INSTITUTIONAL MAPS OF RISK OWNERSHIP FOR STRATEGIC DECISION MAKING

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BACKGROUND

Purpose of this report

The purpose of this report is to develop institutional maps of risk ownership in the Australian context that will provide an insight into the current balance of ownership delegations. These maps address risk ownership relating to the strategic management of natural hazard risk for planning, preparedness and recovery (PPR). They do not cover the response component of natural hazard risk management (see Figure 1), which is largely tactical and command and control-based, rather than strategic.

Strategic management includes mitigation incorporated into planning and preparation designed to reduce the impacts of natural hazard risks. Resilience is also included as a key contributor to recovery and is seen as any set of actions that do not alter the risk itself, instead influencing exposure, sensitivity and vulnerability.
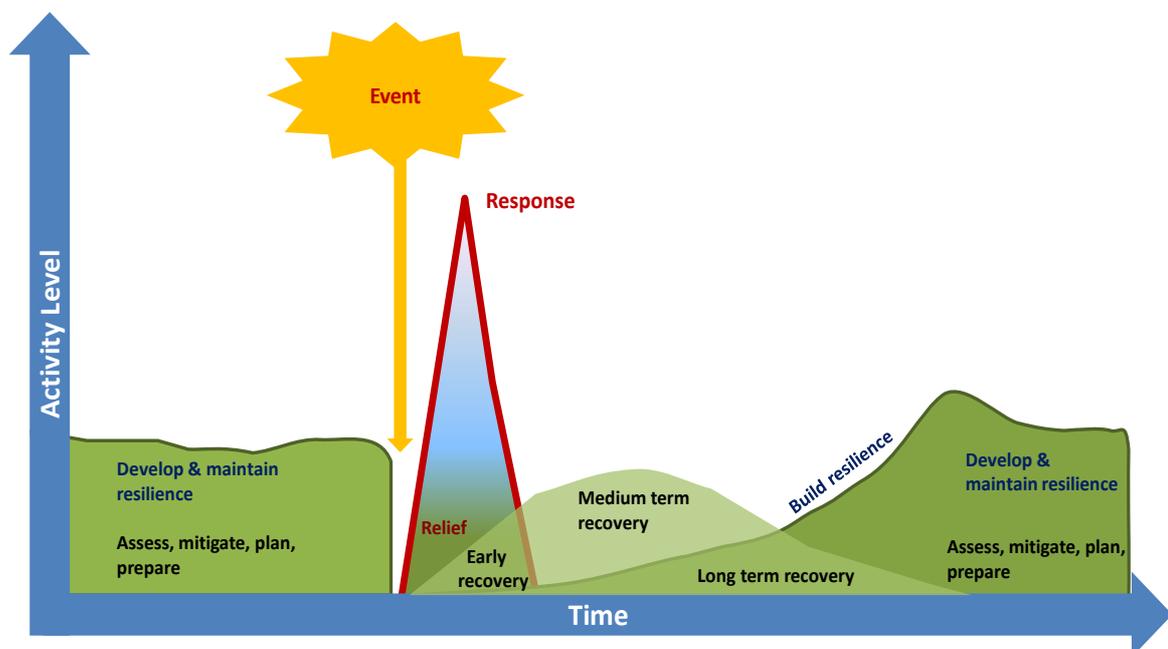
FIGURE 1: PROJECTED RESOURCE REQUIREMENTS FOR EFFECTIVE INTEGRATED NATURAL HAZARD RISK MANAGEMENT TASKS ACROSS TIME SCALES (YOUNG ET AL. (2015B) ADAPTED FROM AEMI (2011).

These maps build on earlier work (Young et al., 2015b, 2016), using the frameworks and research developed through that work as a basis. It also draws on aspects of the economic geography of values at risk developed by the project.

What is institutional risk ownership?

The concept of risk ownership in the broader literature (academic, standards and popular) identifies two main roles:

1. As the owner of the resource (asset, good or service) at risk, and
2. As the delegated risk manager.

The first role originated as part of economics and the second from the risk management process. One aim of this project is to combine these two aspects in order to achieve a more comprehensive oversight of strategic risk management.

Risk ownership has been defined in this project using two aspects: asset ownership and the risk management process (Jones et al., 2015; Young et al., 2015a, 2015b, 2016). This definition combines the two following definitions:

An asset owner has legal authority, incentive to manage risk to prevent loss and fairness in the distribution of cost and benefit (Productivity Commission, 2014). A risk owner is defined by the international risk standard ISO 31000 as a "person or entity with the accountability and authority to manage a risk" (ISO, 2009).

These definitions link the relationship between the different types of values at risk and the decision-making process associated with managing natural hazards. The institutional mapping of risk ownership allows for greater scrutiny of this relationship, while addressing the systemic nature of the risks themselves.

The Productivity Commission's definition, while suitable as a starting point for understanding ownership of economic assets, property and resources, does not, however, account for factors such as intangible assets or shared ownership. These require more complex arrangements, which need to incorporate environmental and social assets, taking account of private, public, common and restricted ownership, all of which fall beyond the more straightforward definitions around property, personal and business assets.

In relation to the ISO definition, ownership can be divided into responsibility for carrying out a management process or action, and accountability for ensuring that it has been carried out. Who pays is also one of the key ways ownership can be determined (Young et al., 2015b).

Institutions are rules and norms held in common by social actors that guide, constrain, and shape human interaction (North, 1990). In simple terms, groups of people act in accordance to a common set of values and rules. Rules can be formal, such as laws and policies; or informal, such as norms and conventions. Organizations such as parliaments, regulatory agencies, firms and community bodies act in response to institutional frameworks and the incentives they frame (Young et al., 2008). Institutional ownership of risk is characterised by the formal and informal sets of rules that identify a risk owner.

This can be through ownership of a resource, as a risk manager or by being responsible for both. At the institutional scale, risk ownership describes sets of actors with common goals and responsibilities, such as home owners, local government and the insurance industry. Both institutional rules and roles associated with risk ownership can be formal or informal. They range from being legally prescribed, to being taken up voluntarily or inherited by default. Ownership can be allocated in a number of ways, for example, to

a specific value, risk or risk management activity or to a general thematic area such as education and awareness.

Institutional maps of ownership can help achieve things such as:
- Creating an understanding of the links between values at risk, ownership of the assets and resources linked to those values and of the specific roles undertaken within the context of strategic risk management.
- Providing a framework that can assess the coverage of ownership delegation and uptake across values at risk and the strategic risk management process.
- Providing a structure for individuals and groups to explore their own roles in terms of risk ownership.

Levels of ownership can be assessed by contrasting what has been formally allocated with what has been taken up (either as delegated or informally). There is also an 'ideal' for risk ownership that can be developed by assessing the forms of governance and approaches most suited to the nature of a particular risk and the context in which that risk exists. This mapping of aspiration, allocation and attainment is currently difficult without first developing the foundations to build on.

