GOVERNMENT OF WESTERN AUSTRALIA

STATE EMERGENCY MANAGEMENT COMMITTEE WESTERN AUSTRALIA

EMERGENCY PREPAREDNESS REPORT 2015

OCTOBER 2015

Cover image:

'Multi-pronged creek lightning', Port Hedland Western Australia –
Image courtesy of Miriam Sheridan Photography

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Address: 20 Southport Street
West Leederville
Western Australia 6007

Telephone: +61 8 9482 1700

Email: publications@semc.wa.gov.au

Website: www.semc.wa.gov.au

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A list of acronyms used is provided at Appendix H.

CONTENTS

FOREWORD

On behalf of the committee, I have great pleasure in presenting the fourth *Emergency Preparedness Report* to be delivered since the reconstitution of the SEMC in 2012 and the first since the introduction of the SEMC Strategic Plan 2015–2018. To fully comprehend the context of this report, we must first outline some universal issues at the core of the concept of preparedness.

The first is that natural events such as cyclones and earthquakes will happen and no amount of planning can or will alter this. The second is that these hazards can and often will affect our communities, people and businesses in any number of different ways. From this point, we then introduce the issue of expectation. There is an expectation that the government and authorities will do all that they can to minimise the damages and protect the normal state. Further, there is an expectation that we will learn from our mistakes and be better prepared before the next emergency. The final, and often most crucial, expectation is that government funds are spent appropriately and where they can do the most good.

While government agencies have been striving for increased cooperation and preparedness, it remains crucial that individuals and the broader community embrace their role. Community safety during an emergency is a responsibility that is shared by the state, local governments, businesses and individuals alike.

These concepts have been critical in the development, evolution, maintenance and continual improvement of Western Australia's Emergency Management Framework. As a state, we collectively engage to assess the risks, critically examine disasters to learn from mistakes or maximise positive elements, train and equip our frontline staff and volunteers to mount an effective defence, and educate communities on the hazards and dangers we may face. Every year we aim to be better than the year before.

In 2015 participation in the preparedness report was the highest it has been since the inception of the report. Responses were received from all hazard management agencies, most emergency management agencies, a range of service providers and more than 95 per cent of local government authorities. This high level of participation highlights the broad acceptance of shared ownership and responsibility. This attitude of cooperation can only be advantageous to our ongoing efforts to build our capacity, increase our resilience and better equip Western Australia for the next emergency.

Frank Edwards CSC

CHAIR

STATE EMERGENCY MANAGEMENT COMMITTEE

31 October 2015

Cathedral Gorge, Kimberley emergency management district
– *Image courtesy of Miriam Sheridan Photography*

01

EXECUTIVE SUMMARY

01 EXECUTIVE SUMMARY

Preparedness is not a destination but rather a journey.

Collection and analysis for the *Emergency Preparedness Report 2015* has identified a number of promising factors that reflect well on the ability of the state to prepare for and react to emergencies. These are:

- involvement
- engagement
- continuous improvement.

Involvement in the 2015 preparedness report was the highest it has been since the report's inception. Hazard management agencies (HMAs), other emergency management agencies (EMAs), local governments and service providers (e.g. gas, power, insurance), all provided data to enable its completion. (For a full list of respondents, see Appendix G.)

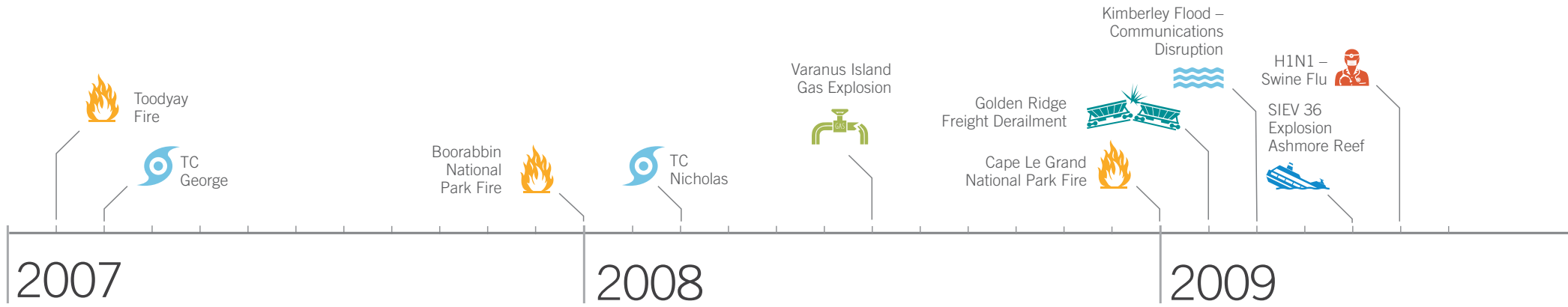
Agency engagement throughout the year has been high. Interagency cooperation has occurred in the areas of risk, policy, governance, legislation, coordination and communications. Workshops, working groups, subcommittees, exercises and multi-agency deployments have brought the sector closer together.

Almost without exception, agencies strive for continuous improvement. Shared ownership and collaboration are seen as the primary tools to achieve this, fostering a spirit of cooperation and better outcomes across the emergency management (EM) sector.

This cooperation, encompassing pooled knowledge, experience and even resources, is a continuation of a previously identified trend. However, in 2015 this is particularly evident.

Due to the complexity of the EM environment and the wide range of hazards faced, no single solution to risk exists. While all agencies report seeking to learn lessons and improve the way they deliver services during an emergency, some significant challenges remain across the sector.

- Health services around the state operate at or near capacity at all times so a major incident with mass casualties or fatalities would quickly stretch existing resources.
- Extreme catastrophic events would overwhelm existing capabilities across the entire sector.
- Multiple simultaneous or concurrent incidents or those that run for extended periods will stretch some areas of the state's capabilities.



- Physical distance and remoteness of communities in Western Australia continue to pose challenges that are likely to remain unresolved.
- Confusion exists among members of local and district emergency management committees about their roles and responsibilities within the committees, the purpose, goals and expectations.
- Despite significant advances, interoperability remains an issue between agencies.
- State expenditure on eligible WANDRRA (Western Australian Natural Disaster Relief and Recovery Arrangements) measures is expected to be in the region of $64 million for the 2014-15 financial year. Based on financial thresholds set out in NDRRA, this would lead to a Commonwealth contribution of between $3 and $4 million.
- Knowledge of EM is broadening. However, some areas untouched by recent emergencies see EM requirements as an unnecessary burden upon already limited resources and budgets, and therefore have limited EM knowledge or commitment.

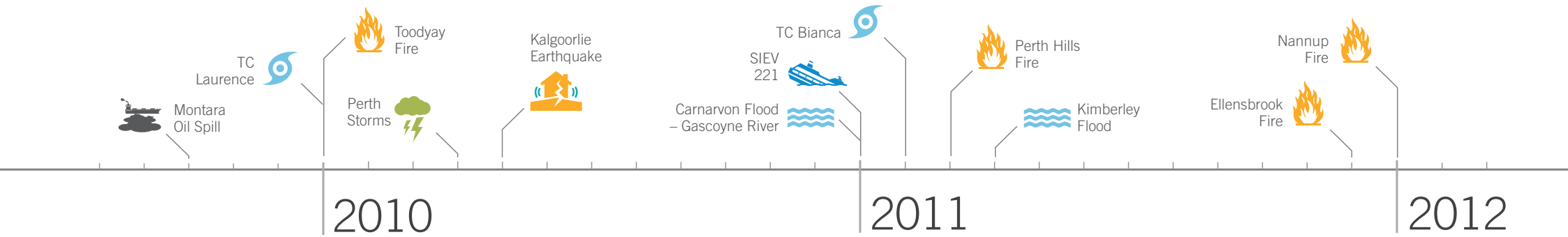
All of these issues are in varying stages of being addressed to the extent possible, including scenario planning for worst case and extreme catastrophic events. While issues remain, it is clear that most agencies are actively working together to resolve them.

Major bushfires in the south-west in January and February 2015, including the biggest fire in recent memory, stretched resources and tested interagency arrangements and interoperability. The state's response to the fires was to assemble a major multi-agency and cross-jurisdictional force that slowly but surely contained the blazes.

By the time the fires were contained, 98,000 hectares had been burnt out at Northcliffe and 52,000 hectares in Lower Hotham. It was estimated that fire responders across all agencies expended 96,000 hours and the 25 airborne water bombers involved dropped more than 10 million litres.

In March 2015, tropical cyclone Olwyn crossed the coast at Carnarvon as a severe Category 3 cyclone at its peak. Winds carved a path of destruction uprooting trees, damaging houses and flattening crops.

This year the SEMC embarked upon a new three-year strategic plan (2015–18) (see Appendix B) that seeks to build on the achievements of the previous three years. Having made strong gains in governance, shared responsibility, coordination and oversight, attention is now focused on developing a robust, integrated understanding of risk, capability and impact across the state.



In the interests of national consistency, the SEMC's focus areas mirror three national projects. These projects are developing tools to assess and measure risk, capability and impact. They are at different levels of maturity and at different stages within their evolution. The tools in use or under development are:

- NERAG – National Emergency Risk Assessment Guidelines
- NEMCAT – National Emergency Management Capability Assessment Tool
- NIAM – National Impact Assessment Model.

The intent is to develop a robust system that combines these three initiatives so that meaningful evaluations may be made.

The ongoing State Risk Project, which was launched in 2013, has so far identified that the highest risk events in Western Australia are cyclone, human epidemic, flood, storm, bushfire and marine transport emergency. Some events, such as earthquakes, have a lower likelihood; however, potentially extreme consequences increase their overall risk.

The district level rollout of the State Risk Project started in May 2015, assessing risk for each district.

As a state, we broadly have a well trained, well equipped and capable EM workforce able to manage Level 3 (significant) incidents. This capability becomes stretched and potentially exhausted as multiple incidents take place simultaneously or individual incidents run for extended periods.

Health services operate at or near capacity at all times so a major incident with mass casualties or fatalities would quickly stretch existing resources.

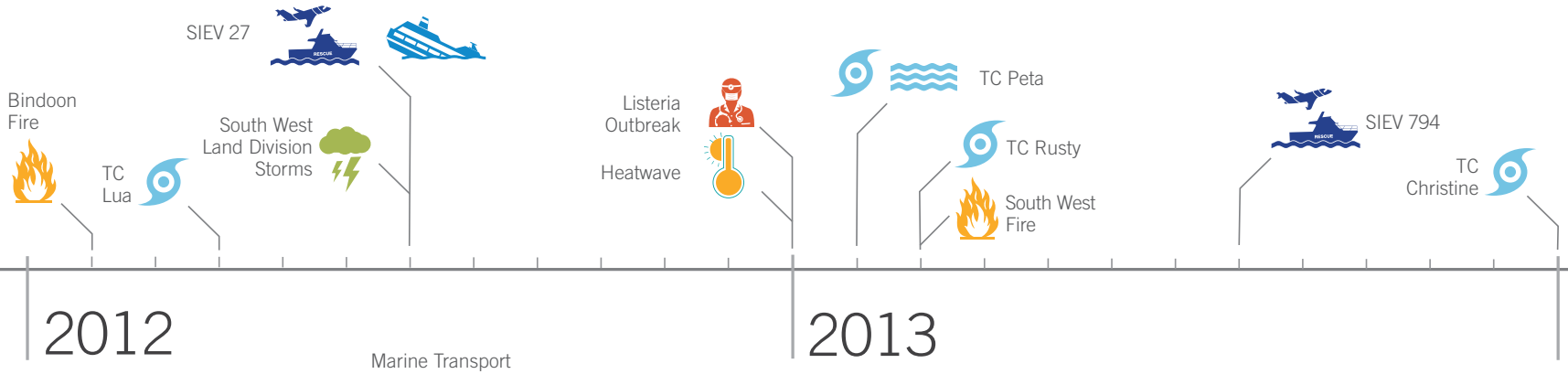
Agencies regularly review incidents in the interest of continuous improvement. Impact assessments are not about apportioning blame after the fact but about learning lessons for the future. Reducing the impact of a given event and improving resilience to these events is the overall aim. Despite this, impacts often remain poorly quantified.

The complexity of the EM environment and the volume of work being undertaken by all agencies to improve preparedness across all hazards have prompted the grouping of initiatives and responses under five themes: mechanisms, cooperation, readiness, communication and knowledge of EM.

MECHANISMS

All agencies report having a solid understanding of their roles and responsibilities. They identify that:

- Legislation, policies and plans are in place and appropriate.
- EM plans are regularly reviewed, exercised and updated.
- Updates are communicated and disseminated effectively.



- Pre-established protocols are in place between EMAs, service providers and local governments.
- The SEMC and its subcommittees perform as the knowledge and coordination hub for EM governance.
- Clarity and guidance are required for when residents choose to stay to protect property after EM staff and volunteers are withdrawn as conditions become too dangerous.
- All EMAs and service providers report they can capture and report on emergency expenditures.
- Owners and operators of critical infrastructure (much of which is in the private sector) are ultimately responsible for the safety and security of their assets.

COOPERATION

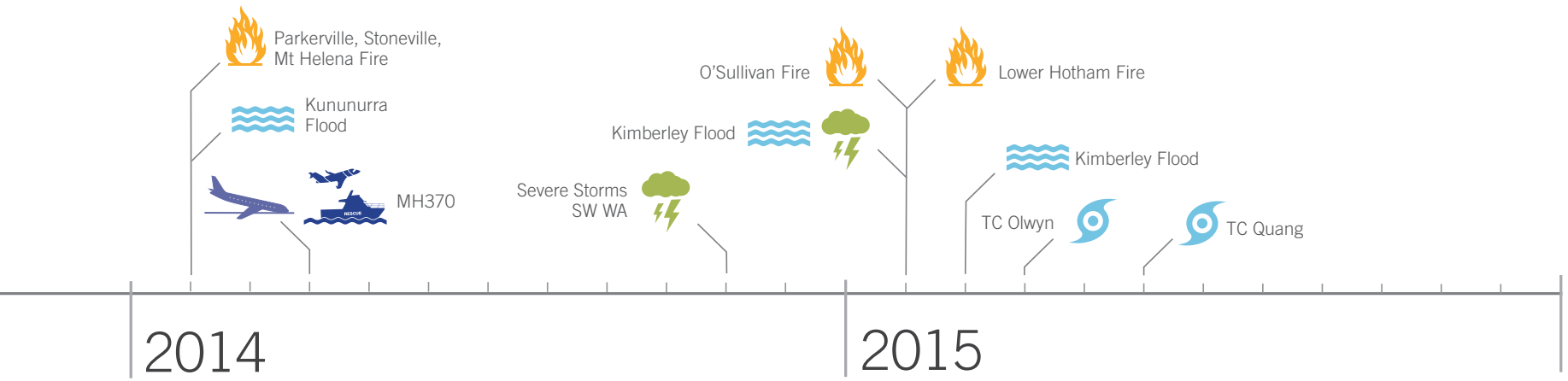
The level of cooperation among agencies was at its highest in 2015. Agencies recognise that:

- It is crucial that responsibility for community safety during an emergency is shared by the state, local governments, businesses, individuals and the broader community.
- Most agencies actively cooperate and share information to increase knowledge and interoperability.
- All HMAs and most other EMAs have agreements with community or industry groups to assist during an incident.
- Liaison officers deployed to operations centres are given access to HMA crisis information management systems.
- Most agencies have indicated conducting some form of horizon scanning with respect to their identified hazards.
- Interoperability issues still exist in some circumstances.

READINESS

Preparedness measures can yield significant benefits over time. To modify behaviour and avoid disaster risk, agencies report they have undertaken the following measures:

- As at 16 October 2015, Department of Parks and Wildlife (DPaW) reported that prior to the 2015 fire season 53 prescribed burns had been commenced or completed in the south-west of the State accounting for a total of 78,722 hectares.
- Most agencies report having access to a predetermined operations centre and have back-up contingencies in place with minimal-to-no loss of functionality.



- Agencies report having capable, well trained and well supported personnel.
- Workforce plans are in place to recruit and retain personnel.
- Arrangements exist for the deployment of additional personnel and equipment to the site of an emergency.
- All applicable HMAs, EMAs and service providers report they have appropriate asset management programs
- Equipment is maintained in a state of readiness.
- In many cases, equipment and personnel are pre-deployed ahead of a known emergency.
- Three-quarters of responding local government agencies have commenced emergency risk management processes, most of which are informed by national criteria.
- All HMAs, most other EMAs and an increasing number of service providers and local governments use an incident management system (IMS), which aids the coordination of emergency responses and increases interoperability.

COMMUNICATION

Many respondents acknowledged significant improvements in the availability of information on natural hazards and exposure in recent years, but the SEMC also received evidence of residual information gaps:

- Most HMAs report they have systems in place to convey vital information and warnings.
- Local governments use a range of communication tools to send emergency information to residents.
- EM agencies are increasingly using social media as a tool to communicate with the community.
- Many local governments report conducting activities specifically addressing the needs of culturally and linguistically diverse (CaLD) groups.
- Maintaining effective and interoperable communication systems remains a challenge.
- Concerns have been raised about telecommunication 'blackspots', particularly in the wheatbelt and south-west of the state.
- Several regional local governments have expressed dissatisfaction with both the level of telecommunications infrastructure and the service provided.

KNOWLEDGE OF EM

To manage the natural disaster risks they face, agencies need information to understand these risks and their risk management options. We have determined that:

- Knowledge of EM is extensive in the small number of agencies intimately involved in EM activities.
- Other agencies have a specialised knowledge of EM that is confined to the functional areas specialising in EM. In such instances, EM knowledge does not permeate through the agency and inform decision making.
- Some local governments have seen the benefits of EM planning and preparedness first hand during and after emergency situations (for a definition of Emergency Situation Declarations, see Appendix A). Others, having seen the impact on neighbouring shires, have embraced EM principles.
- Some local governments have not been directly impacted by an emergency and cannot envisage an instance where they would. These agencies see the requirements as an unnecessary burden upon their already limited resources and budgets, and therefore have limited EM knowledge or commitment.

Mangrove at low tide, Pilbara emergency management district
– *Image courtesy of Miriam Sheridan Photography*

02

INTRODUCTION

02 INTRODUCTION

AUSTRALIAN EMERGENCY MANAGEMENT

In December 2009, the Council of Australian Governments (COAG) agreed to adopt a whole-of-nation resilience-based approach to disaster management. From this decision, the National Strategy for Disaster Resilience (NSDR) identified six key messages:

- Disasters will happen
- Disaster resilience is your business
- Connected communities are resilient communities
- Know your risk
- Get ready – then act
- Learn from experience

> Despite the national coordination role of the Commonwealth, the 'primary responsibility for the protection of life, property and the environment rests with the states and territories'.
>
> (Emergency warnings 2015)

WA EMERGENCY MANAGEMENT

Emergency management, preparedness and mitigation are not new concepts in Western Australia. They have been in effect, in some form or another, for over a century. Events, accidents and incidents happen daily; however, these are generally small, localised and dealt with by a range of agencies such as the fire service, police or local government.

On occasion, emergencies are large, more widely spread or affect more people and therefore require a coordinated response. This response may necessitate the deployment and coordination of many people, numerous assets at multiple sites, and involve a range of agencies. Major storms, cyclones, floods and bushfires tend to be the most common forms of these events.

Emergency operations in Western Australia are based on the principle of 'graduated response'. This approach identifies that responsibility for resourcing and responding to an emergency initially rests at the local level. Where an emergency requires resources beyond the capability of the local community, support from district resources may be obtained. If district resources are inadequate, support may be obtained from state resources and where state resources are inadequate or unavailable, support from interstate agencies or the Australian Government may be sought under national arrangements.

During an emergency, the State Emergency Coordinator (Commissioner of Police) can convene the State Emergency Coordination Group (SECG) to strategise, organise, oversee and coordinate the response to the emergency. This is done under s. 26 of the *Emergency Management Act 2005*, (the 'EM Act'), which is designed to ensure the provision of a coordinated EM response across the whole of government.

The State Emergency Management Committee (SEMC) is Western Australia's peak emergency management planning body. The committee has existed in various forms since the 1970s. The function of the SEMC is to:

- advise the Minister on EM and the preparedness of the state to combat emergencies
- provide direction, advice and support to public authorities, industry, commerce and the community in order to plan and prepare an efficient EM capability for Western Australia

- provide a forum for whole of community coordination to ensure the effects of emergencies are minimised
- provide a forum for the development of community-wide information systems to improve communications during emergencies
- develop and coordinate risk management strategies to assess community vulnerability to emergencies
- arrange for the preparation of state EM policies and plans
- prepare an annual report on its activities
- monitor and review the EM Act and its regulations.

WA Emergency Management Framework

To ensure all of the pieces in this complex puzzle come together, the state has established an EM framework (Figure 2.1). This framework ensures the responsibilities and knowledge of the relevant authorities are recorded and effectively cascade through all levels of documentation and planning. It provides responsible agencies with the certainty that their actions during emergencies are supported by legislation, are well considered and are in line with best practice.

WA EMERGENCY PREPAREDNESS

Western Australia is subject to a wide variety of hazards that have the potential to cause loss of life, damage and destruction. These hazards have natural or human origins, or a combination of both. Risk is determined by considering the hazard itself (e.g. cyclone), the exposure to the hazard (e.g. towns sitting in the path of the cyclone) and finally the vulnerability of affected communities (e.g. poor building construction, limited mobility of residents).

The State Emergency Management Framework

Figure 2.1 – WA Emergency Management Framework

The EM Act has prescribed 27 hazards of particular concern within the Western Australian context (see Appendix C). Each of these has a prescribed Hazard Management Agency (HMA), which is responsible for leading the management and coordination of that emergency (see Appendix E). HMAs are given their functions under legislation because of their specialised knowledge, expertise and resources in respect of that particular hazard.

Determining and assessing preparedness is a constant cycle of:

- assessing the risk
- evaluating the available capability
- measuring the impact.

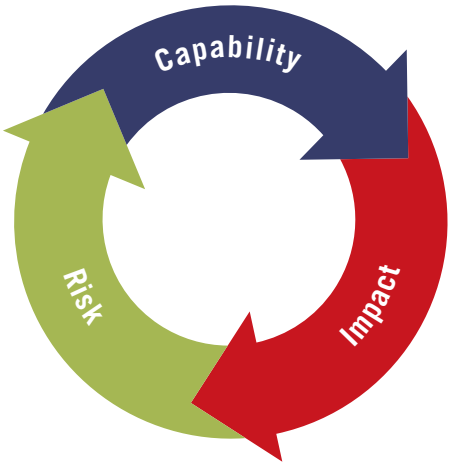


Figure 2.2 – Risk, capability and impact cycle. This loop represents a constant cycle of continuous improvement.

While effective response to an emergency is critical, preparation for the onset of the event and mitigation of the impact are vital. A report into disaster funding by the Productivity Commission in 2015 highlighted that:

> 'Governments overinvest in post-disaster reconstruction and underinvest in mitigation that would limit the impact of natural disasters in the first place'.
>
> (Productivity Commission 2015)

It should be noted there will always be a level of residual risk that cannot be mitigated in advance.

WA Emergency Preparedness Report

This report is the fourth in a series following the reconstitution of the SEMC in 2012. The initial report provided a snapshot of the preparedness of the state and outlined our capacity to deal with emergencies. After this initial stocktake, the SEMC and its partners entered a cycle of continuous improvement, endeavouring to build capacity and increase preparedness year on year.

Over this period, knowledge of risks, hazards and capabilities have been furthered through a variety of projects, improved cooperation and information sharing. This greater understanding is driving a new focus aimed at improving resilience to disasters.

Method

A series of targeted and tailored surveys was supplied to all HMAs, other EMAs, service providers and local government agencies. The surveys allowed for self-assessment and individual agency's reporting of preparedness for emergency events. This type of collection and analysis started in 2012 and has been refined and focused each year to better capture and reflect Western Australia's evolving understanding of both the risk environment and of emergency preparedness.

Responses

Table 2.1 – Respondents overview

	HMA	EMA	SVP[a]	LGA[b]
SENT	8	14	8	138
RECEIVED	8	13	5	133

[a] Service providers.
[b] Local government authorities.

A full table of respondents is contained in Appendix G.

WHO IS THE SEMC?

SEMC membership includes representatives appointed by the Minister for Emergency Services from organisations essential to the state's EM. The committee brings together key agency CEOs and independent individual members appointed for their expertise or experience relevant to the functions of the SEMC. The SEMC champions efforts for continuous improvement of EM and coordination in Western Australia.

NATIONAL PROJECTS

At a national level, three projects address the SEMC's focus areas of risk, capability and impact. While these projects are developing tools to assess and measure risk, capability and impact, they are at different levels of maturity and at different stages within their evolution. The tools in use or under development are:

- NERAG – National Emergency Risk Assessment Guidelines
- NEMCAT – National Emergency Management Capability Assessment Tool
- NIAM – National Impact Assessment Model.

The overall intent is to develop a robust system that combines these three initiatives so that a meaningful risk, capability and impact evaluation may be made.

NERAG

In 2007 the then Australian Emergency Management Committee endorsed a National Risk Assessment Framework. This framework supported the development of an evidence base for effective risk management decisions and to foster consistent baseline information. The framework provides a national approach to the conduct of emergency risk assessments to:

- improve the understanding of emergency risk issues and ensure risk treatment measures provide a sound return on investment
- standardise risk assessments and develop alternative risk reduction proposals
- increase transparency so assessment processes can be easily followed, checked or modified in light of improved knowledge or information
- improve consistency to allow meaningful comparisons between different geographical areas or hazard classes (National Risk Assessment Framework 2007).

The NERAG provide a methodology to assess risks of emergency events and are primarily concerned with risk assessment. They do not principally focus on risk management or mitigation, nor do they address business continuity processes and practices.

NEMCAT

The NEMCAT aims to assist local governments and state or territory EM organisations to prepare an EM capability assessment report. The report may be used to:

- identify key capability gaps
- support a proposal to secure resources
- identify areas for resource prioritisation
- facilitate communication about EM responsibilities and capabilities
- meet legislative or policy imperatives.

The aim is for NEMCAT and the project guidelines will become a robust method for undertaking EM capability assessment in Australia.

NIAM

NIAM was designed to provide national consistency for impact assessments and to inform relief and recovery efforts. It focuses on the collection of data and provides agreed national measures and definitions. This includes a definition of 'severe event'. The NIAM has been under development over recent years and in 2015 was undergoing pilot testing in a range of jurisdictions.

