emergencies would significantly help but where do you start. Thankfully there are a number of tools already available to help. On this page are some brief examples of the sorts of tools that are available. This is by no means exhaustive but represents a sample of the vast array that of help that is available.



Individuals and Properties

- Information is also available on how to prepare yourself and your home
 - How to prepare your [property](#) and [household](#)
 - Emergency kits and [relocation packs](#)
- Join a [Bushfire Ready Action Group](#) to work together with local residents to prepare and protect families and properties. (DFES)
- [RediPlan](#) is a free guide with information on how to personally prepare for an emergency.
- [Advice](#) on how to start a conversation about how you might cope in a disaster and to build support networks. (Red Cross Australia)
- Practical [information](#) on understanding the aftermath of a disaster including how to look after yourself and your [family](#) and insights on donations and coping with stress. (Red Cross Australia)
- This [tool](#) provided by Insurance Council Australia can assess how your building may perform when local hazards occur and recommends improvements.

A number of tools are available to help parents and teachers in educating **young people** about emergencies and what to do.

- The [Pillow Case Project](#): Each student is given a pillowcase to decorate and take home to start their own personal emergency kit. (Red Cross Australia)

- Child friendly activities including
 - [Get Ready](#), an activity book to help children understand disasters through the use of colour and puzzles;
 - [Booklets](#) on how to help children and young people cope in a crisis, and
 - A parent's guide on how to talk to children [before](#) and [after](#) emergencies. (All Red Cross Australia)
 - Visit the [DFES Education and Heritage Centre](#)
- Disaster Resilience Education [tools](#) including animated videos for various ages. (Australian Institute for Disaster Resilience)



Families and young people



The Community

- Australian Red Cross offers a [disaster ready](#) guide to planning and facilitating workshops for the community service sector.
- The Council of Australian Governments has a [National Strategy for Disaster Resilience](#), outlining what a resilient community looks like and actions that can be taken to build resilience.
- This free [toolkit](#) provides advice for effecting an appropriate local response for people with vulnerabilities in disasters. (Queensland Government)
- The [Learn and Tell Community Resilience Toolkit](#) gives information on building disaster resilience with the aim that readers can then educate others.



Business

Ideally, businesses have existing **business continuity plans**. Including emergencies in their plans is a simple step in improving business resilience to allow better recovery following a disaster.

- The [Business Continuity and Disaster Recovery Workbook](#) is a free resource containing logistical processes and checklists. (Chamber of Commerce & Industry, WA)
- [Templates and guides](#) are available including an [Emergency Management Recovery Plan](#) and [Prepare Your Business Checklist](#). (Business, Australian Government)
- DFES has [resources](#) designed for service providers in the aged care and disability sectors for bushfire.
- The Queensland Government offers a number of planning and response resources, including:
 - What's in a [business continuity plan](#);
 - Preparing your business for [natural disasters](#);
 - [Pandemic](#) risk management for business;
 - Guidelines for preserving records and [heritage materials](#);
 - How to get your business [storm ready](#);
 - [Evacuating](#) your business; and
 - Emergency preparation [checklists](#).

Building a Resilient WA







References and Appendices 09

09 References and appendices

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Appendix A – Emergency situation and WANDRRA declarations

Emergency situation declarations

Under s.50 of the *Emergency Management Act 2005*, an ‘**emergency situation**’ may be declared where the HMA or State Emergency Coordinator is satisfied that an emergency has occurred, is occurring, or is imminent and that Part 6 powers of the EM Act are required to prevent or minimise:

- loss of life, prejudice to the safety, or harm to the health, of persons or animals
- destruction of, or damage to, property
- destruction of, or damage to, any part of the environment.

The declaration of an ‘emergency situation’ allows for hazard management officers appointed by the HMA to exercise emergency powers under Part 6 of the EM Act. These powers include but are not limited to:

- obtaining identifying particulars
- the movement and evacuation of people
- using vehicles or property
- exchanging information for EM purposes.

In 2016–17, no emergency situations were declared.

In 2017–18, no emergency situations were declared, nor were there any extensions of an emergency situation.

WANDRRA declarations

While no emergency powers were required, a range of eligible disasters required the Western Australia Natural Disaster Relief and Recovery Arrangements (WANDRRA) to be activated to support recovery efforts.