As all risks exist in a system where they are interrelated – an impact on one area of risk can impact on other areas (see Figure 2). It is important to understand how the different types of risks and their interactions affect institutions at an organisational or group scale.
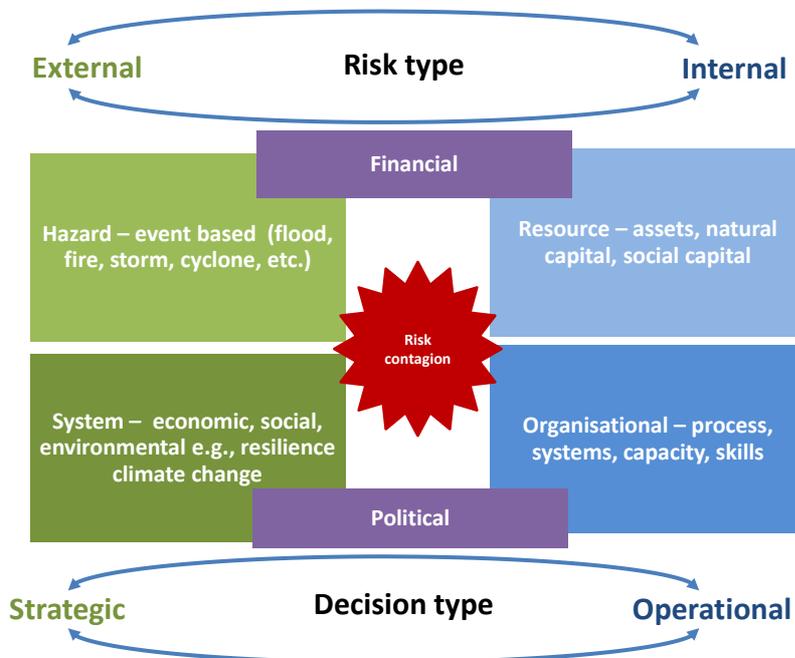

FIGURE 2: RISK SYSTEM WITH INTERNAL AND EXTERNAL COMPONENTS (YOUNG ET AL., (2016) – ADAPTED FROM PCW (2013) AND KAMBIL ET AL. (2005).

Ascertaining whether a risk is external or internal to an organisation can help risk owners to better understand where they have the most agency to

act. It can also help to determine *how* a risk can be managed and *if* it can be managed. It is particularly important to ascertain if a risk owner or their representatives are capable of fulfilling the ownership role allocated, by considering the following areas:

- The capacity and skills of allocated owner/s.
- Resources available to address the risk.
- Key connections the primary owner depends on to deliver outcomes.
- Identified interdependencies between the different values and areas of risk and the possibility of contagion from one risk area to another.
- The nature of the systems (social, environmental and economic) that surround the risk.

Values and risk

Traditionally, risk ownership has been allocated for specific values, such as built infrastructure and personal and community safety. However, the move towards a multi-hazard outcomes based approach requires a different approach. Because of the long-term and pervasive nature of natural hazard risk, values put at risk need to include a wide range of both tangible and intangible values to properly assess trade-offs during decision making, thus minimising regrettable damage and loss.

The introduction of resilience as a key policy driver in managing natural hazards is also driving fundamental changes in how planning and management of risk needs to be undertaken. This is because:

- Resilience is an activity that requires monitoring and assessment across short, medium and long-term time frames, so needs to be planned and managed as a strategic activity.
- Due to the dynamic nature of natural hazard risks and the environment they occur in, exercising risk ownership requires a continuous improvement approach that is able to accommodate and adapt to changes and developments as they occur.
- Risk ownership requires a systemic approach to assessing tangible and intangible values. Here, we apply social, environmental, economic and built environment value categories.
- Ownership is context specific, requiring the implementation of actions to be resilient in the face of changing circumstances.
- Everyone is now a risk owner (disaster resilience is everyone's business), so risk literacy in relation to natural hazards is important across all areas of society.
- Natural hazards and their impacts are increasing due to social and environmental factors such as increasing populations, changing demographics, changing settlement patterns and climate change.

Starting with an understanding of what is valued and by whom, is a way of prioritising risks and provides a focus point for the development of a portfolio of risk management activities and the allocation of risk ownership relevant to these.

Institutional mapping of risk ownership

Mapping risk ownership at the institutional scale is a foundational step to developing a systemic approach to strategic risk management. Like many such maps, an institutional map is developed as a series of layers that explore the structure, relationships and interactions within a system. Each map illustrates a different aspect of ownership. This report and the work it synthesises provides a 'broad brush stroke' overview or the first layer of an institutional map for the strategic management of natural hazards.

Mapping risk ownership is a dynamic process because risk ownership is present across multiple systems and agendas. A number of factors can change who owns the risk, when it is owned and how it is owned; including:

- Changes in roles due to the actions required to address the risk.
- The severity of the risk of event/s.
- Changing social, environmental and economic contexts in which the event can occur.
- The time frame that is defined for risk management which includes prior to and following an event.

As shown in the workshop report (Young et al., 2016) and in the attachments below, there is a number of ways to develop and present these maps. What format is selected depends upon the purpose of the 'map' and the audience for which the map is being developed. As much of the allocation of risk ownership is activity-based, it is difficult to represent this spatially so a matrix approach has been adopted for this report.

Methodology

These maps are represented in a matrix containing the following core components:

- Values: economic, social, environmental and built infrastructure.
- Ownership: covering ownership of values at risk through to ownership of actions, including preparation, prevention and recovery.
- Institutions: Federal, State and Local Government, the Community, Industry and Business and Boundary Organisations.

They have been constructed from the following sources:

- State Emergency Plans from Victoria, New South Wales, Tasmania and South Australia (Appendix B).
- Activity-based exercises that allocated perceived risk ownership from the workshops undertaken as part of this research project (Appendix C and D).

▪ A document 'map' which identified areas ownership delegation from publically available documents (Appendix E).

The scope of the maps is for activity-based allocation in value categories and does not include analysis of uptake of ownership to determine the effectiveness of this. Process areas considered are the management prior to, and recovery following events into the longer term.

Maps developed from the workshops are based on the use of a scenario process to represent perceived ownership of risk actions. Those derived from State Emergency Plans represent a sample of actual delegation. These show different areas of decision making and as a result provide different interpretations of risk ownership. These maps were then contrasted to identify patterns of allocation. Areas of ownership within each institutional area varied, which may indicate either lack of ownership, or limitations of the process used, resulting in restricted outcomes. A substantial amount of ownership allocation was shared in the State Emergency Management Plans, so allocations were made to the separate institutions rather than placed under a shared category to provide greater transparency.

We are aware that all of these measures are incomplete and contain selection bias, but based on the different methods and sampling, we believe this method provides a robust approach to mapping and viewing the different aspects of how risk ownership is currently allocated. We also recognise that these areas are complex and interrelated so that the maps provided in this document only indicate general patterns of current ownership allocation.

Institutional categories

Understanding risk ownership at the institutional scale is a key part of identifying the primary stakeholder groups of risk owners and their level of ownership. This is important, because risk ownership needs to be distributed and managed in the long-term across all levels of society, if society is to be resilient and sustainable. Ownership is also often shared across institutions.

The key institutional categories we have defined are:

▪ Local Government
▪ State Government
▪ Federal Government
▪ Business and Industry
▪ Community
▪ Boundary organisations (N.B., these were not included as part of the community ownership allocations for the workshop exercises undertaken, so they are not visible as an institutional category in maps drawn from these exercises).

Some examples are shown in Table 1 below.

Institution	Examples of agencies involved
Federal Government and associated agencies	Individual Federal Government departments COAG Australian Maritime Safety Authority Air Services Australia Australian Defence Force Attorney-General's Department Emergency Management Australia Centrelink
State and Territory Government and associated agencies	Individual State Government departments Ambulance services Environmental agencies Fire services Health services Police force Providers and regulators of essential services State coroner Volunteer organisations State Fire Authority State Emergency Service Natural resource management bodies (e.g., water authorities) Road management and transport authorities
Local Government	Individual municipal councils Regional Organisations of Councils Local Government peak bodies
Industry & Business	Individual companies and organisations Insurance and finance sector Critical infrastructure providers and operators
Community	Individual land owners Community organisations, groups and networks Community Volunteer organisations
Boundary organisations	Non-government organisations Not-for-profit organisations Regional development bodies Industry and government peak bodies

TABLE 1: INSTITUTIONS AND AGENCIES INVOLVED IN THE NATURAL HAZARD DISASTER RISK PROCESS (YOUNG ET AL., 2015B), ADAPTED FROM PRODUCTIVITY COMMISSION (PC, 2012).