Canola fields, Wheatbelt emergency management district
– *Image courtesy of Daniel Hill*

03

RISK

03 RISK

We must fully understand risk to assess our preparedness.

KEY FINDINGS

- Every year, Western Australia will inevitably experience several emergencies.
- Western Australia can expect that bushfires, cyclones, heatwaves and major storms are likely to occur annually.
- The highest risk events are cyclone, human epidemic, flood, storm, bushfire and marine transport emergency.
- Some events, such as earthquake, have low likelihood; however, their potentially extreme consequences increase the overall risk.
- Individual hazards will affect different core objectives of the state.
- The hazard with the lowest overall risk (that has been assessed to date) is tsunami, as the likelihood is low and the expected onshore consequences are limited.

ANNUAL EVENTS

Every year in Western Australia emergencies occur. They vary in size and effect. Almost every year the state will face a threat from bushfires, cyclones, major storms, and in some seasons, heatwaves. The instances and frequency of these change year on year, subject to a range of factors.

Advice from agencies such as the Bureau of Meteorology (BOM) is that these events are inevitable. Therefore, so too is the need to prepare for them.

Available data tells us that every year about five tropical cyclones will threaten Western Australia, with two of these crossing the coastline and one of which will be Category 3 or above. Winds and rain will cause destruction and have the potential to cause localised flooding.

During the applicable seasons, bushfires will break out and major storms will occur.

Agencies produce and publish a range of seasonal outlooks that explore and examine the threat posed by a particular hazard. The agencies draw upon complementary work, such as prevailing climatic conditions, and use their specific hazard knowledge to draw inferences about the type and scale of emergencies they may face in the upcoming season.

The BOM is particularly focused upon this modelling and regularly publishes data and analyses on its website. Some notable examples within an EM context include: tropical cyclone outlook; rainfall; temperature; and monthly outlooks. These analyses and the associated mapping tools enable individual agencies to determine threat levels and mitigation strategies specific to their natural hazards.

The Bushfire and Natural Hazards Cooperative Research Centre produces a national seasonal bushfire outlook that identifies the likelihood of fires across the nation. In Western Australia, the Department of Fire and Emergency Services (DFES) produces a similar outlook with a focus specifically on the state. These reports are made widely available so that the public can be aware of expected dangers and can make appropriate preparations.

Further, the outlooks and regionally specific data are made available to career staff and volunteers through the DFES volunteer portal. These actions, along with associated media and marketing campaigns, seek to ameliorate the risk through greater knowledge and increased preparation.

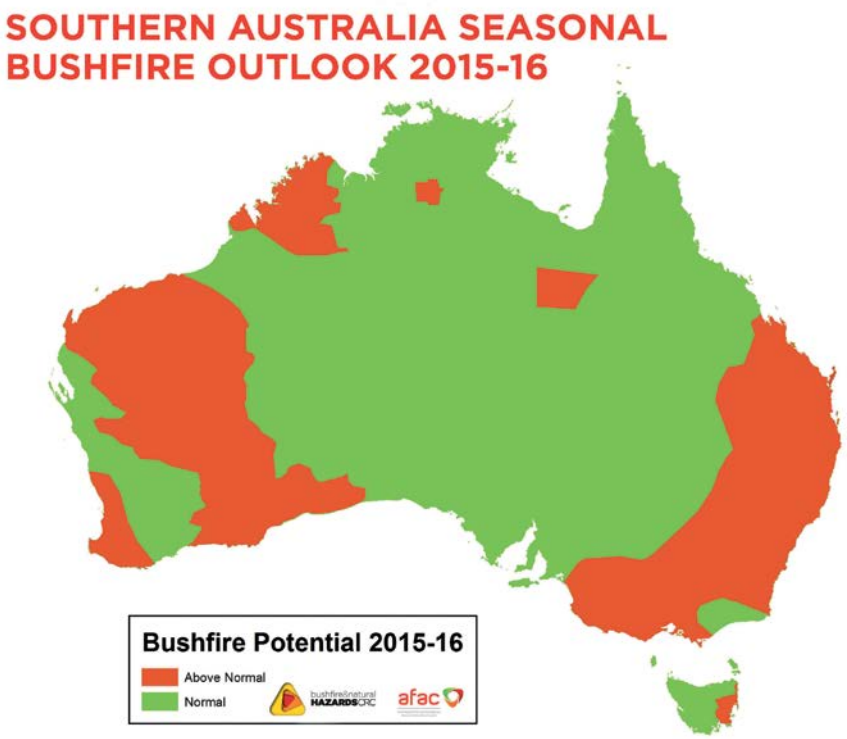


Figure 3.1 – Southern Australia Seasonal Bushfire Outlook 2015–16

Image courtesy of Bushfire and Natural Hazards CRC

Other hazards are less predictable. The threat of terrorism has generally heightened after numerous incidents abroad and in Australia over the past 15 years. Recent activities from highly publicised terrorist groups have seen the national terrorism public alert system set at high (Australian National Security 2015), indicating 'a terrorist attack is likely'. While monitoring and most handling of such hazards are coordinated nationally, response to a terrorist attack in Western Australia would primarily be conducted locally.

RISK

EM risk is established through an assessment process where the sources of risk and the elements at risk are identified, intersected and assessed. EM practices may be termed 'capabilities'. They occur across the spectrum of prevention/mitigation, preparedness, response and recovery. Deploying different capabilities can alter the level of risk.

Risk and capabilities therefore have an inverse relationship (i.e. when the capabilities of the state increase, the risks decrease).

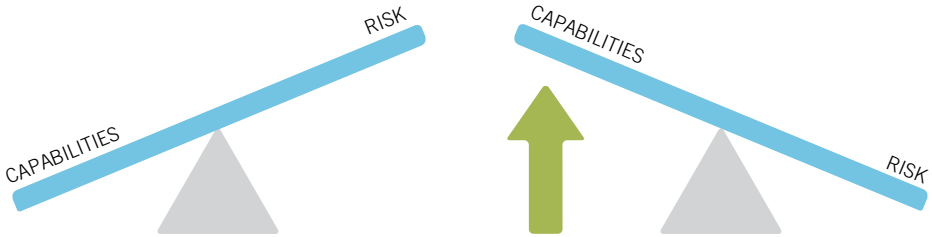


Figure 3.2 – Risk and capability inverse relationship

These capabilities can include plant and equipment, skills based on better training, and awareness development through targeted education campaigns. They can also be preventive actions such as prescribed burning or improved building standards.

Betterment is a term articulated in the Natural Disaster Relief and Recovery Arrangements (NDRRA). The term encapsulates the rebuilding of infrastructure damaged by disasters to improve upon the pre-disaster standard. That is, 'don't replace like with like' but repair and rebuild so that it can withstand future hazards.

For example, Main Roads replaced a timber bridge on the Brookton Highway that was destroyed in 2011 by the Roleystone/Kelmscott bushfires. This bridge over the Canning River was replaced with a more robust concrete and steel bridge.

While up-front costs of rebuilding increase under the betterment principle, the community will be disaster-proofing its infrastructure. The potential return on investment is high through the future avoidance of community suffering and a reduction in the future cost of recovery to governments.

Prevention and **mitigation** are actions and strategies designed to reduce the impact of a hazard or the long-term risk of an event. They should occur long before the event or alternatively as betterment during the recovery process after an incident (e.g. land-use planning, public education, infrastructure improvements).

Prevention and mitigation capabilities lower risk through long-term strategic efforts, which in turn increase resilience and create a geographic setting that is less prone to hazards. Ultimately, a low-risk setting is one that has:

- fewer elements exposed to hazards
- the best land-use planning measures in place
- well designed and properly located infrastructure
- effective public education and community involvement.

Response and **recovery** activities relate to our ability to combat the hazard when it occurs and to address the subsequent damage. These matters largely relate to the efficiency and effectiveness of the reaction and should be measurable and able to be compared quantitatively over time.

The concepts of prevention and mitigation (before an event) and response and recovery (during and after an event) combine to address the issue of **Preparedness.**

Due to the complexity of the EM environment and the wide range of hazards faced, no single solution to risk exists. The many forms of possible treatments create a suite of capability tools available to government, industry, the community and individuals to lower the overall risk to the state.

Preparedness ensures proactive and reactive initiatives occur simultaneously to reduce risk and improve responsiveness. Every year, capabilities evolve and agencies draw on the lessons of the past, thereby improving how well they prepare for, respond to and recover from events. As capability increases and risk decreases, equilibrium will ideally occur where the efficiency of the response aligns with the risk faced.

WA STATE RISK PROJECT

In 2009 COAG endorsed the National Partnership Agreement on Natural Disaster Resilience. This agreement provided Commonwealth funding to local regions to increase the resilience of their communities to natural disasters. As a condition of initial funding, each state and territory was required to undertake risk assessments to inform and address priorities for risk mitigation.

In 2013 the SEMC initiated the State Risk Project, which was designed to gain a comprehensive and consistent understanding of the risks faced at state, district and local levels. Consequently, a series of state-level risk assessment workshops was held to assess the risks posed by seven sudden-onset natural hazards. These were heatwave, flood, bushfire, cyclone, tsunami, earthquake and storm. The results were reported to the Commonwealth in 2013 and an update of the state's risk profile will be delivered by 2017.

Western Australia currently has 27 hazards prescribed within EM legislation (see Appendix C). These hazards stem from natural and human origins or a combination of both. The State Risk Project has identified a range of potential **vulnerabilities** that may be affected by any of these hazards.

These vulnerabilities, grouped under six key themes, are considered of critical importance to the wellbeing of the state (the state 'core objectives').

The six themes are people, social setting, economy, infrastructure, public administration and environment.

The State Risk Project aims to gain a robust understanding of the risks faced. From there, authorities can use the information to formulate appropriate and cost-effective mitigation strategies that lower risk and contribute to building a more resilient state.

The State Risk Project uses the methodology and criteria outlined in the NERAG, which are based on the internationally recognised standard for risk assessment process (AS/NZS ISO 31000:2009). Assessments, based on a worst-case scenario event (and a near worst-case scenario event), are conducted in workshop settings. The scenarios are scalable for state, district and local levels and are tailored accordingly. This ensures all data is consistent and can be shared.

A detailed breakdown of the State Risk Project can be found at Appendix J.

People
To protect the lives and wellbeing of people.

Economy
To maintain and grow the state's productive capacity.

Infrastructure
To maintain key infrastructure such as transport and utilities.

Social setting
To maintain public order, safety, sanitation, education, health and culture.

Government
To maintain public administration, democracy and rule of law.

Environment
To protect the ecosystem and biodiversity of the state.

Figure 3.3 – Six state core objectives considered of critical importance in emergency management

The current phase of the project builds upon the assessments of the seven sudden-onset natural hazards mentioned above and broadens the base across more of the 27 hazards. This phase is expected to run through to 2017, with anticipated benefits and outcomes including:

- an increased understanding of the major risks and associated impacts on a regional and state basis
- objective information to assist in resource allocation, including emphasis on prevention and preparedness activities
- substantial collection of data to enable mitigation proposals to be evaluated and to support risk management strategies
- improved basis for development of local EM arrangements and Westplans (State Emergency Management Plans for the 27 hazards) required under the EM Act and to inform capability development
- increased awareness of risk at a local and regional level and increased knowledge of the state and local framework for managing risk.

WA RISK PROFILE

The range of hazards assessed by the State Risk Project continued to expand this year with emergency risk assessment workshops being held at the state level and the start of district level assessments.

At state level, human epidemic and marine transport emergency (including marine oil pollution) were assessed. The human epidemic workshop focused on two scenarios – a haemorrhagic influenza outbreak similar to the 1918 Spanish influenza, and an outbreak of salmonellosis. The marine transport emergency workshop assessed a worst-case scenario involving a collision between two ships near the World Heritage listed Ningaloo Reef that theoretically caused a large oil spill. A second scenario (near worst case) was assessed but further analysis revealed the magnitude of probable impacts was not commensurate with other hazard scenarios, so the data was not included in the risk profile.

At district level, hazards specific to individual districts were chosen and risk assessments were conducted. Workshops were conducted in the Great Southern, Wheatbelt, Kimberley, South-West, and Goldfields-Esperance EM districts. They considered storm, bushfire, flood, cyclone, road crash, human epidemic and marine transport emergencies and animal and plant biosecurity. The district risk data has not been fully analysed and is therefore not presented in this year's report.

Analysis of state workshop data has identified no risk statements (findings) that have produced an 'extreme' risk. Broadly speaking, most statements have a 'possible' likelihood, occurring once or twice in a lifetime (30–70 years). Nevertheless, it is important to consider hazards that have a lower likelihood but that are also capable of inflicting significant consequences. Risks that plot in the 'major' and 'catastrophic' categories are noteworthy as they may stretch, or outstrip, the state's current capabilities.

Figure 3.4 illustrates the proportions of risk statements that have been rated as low (green), medium (yellow) and high (red). As is evident from the statements, tsunami has the greatest proportion of low risks, followed by marine transport emergency (MTE). The high risks (red columns) show that cyclone (39%), human epidemic (36%) and flood (28%) have the greatest proportion of concern.

State-level risk statements per hazard

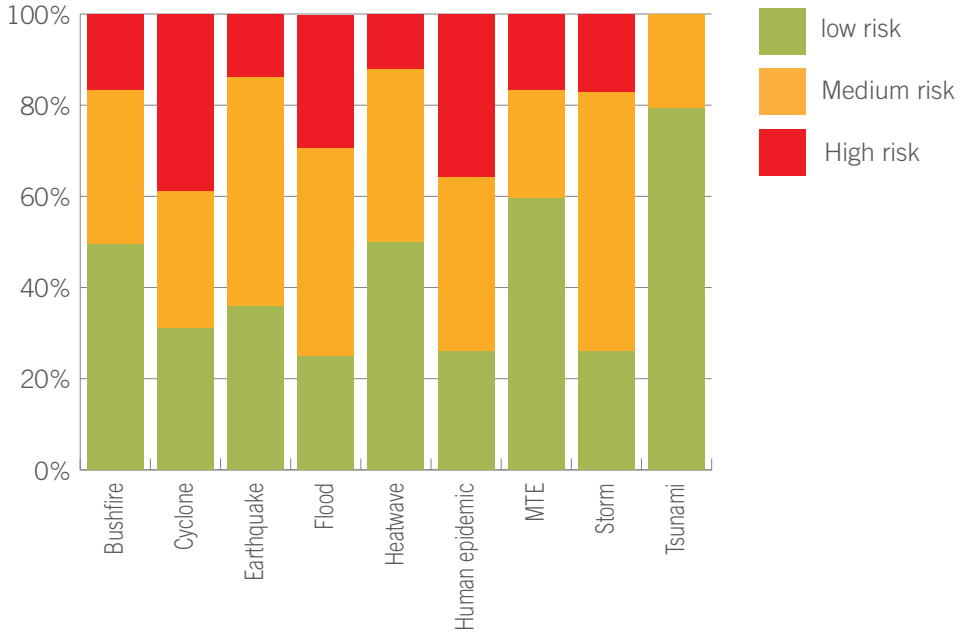


Figure 3.4 – State risk profile: summary of risk levels by hazard

When the hazards are examined individually, it becomes clear they will affect the six state core objectives differently. A flood, for example, impacts most heavily upon infrastructure and economic components whereas the greatest impact of a heatwave is on people, due to deaths and illnesses associated with heat stress. Figure 3.5 isolates the high risks and displays the area of impacts against the state core objectives.

The root cause of the high risk rating from cyclones is the widespread damage to infrastructure and buildings (both residential and commercial) caused by strong winds across a broad geographical area.

The flow-on effect from the potential displacement of people from their homes is an erosion of the communities' social fabric. Issues surrounding evacuation and the lengthy rebuilding process make up the largest proportion of the high risks from cyclones.

Comparable impacts to infrastructure and buildings from flood, storm and earthquake have similar economic and social flow-on impacts.

High risks from human epidemics are largely divided into the impact they would have on people and on public administration (Figure 3.5). While the impact of a human epidemic on people is obvious, the risks to public administration relate to the fact that the health system in Western Australia is operating at or close to capacity. An epidemic would likely overwhelm the majority of primary and secondary systems, remote health services, remote medical transport services (e.g. Royal Flying Doctors Service and St John Ambulance), intensive care units, pathology services and general practitioners.

Similarly, the ability of the state to handle a large oil spill would be stretched due to limited trained personnel and the remoteness of most of the coastline. The logistics of mounting a large response, both in terms of personnel and required resources (e.g. boats) to areas of the coast near Ningaloo Reef (and many other parts of the coast) would be very challenging.

The State Risk Project will continue to assess risks at the state and district level over the next 12 months and will begin to roll out assessments at local government level. In addition, attention will be given to the risk treatment process. This has begun with the testing of models that use risk assessment data to assess cost–benefits of potential treatments.

State level high risks per category

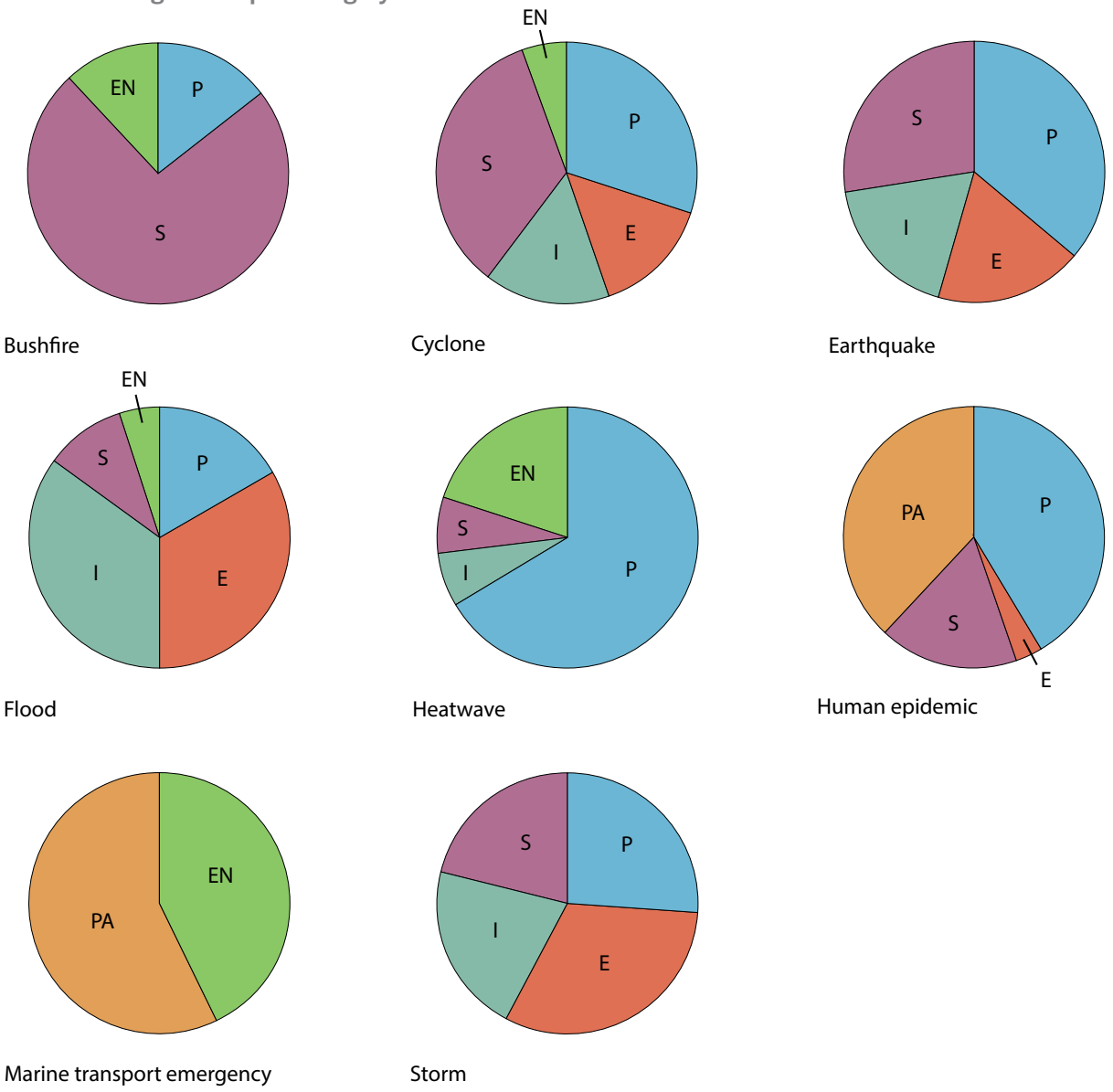


Figure 3.5 – High risks presented in terms of the six state core objectives

Sunset at Monkey Mia, Midwest–Gascoyne emergency management district – *Image courtesy of Daniel Hill*

04

CAPABILITY

04 CAPABILITY

To assess our preparedness, we need to understand what capability exists and can be drawn upon.

CAPABILITY FRAMEWORK

When the SEMC was reconstituted in 2012, an Emergency Management Capability Framework (the 'framework') was established (see Appendix I). This framework identified 10 capability areas (both strategic and operational) spanning the prevention, preparedness, response and recovery spectrum. Figure 4.1 represents the 10 capability areas, with segments connected to symbolise how they are interlinked and operate holistically.

Capability framework

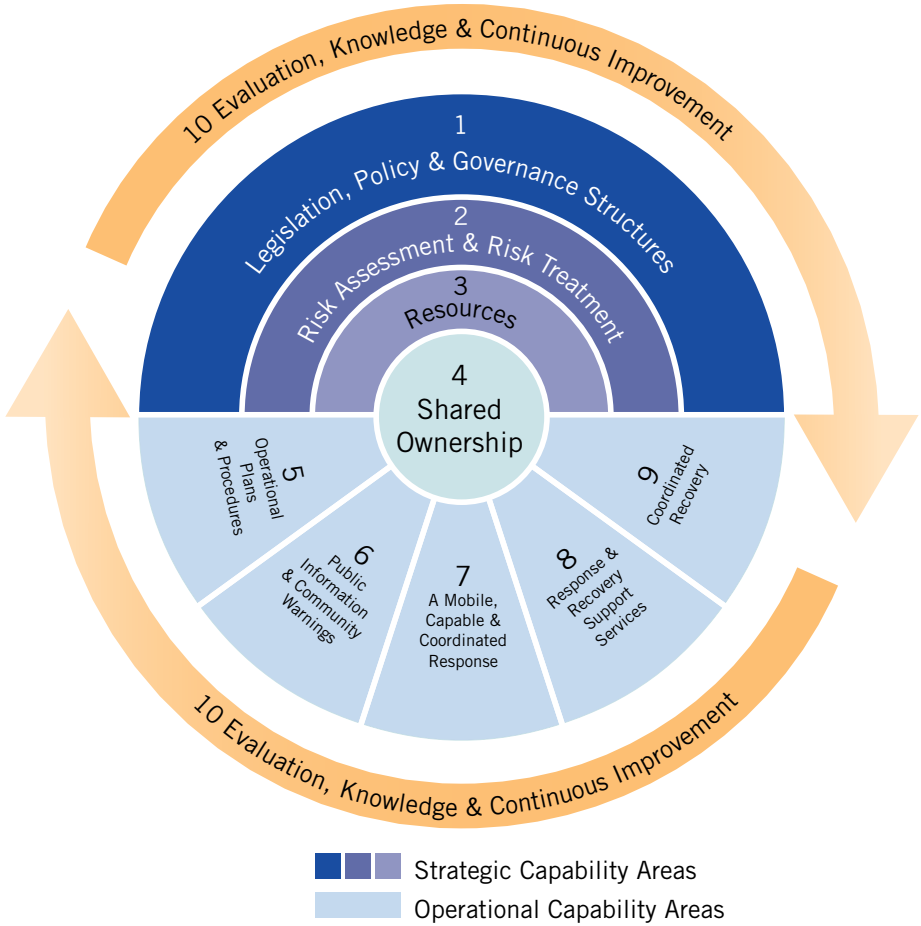


Figure 4.1 – WA Emergency Management Capability Framework

The framework is further underpinned by a series of achievement objectives that support each capability area. These capability areas and the objectives remain unchanged in 2015, as they continue to represent best practice in EM preparation and response, and denote areas where continual improvement can be measured (Table 4.1).

Table 4.1 – Capability areas and achievement objectives

CAPABILITY AREA	ACHIEVEMENT OBJECTIVES
Legislation, policy and governance structures	Legislation, policy and governance structures
Risk assessment and risk treatment	Risk assessment and risk treatment
Resources	People Equipment and infrastructure Finance and administration
Shared ownership	Volunteering Community engagement Business and industry
Operational plans and procedures	Emergency management plans Training and exercising of plans
Public information and community warnings	Public information and community warnings
A mobile, capable and coordinated response	Command, control and coordination Effective and interoperable communications Mobilisation Situational assessment and acquisition of critical resources and services
Response and recovery support services	Evacuation and public protection measures Fatality management services Health and medical services Welfare and social services Restoration of essential services and critical supplies
Coordinated recovery	Coordinated recovery
Evaluation, knowledge and continuous improvement	Evaluation Knowledge management Continuous improvement

4.1 LEGISLATION, POLICY AND GOVERNANCE STRUCTURES

KEY FINDINGS

- Emergency management legislation, policies and plans are in place and appropriate.
- Agencies all report a solid understanding of their roles and responsibilities under the state's EM framework.
- EM policy and legislation updates are communicated and disseminated effectively.
- Responses to stakeholder involvement in the EM review process, primarily through the SEMC working groups, were overwhelmingly positive.
- Most Westplans are current.

The SEMC and its subcommittees perform as the knowledge and coordination hub for EM governance in the state. Responses from agencies indicate that, supported by the SEMC Secretariat, the committee and subcommittees provide an effective distribution mechanism among EM agencies and an effective tool in coordinating input, consulting, clarifying issues and promulgating EM best practice, policy and procedure.

Cohesion of the framework depends on agencies being aware of their roles and responsibilities under EM legislation and flow-on policies and plans. All responding agencies report a comprehensive understanding and have identified that no significant barriers exist. Agencies report that any issues with the EM Act were being addressed through existing structures, notably the Emergency Management Legislation Advisory Group (EMLAG).