These included:

- AGRN 768 – flooding in the Great Southern
 - 25 and 26 September 2017
 - Albany, Denmark, Plantagenet
- AGRN 780 – TC Hilda and associated heavy rainfall in Broome and the West Kimberley
 - 27 December 2017
 - Shire of Broome
- AGRN 781 – Rainfall following TC Joyce
 - 11–16 January 2018
 - Dandaragan, Upper Gascoyne, Victoria Plains, Wongan–Ballidu, Moora, Gingin, York, Cunderdin, Quairading, Dalwallinu, Northam, Broome, Murchison, Meekatharra, Chapman Valley, Beverley and Ashburton
- AGRN 787 – Tropical low and associated flooding in the Kimberley and East Pilbara regions
 - 29–31 January 2018
 - Broome, Derby – West Kimberley, Wyndham – East Kimberley, Halls Creek, East Pilbara
- AGRN 793 – TC Kelvin and associated flooding
 - 17–19 February 2018
 - Broome, Derby – West Kimberley, Wyndham – East Kimberley, Laverton.

These incidents were managed as large-scale, business-as-usual events and did not need the additional emergency powers available under the EM Act.

Appendix B – Status of Westplans

The *Emergency Management Act 2005* prescribes 27 hazards. Historically, each has had a corresponding Westplan. However, there was substantial duplication between the individual Westplans and with the State Emergency Management Plan.

As part of a broader policy and governance review project, the Office of Emergency Management rectified this duplication through the Westplan Rationalisation Project. In December 2016, the SEMC agreed to rationalise and amalgamate most Westplans.

All Westplans (those that have been amalgamated and those remaining as individual plans) have since been converted into succinct State Hazard Plans (Table B1) that will become subplans of the parent State Emergency Management Plan.

In addition to the rationalisation above, full content reviews of some newly created State Hazard Plans are underway. The reviews are being conducted either when the original Westplan was due for revision or where agencies identify a need to conduct a full review as part of the amalgamation activities.

The purpose of the State Hazard Plans is to provide state-level direction on the management of specific hazards. They provide an overview of the arrangements – and agency roles and responsibilities – for managing specific hazards within the state.

While substantial progress has been made with this project, delays can be attributed to the following factors:

- the complexities and sensitivities in amalgamating some plans into single State Hazard Plans
- the number of lead agencies and stakeholders involved

- the desire by some agencies to conduct a full content review of their arrangements earlier than formally required.

Table B1. State Hazard Plans and corresponding former Westplans

State Hazard Plan	Former Westplans	Reviewing agency
Heatwave	• Heatwave	WA Health
Terrorist Act	• Terrorist Act	WA Police Force
Tsunami	• Tsunami	DFES
Fire	• Fire	DFES
Crash Emergency	<ul style="list-style-type: none"> • Air Crash • Brookfield Rail¹¹ Crash Emergencies • Rail Crash PTA • Road Crash 	OEM with input from WA Police Force, DFES, the Public Transport Authority and Arc Infrastructure
Persons Lost or in Distress Requiring a Search and Rescue Response (SAR Emergency)	<ul style="list-style-type: none"> • Land Search • Marine Search and Rescue 	WA Police Force

¹¹ Arc Infrastructure was formerly known as Brookfield Rail

State Hazard Plan	Former Westplans	Reviewing agency
HAZMAT (Hazardous Materials) Annexes: <ul style="list-style-type: none"> • Nuclear Powered Warship (NPW) • Space Re-entry Debris (SPRED) 	<ul style="list-style-type: none"> • HAZMAT • Chemical and radiological aspects of Chemical, Biological, Radiological and Nuclear (CBRN) • NPW • SPRED 	DFES Annexes: WA Police Force
Maritime Environment Emergency	<ul style="list-style-type: none"> • Marine Oil Pollution • Marine Transport Emergency 	Department of Transport (Marine Safety)
Energy Supply Disruption	<ul style="list-style-type: none"> • Electricity Supply • Gas Supply • Liquid Fuel Supply 	Public Utilities Office
Animal and Plant Biosecurity	<ul style="list-style-type: none"> • Animal and Plant Biosecurity 	DPIRD
Human Biosecurity	<ul style="list-style-type: none"> • Human Epidemic • Biological component of CBRN 	WA Health
(Name of plan to be decided)	<ul style="list-style-type: none"> • Collapse • Earthquake 	DFES
Severe Weather	<ul style="list-style-type: none"> • Cyclone • Storm • Flood 	DFES

Appendix C – Tracking recommendations

The SEMC has committed to the continuous monitoring of recommendations made following major emergencies in WA. The *Reframing Rural Fire Management: Report of the Special Inquiry into the January 2016 Waroona Fire* by Special Inquirer Mr Euan Ferguson reported on the status of recommendations from previous inquiries, noting that 118 of these remained unresolved. The SEMC was tasked with monitoring any active recommendations from the seven (including the Ferguson) historical reviews.