Values categories

Identifying values to identify ownership and actions helps to trace the systemic nature of the hazard and identify potential areas of 'risk contagion' or domain crossing, areas of vulnerability, and where critical thresholds may lie (for a summary of risk contagion and domain crossing see Appendix A). This in turn can help decision makers understand the trade-offs between different actions and enable more comprehensive activities and ownership allocations to be developed.

Four value groups examined used in this map are:

- Environment
- Economic
- Built infrastructure
- Social

Built infrastructure was incorporated as a separate value group because of the different responses of 'hard' and 'soft' assets to natural hazards and also because much of the recovery expenditure to date has been in this area.

Work to date has established the need to understand not only who is allocated ownership, but what it is allocated for and how it is allocated. We have divided key areas of delegation into three parts for this matrix which are:

- Who is accountable for the risk?
- Who manages the risk?
- Who pays for the risk?

The formal instruments identified for allocating risk ownership are shown in Figure 3. Informal arrangements such as social contracts will need to be investigated further to understand where they are present and the role they play in uptake of ownership.
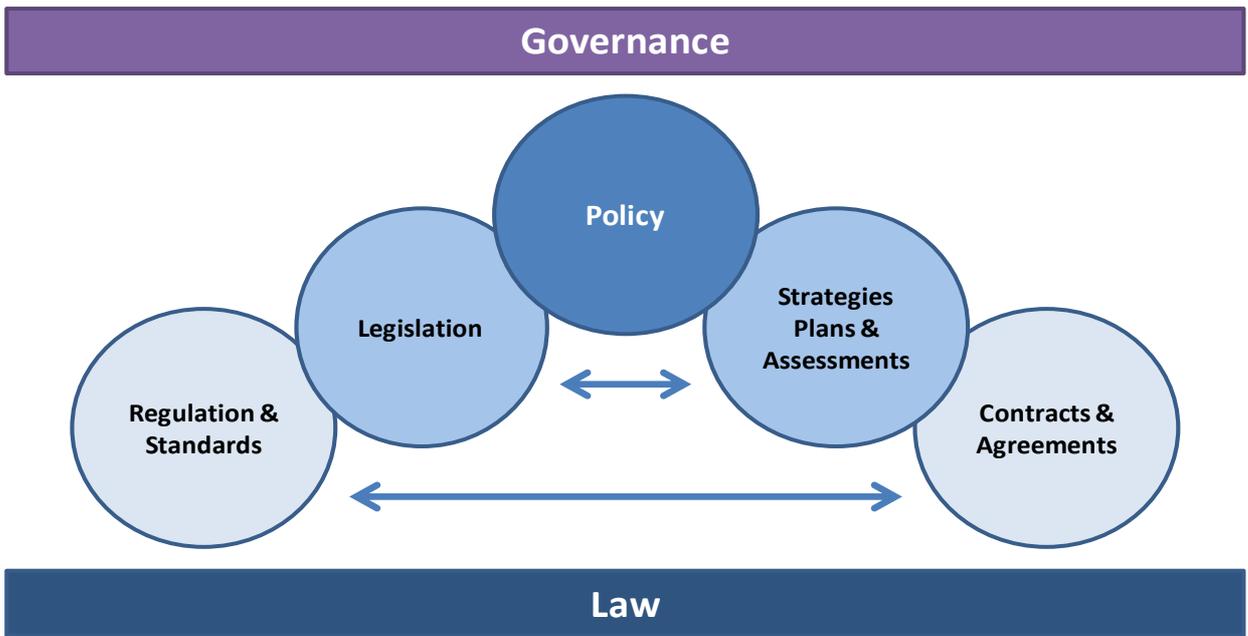
FIGURE 3: INSTRUMENTS FOR ALLOCATING RISK OWNERSHIP (YOUNG ET AL., 2015B).

OVERVIEW OF KEY FINDINGS OF INDIVIDUAL RISK MAPPING EXERCISES

Institutional ownership through State Emergency Management Plans

In terms of strategic values-based decision making, the State Emergency Management Plans (SEMP) varied across the different states in terms of clarity in these areas. Activities that could possibly be still active in extreme circumstances after 2 months and also activities that produced outcomes that could inform strategic decision making, were included as part of this mapping exercise.

Ownership was often generalised and was most specific when related to response activities. There is a noticeable move towards identifying different value areas in both the Tasmanian and Victorian plans, with tables inserted that define and identify value areas and risk owners across the PPRR spectrum (prevention, preparedness, response and recovery). Victoria also had the most references to community. Many of the actions have shared ownership and there is varying clarity across the different plans in relation to this.

The following were found across all state plans (Young et al., 2016):
- State Government had the majority of ownership allocations and communities the least.
- It was not clear outside of ownership of private assets what ownership of risk the community is responsible for and how they are responsible.
- Time frames related to recovery and preparation activities were indicated in some documents to be 'longer term', but there was no specific time frame allocated to these activities.
- It was not clear in many cases how success of long-term recovery or resilience activities were to be measured.
- Local Government's scope and level of ownership are not clearly defined and could indicate an 'iceberg' level of ownership, where formal allocations do not reflect the real level of allocations or activity required from that sector.
- There was a higher percentage of allocation of risk ownership to the hazard area of bushfire than other hazard areas.

For further details see Appendix B, (p. 17).

Institutional risk ownership (prevention, preparedness) short-term time frames and (recovery, resilience and capacity building) long-term time frames.

Although not all ownership allocations were completed on these maps during the workshop, they still provide some insight into how risk ownership was perceived to be allocated in relation to these activities. The hazards assessed during these exercises were bushfire, flood, extreme weather events and heatwave. The ownership allocations for these workshops (Tasmania, South Australia and New South Wales) provide the following insights (Young et al., 2016):

- State Government had the largest allocation of both short and long-term ownership of actions, and Community the least.
- When distributed between short-term (prevention, preparedness) and long-term (response, resilience and capacity building) actions, State Government institutions had the highest allocations in both categories. Local Government had the second highest allocations in both categories, although the number of short-term actions was substantially high.
- Federal Government had the lowest allocation of the government institutions spread equally across both short and long-term categories.
- Business and Industry had a higher allocation of short-term ownership than Federal Government and slightly less for the long-term category.
- Community had the least allocation in both short and long-term categories, there was a small allocation of shared ownership in the short-term category and Unowned category in the long term.
- The majority of ownership was allocated to shorter-term prevention and preparedness activities.

For further details see Appendix C (p. 29).

Mapping risk ownership using the RAP criteria (Victoria) workshop map

The Victorian workshop allocated perceived risk ownership to short and long-term recovery activities using the RAP criteria, across three risk categories (social, environmental and economic) using the RAP criteria develop by the project which has the following components:

- Who is responsible for actions?
- Who is accountable for actions?
- Who pays for the actions and impacts?

Participants were asked to select the priority risk for each risk area and to allocate risk ownership for this across 2–12 Month, 1–2 Years and 2+ Years, time scales.

Although not all ownership allocations were completed during this exercise, this mapping illustrated the following (Young et al., 2016):

- State Government is seen as the largest owner of tasks overall.
- The largest amount of ownership was allocated in the 2–12 Month period.
- Ownership was most evenly allocated across different stakeholders in the 1–2 Year period.
- State Government had the largest allocation in the 2–12 Month and 1–2 Year period.
- There was a substantial decrease in risk ownership in the 2+ Years period, except for the areas of No owner and Community.
- Ownership was most complete in areas of 'who pays' and patchy in areas of responsiblity and accountability.
- It was also found that the majority of ownership related to the fire hazard area.

For further details see Appendix D (p. 34).

Mapping institutional ownership via policy and regulatory instruments

The desk top review (Young et al., 2015) undertaken has provided a 'map' of policy and regulatory instruments that allocate risk ownership either directly or indirectly in the strategic area of natural hazard management (see Appendix E, p. 35). The key instruments used to identify these documents are shown in Figure 3 (p. 8).