Prompt and effective communication of changes to the framework is vital. This includes not only communication to EM stakeholders but also within and among those agencies. Agencies indicate communication of updates is predominantly achieved through membership of the SEMC subcommittees and the SEMC Communiqué or through participation in district and local EM committees.

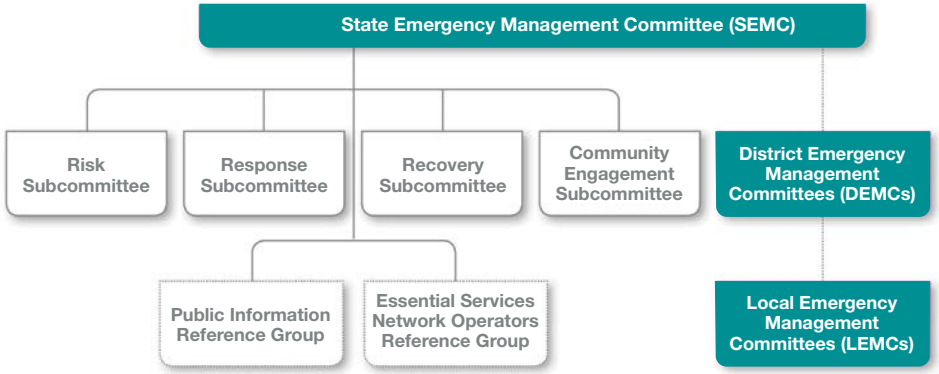


Figure 4.2 – The SEMC governance framework

These updates are then distributed internally through team meetings, training exercises and by email. The dominant avenue for sharing changes or policy updates externally is through involvement in multi-agency exercises, working groups and committees.

All EMAs and more than half of the services providers and local governments reported having contributed to EM legislation and policy reviews. A number of HMAs cited the current review of the Emergency Management Act 2005 and the Policy Review Advisory Group as specific examples of how their agency had been directly involved in the EM review process.

The majority of HMAs reported Westplans under their control are current for the present environment.

All EMAs reported they had measures in place to ensure they were complying with relevant policy and legislation. WA Police, for example, have EM and counter-terrorism advisers who monitor agency response activities to ensure they accord with current legislative and policy frameworks.

Policy and governance framework review project

In late 2014 the SEMC Secretariat embarked upon the first major review of SEMC policy and plans since the proclamation of the EM Act in December 2005. The project will simplify the number of state policies and plans, making EM arrangements more useful, usable and used.

It is anticipated that integrating the policies into a single document and combining the generic elements of Westplans will achieve:

- greater coherence between policy and plans
- removal of duplication between policies, between Westplans, and between policies and Westplans
- greater consistency, by embedding EM principles into the structure of the policies and plans.

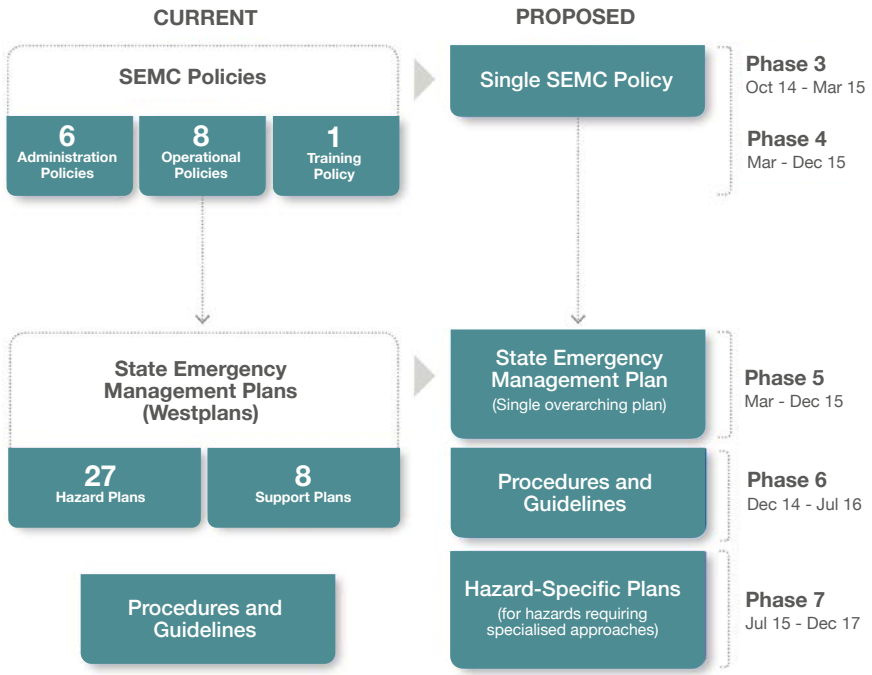


Figure 4.3 – SEMC policies and plans as single documents

The new policy framework will draw upon comprehensive research undertaken across Australian and international jurisdictions, as well as current trends and drivers in EM. The project is being informed by a stakeholder advisory group with representation from a range of EM agencies, as well as broader stakeholder consultation prior to SEMC endorsement.

CASE STUDY – EMERGENCY MANAGEMENT COMMITTEE SKILLS AUDIT

In March 2015, the SEMC Secretariat undertook a survey of district and local EM committee members. The survey was designed to identify the existing skills and responsibilities of almost 300 members of the local emergency management committees (LEMC) and district emergency management committees (DEMC). Once understood, a capability profile could be constructed so that knowledge gaps and training needs could be determined and allowed for in planning.

Committee roles

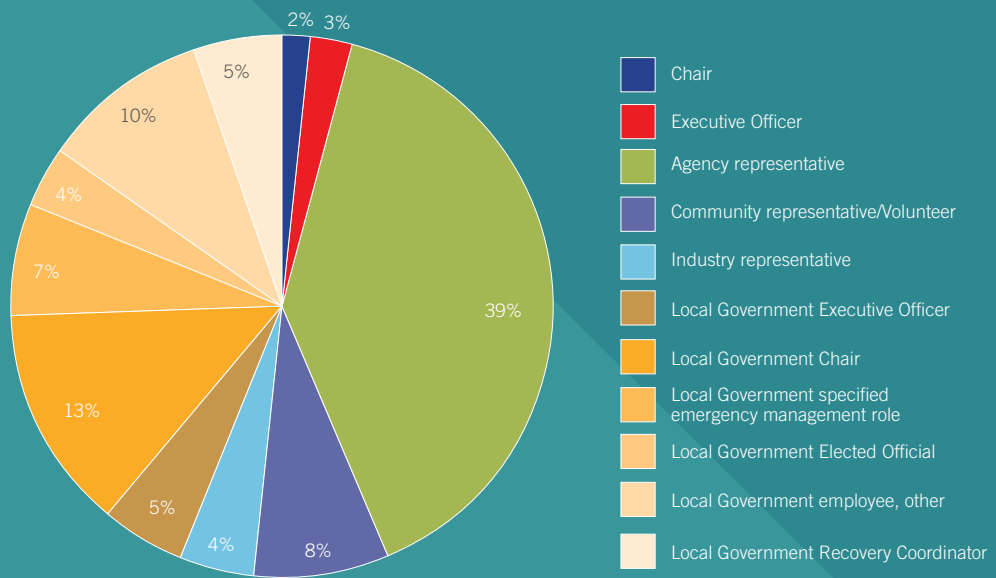


Figure 4.4 – Committee roles

The survey revealed that representatives on the EM committees in Western Australia are highly experienced within their respective fields and are experienced in the EM sector.

Despite this, there was a general lack of understanding about their role within the committee. Committee members identified that they:

- had not received an induction for their committee role
- were unclear about the roles and responsibilities of committee members
- saw a need to clarify the purpose, expectations, goals and objectives of the committees.

Most members saw their involvement in committees as important but primarily as a means to further networking and interactions between EM counterparts. It was reported that committee matters did not generally influence activities within their organisation. Members identified that the most effective learning opportunities were involvement in exercises or responses to an incident.

This echoes patterns highlighted elsewhere in this report. While local and district committees are primarily planning forums, they tend to focus on response and recovery aspects and are not broadly used for prevention and mitigation planning.

4.2 RISK ASSESSMENT AND RISK TREATMENT

KEY FINDINGS

- State Risk Project workshops are well attended, both in numbers of attendees and spread of agencies.
- Three-quarters of responding local government agencies have started emergency risk management processes, most of which are informed by national criteria.

Since its launch in 2013, the State Risk Project has facilitated 10 state-level risk assessment workshops, covering 20 scenarios across 10 separate hazards including cyclone, flood, bushfire, storm, heatwave, tsunami, earthquake, telecommunications disruption, human epidemic and marine transport emergency.

In addition to the workshops, in 2014 the project began analysing actual events in order to validate the risk assessment processes used. For example, a state-level workshop in Karratha focused on the impacts of the 2013–14 Tropical Cyclone Christine and a district-level workshop in Kununurra focused on the impacts of the Kununurra flood in February 2014.

The district rollout officially started in May 2015, assessing risk for each district following EM district boundaries as designated in State Emergency Management Policy (SEMP) 2.4. It began by assessing risks posed to each district from their top priority hazards. Assessment of the remaining relevant prescribed hazards may follow over time. At the time of publication, the State Risk Project had facilitated 17 district-level workshops covering 17 separate scenarios across eight hazards (see Table 4.2).

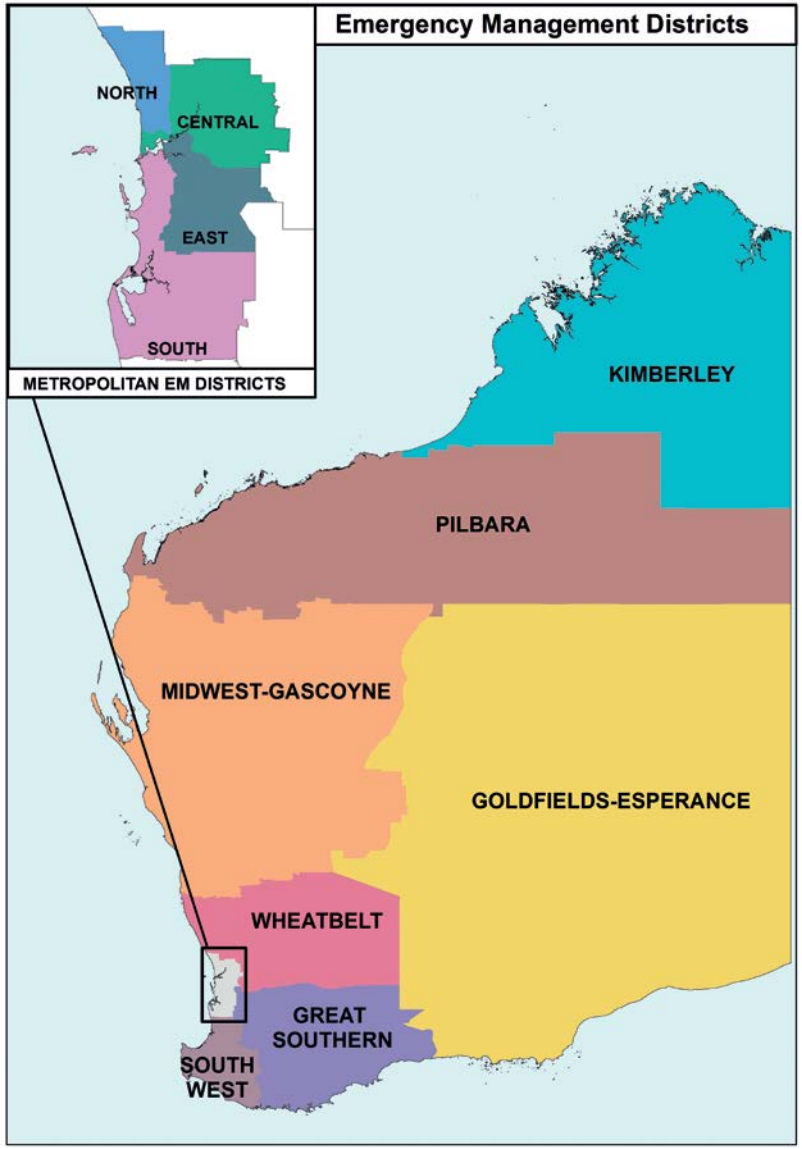


Figure 4.5 – WA emergency management districts

Table 4.2 – Risk assessment workshops facilitated by the State Risk Project

State Risk Project (STATE)	Cyclone Flood Bushfire Human epidemic Storm Heatwave	Tsunami Earthquake Telecommunications disruption Marine transport emergency
State Risk Project (DISTRICT)	Great Southern	Flood Storm Fire Earthquake Marine oil pollution Animal and plant biosecurity
	Kimberley	Cyclone Flood Fire Road crash emergency Human epidemic
	Wheatbelt	Storm Flood Fire
	Goldfields–Esperance	Storm Flood
	South-West	Fire
	Midwest–Gascoyne	To start in 2016
	Metropolitan	To start in 2016

Risk assessment workshops have been well attended by a wide variety of agencies, emphasising the commitment to shared responsibility and fostering shared knowledge of risk, particularly through regional representatives across the EM districts.

In parallel with state and district level risk assessments (and in accordance with their responsibilities under the EM policy), local governments continue to conduct emergency risk management activities. Three-quarters of all responding local governments report having started a risk process.

Table 4.3 – Proposed local risk assessment workshops

State Risk Project (LOCAL)	Strategic and logistical planning for the local government rollout of the *State Risk Project* has commenced, with a number of options currently being considered. It is envisaged that the local rollout will become operational during 2016.

Of the local governments that have completed an emergency risk management process, half report using the national NERAG criteria. This, combined with the high level of awareness (almost 80%) of the State Risk Project, indicates that future uptake and alignment with the national standard is promising.

Mitigating the risk of a natural hazard requires a range of treatment options, including EM, emergency response, construction standards and land-use planning. Land-use planning in particular can be used as a tool to mitigate risk presented by natural hazards.

In 2014 the Australian Government asked the independent Productivity Commission to undertake a public inquiry into the 'efficacy of current national natural disaster funding arrangements, taking into account the priority of effective natural disaster mitigation and the reduction in the impact of disasters on communities'. The commission's final report was released on 1 May 2015 (Productivity Commission 2015).

The report identifies that the impacts and costs of extreme weather events can be expected to increase in the future due to population growth and urbanisation of coastlines and mountain districts near cities.

Bushfire risk management

The Office of Bushfire Risk Management (OBRM) is an independent office within DFES. It was established in 2012 to oversee prescribed burning and bushfire-related risk management in Western Australia. The office focuses on improving the coordination and consistency of practices across the state while recognising that this is best supported by increasing the extent and involvement of all stakeholders.

The OBRM continues to support the development and implementation of a coordinated best practice approach to the identification, prioritisation and treatment of bushfire risk across Western Australia. In 2014–15, the Office worked with organisations and stakeholders to:

- develop a draft best practice guide for prescribed burning in the Kimberley Region, to enhance coordination of prescribed burning planning and management activities
- develop the first version of the Western Australian Bushfire-Prone Area Map
- revise the Western Australian Bushfire-Prone Area Mapping Standard that, together with the map, forms an integral element of the State Planning Policy that will assist in better protecting communities at risk from bushfire
- develop and commence implementation of the statewide Review of the Local Government Permit to Burn system, which aims to align processes with contemporary risk management principles while taking account of local government circumstances
- revise the Bushfire Risk Management Planning Guidelines following the 2014 pilot project, supporting the broader Bushfire Risk Management Planning Project led by DFES
- regulate prescribed burning through its oversight of the DFES and DPaW prescribed burning activities and alignment of these activities to an AS/NZS ISO31000 Risk Management Framework
- engage with non-government organisations who undertake prescribed burning to align their systems and processes to the above framework.

As at 16 October 2015, DPaW reported that prior to the 2015 fire season 53 prescribed burns had been commenced or completed in the south-west of the State accounting for a total of 78,722 hectares.

CASE STUDY – SPECIALIST EM TEAMS AND POSITIONS

Specialist response units have existed for many years and can be found across most contributing agencies to this report. Recent focus on EM has seen corporate and structural changes that have brought about the introduction of EM specific roles and teams within many agencies.

Knowledge of EM and the associated framework is becoming more widespread across Western Australia. Agencies like DFES, WA Health and WA Police have EM principles deeply embedded throughout their organisations. For example, WA Health has established a dedicated disaster preparedness and management unit. This unit specifically manages the prescribed roles articulated within legislation and the EM arrangements.

While this knowledge and commitment is strong within HMAs that have prescribed and legislated roles, it is also extending more widely throughout the spectrum of agencies in the state.

Initiatives like the appointment of a State Recovery Coordinator and local governments appointing local recovery coordinators is broadening the overall importance and acceptance of the need for EM. For example, the Water Corporation recently established an executive level appointment of Corporate Incident Director. This position and the associated staffing seeks to re-energise the existing EM focus through their incident management processes.

Brookfield Rail, Main Roads, the Housing Authority and the Department of Planning have crisis management teams, while other agencies such as ATCO Gas Australia, Horizon Power and the Public Utilities Office have EM teams.

DPaW and the Department for Child Protection and Family Support (CPFS) have pre-formed emergency response teams and Western Power has a preparedness EM team that is convened in response to emergencies.

This broadening acceptance and deployment of personnel against EM priorities is encouraging and is contributing greatly to the advances being made in shared responsibility and preparedness. As more agencies commit to EM principles, understanding increases and systems and processes become more common and standardised.

Figure 4.6 – EM specialists at work

4.3 RESOURCES

KEY FINDINGS

- Agencies report having capable, well trained and well supported personnel.
- Workforce plans are in place to recruit and retain personnel.
- Arrangements exist for the deployment of additional personnel and equipment to the site of an emergency.
- Most agencies report having access to a predetermined operations centre and have back-up contingencies in place with minimal-to-no loss of functionality.
- All EMAs and service providers report they can capture and report on emergency expenditures.
- Confusion exists within LEMC and DEMC members about their roles and responsibilities within the committees, the purpose, goals and expectations.

People

In times of emergency, the state needs suitably trained personnel to combat hazards.

Workforce Plans

Agencies performing a role within the EM environment need appropriate levels of capable, well trained and well supported personnel who can effectively perform their role during large-scale emergencies. To meet this requirement, most EMAs and service providers have workforce plans to ensure sufficient employees are recruited, suitably trained and retained.

DFES reports that its Strategic Workforce Equity Plan 2013–2016 sets out key focus areas such as workforce optimisation, attraction, engagement, leadership and management development.

EMAs such as DPaW report that their fire management programs are designed to develop future fire managers. The Water Corporation has a learning management system that identifies, profiles and records the knowledge, skills, experience and training requirements for its staff.

One area for improvement is within the sphere of local government as EM workforce planning and coordination does not appear to be widespread. This is particularly the case among some of the smaller authorities, which report struggling to develop these plans due to limited financial and human resources to undertake the task.

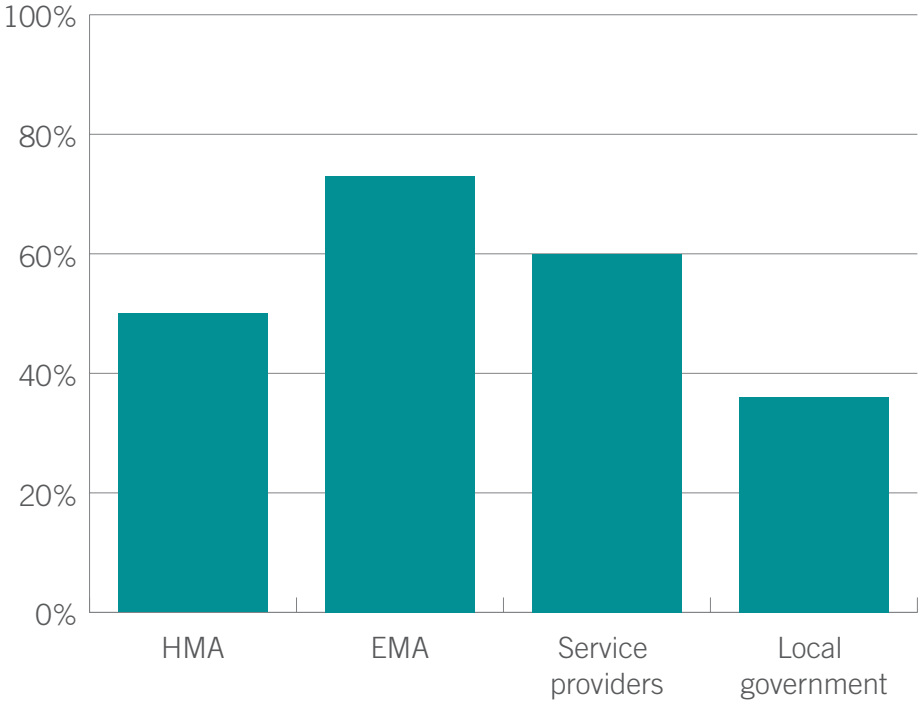


Figure 4.7 – Proportion of agencies with a workforce plan

EM roles and responsibilities should be incorporated into relevant job descriptions to support workforce plans and to ensure that personnel are aware of their obligations. Sixty-three per cent of HMAs and 73 per cent of other EMAs report that roles and responsibilities are clearly documented in the job descriptions of relevant paid personnel.

Volunteers

To support their EM workforces, DFES, local governments, St John Ambulance and the Australian Red Cross report that they use volunteers. These volunteers are provided with extensive training, and clear and well-documented roles and responsibilities. St John Ambulance reports that volunteers are advised of their EM responsibilities as part of its standard training program. Additionally, AmbPlan-WA (the St John Ambulance EM plan) has action cards outlining specific roles and responsibilities during mass casualty events.

These agencies report they have sufficient volunteers to respond to two concurrent Level 3 incidents (for incident levels, see Appendix D) and that they can be deployed to any geographical location within Western Australia. However, the logistics of travel would cause time delays.

DFES has recently established the State Wide Operations Response Division (SWORD). This team is designed to work alongside local volunteer groups, delivering operational support to meet the needs of the local community and its volunteer service. SWORD operations complement the existing volunteer services and deploy teams of rostered volunteers to incidents throughout Western Australia quickly and efficiently.

In August 2015, the WA Auditor General completed a report (Office of the Auditor General 2015) on the support and preparedness of Fire and Emergency Services Volunteers. It was noted that while DFES is accountable for fire and emergency responses, it is not responsible for all volunteers that respond to incidents.

This report identified a number of issues, including:

- an upward trend in volunteer turnover
- a declining number of volunteer groups
- rising concern about volunteer fatigue.

The report concludes that DFES has made considerable progress in identifying ways to improve how it recruits, prepares and supports volunteers. It recognises that DFES does have in place a range of projects that are expected to deliver improvements in these areas, though notes that many of these are still in planning or early implementation stages.

Training

Training and capability are intrinsically linked. It is important that agencies not only provide appropriate training to personnel with assigned EM roles but also assess the effectiveness of that training. Thirty-seven per cent of HMAs, 60 per cent of other EMAs and all applicable service providers report they have assessed the EM skills of relevant employees.

Personnel should ideally have a training plan to enable the development of training schedules. Half of HMAs and other EMAs and 80 per cent of applicable service providers report that all staff have a training plan, while other agencies report having plans in varying degrees of development.

In March 2015, the SEMC Secretariat undertook a survey of district and local EM committee members. The survey was designed to identify the existing skills and responsibilities of committee members. Once understood, a capability profile could be constructed so that knowledge gaps and training needs could be determined and planned for.

The survey showed that representatives on the EM committees in Western Australia are highly experienced practitioners within their respective fields and have been using their occupational skills within an EM setting for extended periods.

Despite this, there was a general lack of understanding about their EM role within the committee settings. It was identified that there is a need to establish clarity around the roles and responsibilities of committee members. The next most important issue identified was the need to clarify the purpose, expectations, goals and objectives of the committees. These issues are likely to make up part of the SEMC 2016 work plan.

Equipment and infrastructure

In times of emergency, agencies need to have access to (or be able to draw upon) appropriate equipment and infrastructure to protect the community.

All applicable HMAs, EMAs and service providers report they have appropriate asset management programs in place to maintain their equipment in a response ready state. These programs incorporate the purchase, maintenance and longer term asset replacement of tools required for discharging their EM responsibilities.

In many cases, the equipment is strategically positioned around the state and is often complemented by an additional surge capacity of standby appliances and equipment ready for rapid deployment. This pre-deployment and surge capacity is particularly evident among service providers where service disruptions closely align with profitability or brand.

ATCO Gas, the Water Corporation, Western Power and Horizon Power all have strong plans in place and report redundancy options available. This capability and equipment is maintained in a state of readiness and contract arrangements are in place for deployment by road or air.

The Australian approach to EM is 'scalable', meaning it can be escalated to a higher level as a situation warrants. Should additional equipment be required to respond to a large-scale emergency, 88 per cent of HMAs, 36 per cent of other EMAs and 80 per cent of service providers report they have agreements in place.

The Department of Agriculture and Food, Western Australia (DAFWA) reports that the 'Boosting Biosecurity Defences' initiative includes a project to improve linkages with local governments. For biosecurity responses, it identifies appropriate animal burial sites, should they be required. These arrangements will be tested during a DAFWA-led large-scale national biosecurity exercise based in Western Australia during May 2016.

Should state-level arrangements be insufficient to respond to a large-scale incident, half of HMAs and 36 per cent of EMAs report having interstate agreements, while 75 per cent of HMAs and 36 per cent of EMAs report having national arrangements in place. Additionally, SEMP 4.9 provides guidance on how agencies may access physical assistance from the Australian Government.

Operations centres

The coordination of personnel and equipment to respond to large-scale emergencies relies on functional operations centres.

More than 60 per cent of EMAs and service providers report they have access to a predetermined operations centre that is both functional and appropriate to respond to Level 3 incidents. Of these agencies, all have access to an appropriate back-up facility.

Agencies report varying levels of redundancy with respect to water, electricity and communications in their primary and back-up operations centres. However, all agencies report that should their primary operations centre fail, there would be minimal-to-no loss of functionality at their back-up centres.

DPaW reports that it has the capacity to establish a fully operational mobile incident control centre on a suitably sized and located 'greenfields' site anywhere in the south-west of the state within 12 hours (and elsewhere in the state in a longer timeframe). Dependence on fixed incident control centres is therefore reduced as the mobile facility may be more functional than fixed centres whose primary purpose is not usually incident management.