While significant progress has been made, 39 recommendations await closure, down from 158 in 2016 (Figure 40).

EM agencies have been working together to progress the 40 Ferguson Inquiry actions. At the end of June 2018, 32 had been completed, seven were in progress and one was yet to progress. Relevant agencies will continue to work on the eight outstanding recommendations.

Progress towards finalising these recommendations included the:

- creation of the Rural Fire Division
- establishment of the Bushfire Centre of Excellence
- implementation of WebFusion to securely links agencies' WebEOC crisis information management systems (which finalised five separate recommendations).

In addition to the major projects, there has been continuous improvement on the remaining recommendations. A range of initiatives has been finalised that will increase collaboration, reduce confusion and streamline and standardise key functions among and between agencies. These include the creation of templates, aides memoir, updated procedures, and identification cards for volunteers.

The SEMC's ongoing commitment to lessons management will in future identify lessons from incidents, exercises, operational reviews and inquiries. This will capture not only those occurring within WA but will also incorporate best practice identified interstate and internationally.

SEMC Recommendation Tracking

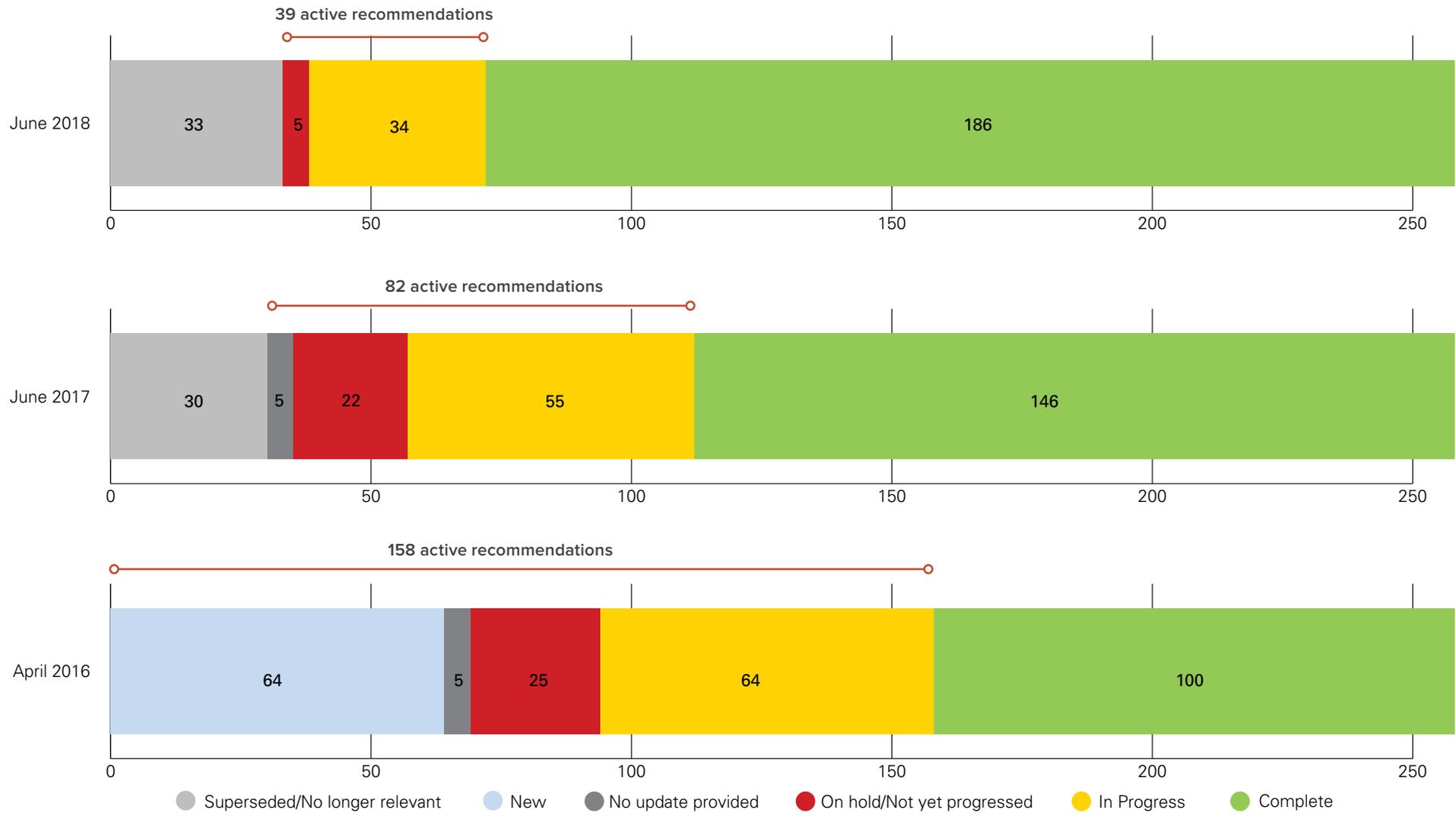


Figure 40. SEMC tracking of recommendations made following major emergencies in WA, 2016–18

Appendix D – Agency respondents

Hazard management agencies	Interview	Survey
Arc Infrastructure	N	Y
DPIRD	Y	Y
Department of Treasury (Public Utilities Office)	N	Y