Clarity of ownership was found in the following areas:

- Built infrastructure and assets have the most complete coverage of risk ownership, which is supported by a wide range of policies and regulation.
- State government have the highest legislated level of allocation in relation to natural hazard risk ownership.
  - There are well-developed early and medium-term recovery plans for impacts on built assets and infrastructure and to a lesser extent on social assets and infrastructure. The majority of recovery funds are currently spent on roads and other transport infrastructure due to high levels of damage and lack of insurance in this area in most states.
- Growing allocation of ownership in risk planning and preparation at the state and local level, and for civil society and business and industry in designated high-risk areas for specific hazards such as flood and fire.
- Broad ownership by civil society of overall hazard risk in terms of insurance coverage, although growing exposure increases the risk of under-insurance.

Ownership gaps were observed in the following areas:
- Mitigation of risk to environmental assets and infrastructure has limited ownership and there are important gaps in coverage for both built and social assets and infrastructure.
- Despite a degree of existing resilience, resilience in all areas of the risk management process and its application is not well defined. Accountabilities also extend beyond emergency management into broader social, economic and environmental areas.
- Lack of clarity between investment in and relative effectiveness of active (e.g., emergency management plans, targeted mitigation) and passive resilience measures (e.g., building to regulation).
- Recovery plans for social and environmental assets and infrastructure. There was no defined funding mechanism for environmental recovery or for social recovery over the long term.

ANALYSIS OF INSTITUTIONAL OWNERSHIP

All institutional mapping exercises across the four states showed consistent findings in the following areas:

- There is a lack of specific long-term allocation of ownership, particularly in relation to some of the intangible social and environmental values.
- Risk ownership in the above area is generally poorly defined, particularly in relation to social and environmental aspects related to resilience and long-term recovery.
- The majority of risk ownership is allocated in the shorter term and the focus of the plans reviewed was on the management of the event itself and 12 months following.
- There were no clear indications as to how ongoing activities such as long-term recovery or resilience are measured within the current State Emergency Management Plans.
- Local Government had a significant delegation of responsibility in many of the maps but it was found to be unclear in many cases as to how this would manifest practically.
- Shared ownership across institutions and across temporal scales is still developing.
- There are potential imbalances in relation to allocation of risk ownership between different hazards and also between the public and private sectors.

When contrasting perceived (data from workshop exercises) and allocated ownership (data from SEMPs), the built infrastructure and environmental categories were largely consistent. However, the economic and social values varied considerably (Figure 4). The smallest allocation in the SEMPs was to economic values, possibly indicating a knowledge gap as to how to apply economic considerations effectively into risk planning processes.
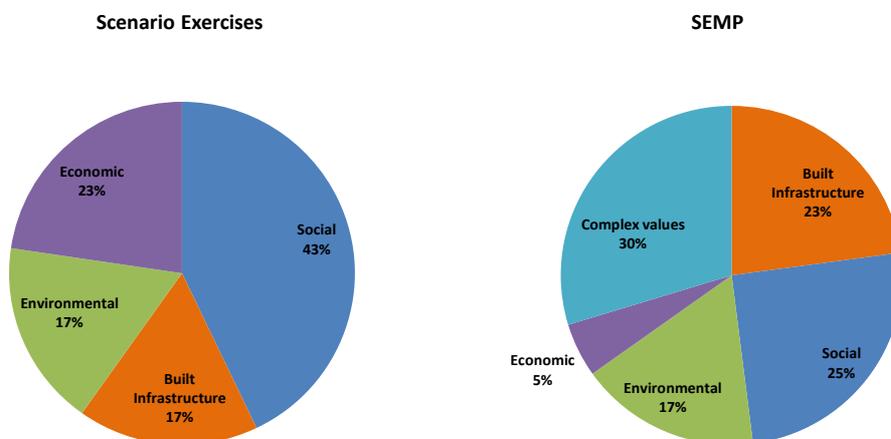
FIGURE 4: VALUE GROUPS ASSOCIATED WITH RISK ACTIVITIES AS IDENTIFIED BY WORKSHOP SCENARIO EXERCISES (PERCEIVED) AND STATE EMERGENCY MANAGEMENT PLANS (SEMP).

It is also interesting to note that over 30% of the values identified can be classified as complex values because they contain other value categories within them. This indicates a possible need for greater understanding of how these values work within the system of ownership allocation.

The policy-mapping exercise (see Appendix E, p. 35) showed a number of areas of policy that are not formally included in the emergency management natural hazard risk agenda and reinforces the need for activities and coordination across policy areas.

It is also interesting to note the institutional allocations exercises examining ownership of values at risk across the different institutions undertaken in the workshop in relation to the risk activity based maps (see Figure 5). There are significant changes of allocation between ownership of values and ownership of risk actions related to natural hazards particularly in relation to the state government emergency management plans (Young et al., 2016). This raises questions as to a possible disconnect between asset ownership, policy and risk management activities related to natural hazards. Further research is needed to understand how this can be addressed to support more effective strategic management.

Although communication with the community is defined in many plans and policies, the subject of what needs to be communicated is not clear, particularly with regard to resilience. Government agencies, particularly State Governments, are often the custodians of much of the information needed to inform the Community and other institutional risk owners. The provision of this information in accessible form is crucial for the effective uptake of ownership, to reduce unacknowledged ownership of risk (where actors have been delegated but are unaware) and support identification of unowned risks.

Figure 5 summarises the ownership work to date with four institutional maps that represent the outcomes across the different activity based mapping exercises. We have also included a map from the value at risk ownership mapping exercise. This has been done to illustrate the key components of the current decision-making process and highlight how the allocation of ownership of strategic actions to institutional players changes when allocated across different activities. Note the addition of Boundary Organisations and removal of the Shared category in the lower right diagram. This is due to the different calculation method and emphasises that although we think the general patterns of ownership are robust, individual representations are due to the method of sampling.

FIGURE 5: INSTITUTIONAL MAPS FOR ALLOCATIONS OF OWNERSHIP OF VALUES AT RISK, RISK AND CONSEQUENCES OF NATURAL HAZARD EVENTS, RISK MANAGEMENT ACTIONS (YOUNG ET AL. 2016, APPENDIX C & D) AND STATE GOVERNMENT EMERGENCY MANAGEMENT PLANS (LOWER, RIGHT, APPENDIX B).

NOTE THE ADDITION OF BOUNDARY ORGANISATIONS AND REMOVAL OF SHARED IN THE LOWER RIGHT DIAGRAM.

CONCLUSION

In the emergency services sector, risk ownership plays a key role in the command and control model used for response but, has not been well understood or defined for longer-term strategic activities such as prevention, preparedness and response, in particular in areas of resilience and capacity building. These institutional maps highlight the gaps that currently exist in areas of risk ownership in strategic planning. There are a number of opportunities for improvement in this area, which include:

- Specific allocation of ownership in time frames beyond 2+ Years for resilience and long term recovery and the development of strategies at a state level to support this.
- Clarification of what 'ownership of risk' at a community level is, and how these responsibilities manifest practically.
- Better understanding and visibility of intangible values particularly in the social and environmental area.
- The development values-based approaches in relation to the management of natural hazards.
- Inclusion of specific monitoring and evaluation measures for long-term recovery and resilience activities in emergency management plans.
- Assessment of the current levels of public/private ownership and how sustainable these arrangements are, particularly in relation to local and state government ownership allocations.
- Clarification of shared ownership arrangements and identification as to whether these are formal or informal arrangements.

APPENDIX A: THE DYNAMIC NATURE OF RISK OWNERSHIP

Source: Young et al., 2016 (p. 8).