Finance and administration

The need to review natural disaster funding has been nationally recognised. The 2015 Productivity Commission report into disaster funding arrangements recommended that post-disaster support by the Australian Government to state and territory governments should be reduced, while support for mitigation should be increased.

It also states that state and territory governments bear a significant level of disaster relief and recovery expenditure. Current natural disaster funding arrangements are not efficient, equitable or sustainable. They are prone to cost shifting, ad hoc responses and short-term political opportunism. The report highlighted that insurance was an important element of risk management. Insurance markets in Australia for natural disaster risk are generally working well, and pricing is increasingly risk reflective.

The federal Attorney-General's Department and jurisdictions are considering the findings and recommendations of the report. However, any changes are not anticipated until at least financial year 2016–17.

Under current arrangements, federal and state grants are available to EMAs, local governments and other eligible organisations ahead of a disaster for prevention and preparedness initiatives, and following a disaster for response and recovery activities. For agencies to claim eligible expenses, it is important they capture costs associated with response activities.

All applicable EMAs and service providers report that, in accordance with SEMP 4.2 – Funding for Emergencies, they have procedures to capture and report on expenditures related to the management of large-scale emergencies. DPaW has developed financial guidelines for bushfires that ensure financial governance and accountability for all expenditure incurred at an incident.

A range of funding is available at both Commonwealth and state level to support EM activities. Some of these are to fund enduring programs such as the State Emergency Service (SES) or Bush Fire Brigades while others are directed to specific needs and to support affected families and businesses after an event.

Emergency services levy

The emergency services levy (ESL) raises around $320 million, funding Western Australia's fire and emergency services, SES units, the Volunteer Marine Rescue Service and Volunteer Emergency Service units.

The levy is applied to every Western Australian homeowner as part of the annual council rates notice. The program is managed by DFES and funding for SES units and Bush Fire Brigades is through an ESL-funded grants program.

Local governments apply for an operating and capital grant for each service. Operating grants are paid to local governments while capital grants are usually provided through direct purchases by DFES.

National emergency management projects

The National Emergency Management Projects (NEMP) program is overseen by ANZEMC (the Australia–New Zealand Emergency Management Committee) and managed by the Attorney-General's Department. The NEMP program funds EM projects of national significance that support the implementation of the National Strategy for Disaster Resilience. These grants are designed to improve the ability to prevent, prepare, respond to and recover from disasters across social, economic, environmental and governance elements.

Applications are sought nationally on an annual basis with information provided on the Australian Emergency Management website. In 2014–15, $3.7 million was allocated across 19 projects. At the time of publication, the allocation for 2015–16 was yet to be determined.

WA natural disaster relief and recovery

The Commonwealth provides financial assistance that is administered locally through Western Australian Natural Disaster Relief and Recovery Arrangements (WANDRRA) to communities that have been significantly affected by an eligible natural disaster event.

Should the measures available under WANDRRA be activated during or after a major emergency, relevant EMAs and local governments are advised of the claims process for reimbursement of eligible costs directly and through joint state and Australian government media statements.

For the financial year 2014–15, 94 individual WANDRRA claims in excess of $64 million were processed (see Table 4.4). While the cash value totals are comparable with the expenditure for the previous financial year, it is notable that most expenditure this year was for flood events and last year was for storm damage.

State expenditure on eligible WANDRRA measures is expected to be in the region of $64 million for the 2014–15 financial year. Based on financial thresholds set out in NDRRA, this would lead to a Commonwealth contribution of between $3 and $4 million.

Table 4.4 – WANDRRA expenditure for 2014–15 by hazard category

HAZARD	$
BUSHFIRE	10,334,624
CYCLONE	8,330,174
FLOOD	44,422,338
STORM	1,105,651
TOTAL	**64,192,787**

Natural disaster resilience program

Funding for the Natural Disaster Resilience Program (NDRP) is apportioned to Western Australia by the Attorney-General's Department through a national program.

The program aims to enhance the resilience of Western Australian communities to natural disasters by targeting activities in accordance with the National Strategy for Disaster Resilience. The SEMC Secretariat has oversight of the program.

Western Australia allocated this Commonwealth funding to three programs. More than $2 million was made available in 2014–15 for distribution throughout the state through a competitive bid process, with successful projects announced in March 2015.

The remainder of the funding was divided between the state's two priority projects – the State Risk Project and the Bushfire Risk Management Planning Project – with $2.06 million allocated to each. Information about access to NDRP funds is available on the SEMC website (www.semc.wa.gov.au).

All West Australians reducing emergencies

The All West Australians Reducing Emergencies (AWARE) program is a grant scheme designed to enhance the State's EM arrangements by building local EM capacity, capability and knowledge. AWARE is financed and administered by the SEMC Secretariat. The annual competitive grants program focuses on established state priorities and is advertised on the SEMC website and elsewhere. In 2014–15, $380,000 was available for distribution via a competitive grants round, with 14 approved projects receiving a total of $326,000.

National bushfire mitigation program

Funding for the National Bushfire Mitigation Program (NBMP) is distributed to each state and territory by the Attorney-General's Department for bushfire mitigation. The program is hosted by DFES through the Office of Bushfire Risk Management and is distributed via a competitive grants round. It delivers activities to implement long-term bushfire mitigation strategies and better fuel reduction programs. The program will allocate $305,000 per year for three years to Western Australia. Although this program officially commenced in 2014–15, the Project Agreement was signed in June 2015 and therefore the inaugural grant round will be held in 2015–16.

Royalties for regions

While not EM specific, the Royalties for Regions program has provided significant funding across the state for a range of projects that have increased capability and preparedness. Since December 2008, Royalties for Regions has invested $4.2 billion of the state's mining and onshore petroleum royalties to more than 3500 projects across regional Western Australia.

4.4 SHARED OWNERSHIP

KEY FINDINGS

- All HMAs and most other EMAs have agreements with community or industry groups to assist during an incident.
- Robust recruitment, engagement and training strategies exist within the agencies that use the services of volunteers.
- Most HMAs have regional offices through which they can engage with a wide range of community groups.
- EMAs reported that they have dedicated significant time to maintaining relationships that enable them to work well with industry and community groups to prepare for and respond to emergencies.

DPaW has formal arrangements with the Forest Products Commission (FPC) for personnel participation in the department's fire management program. This is in addition to formal agreements covering heavy machinery and logistics for bushfire response operations. Further, informal arrangements are in place with some commercial tree-growing companies to protect plantation assets.

The core business of the Public Transport Authority (PTA) of Western Australia is transport and the mass transit of people. Accordingly, the PTA has the ability to mobilise assets within its network to assist response agencies with the deployment of personnel and equipment to a hazard site during a large-scale emergency. The PTA reports it has excellent working arrangements with St John Ambulance and WA Health. The authority's emergency response and contingency plans have been developed with this support process in mind.

Volunteering

More than 80 per cent of local governments reported they manage volunteers, most of whom are engaged through Bush Fire Brigades. Other volunteers are managed by organisations that operate in support of emergency situations such as the SES Volunteers, marine search and rescue, volunteer fire and rescue, Australian Red Cross, St John Ambulance, the Country Women's Association and the Salvation Army.

There are 579 Bush Fire Brigades across Western Australia staffed by more than 22,000 volunteers (Bush Fire Service 2015). They predominantly work to protect people and property in rural and pastoral areas. The brigades are administered and trained by the respective local governments with support from DFES. They are run by a range of volunteers, DFES staff or local government staff, depending on the size and complexity of operations.

In late 2013, Volunteering Australia undertook a review of the definition of 'volunteering'. The previous definition was not thought to encompass the dynamic nature of volunteerism and the wide range of people and activities covered. The new definition is as follows:

> Volunteering is time willingly given for the common good and without financial gain.
>
> (Volunteering Australia 2015)

The Board of Volunteering Australia formally endorsed the new definition and supporting explanatory notes in July 2015. As this is a recent change, it may take some time to filter through to Westplans and agency and SEMC policies.

Spontaneous volunteers

It is well documented that during a response to a significant emergency, skilled and unskilled members of the public may spontaneously volunteer to assist in any way they can (Emergency Management Australia 2015). In such circumstances, these volunteers need to be effectively managed so as not to interfere with or impede planned response and recovery activities.

Spontaneous volunteering is increasingly a part of emergency management (Department of Families, Housing, Community Services and Indigenous Affairs 2010). Some EMAs and local government authorities manage spontaneous volunteers through their own policies and processes. Most agencies, however, do not have a process to deal with spontaneous volunteers. Many will refer them to Volunteering WA. Several HMAs reported that the types of emergencies they are involved in either required specialised skills or have not historically attracted spontaneous volunteers.

WA Police, WA Health, the Australian Red Cross, St John Ambulance and the Water Corporation all report having processes in place to manage spontaneous volunteers. The remaining agencies have mixed opinions as to whether or not they should establish processes. One agency recommended whole-of-government consideration to address issues such as risk, liability, insurance and occupational safety and health.

Community engagement

HMAs engage with communities chiefly through media campaigns and interviews, the web and social media. Other engagement strategies include leaflets, community meetings and training sessions.

The Department of Planning's notification of known hazards on land titles (e.g. known flood zones) enables property owners to learn more about their potential risks, and thus be better prepared. Only titles applied for through a planning decision have this information (e.g. if a property owner wishes to subdivide their block). Property owners can also find out more by requesting an *Interest Report* (Property Interest Report 2015).

The information available to property owners will only increase over time as the Western Australian Whole of Government Open Data Policy 2015 becomes embedded and better data sharing between agencies is established (Department of the Premier and Cabinet 2015).

The Australian Red Cross in Western Australia is currently piloting a preparedness program for new migrants. This project uses clients of the Red Cross Migration Support Program (with reasonably good English language skills) to deliver preparedness messaging to their family and cultural networks. The training enables clients to deliver REDiPlan sessions in their own language to fellow migrants, whose English skills might not be as good.

In 2014 the Red Cross employed a project officer based in the Kimberley to work specifically with remote Aboriginal communities on emergency planning and preparedness. Ongoing efforts are being made to establish volunteer teams focusing specifically on EM in remote areas such as Kununurra and Halls Creek to help build resilience.

The City of Cockburn is one of several local governments that holds preparedness workshops for the community; their version is called 'Can You Do 72' (Emergency Preparedness Workshops 2015). The city has also released an emergency awareness smart phone app called 'Disaster Aware'.

DFES has developed traveller-specific tools such as publications aimed at travellers in remote bushfire risk areas and has targeted media outlets such as Tourist Radio or regional media when a specific requirement is identified.

The Town of Bassendean conducted a significant riverine flood prone awareness project that involved wrapping Western Power poles with fluorescent bands to indicate flood levels in inundation regions. This very visible reminder of flood impact is supported through signs with flood regions superimposed over local maps and a door-to-door contact program by SES members to all vulnerable properties delivering 'Flood Ready Kits'. The kits contain publications, checklists, a wind-up radio/torch, and other items that encourage residents to plan and aim for self-reliance during a flood event.

Figure 4.8 – SES members show Town of Bassendean flood markers and kits
Image courtesy of DFES

Many local governments, with the support of EMAs and other agencies, target tourists in education campaigns about potential dangers. A good example is the Shire of Mingenew, which employs the standard methods (visitor centre, caravan park and shire office), but also uses a person-to-person approach. The shire prints notices that can be handed out in the local shops, post office, supermarket, bakery and pub, enabling tourists to engage with the locals about any impending emergency issues.

The Shire of Augusta–Margaret River provided key preparedness messages to three labour hire companies for seasonal workers. They also set up an emergency preparedness information stall at the Margaret River Farmers Markets over the March long weekend and the Margaret River and Districts Agricultural Show in October, where staff took the opportunity to speak with tourists about how to be prepared for emergencies.

Business and industry

All HMAs and a significant number of other EMAs have agreements in place with community or industry groups to assist with EM activities during an incident. Some of these agreements are formally documented in memorandums of understanding (MoUs), mutual support agreements, Westplans or local emergency management arrangements (LEMAs).

Others are less formal agreements relating to the use of equipment and personnel or other resources from local industry or authorities. This is particularly evident in remote areas of the north-west of the state where the mining industry is the primary employer and mining companies have both personnel and plant and equipment available for deployment.

Considerable effort has been made with respect to the maintenance or recovery of local businesses. Agencies such as the Small Business Development Corporation or the Chamber of Commerce and Industry have invested in equipping local businesses with knowledge of business continuity measures. These draw upon HMA resources and provide information, guidance and checklists for improving business continuity. They focus on enabling businesses to identify and prepare for risks, respond to and recover from incidents and, wherever possible, to continue trading.

This preparedness and planning will lessen the impacts and increase the resilience of individual businesses and the community in general.

4.5 OPERATIONAL PLANS AND PROCEDURES

KEY FINDING

- HMAs advise that State Emergency Management Plans are regularly reviewed, exercised and updated to accurately reflect current EM arrangements.

Emergency management plans

State Emergency Management Plans (Westplans) are established in accordance with s. 18 of the EM Act. These plans clearly identify and document the roles and responsibilities of HMAs and EMAs in the event of an emergency or activation of a support service.

The SEMC is responsible for ensuring the preparation of the Westplans it considers necessary. In practice, this function is delegated to the relevant HMA or EMA. (For a full analysis of Westplans, see Appendix E.)

To complete a Westplan, the responsible HMA consults with other EMAs that have a role or responsibility under that plan and ensure all roles and responsibilities are clear and well defined. All HMAs report a strong internal governance process to ensure their EM plans are regularly reviewed and are consistent with state EM policies and procedures.

Training and exercising of plans

Regular testing of an EM plan is an effective way to demonstrate and evaluate the level of preparedness for emergencies. EM policy requires HMAs to exercise their EM plans annually. Most EMAs have reported a strong focus on exercising these plans at local, state and national levels.

Exercising an emergency plan can take many forms, from in-house discussions to full-scale, multi-agency coordinated deployment exercises in the field. Testing these plans ensures they are current, effective and represent best practice. It also ensures that operational personnel in the field, who will most likely be required to activate the plan in an emergency, are familiar with the plan's operation.

Most HMAs conducted exercises of their EM plans during 2014–15, or have plans to undertake them during 2015–16. The majority of these HMAs undertook a regime of post-exercise evaluation to identify areas for improvement (Appendix E).

Westplan rationalisation project

Western Australia currently has 27 Westplans and eight support plans. The SEMC Secretariat is working with stakeholders to reduce the number of Westplans. The Westplan Rationalisation Working Group is considering the amalgamation of Westplans based on hazard or consequence. It is expected that the process will be completed by December 2017.

Bushfire risk management plan

In March 2014, the SEMC approved State Emergency Management Policy 2.9 which deals with the management of emergency risks. Under the policy, local governments will develop and maintain emergency risk management plans for all hazards relevant to their locality.

As part of this process, 45 individual local governments were identified as having a known bushfire risk and were therefore required to develop a specific bushfire risk management plan (BRMP). BRMP guidelines have been developed, and a pilot project is being considered for rollout across the identified local governments.

CASE STUDY – TRANSPORT RESILIENCE

In February 2015, the Broome and the Kimberley EM committees studied the resilience of transport networks in the face of cyclones in the north.

The Transport Network Disaster Resilience Workshop looked at lessons from recent disaster events and examined opportunities for improvements. Participants explored ways to improve the resilience of the transport networks prior to, during, and after a disaster.

The workshop was part of a broader project headed by a research team from Griffith and Curtin universities, which form part of the Sustainable Built Environment National Research Centre. Members shared their visions, ideas, constraints and opportunities as well as generating actions for the future.

'A resilient city persists in the face of adversities such as natural disasters and continues to deliver its core functions despite these daunting challenges,' one participant said.

'Much is understood about how to respond to disasters and it is crucial that this knowledge is shared and enhanced.'

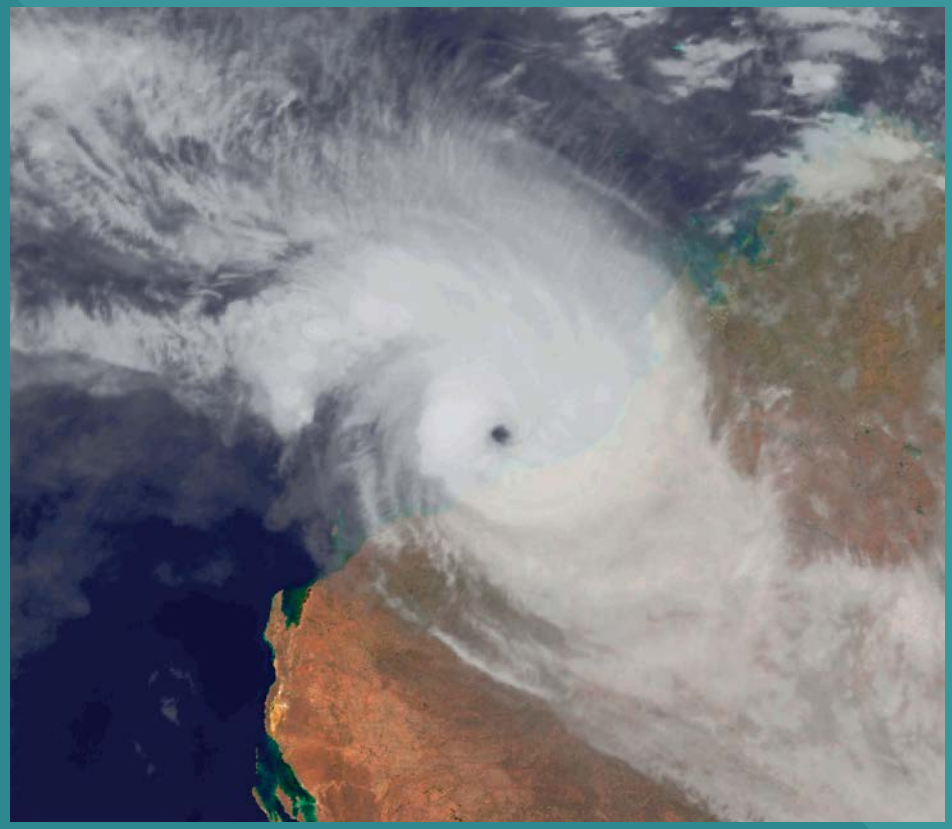


Figure 4.9 – Cyclone is one of the most significant hazards for the Kimberley emergency management district.

Satellite image originally processed by the Bureau of Meteorology from the geostationary meteorological satellite MTSAT-2 operated by the Japan Meteorological Agency.

4.6 PUBLIC INFORMATION AND COMMUNITY WARNINGS

KEY FINDINGS

- Most HMAs report they have systems in place to convey vital information and warnings.
- Local governments use a range of communication tools to send emergency information to residents.
- Many local governments report conducting activities specifically addressing the needs of culturally and linguistically diverse (CaLD) groups.

Most HMAs report they have systems and protocols in place to convey vital information and hazard warnings to the public. Further, they actively cooperate with other EMAs, local governments and support organisations, where appropriate. Activities include media information, advertising, publications, community engagement strategies and tools, social media, training of stakeholders, and internal communications. The SEMC Public Information Reference Group works to collectively enhance the capabilities of all state agencies to communicate with the public.

Primary alert and warning systems available for conveying vital information to the public during times of emergency include:

- ABC Emergency radio
- DFES alerts and warnings
- Emergency Alert (national telephone warning system).

DFES reports it has a detailed public information operational plan outlining how it will distribute information during an emergency. The plan is consistent with the Australasian Inter-Service Incident Management System (AIIMS) structure and relevant Westplans, and has a number of supporting documents, guidelines and processes that underpin its framework. Public information is a dedicated function operating within state operations and incident management (in field) structures. DFES currently has a number of projects underway that:

- enhance the capabilities available for issuing public messages (Critical Messaging Project)
- expand its social and digital media capabilities (Digital Media Project).

DFES is also participating in a national alerts and warning review, led by Victoria, which is expected to further enhance knowledge of and best practice in warnings nationwide.

Local governments across the state use a range of communication tools to send emergency information to residents. Not all local governments use all tools. They select the best tools for their situation, including:

- annual firebreak notices – outlining compliance requirements, and fire safety and preventive information
- hazard checks
  - City of Karratha conducts yearly cyclone and fire hazard checks of all properties
- promotion through local media
- newsletters
- text messaging
  - SMS notification of bans on harvesting during peak periods of fire risk
- roadshows in partnership with HMAs and support organisations
- local government websites
- newspapers
- seasonal signboards.

The Shire of Plantagenet reported that SMS proved a useful communication tool during the O'Sullivan fire in February 2015. The shire convened a community meeting via SMS, which resulted in attendance by about 60 per cent of the population of Rocky Gully. The number of people subscribing to the SMS also increased dramatically during the fire.

Remoteness is a particular hazard in Western Australia, especially for tourists who may be unaware of local conditions. DPaW, which manages many tourism sites, issues tourism operator alerts via email to more than 1300 licenced commercial tourism operators across the state. The department also engages with tourists on department-managed land through local, regional and district offices.

Metropolitan beaches attract numerous day tourists. Many of these beaches are equipped with a broadcast system for emergencies.

Last year's report noted that more is needed to communicate effectively with culturally and linguistically diverse (CaLD) communities. While local governments acknowledge linguistic diversity, many either do not have a strategy or limit their services to interpreting services and language specific packages upon request. However, this year many more local governments reported CaLD activities. Examples of developments include:

- The City of Kwinana lists translation services in its local EM arrangements and is looking at collating the names of personnel who speak a language other than English who can be called upon in various situations.
- The City of Mandurah has included a language identification card in each welfare centre activation kit, to assist in arranging interpreters during an emergency.
- The City of Swan is upgrading its website so that it can automatically translate information into the five most commonly spoken languages within the city.

4.7 A MOBILE, CAPABLE AND COORDINATED RESPONSE

KEY FINDINGS

- Pre-established protocols are in place between EMAs, service providers and local governments.
- Liaison officers who deploy to operations centres are given access to HMAs' crisis information management systems.
- The sufficiency of incident controllers becomes stretched as multiple events take place or as the duration of incidents becomes more protracted.
- EM agencies are increasingly using social media as a tool to communicate with the community.
- Concerns have been raised about telecommunications 'blackspots', particularly in the Wheatbelt and south-west of the state.
- Several regional local governments have expressed dissatisfaction with both the level of telecommunications infrastructure and the service provided.
- Maintaining effective and interoperable communication systems remains a challenge.

Command, control and coordination

In preparation for future emergencies, protocols (formal rules) are agreed upon between EMAs, service providers and local governments. These protocols are structured, well understood and clearly define the interrelationships between agencies during an emergency. They articulate roles and responsibilities, facilitating the orderly giving of directions, priorities for key tasks and arrangements for reporting.

All HMAs, most other EMAs and an increasing number of service providers and local governments use an incident management system (IMS). This IMS, and related incident management principles, enables increased interoperability and aids the coordination of emergency responses. Although the Western Australian EM system does not align to a single IMS, it is acknowledged that two particular systems are used in WA, namely AIIMS (Australasian Inter-service Incident Management System) and ICCS (Incident Command and Control System) Plus.

The Australasian Fire and Emergency Service Authorities Council has started to review AIIMS, with the purpose of developing an updated version. To achieve this, a national working group will consider the alignment between AIIMS and ICCS. Western Australian agencies are represented on this national working group.

In Western Australia, 78 per cent of HMAs report sufficient capacity to provide incident controllers trained for Level 3 incidents of short duration (i.e. less than one week). This capability becomes stretched and diminishes as multiple events take place or the duration of Level 3 incidents become more protracted.

Semp 4.1 – Incident Management

SEMP 4.1 – Incident Management was reviewed in 2014–15. Lessons identified from the Parkerville Stoneville Mt Helena bushfire in January 2014 were considered. These included the frequency of meetings of the State Emergency Coordination Group and clarity about requirements for declaring incident levels. Most EMAs report their processes align with state EM policy. St John Ambulance reports the organisation also uses SEMP 4.1 as a basis for internal emergency response arrangements for incidents involving multiple casualties.

Agencies report no issues with SEMP 4.1, and some agencies highlighted positive experiences in the practical application of the policy. Their processes ensure personnel are aware of the command and control structure and of their responsibilities within that structure. This includes training and exercise programs, policy, procedures and the establishment of operational doctrine.

DFES has implemented the state Control, Command, Coordination and Information System (C3IS) project that enhances the organisation's C3 capacity and ensures that the supporting information systems are of the highest standard. These enhancements have reportedly prompted changes to DFES state-level arrangements for multi-agency Level 3 incidents.

Knowledge of EM

Knowledge of EM and the associated framework is extensive in the small number of agencies that are intimately involved in EM activities. Agencies like DFES, WA Health and WA Police have a solid understanding of EM and a depth of knowledge as all levels of the organisations contribute to improving outcomes.

Other agencies have a specialised knowledge of EM that is confined to their functional areas specialising in EM and does not permeate through the agency and inform decision making.

Some local governments have seen the benefits of EM planning and preparedness first hand during and after emergency situations. Others have seen the beneficial impact on their neighbours and have since embraced EM principles. However some local government areas have not been directly impacted by an emergency and cannot envisage an instance where they would. These agencies see the requirements as an unnecessary burden upon their already limited resources and budgets, and consequently have limited EM commitment and knowledge.

Effective and interoperable communication systems

The availability of reliable telecommunications is critical to the success of an emergency response. EMAs continue to work towards effective and interoperable communication systems to allow responders to communicate effectively in large-scale emergencies.

EMAs, service providers and local government authorities report the use of a variety of communications systems during large-scale emergencies. These include communication and information management services, such as WebEOC®, Noggin OCA®, two-way radio networks, satellite, mobile and landline telephones, and emails. It is notable that EM agencies are increasingly using social media as a tool to communicate with the public.

Capacity relating to two-way radio and mobile phone networks continues to be enhanced. WA Police report their Trunked Radio Network now consists of 28 operational radio sites. An additional two sites in Greenough (prison-related) and Port Hedland are in the design and pre-build phase.

WA Police also report progress in the installation of a conventional digital radio network to provide 'in-fill' radio coverage to subdistricts in remote and regional areas. Of the 207 sites, 117 are in the design and pre-build phase, 56 are either under construction or in the pre-commissioned phase and 34 have been commissioned and are operating. The project should be completed by December 2017.