DFES	Y	Y
Department of Health	Y	Y
Department of Transport (Marine Safety)	N	Y
Public Transport Authority	N	Y
WA Police Force	Y	Y

Combat agencies – support organisations	Interview	Survey
Department of Communities	Y	Y
Department of Biodiversity, Conservation and Attractions	Y	Y
St John Ambulance Australia, WA	N	Y

Emergency support services	Interview	Survey
Australian Defence Force	N	Y
Australian Red Cross (WA)	Y	Y
Bureau of Meteorology	N	Y
Department of the Premier and Cabinet	Y	Y
Office of Emergency Management	Y	Y

Essential service providers	Interview	Survey
ATCO Gas Australia	N	Y
Dampier Bunbury Pipeline	N	Y
Horizon Power	N	Y
Main Roads WA	N	Y
National Broadband Network – Australia	N	Y
Telstra	N	Y
Water Corporation of WA	N	Y
Western Power	N	Y

Industry bodies / Other	Interview	Survey
Chamber of Commerce and Industry	N	Y
Department of Education	N	Y
Department of Planning, Lands and Heritage	Y	Y
Department of Water and Environmental Regulation	N	Y
Forest Products Commission	N	Y
Insurance Council of Australia	N	Y
WA Council of Social Services	N	Y
Western Australian Local Government Association	Y	Y

Appendix E – Local government respondents

In 2018, (once again) the emergency preparedness and annual report surveys were combined to reduce the impost on contributing LGs. A single survey was sent to all 137 LGs within WA. Almost 90 per cent of these responses (N=121) were received on time or within a reasonable period beyond the initial cut-off. An additional seven responses were received after the point where data and answers could be incorporated into this year's *Emergency Preparedness Report*. Nine LGs failed to submit responses.