As different types of risk and geographical contexts are often interrelated and exist in a dynamic system, risk ownership can change abruptly. Two of the key ways this can happen are as a result of:

- risk contagion, and
- the exceedance of capacity thresholds.

'Risk contagion' is a term most commonly used in relation to financial risk and describes how financial shocks travel through an economic system and can 'infect' other areas of the economy. Impacts are seen to spread across geographical and institutional borders 'like a contagious disease' (Bordo and Murshid 2001), creating a cumulative effect far larger than the initial event. This type of systemic understanding of risk is well understood in the natural hazard literature through catastrophe risk (Hewitt and Burton 1971; Burton et al. 1993) in areas of social and environmental systems. However, the idea of risk contagion has recently started to emerge in business models as a way of understanding how different areas of risk can be affected by strategic risks. This is particularly relevant to the natural hazard area where risk ownership can be allocated through the risk type.

Risk contagion can also be a useful way to understand how risk ownership can change as natural hazards can spread through and across systems. One example is the 2011 Thailand floods that, due to the disruption of key supply chains, became a risk for many companies globally, resulting in profound financial impacts in some industry sectors (Haraguchi and Lall 2015). This type of contagion can resonate over long-term timeframes if the damage incurred is not addressed. If identified and treated in advance, the knock-on effect for long-term secondary and tertiary impacts can be reduced.

Another aspect associated with changing risk ownership is the breaching of capacity thresholds (environmental, social or economic) (Jones et al. 2013) where the original risk owner will transfer the responsibility of the risk to another owner (either by a prior arrangement or by default), because they lack the capacity to address or manage the risk. An example of this is the 2009 heatwave in Victoria that exceeded the coping capacity of the health services resulting in an estimated 374 excess deaths. Many agencies that were outside of the normal health sector networks became involved with the event due to health agencies being unable to meet the demands created by this event.

In terms of risk ownership, identifying whether the nature of the risk is changing through contagion or capacity exceedance is important, as this determines how the ownership may be transferred or where risks may become unowned. It can also help identify potential areas of vulnerability.

APPENDIX B: INSTITUTIONAL MAP OF RISK OWNERSHIP, STATE EMERGENCY PLANS, VICTORIA, NSW SOUTH AUSTRALIA AND TASMANIA

Value category	State	Allocation to (agency, organisation, body)	What is allocated (task or asset)	Prevention, preparedness, recovery	Local Gov	State Gov	Fed Gov	Community	Business and Industry	Boundary organisation
All values	Victoria NSW South Australia Tasmania	Australian Attorney–General's Department	The National Security Resilience Policy Division is responsible for policy, legislation, advice and programs related to developing resilience to all hazards, including the areas of critical infrastructure protection, chemical, electronic and identity security and protective security policy. In particular, the National Security Resilience Policy Division facilitates the development of national policies and strategies aimed at preventing or mitigating disasters and reducing their impact on the community, including implementation of the National Strategy for Disaster Resilience.	Prevention, Preparedness			X			
All values	Victoria NSW South Australia Tasmania	Australian Attorney–General's Department	Provision of financial assistance to support recovery.	Recovery						
All values (economic, social)	Victoria NSW South Australia Tasmania	Victorian Department of Health and Human Services and Australian Government Department of Human Services	Participation in the operation of community recovery services, outreach teams, provision of personal support & case management services, provision of reception services are International airports, provision of information to members of the State and Community recovery communities, and availability of staff with specialist skills to work with disaster affected individuals and communities.	Recovery		X	X			
All values (not environmental)	Victoria	Red Cross	Delivery of community information to assist people, communities, government and agencies prepare for, respond to and recover from emergencies using resources such as Rediplan.	Preparedness, prevention, recovery						X
All values (not environmental)	Victoria	Red Cross	Relief and recovery coordination responsibilities summary: support EMV to undertake state level emergency relief coordination and support DHHS to undertake regional level relief coordination.	Recovery						X
All values	Victoria	CFA	To minimise impact of fires and other emergencies through prevention, preparedness, education and fire protection activities, through development and enforcement of legislation and regulations, provision of information, resources and co-ordination to other organisations or personnel preparing for prevention task; risk modelling to identify key safety processes and priorities and planning; and providing anything ancillary to these matters	Preparedness, Prevention		X				
All values	Victoria	Department of Economic Development, Jobs, Transport and Resources	Responsible for recovery of functional area coordination of local economics; businesses; agriculture; energy services; telecommunications and transport.	Recovery		X				
All values	Victoria	Department of Premier and Cabinet	Provide information and strategic advice to the Premier, Security and Emergency Management Committee and State Crisis and Resilience Council, as well as chair the Council, support and coordinate the whole-of-government Strategic Emergency Management.	Prevention, preparation, recovery		X				
All values	Victoria	Department of Premier and Cabinet	Relief and recovery coordination.	Recovery		X				

Value category	State	Allocation to (agency, organisation, body)	What is allocated (task or asset)	Prevention, preparedness, recovery	Local Gov	State Gov	Fed Gov	Community	Business and Industry	Boundary organisation
All Values	Tasmania	DPAC, DHHS, TFS, Ambulance Tasmania, SES, DPEM	a. Institute and coordinate policy, arrangements and strategies for State-level emergency management (this includes maintaining the Tasmanian Emergency Management Plan and any related State emergency plans). b. Coordinate/oversee the management of emergencies that affect more than one region and other emergencies the SEMC considers appropriate, and c. Identify and promote opportunities for improvement in emergency management. This can include imposing functions on the Regional Committees and State sub-committees.	Prevention, preparedness, recovery		X				
Built & Social	Tasmania	DHHS & Municipal Councils	When requested by councils, arrange emergency shelter and accommodation for displaced households.	Recovery	X					X
Built infrastructure	Tasmania	Taswater DHHS (Public Health Services) DPIPWE Biosecurity Tasmania	Drinking water	Recovery		X			X	X
Built infrastructure	Tasmania	Tasnetworks State Growth AEMO	Electricity (very high voltage, domestic and commercial supply. Excludes Basslink which is privately owned)	Recovery						X
Built infrastructure	Tasmania	Hydro Tasmania State Growth AEMO	Electricity generation (hydro, wind and gas) and dam safety	Recovery		X			X	
Built infrastructure	Tasmania	Tasgas State Growth	Natural Gas	Recovery		X			X	X
Built infrastructure	Tasmania	Liquid fuel suppliers State Growth – Infrastructure Tasmania	Liquid fuel and LPG (liquefied petroleum gas) and LNG (liquefied natural gas)	Recovery		X			X	
Built infrastructure	Tasmania	Network owner/manager	Telecommunications including radio network	Recovery					X	X
Built infrastructure	Tasmania	Taswater DPIPWE – EPA Division Councils	Wastewater (sewage)	Recovery		X			X	X
Built infrastructure	Tasmania	Councils DPIPWE – EPA Division	Waste/refuse collection	Recovery	X	X				X
Built infrastructure and environmental	Tasmania	DPIPWE Heritage Tasmania	Historic heritage (building, places and features)	Recovery	X					X
Environmental	Tasmania	DPIPWE Resource Management & Conservation Division Councils Community/Member groups	Natural values assessments	Recovery	X	X			X	
Built infrastructure/social	Victoria	DHHS & municipal councils	Support securing interim accommodation	Recovery	X	X				
Built infrastructure/social	Victoria	DHHS	Advice to councils on accommodation standards	Mitigation		X				
Built infrastructure	Victoria	municipal councils	Survey and make a determination regarding occupancy of damaged buildings	Recovery	X					
Built infrastructure	Victoria	VBA & municipal councils	Building advice and information to residents	Preparedness	X	X				
Built infrastructure/social	Victoria	DHHS	Transition to permanent housing	Recovery		X				
Built infrastructure	Victoria	DEDJTR, electricity businesses, AEMO	Electricity services assets reinstatement and return to reliable supply	Recovery		X				
Built infrastructure	Victoria	DEDJTR, gas businesses, AEMO, and other pipeline operators	Gas services assets reinstatement and return to reliable supply	Recovery		X			X	X
Built infrastructure	Victoria	DEDJTR, fuel companies	Restoration of liquid fuel supply	Recovery		X			X	
Built infrastructure	Victoria	DEDJTR, Telecommunications carriers	Telecommunications assets reinstatement and return to reliable supply	Recovery		X			X	
Built infrastructure	Victoria	DELWP, water corporations	Recovery and rehabilitation of essential water supply for domestic use	Recovery						
Built infrastructure	Victoria	DELWP, water corporations	Restoration of sewerage, sanitation systems and wastewater management	Recovery		X			X	