Concerns about telecommunications blackspots and service disruption issues have been raised consistently at district level, particularly in the Wheatbelt and south-west of Western Australia. Several local governments expressed dissatisfaction with the level of telecommunications infrastructure and service provided by the national carriers. The Parkerville Stoneville Mt Helena Bushfire Review also recommended improvements to communications infrastructure.

Following the success of the Regional Mobile Communications project completed in 2014 (State Emergency Management Committee 2014), the Western Australian Government provided a further $45 million, through the Royalties for Regions program, for the Regional Telecommunications project. Managed by the Department of Commerce, the project secured additional funding from the federal government's $100 million Mobile Blackspot Program that will deliver 499 mobile base stations nationally. A total of 130 will be located in Western Australia, including 109 funded by the Regional Telecommunications project.

Despite this increased capacity, maintaining communication systems that are effective and interoperable remains a challenge.

Half of EMAs and service providers report they do not have communications systems that are interoperable with other agencies. The need for interoperable communications is being considered at a state level through the Emergency Services Communication Strategy. The strategy, developed in 2009, is being reviewed with the aim of ensuring it remains contemporary and fit for purpose. The review should be completed in 2015–16.

HMAs report that communications with some agencies and non-government organisations remains technically difficult.

Interoperability issues highlighted by agencies include the lack of testing of two-way radio functionality between some agencies and the inability to share information. Agencies did, however, acknowledge that the interface issue is currently being addressed by the SEMC, and is likely to be resolved in the near future.

An area of ongoing focus is upon addressing communication disconnects between DFES and DPaW. Lack of visibility of DFES' information management systems has been reported by DPaW as a matter that may limit effective interagency operations.

The mechanism for DFES and DPaW to share WebEOC® is available, as evidenced by the WebEOC® partnerships between MainRoads WA and PTA, and WA Health and St John Ambulance. However, technological interoperability between these agencies is yet to be fully achieved.

Additionally, VHF radio communications can be problematic in some instances as high-band VHF is not available in a number of local government and private vehicles (which are still equipped with mid-band VHF), and some support agencies are not VHF-equipped at all.

While it is acknowledged that it is critical for DFES, DPaW and local government to communicate seamlessly during bushfire response, interoperability of communications remains a body of work being addressed.

Agencies have implemented processes to overcome these interoperability issues. Some service providers report using liaison officers who deploy to HMA operations centres, where they are given access to communication and information management service applications.

A common issue identified by local governments was that certain large service providers were unwilling to contribute to local or district EM processes and therefore no local contact information was available. This resulted in agencies and locals being forced to contact national or statewide fault line reporting mechanisms (13 or 1300 numbers) as their only means of communication. In some cases, this has been effective while in other cases it has led to long delays and frustrations during an emergency.

Mobilisation

Due to the sheer size of Western Australia and the nature of associated risks, the ability to mobilise staff and equipment in response to a large-scale emergency is imperative.

Eighty-five per cent of applicable HMAs and 65 per cent of EMAs report they have effective plans in place to pre-deploy staff and equipment ahead of a known hazard. DAFWA reports it is drafting a concept of operations for plans to pre-deploy personnel as required. DFES and DPaW report they have established predetermined incident management teams (IMT). During peak activity periods, and following a risk assessment, it is intended that these IMTs would be deployed to high risk or strategic locations. Brookfield Rail reports that it pre-positions portable fire equipment when undertaking 'hot work', such as welding or grinding, to be ready to put out accidental fires.

As periods of peak demand can be resource intensive, all HMAs and 45 per cent of EMAs have formal and informal agreements in place with community or industry groups to assist with EM during an incident.

These arrangements range from MoUs to formal contracts. DFES reports a significant number of MoUs for the provision of mutual support in planning and responding to emergency incidents on mines, emergency rescue helicopter services and the provision of mapping services.

DPaW reports it has formal contracts for the provision of heavy machinery and logistical arrangements and a formal arrangement with the Forest Products Commission for their participation in the department's fire management program.

The SEMC has a Mutual Assistance Policy that includes private organisations. The Emergency Services Network Operator's Reference Group (ESNORG) formalises agreements when seeking assistance from service providers when an emergency affects essential services infrastructure.

In June 2015, the Emergency Services Minister announced that Western Australia's second rescue helicopter will be based at Bunbury Airport, in a new facility that is about to be built. It is expected that the second helicopter will enter service in early 2016. Together, the two helicopters will service 95 per cent of the population of Western Australia.

Figure 4.10 – Bunbury MLA John Castrilli, with The Hon. Minister Joe Francis MLA, Minister for Emergency Services and DFES commissioner Wayne Gregson, welcome confirmation that Bunbury will be the site of the state's second emergency rescue helicopter service.

Image courtesy of Bunbury Mail

Situational assessment and acquisition of critical resources and services

The unpredictable and dynamic nature of emergencies requires agencies to undertake regular assessments to ensure all personnel are appropriately informed of emergency plans. Regular communication allows for pre-emptive planning to mitigate the effects of an emergency. Situational assessments include the sharing of information between agencies. HMAs are responsible for coordinating and collating information relevant to their hazards, which will inform the overall assessment.

EM agencies use a variety of measures to maintain situational awareness during incidents. Possibly the most effective is the deployment of agency liaison officers to relevant incident control centres. The sharing of common platforms and communication equipment, while holding regular crisis management meetings, are tested communications methods. Hazard modelling and predictions have proven useful and the use of command, control and coordination structures and channels are vital.

Having well-established and tested processes to provide regular updates to stakeholders is vital in a fast-moving emergency.

EMAs and service providers report that they maintain a two-way information flow with HMAs. This includes assessments undertaken by the EMA or service providers relevant to their area of expertise (e.g. weather reports, casualty assessments). This information is then provided to the HMA to inform the overall situational assessment (or needs analysis).

Assessments are predicated on the ability to share information within the constraints of legislation. While most information is shared routinely (e.g. the number of homes without electricity, the number of traffic lights not working), sensitive information may not be shared unless emergency information-sharing provisions are in place.

Agencies report that information sharing is generally efficient; however, on rare occasions a lack of information contributes to difficulty in maintaining situational awareness. Nevertheless, all agencies are willing to share information, when possible. Challenges relating to interoperable communications also add to the complexity of maintaining situational awareness.

Throughout an emergency, the need for critical resources is informed by situational assessments. The acquisition and mobilisation of resources is facilitated by the predetermined agreements and processes mentioned in s. 4.3. Should demand for resources exceed supply, some agencies bring cross-jurisdictional agreements into play. Alternatively, agencies or the state can access assistance from the Australian Defence Force through Defence Aid to the Civil Community (DACC) or physical assistance under the Australian Government Disaster Response Plan (COMDISPLAN). These and other arrangements are outlined in SEMP 4.9.

4.8 RESPONSE AND RECOVERY SUPPORT SERVICES

KEY FINDINGS

- The Department for Child Protection and Family Support (CPFS) is well connected with local government authorities.
- WA Health services run at or near capacity at all times.
- An incident with mass casualties or fatalities would quickly stretch existing resources, causing delays or disruptions.
- Physical distance and remoteness of communities in Western Australia continue to pose a challenge. Such inherent issues with time and distance are likely to remain unresolved.

Evacuation and public protection measures

Considerable work remains for many local governments to refine evacuation and recovery plans, as identified in last year's report. In 2015, 95 per cent of local governments acknowledged they have a role to play in evacuation. Further, they reported having a good understanding of their role.

Under EM arrangements, CPFS is responsible for coordinating the provision of welfare support services to people affected by an emergency or disaster. Many local governments specifically mentioned they have good working relationships with the department.

Types of welfare support coordinated by CPFS are:

- emergency accommodation
- emergency catering
- emergency clothing and personal requisites
- financial assistance
- personal support services
- registration and reunification (CPFS uses Register.Find.Reunite., a service that registers, finds and reunites family, friends and loved ones after an emergency, for this purpose and is assisted by the Australian Red Cross.)

Note that the role of local governments in evacuation will vary depending on factors such as the type of event, its location and the size of the local government. In general, local governments perform the following duties, subject to having the required resources:

- identifying and providing appropriate evacuation centres
- ensuring such centres are maintained and kept operational, including key contacts
- opening the centres in partnership with CPFS
- understanding vulnerable sectors of the community and documenting the information in LEMAs
- providing a welfare liaison officer to assist CPFS
- assisting with the staffing of centres
- providing administrative support, including assistance in circulating relevant information from the Incident Controller to the community through the agencies' usual means.

Some local governments have public facilities, such as sports halls, or managed locations that can be made available for use as an evacuation centre, while others have arrangements in place with private providers.

The City of Mandurah provides a good example of ensuring facilities can be made available at short notice in that all lease agreements for city buildings include a clause making those premises available for use during an evacuation.

While WA Health has a minimal role in evacuation, it does provide medical services and support to evacuees. Most commonly, this involves the provision of prescriptions for those who have evacuated rapidly without

their medication. Some remote and isolated locations present logistical challenges for medical evacuation and some identified gaps remain. Delay due to time and distance when managing seriously injured casualties is an important and longstanding issue.

Several EMAs report that due to the size and remoteness of Western Australia, dealing with incidents in areas removed from key population hubs will always create challenges. There may well be delays in getting personnel to the site, depending on the situation and remoteness of the location.

Clarity and guidance are required for when residents choose to stay to protect property after EM staff and volunteers are withdrawn as conditions become too dangerous. No policy covers this situation and some HMAs have expressed concern over the lack of guidance.

Some recent 'near miss' evacuation incidents reported by local governments mostly relate to communication issues. In some instances:

- EM personnel were unsure for a period about who had been evacuated and who had not.
- Lack of coordination led to the wrong welfare centres being opened.
- Road closures blocked access routes to welfare centres.
- Residents of an aged-care facility were evacuated to multiple hospitals and their location was challenging to determine.
- Lack of input to an incident control centre resulted in the duplication of effort by multiple agencies.

Some of these issues were a symptom of residents making assumptions and others the result of unclear guidance or a breakdown in communication.

The current SEMC review into communications during recent large-scale incidents may highlight similar issues and determine specific recommendations that can guide improvements in this area.

It is vital that communication channels are effective so all parties who may be involved in an incident (EMAs, agencies, local government, industry, community groups and the public) are informed. At an organisational level, public and community groups can contribute their expertise to decision making bodies while at an individual level the public can make decisions based upon the best available current knowledge. Effective communication is the key to ensuring all available information is captured and used appropriately.

Fatality management services

Mass fatality management issues have been addressed in WA Health's Mass Fatality Plan. This plan is yet to be tested or exercised. Two agencies hold complementary roles in fatality management:

WA Health	Certification of the deceased; accommodation of bodies at the state mortuary and hospital mortuaries; provision of forensic pathology; regulation of cremation arrangements
WA Police	State Coroner's representative; disaster victim identification

While WA Police is the agency responsible for identifying disaster victims, if an incident occurred in a remote location, they would rely upon WA Health for access to shelter and equipment. An agreement provides for access in such situations.

A WA Police working group is currently formalising management plans to provide a prescriptive response to a mass fatality event. The working group is looking to establish a consistent process for all stakeholders and strategic partners. It will also formally document WA Police procedures and processes in relation to mass casualty management and seek formal corporate adoption and recognition of those procedures.

CASE STUDY RED CROSS – REGISTER.FIND. REUNITE

After Cyclone Tracy devastated Darwin in 1974, a national registration system was built to track and trace people relocated in an emergency. The National Registration and Inquiry System assists people to make contact and reassure loved ones that they are safe.

Between 2006 and mid-2013, the system was activated over 70 times, including for some major events. For example, during the 2009 bushfires in Victoria, 22,000 people registered and 21,000 people made enquiries. In 2011 during the Queensland and Victorian floods and Cyclone Yasi, 34,000 people registered and 15,000 people made enquiries.

The final report of the Royal Commission for the 2009 Victorian Bushfires included a recommendation to update the system. In response, the Australian Red Cross developed and delivered Register.Find.Reunite. This system enables families to communicate their safety, regardless of the availability of infrastructure such as power, communications or road access.

Once a person is registered, their safety may be checked on by friends and relatives through the Red Cross website on any mobile device. The system runs all enquiries and registrations against a complex matching algorithm and instantly matches registrations and enquiries. The separation of family members can be one of the most stressful experiences during an emergency. It can lead to anguish and mental health consequences. People may be less likely to evacuate, or delay the decision to evacuate, if they do not know where their family members are, or if they cannot contact them. In addition, the separation of families can increase unnecessary calls to the emergency 000 number.

Further to its use in evacuation centres, Register.Find.Reunite. has the potential to be used more broadly in occurrences of mass casualty, mass fatality or disaster victim identification.

Figure 4.11 – Since its launch in 2013, Register.Find.Reunite. has been either activated or put on standby in response to 45 emergency events nationwide.

CASE STUDY – MASS FATALITY MANAGEMENT

The Metropolitan Cemeteries Board has worked with local religious leaders and government agencies – such as WA Health, WA Police and the WA Coroner's Office – to develop a Rapid Burial Technique for use during a mass fatality event, such as a severe pandemic.

The board has two designated 'land banks' in Perth cemeteries that can accommodate up to 4000 bodies. The technique involves the preparation of single plots to allow for the burial of one body every 15 minutes or 700 burials per week and the expansion of cremation services to accommodate 588 cremations per week, in addition to normal business.

Although the land bank concept and Rapid Burial Technique is currently only undertaken in Perth, the board can readily share their information and techniques to allow for statewide application.

If a mass fatality event occurs, bodies and burial places will be identified through post-mortem processes (routine photographs, fingerprints), DNA swabs and GPS tags. To allow rapid location of the deceased, the Cemeteries Record System will assign a unique identifier to each body and store the GPS location as well as agency specific unique identification numbers (WA Health, WA Coroner's Office).

Supported by local religious leaders, the Rapid Burial Technique was designed to honour societal commitment in relation to respectful burial and cremation.

Figure 4.12 – Exercising the Rapid Burial Technique in Perth
Image courtesy of the Metropolitan Cemeteries Board

Health and medical services

Health services operate at or near capacity at all times so a major incident with mass casualties or fatalities would quickly stretch existing resources, resulting in delays to some non-essential procedures and services. WA Health has a dedicated disaster preparedness and management unit to manage its roles under EM legislation.

Time and distance are likely to remain unresolved issues in Western Australia. Outside the metropolitan area, limited resources and infrastructure make the handling of a large number of casualties problematic. Perth itself is a very isolated city so that under catastrophic circumstances getting assistance from the eastern states or overseas would involve considerable delays.

The allocation of casualties to hospitals also remains a challenge. Current work between WA Health and St John Ambulance is aimed at minimising these issues. These organisations work closely to set up systems and structures to efficiently manage injured people.

St John Ambulance has medical logistics deployed strategically across the state that take into consideration major population centres, airports, industry, major highways and remoteness. It has road transport and mobile resources available to move equipment but does not have aero-medical resources, other than a single rescue helicopter (soon to be two).

In remote areas, it would need the assistance of other agencies for air transport of personnel and additional equipment. The availability of fixed-wing transport, such as Royal Flying Doctor Service (RFDS) planes, is essential to deal with time and distance issues. WA Police provides a liaison officer to the state Health Incident Control Centre, and another, attached to the WA Police Air Wing, to assist with coordination. The police also maintain an aviation subplan for rail crashes east of Kalgoorlie that may be used to support Westplan Health.

About half of HMAs have staff trained in first aid for initial responses until St John Ambulance can arrive.

For example:

- All DFES appliances have a first-aid kit; appliances run by career fire staff have a defibrillator; and some have an oxy-viva.
- All security and customer service personnel at the Public Transport Authority are trained in first aid.
- Defibrillators (AEDs) are located in all major stations and major PTA facilities.

Other EMAs, apart from St John Ambulance, provide first-aid training for operational staff only. Medical services (beyond initial first aid) is assessed and addressed on a case-by-case basis.

The Department of Environment Regulation (DER) also provides critical health support for some emergencies through emergency air, water and soil monitoring to protect public health. It also advises on the regulation of hazardous waste and provides emergency exemptions for transport and disposal of medical and other hazardous wastes.

Welfare and social services

Animal welfare is receiving considerable attention. Effective animal welfare management directly affects the psychological welfare of many people during emergencies.

Many local governments have set up specific animal welfare plans. Some have even set up special trailers or facilities to enable animals to be cared for at welfare centres. For instance, the City of Geraldton held an exercise in June 2015 to test their new animal welfare EM plan and facilities. The goal was to see how domestic pets could be accommodated during an evacuation. The city activated an evacuation centre with emergency animal facilities, a livestock yard and a cattery. The exercise was funded through the AWARE program with partners for the event including specialist vets, the Durack Institute of Technology, the RSPCA, Geraldton Dog Rescue, the Mid West Cat Shelter, kennel clubs, Red Cross Australia, CPFS and staff of the City of Greater Geraldton.

Most EMAs are content for animal welfare to be dealt with by local government, the RSPCA and DAFWA. While EMAs in general do not explicitly consider animal welfare in their plans, or consider the issue only from an awareness perspective, it is important to note the progress of some agencies such as:

- WA Health – incorporating assistance to animals (e.g. seeing eye dogs) as health plans are rewritten
- Department of Transport – Marine Safety business unit has a wildlife subplan to respond to wildlife affected by oil
- WA Police – officers have responsibilities as General Inspectors under the *Animal Welfare Act 2002*; these are reflected in agency policy
- The Public Utilities Office – operation plans note implications for the food processing industry of disruptions to gas and electricity supplies
- DPaW – provides access to registered wildlife carers to assist with the welfare of native animals affected by an incident
- DAFWA – coordinates agricultural impact assessments regionally with industry recovery plans being developed as part of the Boosting Biosecurity Defence initiative
- DFES – website has information specific to pet owners. A pet and animal plan provides suggestions about the contents of an EM kit and checklist specific to animals.

Restoration of essential services

The Public Utilities Office has agreements in place to ensure that essential services (power, water, gas, telecommunications, roads and sewerage) can be maintained or quickly restored during emergencies. WA Police is the only other HMA to have reported widespread restoration agreements. Brookfield Rail has agreements for telecommunications, and the PTA and WA Health have agreements for power.

However, formal agreements are not strictly necessary. HMAs have the primary responsibility for initial recovery and impact assessments to restore essential services. Priorities are assessed by industry on a needs basis and HMAs may need to negotiate to ensure any conflict with emergency service priorities is resolved.

A formal relationship exists between WA Health and Western Power for the priority restoration of services, and other service providers readily recognise the need to resupply hospitals, in particular, as a priority.

The Water Corporation reports that gaps and vulnerabilities exist, reflecting the scale of statewide distribution of water services. These gaps may affect responses to emergency incidents.

Most EMAs have business continuity plans in place. This includes agencies conducting ongoing work to integrate area and section plans into whole-of-department plans. In April 2015, WA Health introduced a policy to standardise approaches to disruption-related risks through a new business impact analysis template based on ISO 22301:2012 – Societal security, business continuity management systems.

St John Ambulance has responded to gaps in continuity of communications services in country regions due to a lack of reliable radio infrastructure. Measures include the use of satellite phones, mobile phones, VoIP and access to WebEOC®.

The SEMC Recovery Subcommittee is investigating a whole-of-government approach to disaster management. Introduction of the National Impact Assessment Model (NIAM) will help determine the impact of a disaster (see Chapter 5 for more information). Mechanisms to conduct assessments are in place; however, the new model, with accompanying templates, will greatly assist multi-agency consistency.

4.9 COORDINATED RECOVERY

KEY FINDINGS

- Of the 138 local governments in Western Australia, most report they have LEMAs, which include specific recovery plans, and identify local recovery coordinators for the area they represent.
- The introduction of the State Recovery Coordinator has streamlined processes where state level assistance is required.

By definition, recovery management is the coordinated process of supporting 'emergency affected communities in the reconstruction and restoration of physical infrastructure, the environment and the community, and psychosocial and economic wellbeing' (*Emergency Management Act 2005*).

Under the EM Act, local governments have a responsibility to manage recovery following an emergency that affects the community. They are also required to develop and maintain LEMAs, which include a local recovery plan and the identification of a local recovery coordinator.

Depending on the size and nature of the emergency, the State Government may have an increased level of involvement, through the State Recovery Coordinator, the State Recovery Coordination Group or the appointment of a State Recovery Controller.

The State Recovery Coordinator supports a whole-of-government approach to recovery preparation through the SEMC Recovery Subcommittee and to coordination of recovery operations through the State Recovery Coordination Group.

The SEMC Recovery Subcommittee oversees the planning and review of state-level recovery arrangements, providing a forum for promoting and supporting the development and maintenance of emergency recovery capability.

Of the 138 local governments in Western Australia, most report they have LEMAs in place, which include specific recovery plans, and identify local recovery coordinators for the local government they represent.

All HMAs and many EMAs report they have agreements in place with communities and industry groups to assist with EM activities during an incident. Most HMAs and local governments advise that their plans and arrangements cover restoration and recovery of infrastructure, the economy, the environment and local services after an emergency.

However, only half advise they have mechanisms in place to carry out impact assessments of a community to inform stakeholders for recovery purposes.

The SEMC is working closely with the ANZEMC Recovery Subcommittee to develop accurate and timely impact information as part of a state impact assessment model in line with the evolving NIAM.

WANDRRA is central to the financial arrangements supporting the disaster recovery process. It is funded jointly, although not equally, by state and the Commonwealth governments.

During 2014–15, the main recovery challenges related to bushfire and cyclone events. Four significant Level 3 fire incidents occurred at Bullsbrook, Waroona, O'Sullivan and Lower Hotham. Each of these incidents posed a major threat to communities and assets; however, effective fire suppression limited the impact on communities and built assets. As no extraordinary impacts were recorded, local governments were assessed to be capable of undertaking the recovery process, with some additional assistance.

For example, financial assistance was provided through WANDRRA for clean-up costs and repair of essential public assets for the Lower Hotham and O'Sullivan fires.

In March, Cyclone Olwyn crossed the coast causing significant damage in the mid-west region of Western Australia, particularly around Carnarvon. DAFWA assembled a team to assess the damage inflicted on the horticultural and pastoral industries by the cyclone. Production losses were found to be significant with the loss of 43 per cent of the value of horticultural production in the region.

Grants of up to $25,000 were made available to cover recovery and clean-up costs for affected agricultural businesses in Carnarvon, Exmouth, Shark Bay and in a defined area within the Shire of Ashburton. The assistance does not provide compensation for loss of income.

Staff from the Department of the Premier and Cabinet visited local governments to provide guidance and assistance on the operation of WANDRRA following emergencies in 2014–15. Funding was also provided to allow the appointment of a temporary fixed-term recovery coordinator for Carnarvon following Cyclone Olwyn.

The State Recovery Coordinator attended the regions following the onset of each emergency to provide support to local government with recovery activities. Help was also provided with the impact assessment process and the provision of additional financial assistance where necessary.

WANDRRA was activated six times over 2014–15 for 26 local governments:

- November 2014 – flood (Gnowangerup and Kent)
- January 2015 – flood (Broome and Derby/West Kimberley
- January 2015 – bushfire (Manjimup and Boddington)
- February 2015 – flood (Carnamah)
- February 2015 – flood (Ashburton, Carnamah, Chapman Valley, Cue, Dalwallinu, East Pilbara, Meekatharra, Mingenew, Morawa, Mt Magnet, Mukinbudin, Murchison, Northam, Sandstone, Three Springs and Yalgoo, and the City of Greater Geraldton)
- March 2015 – cyclone (Ashburton, Carnarvon, Exmouth and Shark Bay, and the City of Greater Geraldton).

The estimated cost of payments made under WANDRRA for 2014–15 is $64 million of which $3.4 million is expected to be the Commonwealth contribution.

4.10 EVALUATION, KNOWLEDGE AND IMPROVEMENT

KEY FINDINGS

- All HMAs seek to learn lessons and improve the way they deliver services during an emergency.
- Most agencies have conducted some form of desk research with respect to their identified hazards.
- Examining trends and monitoring local, regional, state or international events helps agencies to identify their risks and guides planning and preparedness activities.

Evaluation

Three main elements prompt HMAs to review their EM plans in accordance with policy:

- document review timeframes
- lessons learnt from exercises or response activities
- new or emerging research.

All HMAs report adhering to intrastate, interstate and national review cycles. DAFWA reported its EM plans are regularly reviewed, updated, and informed by research into new or emerging diseases in Australia or internationally. WA Health uses research and evidence-based data to inform its policies and plans. With the BOM, WA Health conducted research into the efficacy of varying heatwave formulae, which ultimately will help inform the review of Westplan Heatwave.

Subplans under Westplan Health and future revisions of Westplan Human Epidemic will reflect the lessons learnt from the 2014 Ebola virus outbreak in West Africa. This 'scanning of the horizon' helps EMAs to integrate and incorporate lessons in EM into local doctrine and procedure.

The Department of Transport (Marine Safety) and DFES also report they endeavour to use real incidents and post-incident analysis to identify potential improvements in their EM arrangements.

A major component of the SEMC Policy and Governance Framework Review project is the creation of an overarching State Emergency Management Plan. Concurrently, stakeholders are considering a potential rationalisation and amalgamation of Westplans based on hazard or consequence. It is expected the overarching state plan will be finalised early in 2016, with the rationalisation of Westplans continuing through to December 2017.

Over the past 12 months, HMAs and EMAs – with other agencies working together in lead or support roles – have reviewed several Westplans. They include plans for storm, cyclone, flood, tsunami, marine oil pollution, marine transport emergency, human epidemic, and animal and plant biosecurity.

All HMAs, EMAs and service providers report a culture of continuous improvement within their organisations. This is supported through knowledge sharing via various platforms including committees, councils and advisory, reference or working groups. A number of agencies are exploring methods to identify business improvement opportunities, including research programs and post-incident analysis to inform future policies and plans.

Knowledge management

Most agencies report conducting some form of desk research with respect to identified hazards. Examining trends and monitoring local, regional, state or international events enables agencies to identify the risks and guides their planning and preparedness activities. The reviews are assessed and used to develop best practice.

In the last quarter of 2015, the SEMC Secretariat plans to launch its new website. The website will contain *'The Hub'* which is a continually growing information portal designed to help stakeholders (including national, state and local governments and other EM bodies) to build and share EM and hazard knowledge.

All agencies report engaging with external agencies to share and discuss experiences and best practice at multiple levels within the state, nationally and internationally.