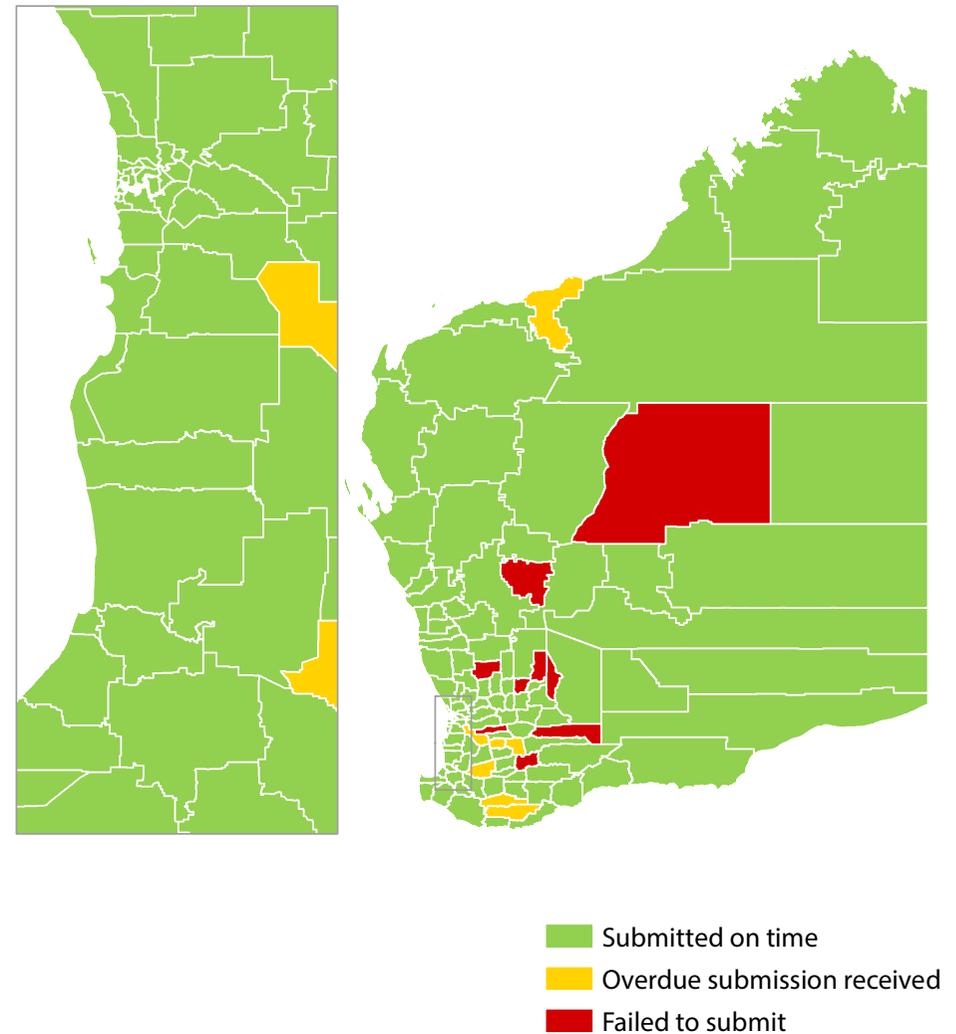
Overdue submission received

Cranbrook
Cuballing
Plantagenet
Port Hedland
Wandering
West Arthur
Wickepin

Failed to submit

Brookton
Dumbleyung
Kondinin
Mt Magnet
Mukinbudin
Trayning
Westonia
Wiluna
Wongan–Ballidu

LG survey submission status



Appendix F – Acronyms

Acronym	Term in full
ANZCTC	Australia-New Zealand Counter-Terrorism Committee
BRM	Bushfire Risk Management
C3	Command, Control and Coordination
CaLD	Culturally and Linguistically Diverse
DFES	Department of Biodiversity, Conservation and Attractions
DEMCC	District Emergency Management Committee
DFES	Department of Fire and Emergency Services
DMIRS	Department of Mines, Industry Regulation and Safety
DPC	Department of the Premier and Cabinet
DPIRD	Department of Industries and Regional Development
DRFA	Disaster Recovery Funding Arrangements
DWER	Department of Water and Environmental Regulation
EM	Emergency management
EMA	Emergency Management Australia
ESL	Emergency Services Levy
HMA	Hazard management agency
HRT	Health Response Team
IMT	Incident Management Team

Acronym	Term in full
LEMA	Local Emergency Management Arrangements
LEMC	Local Emergency Management Committee
LG	Local government
MAF	Mitigation Activity Fund
MOU	Memorandum of Understanding
NDRP	Natural Disaster Resilience Program
NDRRA	Natural Disaster Relief and Recovery Arrangements
NGO	Non-government organisation
NSDR	National Strategy for Disaster Resilience
OEM	Office of Emergency Management
PTA	Public Transport Authority
PUO	Public Utilities Office (Department of Treasury)
SEMC	State Emergency Management Committee
TC	Tropical Cyclone
WA	Western Australia
WALGA	Western Australian Local Government Association
WANDRRA	Western Australia Natural Disaster Relief and Recovery Arrangements
WAPC	Western Australian Planning Commission

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