Value category	State	Allocation to (agency, organisation, body)	What is allocated (task or asset)	Prevention, preparedness, recovery	Local Gov	State Gov	Fed Gov	Community	Business and Industry	Boundary organisation
Built infrastructure	Victoria	Vicroads, DEDJTR, Cictrack Access, VMIA, infrastructure operators	Restoration of major arterial roads, bridges and tunnels.	Recovery		X			X	
Built infrastructure	Victoria	Public Transport Victoria, DEDJTR, VMIA	Restoration of tram, bus, rail services	Recovery		X			X	
Built infrastructure	Victoria	Municipal Councils, EMV, DELWP (LGV)	Coordination of clean-up activities	Recovery	X	X				
Built infrastructure	Victoria	Respective asset managing agencies, Vicroads	Undertaking the assessment, restoration, clearing and rehabilitation of public buildings and assets (e.g. roads, bridges, sporting facilities, public amenities, station buildings, schools, hospitals) where an agency is the manager of that respective building or asset.	Recovery						
Built infrastructure	Victoria	Municipal councils	Oversight and inspection of rebuilding/redevelopment	Recovery, prevention	X					
Built infrastructure	Victoria	VMIA	Administration of insurance claims for state assets	Recovery					X	
Built infrastructure	Victoria	Airservices Australia	Airspace Design	Prevention, Preparedness		X				
Built infrastructure	Victoria	Airservices Australia & DEDJTR	Surveillance and navigation systems			X				
Built infrastructure	Victoria	Ambulance Victoria	Restoration, clearing and rehabilitation of public buildings and assets managed within Ambulance Victoria's portfolio	Recovery		X				
Built infrastructure	Victoria	Citylink	Restoration and/or reconstruction of Citylink	Recovery						
Built infrastructure	Tasmania	Asset or utility owner Land owner	Other assets e.g. Dams, pipelines, power lines etc.	Recovery				X	X	
Built infrastructure	Tasmania	Owners/managers	Safety and security of property Maintaining effective arrangements for requesting assistance. Maintaining emergency capabilities and arrangements Resuming ongoing responsibilities for the property after the response has ended.	Preparedness, prevention				X	X	
Built infrastructure	Tasmania	TFS, DOJ building standards and occupation licensing	Infrastructure failure-building collapse	Preparedness, prevention		X				
Built infrastructure	Tasmania	State Growth – Traffic Infrastructure Services	Infrastructure failure-state roads and bridges	Preparedness, prevention		X				
Built infrastructure	Tasmania	Councils	Roads and bridges-municipal	Recovery, prevention	X					
Built infrastructure	Tasmania	State Growth – Traffic Infrastructure Services	Roads and bridges-state	Recovery, prevention		X				
Built infrastructure	NSW	Fire & Rescue NSW	Conducting pre-planning exercises at high risk facilities to increase occupant and fire fighter awareness and preparedness. Providing regulatory, advisory and compliance inspection services for the built environment	Prevention, preparedness		X				
Built infrastructure	NSW	Fire & Rescue NSW	Providing regulatory, advisory, inspection and investigation services in relation to buildings, infrastructure projects, major hazard facilities and dangerous goods sites across NSW.	Preparedness		X				
Built infrastructure	NSW	Fire & Rescue NSW	Assist in any other response or recovery operations for which FRNSW's training and equipment is suitable, for example, the provision of emergency water supplies and pumping equipment, storm and flood response, bushfires and assistance to the Ambulance Service of NSW.	Recovery		X				
Built infrastructure	NSW	NSW Rural Fire Service	Participation in Recovery Committees (where appropriate), administering fire trail/flood disaster works on behalf of NSW Treasury.	Recovery		X				
Built infrastructure/ social	NSW	NSW SES	To work with land use planning and consent authorities to advocate that the risks arising from flood, storm and tsunami are considered so as to prevent the creation of intolerable impacts of these hazards on the community.	Prevention		X				
Built infrastructure	NSW	NSW Public Works	Maintain an Engineering Emergency Management capability to support combat agencies, other functional areas and asset owners prevent, prepare for, respond to and recover from any event.	Preparedness, prevention, recovery		X				

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Built infrastructure	NSW	NSW Public Works	Coordinate the provision of engineering resources in response to and recovery from emergencies, including: -Provision of specialist advice, -Undertake emergency works including protection, make safe and temporary repair works as requested by Combat Agencies and other Functional Areas, -Coordinate, monitor and report on repair, reconstruction and relocation of public buildings and infrastructure as requested by Combat Agencies, other Functional Areas and Agencies, Coordinate clean up, make safe, tarpaulin maintenance and other such items as requested by Combat Agencies and other Functional Areas, and -Provision of advice to Combat Agencies and other Functional Areas on issues such as structural repair grants and other items under the NSW Disaster Relief Guidelines including managing the engineering aspects of those grants. Coordinate the supply of goods and services in response to and recovery from an emergency.	Recovery		X				
Built infrastructure/ economic	Victoria	DEDJTR, airport owners and operators, other agencies and businesses as required	Airports restoration to normal activity	Recovery		X			X	
Built infrastructure/ Economic	Victoria	DEDJTR, port managers, other agencies and businesses as required	Restoration of port infrastructure	Recovery		X			X	
Built infrastructure /economic	Victoria	DEDJTR, freight, warehouse, port, airport and railway operators, Vicroads, other agencies and businesses as required	Assist with logistics interdependencies, contingencies and reconstruction	Preparedness, Recovery		X			X	
Built infrastructure, economic, social	Victoria	Department of Economic Development, Jobs, Transport and Resources	Under Part 7A of the Emergency Management Act 2013 involve working with the transport, energy and communications sectors to enhance critical infrastructure resilience, in particular through: Designating vital critical infrastructure where appropriate, emergency risk management planning by operators and observing exercises as part of resilience improvement cycles.	Preparedness, Prevention		X				
Economic/social	Victoria	DHHS, DTF, EMV	Re-establishment assistance -personal hardship assistance program	Recovery		X				
Economic/social	Victoria	DHHS, Centrelink	Australian Government financial assistance	Recovery		X	X			
Economic	Victoria	DTA, ICA, VMIA, Victorian Legal Aid	Insurance advice and information to customers	Preparedness, recovery		X			X	
Economic/social	Victoria	DTF, DPC, DEDJTR, RFCV	Implement available financial assistance under the NDRRA to assist voluntary non-profit groups, communities and economies	Recovery		X			X	
Economic	Victoria	DEDJTR	Implement approved actions and projects to assist economic recovery	Recovery		X				
Economic	Victoria	DEDJTR	Encourage and bring forward the resumption of local trade and economic activity	Recovery		X				
Economic	Victoria	DEDJTR	Monitor broad economic impacts and consequences	Prevention, preparedness		X				
Economic	Victoria	DTF, RFCV,DEDJTR, DPC	Implement available financial assistance under the NDRRA to assist small businesses' recovery	Recovery		X				
Economic	Victoria	DEDJTR	Implement approved actions to assist business recovery	Recovery		X				
Economic	Victoria	DEDJTR	Provide opportunities for the enhancement of knowledge and skills within small businesses	Prevention, Preparedness, recovery		X				
Economic/built infrastructure	Victoria	DTF, VicRoads	The provision of financial assistance to municipal councils for the restoration of essential municipal assets	Recovery		X				
Economic	Victoria	DEDJTR, Australian Defence Force, Victoria	DACC Category 3 (involves direct cost recovery): is the provision of Defence assistance in the recovery from a civil emergency or disaster which is not directly related to the saving of life or property.	Recovery						