Within WA

Most HMAs and EMAs indicate they engage with other agencies through various committees and working groups at state, district and local levels. Post-incident analyses, reviews, exercises and multi-agency debriefs are used as platforms for sharing knowledge and driving improvement. An example is the local recovery coordinators workshop held at the SEMC in May 2015. The workshop allowed open discussion on effective recovery planning for local government and on incorporating lessons learnt into recovery planning and strategies to develop community resilience. Also in May 2015, the City of Albany hosted a mini EM conference, bringing together 35 practitioners from a variety of state, local and non-government agencies across the EM district.

DPaW and St John Ambulance also reported engagement on a bilateral basis with relevant agencies for more issue-specific or relationship-specific matters.

Nationally

Most agencies report continuing discussions of best practice with their counterparts across Australia. These are generally conducted using similar mechanisms as at state level (committees, conferences and exercises). National pre-season reviews and briefings, multi-jurisdictional exercises and multi-agency forums provide a further platform for sharing knowledge.

Internationally

For agencies with international engagement, national committees often form the conduits for groups and forums to share information and knowledge. Within DAFWA, international information and resource sharing is conducted through a quadrilateral group encompassing Canada, New Zealand, US and Australia. In addition, a small number of agencies report close relations with international groups and emergency responders. DPaW reports it contributes to national and international research programs, and maintains long-term involvement in fire management, fire behaviour and ecology research and practice. The department also participates in study tours between Australasia and North America through the Australia–New Zealand Forest Fire Management Group.

In 2014–15 a WA Health officer travelled to New Zealand, the UK and the US (New York and California) to engage with agencies that had evacuated hospitals due to flood, cyclone, hurricane, storm, bushfire and earthquake. WA Health hopes to use this research to inform future strategies for the state. Following serious earthquakes in Nepal in April 2015, WA Health deployed personnel to work with the World Health Organization (WHO) to assess medical needs in the area. This experience provided an opportunity to harness international lessons and expertise to bring back to Western Australia. In addition, WA Health is currently developing relations within the UK to explore information and resource planning, with the prospect of an exchange program in the future.

Continuous improvement

Most HMAs, EMAs and service providers report that recommendations and feedback from internal and external reviews and inquiries is collected and used to inform their plans, policies and procedures. Some examples of these mechanisms include:

- Department of Transport (Marine Safety) conducts regular desktop and operational exercises to test the validity of recommendations and feedback from review and inquiries.

- A number of agencies use specific programs to monitor the integration of recommendations. For example, DFES integrates recommendations into its integrated planning and reporting system, where they are tracked until completion.
- The PTA conducts passenger satisfaction surveys to ensure the effectiveness and efficiency of services.
- Both Main Roads and WA Health report using the WebEOC® incident management system to record and track actions until completion.

Most agencies rely on feedback from key stakeholder groups to ensure the recommendations adopted are effective. It is also reported that the effectiveness of such adoption is measured through lessons learnt and post-incident reviews, which identify any recurrence of prior issues.

Agencies may need to complete specific actions following a review, investigation or post-incident analysis. A noteworthy example was the improvement notices issued to DPaW by the workplace occupational health and safety regulator WorkSafe after the 2012 Black Cat Creek bushfire. DPaW reports it has fully implemented all 10 improvement notices issued after the 'burnover' incident in which a volunteer firefighter died and three of her colleagues were injured. The final improvement notice was completed in November 2014 when water deluge systems were installed across the department's entire fleet of fire trucks.

The SEMC endeavours to support knowledge sharing and continuous improvement within EM through its annual 'season review'. This session allows agencies to present information and lessons learnt over the past 12 months. Recommendations are then assigned to relevant SEMC subcommittees or reference groups for consideration.

Reviews

The SEMC Secretariat is conducting a review of the two largest bushfires experienced in the 2014/15 season – the Lower Hotham (Shire of Boddington) and the O'Sullivan (Shire of Manjimup).

The aim is to build on aspects that worked well and improve on any shortcomings. It will follow the model used in the Parkerville Stoneville Mt Helena Bushfire review and will specifically examine:

- operational vertical communications
- interstate resource deployment
- interagency collaboration.

Bushfire stocktake

In addition to these reviews, the SEMC Secretariat will examine whole-of-government activities and current investments in managing bushfire risk. This strategic stocktake will assist in gaining a better understanding of what is being done and what could be done better. It will also allow for a more comprehensive, integrated approach to management of bushfire risks, including funding options.

Since the initial Keelty-led inquiries into the Perth Hills and Margaret River bushfires, significant work has been done to address the management of bushfire risk:

- Statutory planning policy is rapidly changing.
- Bushfire prone areas are being defined.
- DFES and DPaW fire-related resourcing has been enhanced.
- A system of developing local government Bushfire Risk Management Plans (BRMPs) has been developed.
- An extensive '*Are You Bushfire Ready*?' risk awareness campaign has been invoked.

Lake Ballard, Goldfields-Esperance emergency management district
– *Image courtesy of Daniel Hill*

05

IMPACT

05 IMPACT

To assess preparedness, we must understand what impact an event will have on our community.

Disasters such as major flood, fire, cyclone, earthquake and tsunami may subject communities to considerable impact and loss. Such events make headlines when they cause injury, death and widespread damage. However, their full impacts often remain poorly quantified.

IMPACT ASSESSMENT

Impact assessments in some form have been carried out in Western Australia for many years. In striving for continuous improvement, agencies have regularly reviewed incidents. As with all things in the EM field, the reviews are scalable, depending upon the size of the incident. For a minor issue, a debriefing is usually sufficient; however, as the severity of the incident increases, so too does the level of scrutiny placed upon it. The purpose of an impact assessment is not about apportioning blame after the fact but about learning lessons for the future. Reducing the impact of a future event and improving resilience is the overall aim.

POST-INCIDENT ANALYSIS

The primary tool used by most EMAs after an incident is the post-incident analysis (PIA). In essence, this is an after-action critique that is conducted regardless of the success or failure encountered during the emergency. This analysis addresses the 'what, where, when, why, how and who' of the incident. Incidents requiring a PIA are generally more significant and tend to involve multiple agencies, injuries, loss of life or property or a more complex response. They entail formal review and documentation and should involve the dissemination and implementation of lessons learnt.

RESEARCH

The Bushfire and Natural Hazards Cooperative Research Centre (Bushfire and Natural Hazards CRC) was launched in December 2013. It was established to build on the work of the previous Bushfire CRC and expand research into other natural hazards. It draws together all of Australia and New Zealand's fire and emergency service authorities with the leading experts across a range of scientific fields to explore the causes, consequences and mitigation of natural disasters (Bushfire and Natural Hazards CRC About Us 2015).

The CRC coordinates research in 'clusters' that examine various elements of the EM environment. These include economics and strategic decisions; governance and institutional knowledge; scenarios and loss analysis; communications and warnings; monitoring and prediction; modelling; and volunteering. Another focus area is on measuring impacts against a range of the clusters.

Bushfires

During 2014–15, Western Australia experienced one of the worst bushfire seasons on record. More than 4000 fires broke out and over 1400 warnings were issued. A succession of fires threatened homes and triggered evacuations. Throughout the summer, serious fires endangered Western Australian communities, often simultaneously, and some burned for days.

This high volume of fires stretched firefighting resources as responders had little, if any, respite between fires. In late January, a series of electrical storms ignited even more fires in the lower south-west, south-west and Great Southern regions. This storm activity ignited the biggest fire in recent memory, the O'Sullivan fire, at Northcliffe. This bushfire took hold in the dense and heavily wooded Shannon National Park.

While fire crews were battling the O'Sullivan blaze, about 130 volunteer and DPaW firefighters were combating a 10km-long fire front in Lower Hotham near Boddington. These events are officially known as the O'Sullivan and Lower Hotham fires. They occurred concurrently, following a series of other incidents over the preceding fortnight.

By the time these fires started, DFES reported that almost 3000 bushfires had occurred around the state since January 1, with more than 120 sparked by lightning storms in the preceding week. Both big fires had the potential to be disastrous. DFES reported over 3.5 million hits on their website in a 12-day period as both fires raged.

Demanding weather conditions, heavily fuelled forest terrains and a fatigued workforce prompted the rare step of a call for reinforcements from interstate. Almost 140 firefighters and support staff arrived from Victoria, followed by 160 from NSW, the ACT and Northern Territory, and later, about 80 from Queensland. This included the deployment of two air tankers from the eastern states. DPaW closed 18 national parks across the state to free up crews from as far away as the Kimberley and the Goldfields and to reduce the risk of a visitor sparking an accidental fire.

These actions assembled a massive multi-agency and cross-jurisdictional force that slowly managed to contain the blazes, to the relief of the communities in their path. The army was called in to build a tent city for about 200 people in Manjimup. At the height of the fires, more than 250 people with 90 firefighting appliances worked on the O'Sullivan fire and 150 people with 60 appliances worked on the Lower Hotham fire.

By the time the fires were extinguished, 98,000 hectares had been burnt at Northcliffe and 52,000 hectares in Lower Hotham. DFES estimates that firefighters, including volunteer, career and those from interstate agencies, put in more than 96,000 hours. The 25 airborne water bombers involved dropped more than 10 million litres – an unprecedented effort from the aerial firefighting fleet.

Tropical cyclone Olwyn

In March 2015, Tropical Cyclone Olwyn formed off the north-west coast of Western Australia, tracking in a southerly direction and steadily intensifying over water. Olwyn was a severe Category 3 cyclone at its peak when it hit the towns of Exmouth, Coral Bay and Carnarvon.

Winds near the centre reached 150 km/h with gusts to 205 km/h. They carved a path of destruction with trees uprooted and houses severely damaged. Most banana crops in Carnarvon were flattened, devastating the local industry, which contributes tens of millions of dollars to the Western Australian economy every year.

While the power station remained unaffected, the support infrastructure of poles and wires were knocked down. This damaged distribution lines taking electricity from high voltage poles into people's homes and properties. The loss of power and a burst water main briefly affected supplies. While Carnarvon Hospital sustained damage, no patients or staff were hurt and the hospital continued to operate normally. CPFS reported that more than 180 people had been accommodated at emergency evacuation centres in Onslow, Exmouth and Carnarvon.

Three separate emergencies were declared in relation to Cyclone Olwyn:

- 12 March 2015 for the Shire of Exmouth
- 13 March 2015 for the local government areas of Carnarvon, Shark Bay, Gascoyne Junction, Murchison, Three Springs, Morawa, Northampton, City of Greater Geraldton, Irwin, Coorow, Carnamah, Dandaragan and Chapman Valley
- 16 March 2015 for the local government areas of Carnarvon and Shark bay.

After crossing land, Olwyn gradually lost intensity and was downgraded to a tropical low.

CASE STUDY – PREPARING CHILDREN

During cyclone Katrina in the US, a group of students were seen evacuating from a campus carrying their cherished belongings in pillowcases.

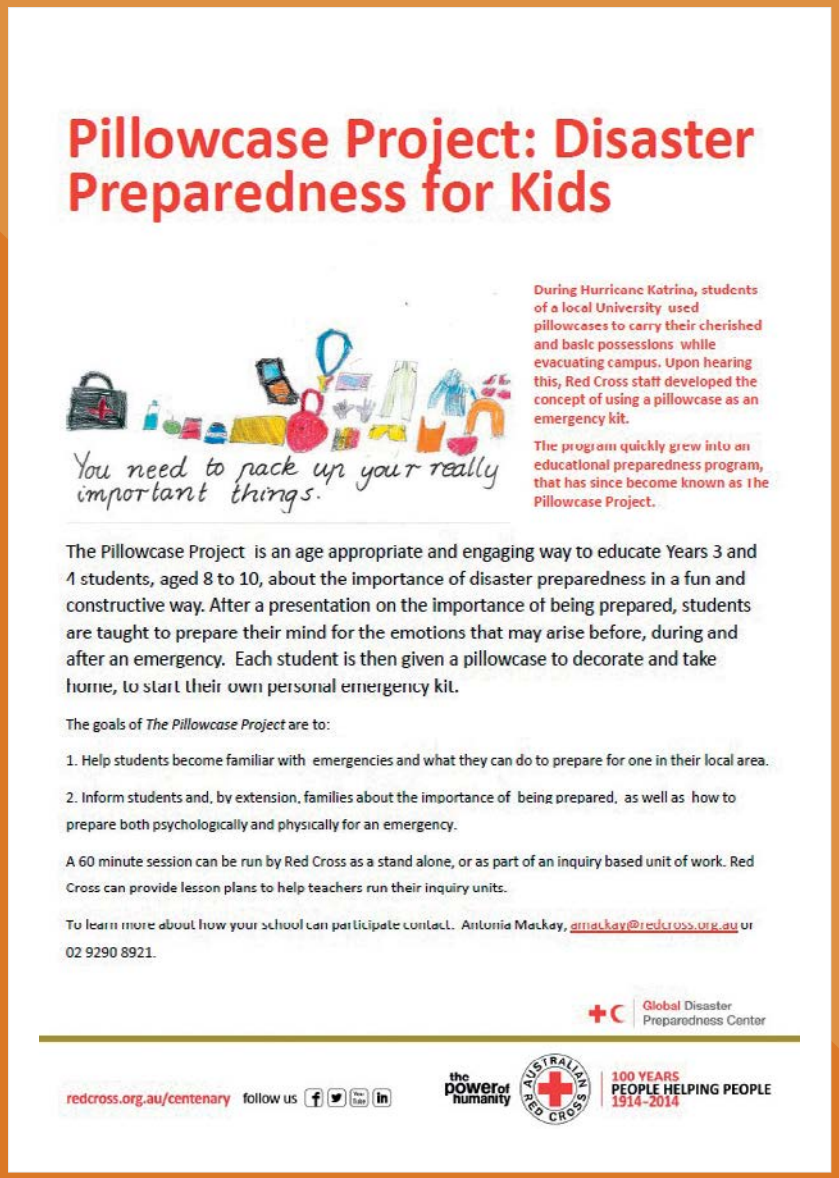
After hearing this story, the Red Cross staff developed the concept of using a pillowcase as a basic emergency kit. The project was designed specifically to target school students between 8 and 10 years old and aims to build their knowledge and preparedness during emergencies.

The Pillowcase Project was born out of research indicating that children are better equipped to deal with an emergency if they are involved in disaster resilience and education programs. Further, research indicates that children act as positive change agents within the community.

Their strengths can be a resource for families serving as motivational reservoirs, encouraging their families to act thereby connecting families to communities and building resilience.

Under the project, students around Western Australia can receive information and tools to prepare their own personal disaster kit and preparedness plan, helping them to cope with the impacts of disaster.

This program is now being delivered around the world and in 2015 was the recipient of the Resilient Australia Award in WA in the Community category.



Pillowcase Project: Disaster Preparedness for Kids

During Hurricane Katrina, students of a local University used pillowcases to carry their cherished and basic possessions while evacuating campus. Upon hearing this, Red Cross staff developed the concept of using a pillowcase as an emergency kit.

The program quickly grew into an educational preparedness program, that has since become known as The Pillowcase Project.

The Pillowcase Project is an age appropriate and engaging way to educate Years 3 and 4 students, aged 8 to 10, about the importance of disaster preparedness in a fun and constructive way. After a presentation on the importance of being prepared, students are taught to prepare their mind for the emotions that may arise before, during and after an emergency. Each student is then given a pillowcase to decorate and take home, to start their own personal emergency kit.

The goals of *The Pillowcase Project* are to:

1. Help students become familiar with emergencies and what they can do to prepare for one in their local area.

2. Inform students and, by extension, families about the importance of being prepared, as well as how to prepare both psychologically and physically for an emergency.

A 60 minute session can be run by Red Cross as a stand alone, or as part of an inquiry based unit of work. Red Cross can provide lesson plans to help teachers run their inquiry units.

To learn more about how your school can participate contact: Antonia Mackay, amackay@redcross.org.au or 02 9290 8921.

Global Disaster Preparedness Center

redcross.org.au/centenary follow us

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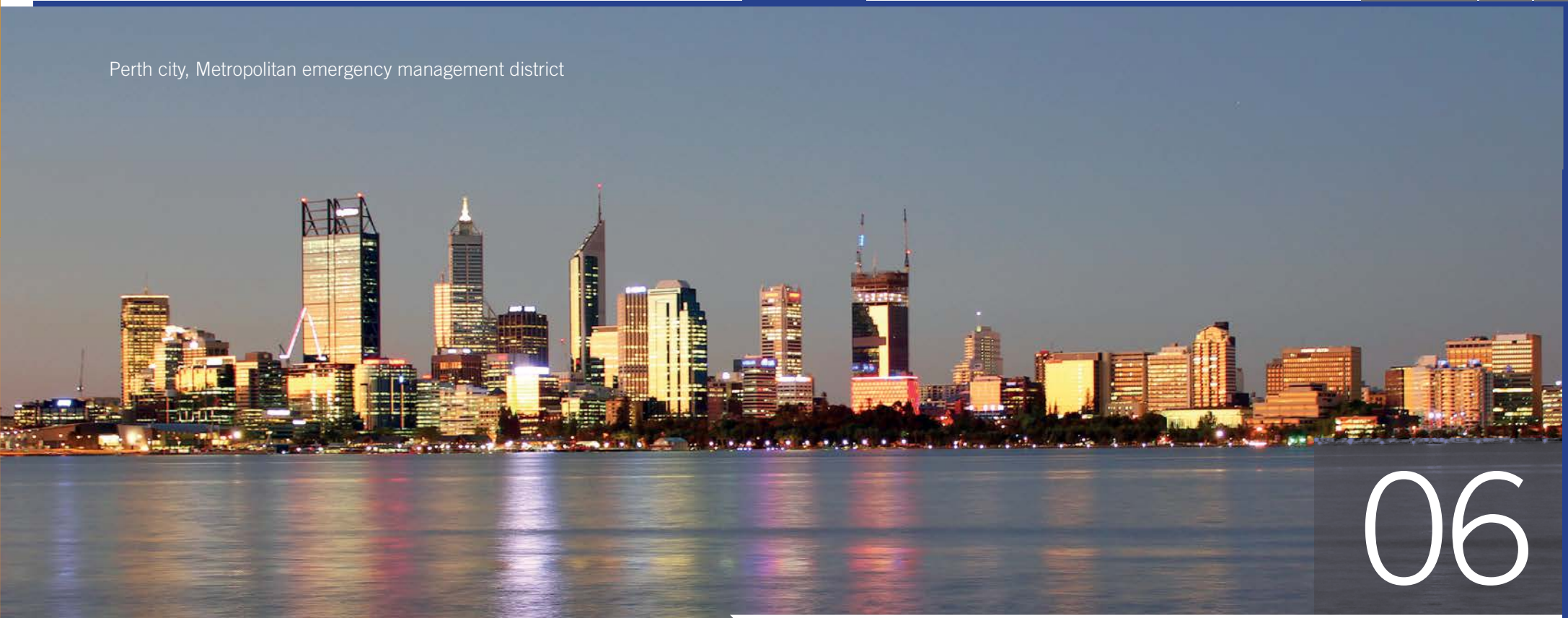
AUSTRALIAN RED CROSS

100 YEARS PEOPLE HELPING PEOPLE 1914-2014

Figure 5.1 – Pillowcase project poster



Perth city, Metropolitan emergency management district

06

STRATEGIC DIRECTION

06 STRATEGIC DIRECTION

When the SEMC was reconstituted in 2012, a three-year strategic plan was developed and put into effect. This plan focused on strategic oversight, coordination, risk, shared responsibility, preparedness and continuous improvement. In the years since 2012, the SEMC has performed as the interagency body with collective oversight of the EM sector. This has enabled progress to be made in both understanding and engagement.

In 2015 the SEMC embarked upon a new three-year strategic plan (see Appendix B) that seeks to build on the achievements of the previous three years. Having made strong gains in governance, shared responsibility, coordination and oversight, attention is now focused on developing a robust, integrated understanding of **risk**, **capability** and **impact** across the state.

The SEMC has begun to build an evidence base to achieve measurable outcomes. The launch of the State Risk Project in 2013 and improvements made in capability assessment methodology are building understanding of both the risks and the capabilities available to deploy against them.

The new SEMC strategic plan acknowledges an intrinsic link between risk and capability and represents a conceptual rethinking of the state's approach. It is intended that risk, capability and impact will form the pillars of SEMC's ongoing three-year strategic work program. For SEMC Capability Framework, see Appendix I.

The SEMC's State Risk Project is developing and creating an understanding of the risk profile of all hazards across Western Australia. The next phase of development aims to quantify existing capabilities. Once the quantity, manner and type of capability that exists is understood, efforts can be made to match that capability against the risks. This information, once developed, can be supplied to decision makers across the community, industry and government.

Figure 6.1 – SEMC strategic emphasis

Post-incident impact analyses and the lessons learnt each season will combine to inform Western Australian communities about how to increase resilience and reduce the impact of future events.

For SEMC preparedness progress over the past year, see Appendix F.

RISK – CAPABILITY – IMPACT

A focus upon risk, capability and impact will pinpoint which risks are highest in a given area. From there, capability gaps and trends can be understood, leading to the development of strategies that increases the state's preparedness and resilience.

The State Risk Project identifies the district level as the best avenue for practically assessing risk, developing treatments and measuring capability. While state-level workshops are useful to gain a broad understanding of what the highest risks are, they do not easily lend themselves to identifying treatment options at a given level. The area involved, the diversity (of both people and landscapes), and the distribution of services mean no single solution can – or should – be rolled out across the state.

Similarly, local level risk assessments are beneficial for local governments to understand their risks and guide their arrangements accordingly. Given that the risk profiles of many adjacent local governments are likely to be similar and many large-scale events (and risks) cross local government boundaries, effective treatments (including cost-effective treatments) may be better organised on a district level. Chosen treatments should increase resilience and lower risk levels.

Over time, the long-term benefits of deploying capabilities against known hazards and risks will be seen in a lower overall risk setting. This represents a holistic, forward-thinking approach to EM in order to use scarce resources most effectively. Learning how to translate these concepts into a pragmatic tactic in Western Australia is an ongoing process.

As with preparedness, a cycle of continuous improvement seeking to deliver statewide resilience and preparedness is based upon the best available evidence.

Tools for capturing data and information about the effectiveness of capabilities are still under development in Western Australia. The US Federal Emergency Management Agency (FEMA) is using an approach that measures capability gaps by assessing a state's current capabilities against a set target. This target has been set against a percentage of what is necessary for a worst-case scenario within a particular jurisdiction.

At present, Western Australia's data is collected from individual agency or local government surveys and is mostly qualitative in nature. It does not easily lend itself to quantitative comparisons year on year. The next iteration of the state's capability assessment method will likely seek to integrate the most pragmatic aspects from Western Australia's current tool, the FEMA model and NEMCAT.

Tipping points

One element of EM starting to emerge is the concept of tipping points. This element is not yet well defined or clearly articulated; however, the notional utility of such a phrase is being explored. A tipping point suggests a threshold that once reached will escalate a scenario or response. This seems consistent with the graduated response principle currently in use throughout Western Australia.

Each response action could potentially have a series of tipping points that indicate when resources at a particular level become exhausted and the next increment is required. These tipping points could occur at local, district, state or national levels. Tipping points are conceptually distinct from incident escalation levels, which remain subjective and at the discretion of the Incident Controller.

In 2015 a protracted series of fire responses in Western Australia, capped off by two large fires occurring simultaneously, stretched the state's existing capability. It could be argued that the combination of multiple concurrent and simultaneous events in different locations stretched our capability towards a tipping point. Reinforcements were called from interstate as EM agencies had effective and efficient arrangements in place to source additional resources to manage the short-term risk.

Post-incident analysis may inform future capability measurements. Measuring events that overwhelm resources (at local, district or state level) allows for the identification of exactly where the tipping point occurred. Determining the tipping point of resources against a known hazard may provide a baseline at each level to estimate when Western Australia as a whole may be stretched or exceed its capabilities.

Western Australia will adopt national standards across risk, capability and impact as this gives strength and credibility to the process. For risk, national guidelines (NERAG) are now well embedded within the state. For capability, the new National Emergency Capability Assessment Tool (NEMCAT) is being considered. For impact, the SEMC agreed in 2015 to consider adopting the newly developed national model (NIAM) currently being trialled.

CRITICAL INFRASTRUCTURE

As part of SEMC's routine enquiries, an ongoing body of work on critical infrastructure has been identified. This has the potential to both inform and complement initiatives undertaken by Western Australia as part of the State Risk Project. Critical infrastructure is broadly described as those facilities and assets (including networks and supply chains) that provide products and services essential to economic and social wellbeing. All Australian governments use a common definition.

Western Australia's current approach to protecting critical infrastructure has been in place for more than a decade. In 2007 the State Government published the Western Australian Critical Infrastructure Protection Framework ('the Protection Framework'). This outlines how the state meets its obligations at state and national levels.

While the Protection Framework promotes an all-hazards approach, the focus of Western Australia's critical infrastructure program to date has been on protection from terrorism rather than resilience to all hazards. This has served the state well for more than a decade. However, in recognising that many of the consequences arising from natural hazards are the same as those from terrorism, consideration has been given to a revised approach that moves from a critical infrastructure protection program to an all-hazards approach to critical infrastructure resilience.

In moving to a resilience approach, it is recognised that the owners and operators of critical infrastructure, much of which is in private hands, are ultimately responsible for the safety and security of their assets. As such, they are encouraged to undertake appropriate risk management practices, including developing and reviewing business continuity plans and providing adequate plans for safety and security.

Given the existing knowledge and experience many owners and operators already possess, they are well placed to both understand the risks facing their businesses and how best to mitigate them. There is an opportunity for industry and government to work more closely together to identify and address emerging security and EM issues and to improve understanding of how they may affect the state's all-hazards resilience and preparedness.

Capability and Investment Plan

Where we build, what is built and how it is built are critical to resilience to natural disasters that occur within the built environment. A national land-use planning and building codes taskforce was established in 2011 under the ANZEMC. This group developed a template for a capability and investment plan to enhance disaster resilience. The plan aims to provide specific information to guide a jurisdiction towards achieving greater resilience through appropriate land-use planning.

A new draft State Planning Policy (SPP) on bushfire planning issues (SPP 3.7 Planning for Bushfire Risk Management) has been developed and is due to be finalised before the end of the year. This is to be supported by statewide mapping of bushfire prone areas, to ensure that consideration of bushfire risk is incorporated into all levels of planning decisions and appropriate building standards are triggered.

At the regional scale, a series of Regional Planning and Infrastructure Frameworks have recently been drafted and/or finalised across Western Australia. The objectives include:

- providing regional context for land-use planning,
- providing an overview of major regional economic, social, cultural and environmental issues,
- identifying priority actions required for regional and local planning,
- identifying regional infrastructure priorities to facilitate economic and population growth.

The regional frameworks provide area specific context for land-use planning. They consider the environmental and biodiversity implications of future land development and infrastructure placement, while ensuring that the process has involved avoidance, mitigation and the potential offsetting of impacts.

OUTLIER EVENTS

Outlier events are rare, unpredictable events that nevertheless have a high impact. They tend to lie outside the dominion of common experience (and past experience). Sometimes called ‘Black Swan’ events – they are unprecedented and unexpected when they occur but with the benefit of hindsight were bound to occur.

History is dotted with outlier events such as the 2011 magnitude-6.3 earthquake in Christchurch, NZ; the 2011 magnitude-9 earthquake and tsunami in Japan; and the 11 September 2001 terrorist attacks in the US.

These are low probability events; however, their impact would be so monumentally high that the damage would be difficult to recover from for a long period. In October 1968, a 6.9-magnitude earthquake destroyed the town of Meckering in Western Australia and caused damage throughout the south-west. Buildings in the Perth metropolitan area were damaged and tremors were felt as far away as Geraldton, Kalgoorlie, Esperance and Albany.

This event was significant. However, if such an earthquake were to occur tomorrow and be centred 100 km further west, it would mean a major earthquake would strike in the Darling Range on the fringes of the Perth metropolitan region. This area is more densely populated and the concentration of infrastructure and assets means it would have a much more devastating impact.

The identification of low probability events and the development of mitigation plans and strategies are complicated by their rare or conjectural occurrences and their potential for causing impacts beyond that which is imaginable in everyday experience.

Without unlimited resources, it is not practical to build homes, infrastructure and assets to a level that would withstand these outlier events. The treatment options in place are based upon valid risk assessment methodology (e.g. only the homes likely to be in a cyclone's path are built to withstand cyclone strength winds).

While outlier events are unable to be predicted or their likely impact effectively mitigated, they should nevertheless be considered. For instance, some EMAs are considering developing and exercising against scenarios that are beyond current experience.

The State Risk Project may provide a starting point as it has developed a series of credible worst-case and near worst-case scenarios across a range of hazards. These scenarios have been developed by subject matter experts such as BOM or Geoscience Australia, and are regularly assessed within workshops run by the SEMC. These scenarios are those that are seen as credible worst-case, which represent the lower end of the outlier events spectrum.

This consideration of outlier events could bring shortfalls or challenges to the forefront.

Karri forest, South-West emergency management district – *Image courtesy of Elements Margaret River*

07

CONCLUSIONS AND FUTURE ACTIONS

07 CONCLUSIONS AND FUTURE ACTIONS

CONCLUSIONS

Western Australia faces and will continue to face threats from a range of natural and manmade hazards. Due to the complexity of the EM environment, the size and diversity of the state and the wide range of hazards, challenges will always exist. We critically examine the events of each season and strive to learn the lessons of the past.

While it is acknowledged that significant challenges still exist, it is noted that agencies are collectively working together to identify and implement solutions and treatments. Despite these high levels of cooperation and collaboration, extreme catastrophic events would overwhelm existing capabilities across the entire sector.

Health services around the state operate at or near capacity at all times so a major incident with mass casualties or fatalities would quickly stretch existing resources. Similarly, multiple simultaneous or concurrent incidents or those that run for extended periods will continue to stretch some areas of the state's capabilities.

The above issues primarily relate to the costs associated with having a permanent on call or standby workforce capable of responding to peak or surge periods. This matter is currently being dealt with through agreements to share resources interstate or nationally.

Interoperability remains a longstanding issue both between agencies and within agencies, between the professional and volunteer workforces. While advances are made year on year communications, training and interoperability issues endure.

FUTURE ACTIONS

State Risk Project

The State Risk Project (2013–17) will:

- continue to assess risks at state and district level
- begin assessments at local government level
- broaden the knowledge base across more of the 27 hazards.

Reviews

Reviews of policies and plans under way aim to:

- simplify the number of state policies
- make EM arrangements more useful, usable and used
- amalgamate Westplans based on hazard or consequence
- reduce the number of Westplans.

Funding arrangements

Following the Productivity Commission report into the efficacy of current national natural disaster funding arrangements, consideration will need to be given to adjust WANDRRA to include betterment.

Bushfires

The following are proposed future actions in relation to bushfire risk:

- newly developed bushfire risk management plan guidelines to be delivered across identified local governments
- Western Australian Bushfire-Prone Area Map to be developed
- prescribed burning to be regulated through oversight of the DFES and DPaW prescribed burning activities and aligned to an AS/NZS ISO31000 Risk Management Framework

- non-government organisations that undertake prescribed burning to align their systems and processes to the same framework
- the SEMC Secretariat to conduct a stocktake of whole-of-government activities and current investments in managing bushfire risk. The stocktake to assist in gaining a better understanding of what is being done and what could be done better. It will also allow for a more comprehensive, integrated approach to management of bushfire risks, including funding options.

Interoperability

The following are proposed future actions in relation to compatible EM systems:

- a national working group to consider the alignment between the Australasian Inter-Service Incident Management System (AIIMS) and the Incident Command and Control System (ICCS)
- WA Police working group to formalise management plans for a prescriptive police response to a mass fatality event
- the SEMC to continue to work with the ANZEMC Recovery Subcommittee to develop accurate and timely impact information in line with the evolving NIAM.

Communications

The following are proposed future actions in relation to EM communications:

- Mobile Blackspot Program to deliver 130 additional mobile base stations
- Control, Command, Coordination and Information System (C3IS) project to continue
- Capacity relating to two-way radio and mobile phone networks to be enhanced.

Volunteers

DFES will continue projects to address:

- an upward trend in volunteer turnover
- the declining number of volunteer groups
- rising concern about volunteer fatigue.

Further, clarity and guidance are required for when residents choose to stay to protect property after EM staff and volunteers are withdrawn as conditions become too dangerous.

Albany, Great Southern emergency management district
– *Image courtesy of Daniel Hill*

08

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08 REFERENCES

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Lucky Bay, Goldfields-Esperance emergency management district
– *Image courtesy of Daniel Hill*

09

APPENDICES

09 APPENDICES

APPENDIX A. EMERGENCY SITUATION DECLARATIONS

For an 'emergency situation' to be declared, the HMA or State Emergency Coordinator needs to be 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.

In 2014–15, five emergency situations were declared.

In February 2015, two declarations were made in relation to bushfires in the south-west of Western Australia:

- On 3 February, an emergency situation was declared for the Shire of Manjimup in relation to the O'Sullivan fire.
- On 4 February, an emergency situation was declared for the shires of Boddington, Collie, Harvey, Williams and Waroona in relation to the Lower Hotham fire.

In March 2015, three emergency situations were declared in the north-west of the state in relation to Tropical Cyclone Olwyn:

- On 12 March, an emergency situation was declared for the Shire of Exmouth.
- On 13 March, an emergency situation was declared for the local government areas of Carnarvon, Shark Bay, Gascoyne Junction, Murchison, Three Springs, Morawa, Northampton, City of Greater Geraldton, Irwin, Coorow, Carnamah, Dandaragan and Chapman Valley.
- On 16 March, an emergency situation was declared for the local government areas of Carnarvon and Shark bay.

APPENDIX B. SEMC STRATEGIC PLAN 2015–2018

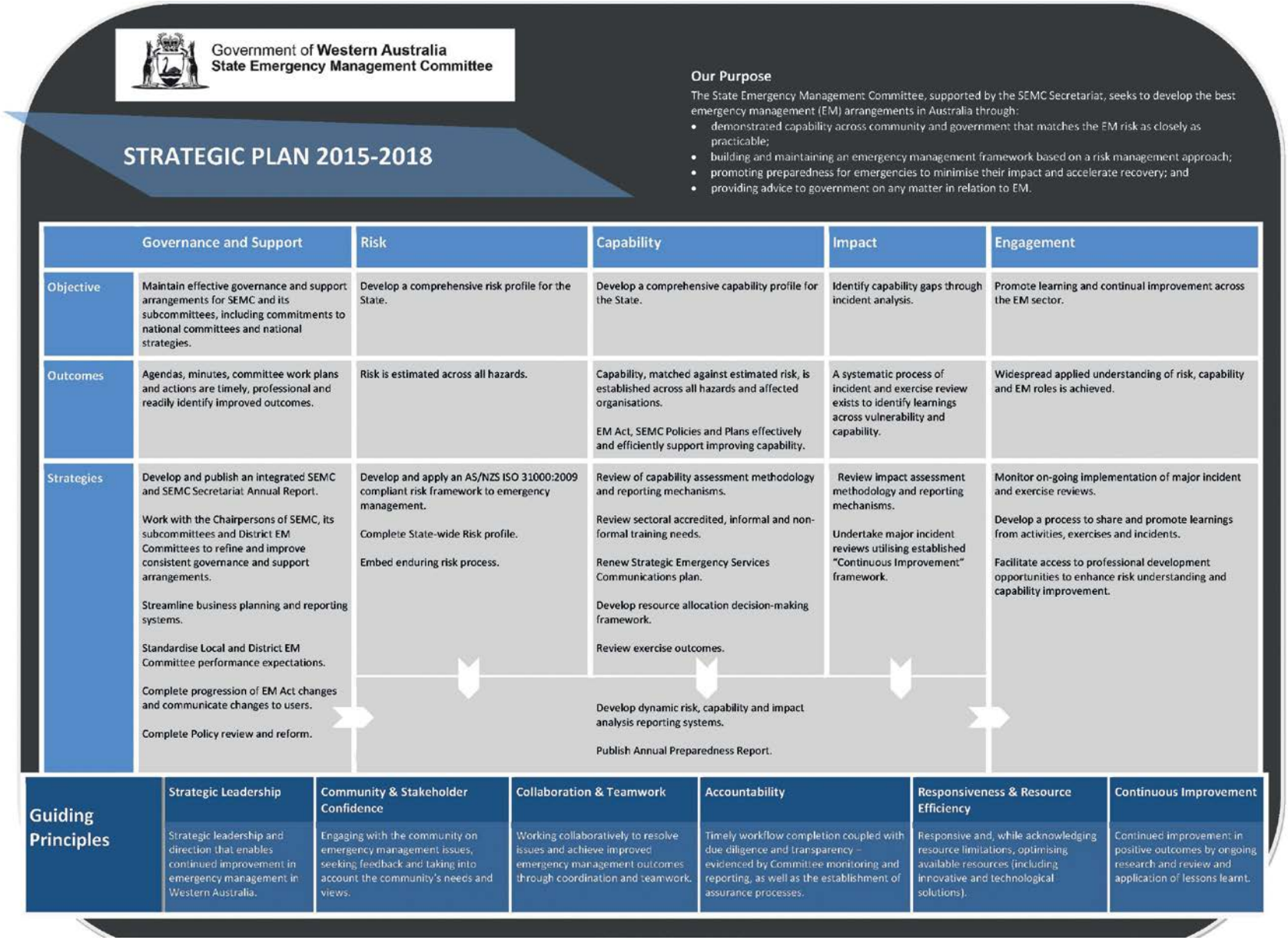


Figure 9.1 – SEMC Strategic Plan

APPENDIX C. HAZARDS

Western Australia is subject to a variety of hazards that have the potential to cause loss of life, damage and destruction. These hazards are of natural or human origin or a combination of both. Twenty-seven of these situations have been legislatively prescribed as 'hazards'. Every year, any one or more of these hazards may impose substantial economic, social and environmental costs on communities through:

- damage to residential, commercial, educational, and recreational buildings
- damage to infrastructure
- damage to stock, equipment and facilities
- indirect losses through disruption of economic activity
- stress and anxiety in affected areas
- injury and death
- polluted environments
- damage to ecosystem and wildlife habitats.

Each legislated hazard is covered by a State Emergency Management Plan (Westplan). Westplans outline the arrangements, responsibilities and procedures in place for multi-agency, coordinated responses. In addition to the 27 'prescribed hazard' Westplans, a further eight 'support' Westplans represent services that would likely be required regardless of the type of hazard that occurs. The Westplans are clear, thorough, comprehensive, sophisticated and, where appropriate, regularly tested.

Table 9.1 – WA's 27 prescribed hazards

	**Air crash**	Worldwide aviation incidents are a regular occurrence. Fortunately, disasters are less frequent but have far more devastating impacts. Major aviation events during 2014 and 2015 have highlighted the impact of the loss of a commercial airliner. Responding to an air disaster will certainly require a coordinated response and recovery capability.
	**Animal and plant biosecurity**	Agriculture is a major industry within Western Australia. Protecting biosecurity is a critical part of the State Government's efforts to prevent, respond to and recover from the impact of pests, diseases and contaminants on Western Australian agriculture, fisheries, forestry and the environment.
	**Collapse**	The collapse of natural landforms or built infrastructure such as buildings, bridges, or subsurface commercial operations is a real risk within Western Australia. These can be caused by natural events, mismanagement or a malicious act and would likely involve a coordinated response.
	**Cyclone**	On average, Western Australia experiences five large-scale cyclone events that threaten the coastline each year. Two of these cyclones cross the coastline, one at high intensity, causing damage and affecting communities. The impact these will have depends upon where the crossing occurs. The coastal regions of northern Western Australia are at greatest risk of cyclones between November and April.

Earthquake	Western Australia has experienced at least one significant earthquake each decade since Federation. Earthquakes of Richter or local magnitude (ML) 4.0 or greater are relatively common and occur about every five years in the south-west Seismic Zone, which includes the main population centres of the state. The 1968 Meckering earthquake measured 6.9.
Electricity supply disruption	Western Australia is heavily reliant upon power both for industry and for use by the general population. Disruption of supply in a widespread manner or for an extended period is a major hazard in its own right. These outages can be caused by other hazard events such as storms or cyclones, or by malicious act or accident.
Fire	Each year in Western Australia, thousands of fires occur that destroy or damage houses, sheds, garages, commercial and industrial buildings, vehicles and vast areas of bushland. Some of these become critical events, subject to size, location or prevailing weather conditions.
Flood	Western Australia has a history of floods, often causing widespread human and economic impact. Floods are a natural phenomenon. After heavy rainfall, rivers, creeks and catchments may be unable to cope with water volumes and overflow causing flash flooding or slower rising riverine flooding, which is the most common cause of floods in Australia.
Gas supply disruption	Natural gas is a vital fuel used for commercial and industrial purposes, resource processing, electricity generation and for residential heating and cooking. Gas transmission pipelines deliver gas to consumers while major pipelines transport it around Western Australia. Gas supply can be disrupted by failure of plant, equipment or networks, natural hazards or malicious acts.
HAZMAT – biological	The list of agents that can cause a HAZMAT mass casualty incident ranges from toxic commercial chemicals, biological materials and radiological substances (CBR), including types of these traditionally used in warfare. The release may be accidental or deliberate, arising from production or consumption within the community or through acts of terrorism.
HAZMAT – chemical	Hazardous materials are widely used and transported throughout Western Australia. Wherever they are used, there is a risk of an emergency occurring. HAZMAT items may include explosives, compressed gases, corrosive substances, poisons, radioactive materials, infectious substances and flammable liquids and gases.
HAZMAT – radiological	Intermittently, global events see renewed interest in the potential use of chemical, biological and radiological material, including their deliberate use on the civil population. Public health and safety experts continue to ensure the state is safeguarded from CBR risks.

	**Heatwave**	Heatwaves kill far more people than other natural disasters like bushfires, cyclones and floods. Adequate preparation is essential, especially for people at high risk – the elderly, babies, young children and people with health and mobility problems.
	**Human epidemic**	Human epidemics, whether natural or introduced, have taken place intermittently. Recent examples of epidemics have included the Middle East Respiratory Syndrome (MERS), swine flu, avian flu and the Ebola virus. These have the potential to overwhelm already stretched health resources.
	**Land search**	Western Australia is vast with extreme temperatures and is mostly made up of remote, inaccessible and often harsh terrain, creating a challenging environment for people who undertake search and rescue missions. The need for specialist skills, equipment, medical care, and interagency cooperation could elevate such searches to a critical level.
	**Liquid fuel supply disruption**	A major disruption to the liquid fuel supply in Western Australia would cause significant disruption across industry and the broader community. The corresponding Westplan is designed to safeguard energy security, maximise contingency planning, and clarify the roles of industry, government and regulatory agencies.
	**Marine oil pollution**	Numerous marine oil spills globally have caused damage to the environment, ecosystems, the economy and public confidence. Whether from a cargo ship, tanker or from oil and gas platforms off the Western Australian coast, the risk cannot be discounted and must be managed.
	**Marine transport emergency**	Marine transport emergencies, whatever their cause, may threaten or endanger life, property and the marine environment and require the coordination of a number of significant EM activities.
	**Marine search and rescue**	Sinking, lost and distressed vessels and aircraft, along with marine search and rescue, occur frequently off the Western Australian coastline. Australia has a search and rescue service that covers 52.8 million square kilometers of the Indian, Pacific and Southern oceans. Plans are in place to coordinate efforts where Commonwealth and state responsibilities intersect.
	**Nuclear powered warships (radiation escape)**	Response plans are in place to manage the hazards presented when nuclear warships traverse Western Australian waters. It is possible that human error, equipment failure or misdeed may create a radiation escape within the state's jurisdiction. Arrangements are in place to limit the consequences.

	**Rail crash freight**	Western Australia has more than 5000 km of freight rail network. Despite ongoing maintenance, it is not possible to eliminate the risk of derailment, collision, malicious acts or other rail incidents on the network. Such an event could significantly disrupt the flow of vital services.
	**Rail crash passenger**	On a typical weekday, more than 1000 passenger train services operate within Western Australia, with additional trains servicing regional centres. A derailment or collision on such a service could result in a mass casualty incident requiring substantial resources and coordination.
	**Road crash**	Vehicle accidents occur daily. Planning and contingencies are in place should such an accident be of sufficient size or impact to overwhelm local resources or require significant coordination of multi-agency resources.
	**Space re-entry debris**	Space debris has been descending out of orbit at an average rate of about one object per day for the past 50 years (Johnson 2011). In 1979 debris from Skylab landed south-east of Perth and was found between Esperance and Rawlinna.
	**Storm**	Storms can occur almost anywhere and at any time of the year. They routinely cause damage to dwellings and structures, sometimes as an isolated event and at other times causing widespread damage, severe damage or total collapse. Due to the frequency, unpredictability and widespread geographical areas involved, storm is a major hazard.
	**Terrorist act**	A number of terror organisations and terror cells have been identified as operating in Australia. Their activities have varied from fundraising and providing material support for terror activities overseas, to plotting and undertaking domestic terrorism. The emergence of Islamic State has raised concerns globally.
	**Tsunami**	Earthquakes happen regularly near the volatile volcanic region around the south coast of Indonesia and have at times caused tsunamis that have inundated parts of the Western Australian coast. The geological instability of this area, along with other potential causes of tsunamis, means that tsunamis remain an ongoing hazard.

APPENDIX D. INCIDENT LEVELS

State Emergency Management Policy 4.1

Table 9.2 – Incident Levels

An incident level is broadly defined by meeting one or more of the following typical conditions:

Level 1	Level 2	Level 3
a. There are no significant issues. b. There is a single or limited multi-agency response (day-to-day business). c. There is minimal impact on the community. d. The incident can be managed by a Controlling Agency Incident Management Team (IMT) only. e. There is a low level of complexity.	a. Requires a multi-agency response. b. Has a protracted duration. c. Requires coordination of multi-agency resources. d. There is some impact on critical infrastructure. e. There is a medium level of complexity. f. There is a medium impact on the community (health, safety, economic, technological or other) g. There is potential for the incident to be declared an 'Emergency Situation'. h. The incident involves multiple hazards.	a. Requires significant multi-agency response. b. There is a protracted response duration. c. There is significant impact on critical infrastructure. d. There is significant coordination of multi-agency resources. e. There is a high level of complexity. f. There is significant impact on the community (health, safety, economic, technological or other). g. There are multiple incident areas. h. Evacuation and/or relocation of community is required. i. There is actual or potential loss of life or multiple, serious injuries. j. A declaration of an 'Emergency Situation' or 'State of Emergency' is required.

Satisfying one or more of the typical conditions of a Level 2 or Level 3 incident does not automatically necessitate an escalation to that level. The 'typical conditions' listed are provided for consideration only, and the escalation of an incident is at the discretion of the Incident Controller.

APPENDIX E. HAZARD AND SUPPORT PLANS

Status of State Emergency Management Plans (Westplans)

Table 9.3 – Hazard Plans

Hazard management agency	Westplan	Status	Exercise / Incident	Exercise or Incident name	Date
Commissioner of Police	Westplan Air Crash	Current	Exercise	Golden Gate	August 2014
Agriculture Director General	Westplan Animal and Plant Biosecurity	Current			
Brookfield Rail Pty Ltd	Westplan Brookfield Rail Emergencies	Current			
Fire and Emergency Services (FES) Commissioner	Westplan CBRN (Chemical, Biological, Radiological, Nuclear)	Current	Exercise Exercise Exercise Exercise	Cook up Higgins International Capex Iron Sentinel	February 2014 October 2014 April 2015 June 2015
FES Commissioner	Westplan Cyclone	Current	Exercise Incident Incident	Touchstone Tropical Cyclone Olwyn Tropical Cyclone Quang	October 2014 March 2015 April 2015
Water Corporation	Westplan Dambreak	Under review	Exercise	Dambreak	June 2015
FES Commissioner	Westplan Earthquake	Current	Exercise Exercise	Shockwave Magnitude	November 2014 April 2015
Coordinator of Energy	Westplan Electricity Supply Disruption	Current	Exercise	Listrik	December 2014

Hazard management agency	Westplan	Status	Exercise / Incident	Exercise or Incident name	Date
FES Commissioner	Westplan Fire	Current	Exercise	Touchstone	October 2014
			Exercise	Last Quarter	October 2014
			Incident	Bullsbrook fire	January 2015
			Incident	Waroona fire	January 2015
			Incident	Lower Hotham fire	January/February 2015
			Incident	O'Sullivan fire	January/February 2015
FES Commissioner	Westplan Flood	Current	Exercise	Touchstone	October 2014
			Incident	Tropical low – Kimberley	June 2015
			Exercise	Rainstorm	
Coordinator of Energy	Westplan Gas Supply Disruption	Current	Exercise	Mingled	June 2015
			Incident	Line Pack Dampier to Bunbury Natural Gas Pipeline (DBNGP)	January/February 2015
			Incident	Tropical Cyclone Olwyn	March 2015
FES Commissioner	Westplan HAZMAT (Hazardous Materials)	Current	Exercise	Higgins	October 2014
			Exercise	White Cloud	October 2014
			Exercise	Drum Plug	August 2015
State Health Coordinator	Westplan Heatwave	Current	Exercise	West Metro DEMC DiscEx	March 2015
State Health Coordinator	Westplan Human Epidemic	Current	Exercise	NIMUS	November 2014
			Exercise	Ebola public health preparation	December 2014
Commissioner of Police	Westplan Land Search	Current	Incident	Land Search Landsdale	December 2014

Hazard management agency	Westplan	Status	Exercise / Incident	Exercise or Incident name	Date
Coordinator of Energy	Westplan Liquid Fuel Supply Disruption	Current	Exercise	Mingled	June 2015
FES Commissioner	Westplan Collapse	Current	Exercise	Orange Squeeze	October 2014
Marine Safety, General Manager	Westplan Marine Oil Pollution	Under review	Exercise	National Plan	August 2014
			Exercise	Challenger	November 2014
			Exercise	Westwinds	May and June 2015
			Incident	Sinking vessel in Jervoise Bay	June 2015
Commissioner of Police	Westplan MARSAR (Marine Search and Rescue)	Current	Exercise	Zuytdorp	March 2015
Marine Safety, General Manager	Westplan Marine Transport Emergency	Current	Exercise	National Plan Exercise	August 2014
			Incident	Ocean Drover shipboard fire	October 2014
			Exercise	Exercise Challenger	November 2014
			Incident	MV Mariperla grounded ore carrier	April 2015
			Exercise	Westwinds	May and June 2015
Commissioner of Police	Westplan Nuclear Powered Warships	Current	Exercise	Sermo	October 2014
Public Transport Authority (PTA)	Westplan Rail Crash (PTA)	Current	Exercise	Butler Access	September 2014
			Exercise	Stranded railcar in tunnel (scheduled)	October 2015
Commissioner of Police	Westplan Road Crash Emergency	Current	Exercise	Collision	April 2015
FES Commissioner	Westplan Storm	Current	Incident	Metropolitan and south west storms	August 2014
			Exercise	Rainstorm	June 2015

Hazard management agency	Westplan	Status	Exercise / Incident	Exercise or Incident name	Date
Commissioner of Police	Westplan SPRED Space re-entry debris	Current	Exercise	Geodesic	May 2015
Commissioner of Police	Westplan Terrorist Act	Current	Exercise Exercise	International Capex 2015 Externus series	April 2015 April and June 2015
FES Commissioner	Westplan Tsunami	Current	Exercise	Indian Ocean Wave 14	September 2014

Status of State Function Support Plans

Table 9.4 Support Plans

Support organisation	Westplan	Status	Exercise / Incident	Exercise or Incident name	Date
Department of Health	Westplan Health	Current	Incident	Fremantle Ship fire	October 2014
			Exercise	Busselton Code Brown	February and March 2015
			Exercise	Animus Series	July 2015
			Exercise	Fiona Stanley Code Brown	October 2015
DFES	Westplan Freight Subsidy (Isolated Communities)	Under review			
Department for Child Protection and Family Support	Westplan Registration and Reunification	Under review	Exercise	Golden Gate	August 2014
			Exercise	Touchstone	October 2014
			Incident	Bullsbrook fire	January 2015
			Incident	Waroona fire	January 2015
			Incident	Lower Hotham fire	January/February 2015
			Incident	O'Sullivan fire	January/February 2015
			Incident	Tropical Cyclone Olwyn	March 2015
Department of the Premier and Cabinet	Westplan Recovery Coordination	Current			
SEMC Public Information Reference Group	Westplan Emergency Public Information	Current			
DFES	Westplan Telecommunications	Under review			

Support organisation	Westplan	Status	Exercise / Incident	Exercise or Incident name	Date
Department for Child Protection and Family Support	Westplan Welfare	Current	Exercise	Golden Gate	August 2014
			Exercise	Touchstone	October 2014
			Incident	Bullsbrook fire	January 2015
			Incident	Waroona fire	January 2015
			Incident	Lower Hotham fire	January/February 2015
			Incident	O'Sullivan fire	January/February 2015
			Incident	Tropical Cyclone Olwyn	March 2015
			Exercise	Collision	April 2015
			Exercise	Geodesic	May 2015
			Exercise	Rainstorm	June 2015
Department for Child Protection and Family Support	Westplan Reception Reception of Australian citizens and approved foreign nationals evacuated from overseas	Under Review			

APPENDIX F. PREPAREDNESS PROGRESS – SEMC RESOLUTIONS

Preparedness Progress: SEMC 2014–15

Last year's Preparedness Report identified a number of significant trends, issues and themes noting work in progress or opportunities for improvement. Progress since made by individual agencies is reported this year under the chapters on risk, capability and impact. However, some matters are largely or exclusively in the domain of the SEMC or our subcommittees and working groups. Following is a summary of how the SEMC has addressed key issues in the past 12 months.