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Economic/social	Victoria	Victorian Department of Health and Human Services and Australian Government Department of Human Services	Maintenance of the Australian Government's social security safety net for all Australians through: continuity of Australian payments and services for existing customers; and provision of information and advice about Australian payments and services for affected Australians.	Recovery		X	X			
Economic/social	Victoria	Victorian Department of Health and Human Services & Australian Government Department of Human Services	Deliver surge assistance such as the National Emergency Call Centre overflow arrangement on behalf of the Victorian Government on a cost recovery basis, under a separate agreement	Recovery		X	X			
Economic/social	Victoria	Department of Treasury and Finance	Relief and recovery responsibilities in supporting Emergency Management Victoria through coordination of financial assistance available under Natural Disaster relief and recovery arrangements (NDRRA).	Recovery		X	X			
Economic	Victoria	DELWP	Assist farmers repair and restore fences damaged by fire or suppression activities	Recovery		X				
Economic/social	Victoria	DTF, ICA & VMIA	Coordinate the insurance industry response, information, advice and government liaison	Preparedness		X			X	
Environmental/ social	Victoria	DEDJTR	As per the Victorian Emergency Animal Welfare Plan, animal welfare support services during relief include, but are not limited to: management of displaced animals; animal welfare assessment, veterinary treatment, humane destruction, slaughter and disposal; provision of emergency pet food, livestock fodder and water; ensure effective resource allocation through liaison with other departments; advise local government of containment of dead or injured animals; inform and coordinate welfare organisations, volunteer groups; assess and report losses and damage to agricultural assets and animals and needs of affected persons and communities to government; liaise with DHHS where emergencies impacting on human health and may also have associated animal health issues.	Recovery		X				
Environmental	Victoria	DEDJTR, DELWP, Municipal Councils, VFF, RSPCA, Aust. Veterinary Association	DEDJTR is the primary agency for animal welfare (other than wildlife) support services. DEDJTR is the primary agency for animal welfare (other than wildlife) support services. Municipal councils are responsible for housing and displaced and lost/stray animals. DELWP is the primary agency to respond to wildlife welfare.	Recovery	X	X			X	
Economic	Victoria	DEDJTR, DPC & DTF	Deliver recovery programs and advice to primary producers, and rural land managers and other animal businesses	Preparedness, prevention, recovery		X				
Environmental/ economic	Victoria	DTF, RFCV, DEDJTR, DPC	Implement available NDRRA initiatives to assist primary producers' recovery	recovery		X				
Environmental/ economic	Victoria	DEDJTR	Technical advice to primary producers and rural land managers on re-establishment or alternative strategies	recovery		X				
Environmental	Victoria	DELWP/PV, Vicroads, Municipal Councils	Undertake erosion control on public land	recovery, prevention		X				
Environmental	Victoria	DELWP, EPA, CMA	Provision of advice and information services to municipal councils and delegated public land managers and community groups	Recovery, prevention, Preparedness		X				
Environmental/ social	Victoria	EPA	Implement the Community Environmental Trauma Protocol	Recovery		X				
Environmental	Victoria	DELWP	Surveying and protecting threatened bird, marsupial, aquatic and plant species	Recovery, prevention		X				
Environmental	Victoria	DELWP	Surveying and protecting ecosystems	Recovery, prevention		X				
Environmental	Victoria	DELWP	Wildlife welfare	Recovery, prevention		X				
Environmental	Victoria	DELWP, EPA	Waste pollution management strategies	Prevention, preparation		X				
Environmental	Victoria	Airservices Australia	Fire and injury prevention and risk management	Prevention, preparation		X				

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Environmental	Victoria	Australian Maritime Safety Authority	Prevent and mitigate pollution from ships.	Recovery			X			
Environmental	Victoria	Australian Volunteer Coast Guard Association Inc. Victorian Squadron	Operation of 14 Limited Coast Stations (LCS) across Victoria from Mallacoota to Portland, providing weather information and ship reporting services.	Preparedness						X
Environmental	Victoria	Australian Volunteer Coast Guard Association Inc. Victorian Squadron	Operation of two LCS on Lake Hume and Lake Eppalock providing weather information and logging services	Preparedness						X
Environmental	Victoria	Catchment Management Authorities	Development, maintenance and upgrading of regional flood warning systems	Preparedness, prevention		X				
Environmental	Victoria	Catchment Management Authorities	Monitor and report on performance of regional floodplain management strategies	Preparedness, prevention		X				
Environmental/ economic	Victoria	DEDJTR, Victorian Farmers Federation, RSPCA & Australian Veterinary Association	Animal welfare support services, other than wildlife which sits with DELWP	Preparedness, prevention, recovery		X			X	X
Environmental	Victoria	DELWP, CFA, Water Corporations	Replacement of essential water used in bushfire fighting	Recovery		X			X	
Environmental	Tasmania	DPIPWE Councils DPAC	Environmental recovery	Recovery	X	X				
Environmental	Tasmania	Councils DHHS (Public Health Services) DPIPWE EPA Division	Environmental health	Recovery	X	X				
Environmental	Tasmania	DPIPWE Aboriginal Natural Heritage Tasmania	Aboriginal heritage sites – protection during operations	Recovery		X				
Environmental	Tasmania	DPIPWE-Resource Management and Conservation Division, DOJ, land use and planning	Coastal erosion	Preparedness, prevention		X				
Environmental	Tasmania	Forestry Tasmania	Fire, national parks and other reserves	Preparedness, prevention		X				
Environmental	Tasmania	TFS	Declared forest land/state forest	Preparedness, prevention		X				
Environmental	Tasmania	TFS	Fire, urban and privately managed land	Preparedness, prevention		X				
Environmental	Tasmania	State Growth Mineral resources Tasmania Councils	Landslip, landslide	Preparedness, prevention	X	X				
Environmental	NSW	Fire & Rescue NSW	Undertaking bushfire hazard reduction activities to decrease fuel between homes and surrounding bushland. Hazard reduction burns are conducted in cooperation with the Rural Fire Service, National Parks and Wildlife Service, local councils and other land managers.	Preparedness, prevention		X				
Environmental	NSW	Environmental Services Functional Area	Regulates or aids in regulating scheduled activities that may cause significant environmental impact, dangerous goods transport, pesticide use, hazardous waste, contaminated land and radiation control. Develops legislation, policy and programs that reduce risks to the environment from routine activities and incidents. Undertakes compliance programs, audits and conducts post response operations following incidents or emergencies involving hazardous materials. Develops regulatory programs to address areas requiring improvement.	Prevention, recovery		X				
Environmental	NSW	Environmental Services Functional Area	Ensures continued development of emergency and incident management capability to respond to and recover from hazardous materials incidents and emergencies. Conducts and participates in agency and inter-agency incident response exercises.	Preparedness		X				