Governance

The 2014 report noted that EM legislation in Western Australia needed to be more responsive to social, demographic and technological change to ensure continuing relevance and effectiveness.

In March 2015, the SEMC endorsed a new draft of the State EM Policy and Governance Framework and accompanying principles to ensure greater coherence and consistency.

In August 2015, following a review of the EM Act, the SEMC endorsed an amended draft bill for Ministerial approval. The SEMC Secretariat also participated in a review of fire services legislation led by DFES.

A significant governance reform achieved during the year was the restructuring of EM districts in the Perth metropolitan area to create more cohesive planning units and streamline administrative arrangements.

Recovery

The 2014 report highlighted issues around disaster recovery. It noted the Recovery Framework had yet to be finalised and embedded in the state's EM ethos. Roles and responsibilities required clarification and formal processes were needed to help local government undertake impact and needs assessments in recovery planning.

In December 2014, the SEMC approved State EM Policy 4.4 Recovery Coordination and Interim Westplan – Recovery Coordination. These documents clarify roles and responsibilities, particularly those of the State Recovery Coordinator, and the obligations on controlling agencies to undertake both interim and comprehensive risk assessments for the guidance of local governments.

The previous report also highlighted the need for local government recovery plans to be kept up to date. During the year, the SEMC has continued to monitor progress towards statewide coverage of local EM arrangements, including recovery plans and the appointment of Local Recovery Coordinators. The SEMC also noted the experience of the Shire of Mundaring's recovery to date from the Parkerville Stoneville Mt Helena fire, as detailed in a report provided to SEMC in March 2015.

In addition to the work of the full SEMC, the SEMC Recovery Subcommittee examined potential evaluation methodologies for assessing the effectiveness of recovery activities.

During the year, the SEMC remained engaged with the national debate on disaster mitigation, including issues raised in the Productivity Commission report into disaster funding. The State Recovery Coordinator is to lead a review of the Western Australian Natural Disaster Relief and Recovery Arrangements.

Risk management approach

The 2014 report noted that risk management and the progression of the State Risk Project remained the SEMC's strategic focus. During the past 12 months, the SEMC Risk Subcommittee has played a major role in providing agency input and sectoral validation.

Important developments include the promotion of the Western Australian Emergency Risk Management Guidelines, online risk management tools and numerous state and district workshops. In March 2015, the SEMC approved in principle the adoption and future application of the National Impact Assessment Model (NIAM) in Western Australia.

Westplans

The 2014 report noted the important role of capability assessment in Westplans, particularly in documenting the roles and responsibilities of EM agencies in the event of a specific hazard or in the activation of a support service during an emergency.

Since the previous report, the SEMC has approved plans for Brookfield Rail Crash Emergencies; Public Transit Authority Rail Crash; Cyclone; Recovery Coordination – Interim and Storm (December 2014); Animal and Plant Biosecurity (March 2015); Westplan Electricity Supply Disruption (May 2015) and Flood, Tsunami and Space Re-entry Debris (August 2015).

An important function of the SEMC Response Subcommittee has been to provide expertise and sectoral input into the review of Westplans for the guidance of the SEMC.

Post-incident analysis and interagency cooperation

The 2014 report noted the important role of post-incident analysis in promoting continuous learning and improvement.

The SEMC has continued to monitor the implementation of recommendations of major reviews, including the inquiries conducted by Mr Mick Keelty AO into the Perth Hills and Margaret River fires of 2011 and the SEMC-led review of the 2014 Parkerville Stoneville Mt Helena fire.

In March 2015, the SEMC finalised terms of reference for an SEMC-led thematic review of two major fire events in January and February of 2015 – the O'Sullivan and Lower Hotham fires in the south-west. In line with the need identified in the previous report for greater interagency cooperation, one of the three major themes of the review will be cooperation.

The SEMC continues to seek opportunities to derive lessons from emergency events occurring elsewhere in Australia, such as the 2014 Hazlewood Mine fire. Consideration of reviews and inquiries from other jurisdictions supplements the SEMC's Season Review process.

Funding

The 2014 report noted the significance of Commonwealth and state funding programs in enabling EM agencies and local governments to pursue natural disaster resilience and address mitigation, response and recovery issues.

In December 2014, the SEMC endorsed grants under the Natural Disaster Resilience Program to a total of $3.06 million for 2014–15.

In March 2015, the SEMC responded to a request from the Minister for Emergency Services to conduct a stocktake of bushfire risk. The aim of the stocktake is to identify activities and resources allocated by the State Government to manage the risk and to identify funding and policy options.

Public awareness of hazards

The 2014 report highlighted opportunities to improve access and engagement with remote, culturally and linguistically diverse (CaLD) and vulnerable communities.

In the past year, SEMC subcommittees have made particular contributions in response to this need. The Public Information Reference Group provided guidance to all agencies on the use of AUSLAN services to the deaf community in Level 3 (significant) emergencies. And the Community Engagement subcommittee contributed to a national stocktake and workshops to identify vulnerable sectors of society, including socially isolated and remote Aboriginal communities.

APPENDIX G. RESPONDENTS

Table 9.5 Respondents

HAZARD MANAGEMENT AGENCIES							
Agency	**Sent**	**Respond**	**Submit**	**Agency**	**Sent**	**Respond**	**Submit**
Department of Fire and Emergency Services	✓	✓	✓	Department of Finance, Public Utilities Office, Office of Energy	✓	✓	✓
Department of Health	✓	✓	✓	Department of Transport (Marine Safety)	✓	✓	✓
Department of Agriculture and Food	✓	✓	✓	Brookfield Rail	✓	✓	✓
Public Transport Authority	✓	✓	✓	Western Australia Police	✓	✓	✓
EMERGENCY MANAGEMENT AGENCIES							
Main Roads WA	✓	✓	✓	Bureau of Meteorology	✓	✓	✓
Water Corporation	✓	✓	✓	Defence Force (Cwlth)	✓	✓*	✗
Department for Child Protection and Family Support	✓	✓	✓	Western Australian Local Government Association (WALGA)	✓	✓	✓
Department of Environment Regulation	✓	✓	✓	Department of Planning	✓	✓	
Department of the Premier and Cabinet	✓	✓	✓	Department of Education	✓	✓	✓
Department of Parks and Wildlife	✓	✓	✓	Department of Housing	✓	✓	✓
St John Ambulance WA	✓	✓	✓	WA Red Cross	✓	✓	✓
SERVICE PROVIDERS							
Agency	**Sent**	**Respond**	**Submit**	**Agency**	**Sent**	**Respond**	**Submit**
ATCO Gas Australia	✓	✓	✓	Forest Products Commission	✓	✓	✓
Dampier Bunbury Pipeline	✓	✓*	✗	Horizon Power	✓	✓	✓
NBN Co	✓	✓*	✗	Western Power	✓	✓	✓
Insurance Council of Australia	✓	✓	✓	Telstra	✓	✓*	✗

* Agencies advised that for capacity or commercial reasons they would not provide a response to the collection survey tool.

LOCAL GOVERNMENTS			
✓ City of Albany	✓ City of Swan	✓ Shire of Corrigin	✓ Shire of Jerramungup
✓ City of Armadale	✓ City of Vincent	✓ Shire of Cranbrook	✓ Shire of Kalamunda
✓ City of Bayswater	✓ City of Wanneroo	✗ Shire of Cuballing	✓ Shire of Karratha
✓ City of Belmont	✓ Rottnest Island Authority	✓ Shire of Cue	✓ Shire of Katanning
✓ City of Bunbury	✓ Shire of Ashburton	✓ Shire of Cunderdin	✓ Shire of Kellerberrin
✓ City of Busselton	✓ Shire of Augusta–Margaret River	✓ Shire of Dalwallinu	✓ Shire of Kent
✓ City of Canning	✓ Shire of Beverley	✓ Shire of Dandaragan	✓ Shire of Kojonup
✓ City of Cockburn	✓ Shire of Boddington	✓ Shire of Dardanup	✓ Shire of Kondinin
✓ City of Fremantle	✓ Shire of Boyup Brook	✓ Shire of Derby/West Kimberley	✓ Shire of Koorda
✓ City of Gosnells	✓ Shire of Bridgetown–Greenbushes	✓ Shire of Donnybrook–Balingup	✓ Shire of Kulin
✓ City of Greater Geraldton	✗ Shire of Brookton	✓ Shire of Dowerin	✓ Shire of Lake Grace
✓ City of Joondalup	✓ Shire of Broome	✓ Shire of Dumbleyung	✓ Shire of Leonora
✓ City of Kalgoorlie-Boulder	✓ Shire of Broomehill–Tambellup	✓ Shire of Dundas	✓ Shire of Manjimup
✓ City of Kwinana	✓ Shire of Bruce Rock	✓ Shire of East Pilbara	✓ Shire of Meekatharra
✓ City of Mandurah	✓ Shire of Capel	✓ Shire of Esperance	✓ Shire of Menzies
✓ City of Melville	✓ Shire of Carnamah	✓ Shire of Exmouth	✓ Shire of Merredin
✓ City of Nedlands	✓ Shire of Carnarvon	✓ Shire of Gingin	✓ Shire of Mingenew
✓ City of Perth	✓ Shire of Chapman Valley	✓ Shire of Gnowangerup	✓ Shire of Moora
✓ City of Rockingham	✓ Shire of Chittering	✓ Shire of Goomalling	✓ Shire of Morawa
✓ City of South Perth	✓ Shire of Collie	✓ Shire of Halls Creek	✓ Shire of Mt Magnet
✓ City of Stirling	✓ Shire of Coolgardie	✓ Shire of Harvey	✓ Shire of Mt Marshall
✓ City of Subiaco	✓ Shire of Coorow	✓ Shire of Irwin	✓ Shire of Mukinbudin

LOCAL GOVERNMENTS			
✓ Shire of Mundaring	✓ Shire of Plantagenet	✓ Shire of Wandering	✓ Shire of Yalgoo
✓ Shire of Murchison	✓ Shire of Ravensthorpe	✓ Shire of Waroona	✗ Shire of Yilgarn
✓ Shire of Murray	✓ Shire of Sandstone	✓ Shire of Laverton	✓ Shire of York
✓ Shire of Nannup	✓ Shire of Serpentine Jarrahdale	✓ Shire of West Arthur	✓ Town of Bassendean
✗ Shire of Narembeen	✓ Shire of Shark Bay	✗ Shire of Westonia	✓ Town of Cambridge
✓ Shire of Narrogin	✓ Shire of Tammin	✓ Shire of Wickepin	✓ Town of Claremont
✓ Shire of Ngaanyatjarraku	✓ Shire of Three Springs	✓ Shire of Williams	✓ Town of Cottesloe
✓ Shire of Northam	✓ Shire of Denmark	✓ Shire of Wiluna	✓ Town of East Fremantle
✓ Shire of Northampton	✓ Shire of Toodyay	✓ Shire of Wongan–Ballidu	✓ Town of Mosman Park
✗ Shire of Nungarin	✓ Shire of Trayning	✓ Shire of Woodanilling	✓ Town of Narrogin
✓ Shire of Peppermint Grove	✓ Shire of Upper Gascoyne	✓ Shire of Quairading	✓ Town of Port Hedland
✓ Shire of Perenjori	✓ Shire of Victoria Plains	✓ Shire of Wyalkatchem	✓ Town of Victoria Park
✓ Shire of Pingelly	✓ Shire of Wagin	✓ Shire of Wyndham/East Kimberley	

Red cross indicates local governments that did not respond to the collection tool.

APPENDIX H. ACRONYMS

ACRONYM	TERM IN FULL
AIIMS	Australasian Inter-Service Incident Management System
AGDRP	Australian Government Disaster Recovery Payment
ANZEMC	Australia New Zealand Emergency Management Committee
BOM	Bureau of Meteorology
BRIG	Bushfire Review Implementation Group
C3	Command, Control and Coordination
CaLD	Culturally and Linguistically Diverse
CBR	Chemicals, biological materials and radiological
CIMS	Communication and information management services
COAG	Council of Australian Governments
COMDISPLAN	Australian Government Disaster Response Plan
CRC	Cooperative Research Centre
DACC	Defence Aid to the Civil Community
DAFWA	Department of Agriculture and Food, Western Australia
CPFS	Department for Child Protection and Family Support
DER	Department of Environment Regulation
DEMC	District Emergency Management Committee
DFES	Department of Fire and Emergency Services
DoT	Department of Transport
DPaW	Department of Parks and Wildlife
DPC	Department of the Premier and Cabinet
EM	Emergency Management
EMA	Emergency Management Agency
EM Act	Emergency Management Act 2005
EMLAG	Emergency Management Legislation Advisory group
ESL	Emergency Services Levy
ESNORG	Essential Services Network Operators Reference Group

ACRONYM	TERM IN FULL
FES	Fire and Emergency Services
FPC	Forest Products Commission
GIS	Geographic Information System
HMA	Hazard Management Agency
ICCS	Incident Command and Control System
ISG	Incident Support Group
LEMA	Local Emergency Management Arrangement
LEMC	Local Emergency Management Committee
MRWA	Main Roads Western Australia
MoU	Memorandum of understanding
NBMP	National Bushfire Mitigation Program
NDRP	Natural Disaster Resilience Program
NPANDR	National Partnership Agreement on Natural Disaster Resilience
NEMCAT	National Emergency Management Capability Assessment Tool
NIAM	National Impact Assessment Model
NSDA	National Strategy for Disaster Resilience
OBRM	Office of Bushfire Risk Management
PIA	Post-incident analysis
PPRR	Prevention Preparedness Response Recovery
PTA	Public Transport Authority
RFDS	Royal Flying Doctor Service
SECG	State Emergency Coordination Group
SEMC	State Emergency Management Committee
SEMP	State Emergency Management Policy
SES	State Emergency Service
SWORD	State Wide Operations Response Division
WANDRRA	Western Australian Natural Disaster Relief and Recovery Arrangements
Westplan	State Emergency Management Plan

APPENDIX I. SEMC CAPABILITY FRAMEWORK

CAPABILITY AREAS	24 ACHIEVEMENT OBJECTIVES
Legislation, policy and governance structures	1.1 Emergency management legislation, governance structures and policies (EM Instruments) are current, used, documented and facilitate effective preparedness for large-scale emergencies in Western Australia.
Risk assessment and risk treatment	2.1 A consistent and comprehensive ERM approach aids in decision making, facilitates appropriate resource allocation, and allows for a proactive approach towards EM, including greater emphasis on prevention and preparedness.
Resources	3.1 People: Organisations have appropriate levels of capable, well-trained and supported people who effectively perform their role in large-scale emergency management. 3.2 Equipment and infrastructure: Organisations have access to the equipment and infrastructure required to effectively manage large-scale emergencies 3.3 Finance and administration: Robust financial and administrative processes and adequate funding arrangements exist to manage large-scale emergencies.
Shared ownership	4.1 Volunteering: Organisations have a clear strategy for promoting and maintaining EM volunteerism, with a focus on developing ready responders. Strategy addresses recruitment, retention, motivational aspects and barriers to volunteerism. 4.2 Community engagement: The community has an understanding of and takes responsibility for hazard-related risks they may be exposed to and strategies to treat those risks, and are engaged with the response and recovery process. 4.3 Business and industry: The state stands resilient to the consequences of an emergency (or emergencies) through the existence of strong stakeholder relationships and support, business continuity planning, integrity of structures and systems and a holistic approach to EM.
Operational plans and procedures	5.1 EM plans: Comprehensive, documented and predetermined processes and procedures exist that are employed in response to and recovery from a large-scale emergency. 5.2 Training and exercising of plans: Plans, processes and procedures are regularly and appropriately exercised to assess and improve capability.
Public information and community warnings	6.1 Public information and community warnings: Systems and processes are in place that allow the broader community to be warned of impending danger and actions to be taken prior to, during or after a large-scale emergency.

CAPABILITY AREAS	24 ACHIEVEMENT OBJECTIVES
A mobile, capable and coordinated response	7.1 Command, Control and Coordination: Pre-established and well-understood protocols and structures exist that define the interrelationships between stakeholders during an event and facilitate orderly giving of directions, undertaking of key tasks and reporting arrangements. 7.2 Effective and interoperable communication systems: Effective and interoperable communication systems exist to allow emergency responders to communicate seamlessly during a large-scale emergency. 7.3 Mobilisation: The effective mobilisation of a response effort, including the transportation of personnel, equipment and services, in response to a large-scale emergency. 7.4 Situational assessment and acquisition of critical resources and services: Situational assessments are undertaken to accurately inform decision makers about the nature and extent of a hazard, and what critical resources and services are needed, or may be needed, at different stages of a response and recovery effort.
Response and recovery support services	8.1 Evacuation and public protection measures: Directed or voluntary evacuation of people and animals or other public protection measures will protect lives in a large-scale emergency. 8.2 Fatality management services: Appropriate management of fatalities in the event an emergency occurs, including body recovery, victim identification, mortuary, burial and cremation services, the management of information between authorities and family members, and the provision of bereavement counselling. 8.3 Health and medical services: Emergency first aid and medical treatment are delivered in response to a large-scale emergency, including the management of environmental and public health to avoid additional injury and disease within the community. 8.4 Welfare and social services: Welfare and social services are delivered during or immediately following an emergency, including the provision of critical goods and services to individuals affected by disaster (e.g. food, potable water and shelter) and critical support services that contribute to the wellbeing of the community (e.g. psychological first aid and financial assistance). 8.5 Restoration of essential services and critical supplies: Essential services and supplies are delivered or returned to the community during and after an emergency, including access to power, mains water, gas, sewerage, telecommunications, food security and liquid fuel.
Coordinated recovery	9.1 Coordinated recovery supports emergency affected communities in the reconstruction and restoration of physical infrastructure, the environment, and psychosocial and economic wellbeing.

CAPABILITY AREAS	24 ACHIEVEMENT OBJECTIVES
Evaluation, knowledge and continuous improvement	10.1 Evaluation: Rigorous, customary and transparent evaluation of all EM activities is undertaken, including post-incident analysis, to assess and improve performance. 10.2 Knowledge management: Knowledge and information is effectively captured, managed and shared in a way that contributes to effective and coordinated EM at state and local levels. 10.3 Continuous improvement: Continuous learning and improvement is achieved through informal and formal mechanisms to strengthen the overall preparedness of the state to deal with large-scale emergencies.

APPENDIX J. STATE RISK PROFILE

This year's report contains several new ways of displaying the risk profile. It is anticipated that these visual representations will be functional for the three different levels, state, district and local; and may, in time, become interactive plots when hosted on the SEMC website.

The fundamental 'unit' of the new graphics is a percentage of risk statements assessed as the number of statements assessed differs between hazards. It can easily be distributed by consequence or likelihood level, by risk level or by impact category.

The full spectrum of state level risks is displayed in Figure 9.3. It shows the risk statements as a percentage as they sit on the NERAG risk matrix. The matrix depicts the consequence as columns and the likelihood as rows. The resulting risk level as described in the national NERAG is shown in the top right corner of each cell. The matrix cells contain graphs bars, one bar for each hazard representing the percentage of risk statements for each hazard that fall into that cell. Figure 9.2 explains these features.

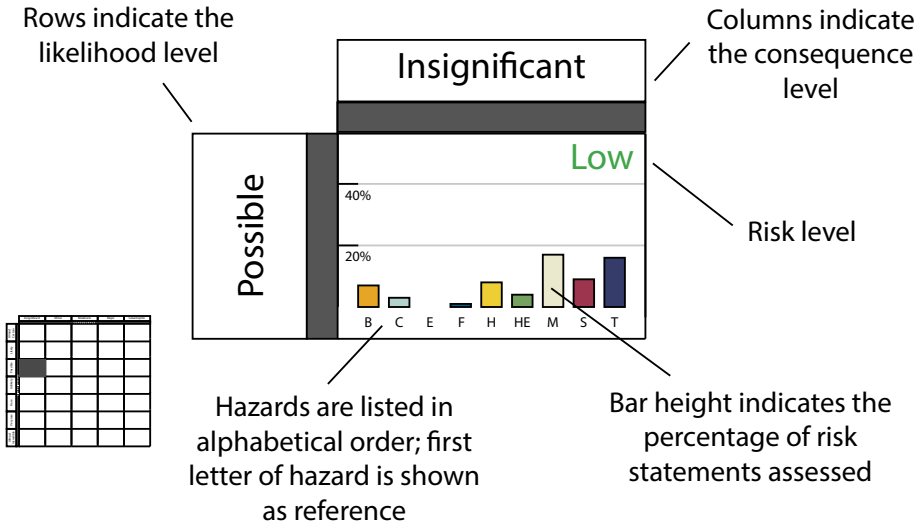
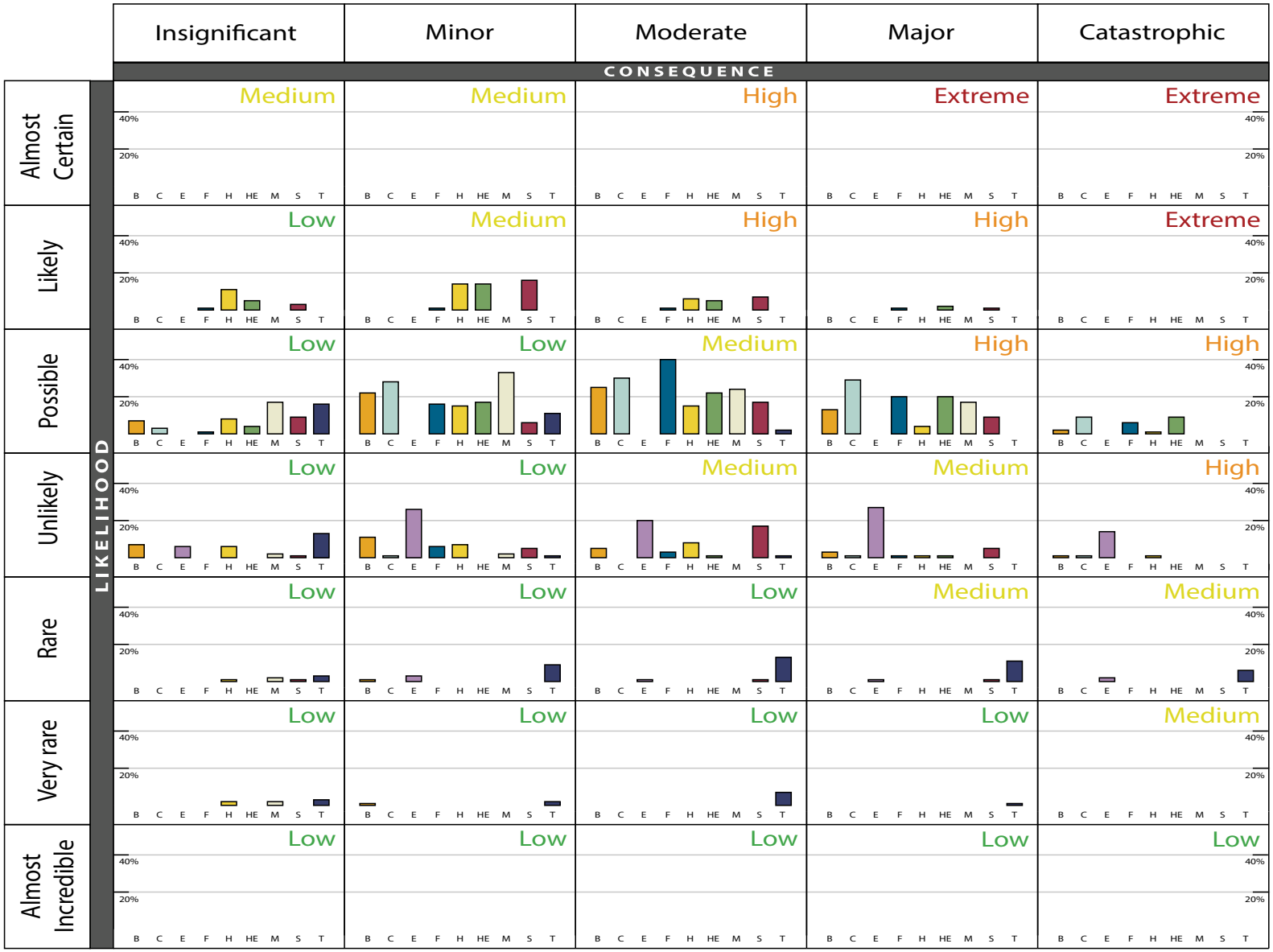


Figure 9.2 – Explanation of risk matrix cells, as seen in Figure 9.3



Legend

- Bushfire (B)
- Cyclone (C)
- Earthquake (E)
- Flood (F)
- Heatwave (H)
- Human epidemic (HE)
- Marine transport emergency (M)
- Storm (S)
- Tsunami (T)

Figure 9.3 – State Risk Profile – percentage of risk statements shown according to their consequence, likelihood and risk rating

Your comments on this report are welcome.
Please direct correspondence to:

SEMC Secretariat
20 Southport Street,
WEST LEEDERVILLE WA 6007

Telephone: (08) 9482 1700
Email: publications@semc.wa.gov.au
Website: www.semc.wa.gov.au

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