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Value category	State	Allocation to (agency, organisation, body)	What is allocated (task or asset)	Prevention, preparedness, recovery	Local Gov	State Gov	Fed Gov	Community	Business and Industry	Boundary organisation
Environmental	NSW	Environmental Services Functional Area	Coordinates the Environmental Services Functional Area's activities in responding to and recovering from emergencies. Provides advice on environmentally sound disposal of hazardous wastes.	Recovery		X				
Environmental/built infrastructure	Victoria	Catchment Management Authorities	Manage and maintain specific strategic and regional (non-urban) works and measures in accordance with responsibilities under the regional floodplain management strategy or catchment management strategy.	Preparedness, prevention		X				
Environmental/built infrastructure	Victoria	Catchment Management Authorities	Implement flood damage restoration programs for flood affected waterways	Recovery		X				
Environmental/ economic	Victoria	DELWP/PV, CMA, VMIA	Restoration, clearing and rehabilitation of public land and assets managed directly by DELWP, PV, or CMAs	Recovery, prevention					X	
Environmental/ economic	Victoria	Catchment Management Authorities	Clearing and restoring of assets and rehabilitation of disturbances on land and waterways managed by CMAs	Recovery		X				
Environmental/ economic	Victoria	Catchment Management Authorities	Restoring impacts of river erosion where there is an immediate danger of the formation of river breakaways and/or immediate danger to CMA assets	Recovery		X				
Environmental/ economic	Victoria	Catchment Management Authorities	Implementing balanced flood recovery programs consistent with funding allocated	Recovery		X				
Environmental/ social	Victoria	Bureau of Meteorology	Contribute to community awareness activities related to meteorological and hydrological phenomena and warning systems.	Preparedness, prevention			X			
Environmental/ social	Victoria	Bureau of Meteorology	·Contribute to community hazard mapping by taking the lead role in the analysis of relevant meteorological and hydrological information.	Preparedness, prevention			X			
Environmental/ social	Victoria	Catchment Management Authorities	Manage and prioritise regional flooding issues, through implementation of regional floodplain management strategies, by collecting maintaining and enhancing flood information, and provision of flood advice to community.	Preparedness, prevention		X				
Environmental/ social	Victoria	Catchment Management Authorities	Prepare flood response action plans and support community education and involvement on flooding issues	Preparedness, prevention		X				
Environmental/built infrastructure	Victoria	CFA & DELWP	Assisting farmers to repair and restore fences damaged by fire or suppression activities through ensuring essential water taken from private landholders during bushfire suppression activities is replaced	Recovery		X				
Environmental/ social	Victoria	CFA	Providing assistance and advice to individuals, families and communities who have been affected by fire or other incidents as described above	Recovery		X				
Environmental/ social	Victoria	CFA	Providing assistance, advice and information to other agencies responsible for, or involved in, recovery activities.	Recovery		X				
Environmental/built infrastructure/social	Victoria	Catchment Management Authorities, DELWP, EPA	Developing and prioritising flood recovery programs for CMA assets/waterways and providing advice and information services to municipal councils and delegated public land managers and community groups	Preparedness, prevention, recovery		X				
Social and built Infrastructure, environmental	Victoria	Department of Environment, Land, Water and Planning	Formulation of policy, regulation, planning and delivery of programs for: - Cetacean stranding, entanglement or vessel strike - Dam safety, water and wastewater services - bushfire management in State forest, national parks and protected public lands - floodplain management/flood - marine pests incursions - wildlife affected by marine pollution - marine pollution - Recovery activities in each of the above	Preparedness, prevention recovery						
Social	Victoria	Boundary Organisation (Red Cross)	At regional and state levels, Red Cross coordinates food and water including support from agencies, and provides support at the local level when requested.	Recovery						X
Social	Victoria	DEDJTR	DEDJTR will support food supply logistics planning and operations with the major food distribution operators.	Recovery		X				

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Social	Victoria	Control Agency	Provide relief and recovery information to assist communities to make informed decisions about their safety.	Recovery		X				
Social	Victoria	DHSS, Boundary Organisation (Red Cross), VCC	Provide information, practical assistance, emotional support, assessment of immediate needs and referrals in relief and recovery centres.	Recovery		X				X
Social	Victoria	DHHS, Boundary Organisations (Red Cross, VCC and other agencies)	Psychological first aid	Recovery		X				X
Social	Victoria	DHHS, Boundary Organisations (Red Cross, VCC and other agencies)	Emotional and spiritual care including counselling and targeted psychosocial support	Recovery		X			X	X
Social	Victoria	DHHS, Boundary Organisations (Red Cross, VCC and other agencies)	Personal support in relief and recovery centres and through community outreach	Recovery		X			X	X
Social	Victoria	DET	Support and advice to aid schools and early childhood services	Preparedness		X				
Social	Victoria	DEDJTR, DHHS	Referrals to psychosocial support services for primary producers and animal owners	Recovery		X				
Social	Victoria	DHHS, Coroner's Court	Support for the bereaved	Recovery		X				
Social	Victoria	DHHS	Public health advice	Preparedness, recovery		X				
Social	Victoria	DHHS	Advise on wellbeing in recovery	Preparedness, recovery		X				
Social	Victoria	DHHS, DHHS funded health care services, other primary and acute health services	Primary and acute health services	Preparedness, recovery		X	X	X		
Social	Victoria	DHHS	Community Information	Preparedness, recovery		X				
Social	Victoria	Municipal Councils & DHHS	Formation, leadership and support of Municipal/Community Recovery Committees	Preparedness, recovery	X	X				
Social	Victoria	DEJTR	Local community events	Preparedness, recovery		X				
Social	Victoria	Municipal Councils & DHHS	Provision and staffing for Recovery/Information Centres	Preparedness, recovery	X	X				
Social	Victoria	Municipal Councils & DHHS	Provision and management of community development services	Prevention, preparedness	X	X				
Social	Victoria	DPC, Boundary Organisation (Red Cross)	Organisation of state-wide public appeals	Recovery	X					X
Social	Victoria	DHS, Boundary Organisations (Red Cross, Volunteering Victoria)	Coordination of spontaneous volunteers	Prevention, preparedness, recovery	X					X
Social/economic	Victoria	DEDJTR	Assist businesses to access available information and advice following an emergency	Preparedness, recovery		X				
Social/economic	Victoria	DEDJTR & Boundary (Small Business mentoring Services)	Information and advice to small businesses to support decision making and encourage a return to business	Recovery		X			X	
Social/economic	Victoria	Airservices Australia & DEDJTR	Pilot and air traffic management procedures	Prevention, Preparedness						
Social	Victoria	Ambulance Victoria	Co-ordinating pre-hospital care	Recovery						
Social/economic	Victoria	Australian Maritime Safety Authority	Development and maintenance of maritime navigation safety.				X			
Social	Victoria	Australian Maritime Safety Authority	Promotion of aviation and maritime search and rescue (SAR) and development of associated arrangements	Preparedness, Recovery			X			

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Social	Victoria	Australian Maritime Safety Authority	Promotion and registration of distress beacons for safety in aviation, maritime and remote land activities including bush walking	Preparedness			X			
Social	Victoria	Australian Maritime Safety Authority	Building awareness of aviation and maritime safety through participation in seminars, aircraft, boat and 4WD shows, safety campaigns and journal articles	Preparedness, prevention			X			
Social	Victoria	Australian Maritime Safety Authority	Participation in relevant aviation, maritime, emergency management and critical infrastructure forums, exercises, and training	Preparedness, prevention			X			
Social	Victoria	Australian Maritime Safety Authority	Participation in national emergency planning, preparedness and mitigation measures	Preparedness, prevention			X			
Social	Victoria	Australian Transport Safety Bureau	The Australian Transport Safety Bureau's (ATSB) function is to improve aviation, marine and rail safety, based on independent accident investigations, identification of safety issues, research of accident trends, publication of reports and industry/public education programs.	Prevention			X			
Social	Victoria	Australian Volunteer Coast Guard Association Inc. Victorian Squadron	Providing small boat seamanship, navigation and marine radio courses for the recreational boating sector. (Education).	Preparedness						X
Social/Economic	Victoria	Citylink	Assistance with the on-going management of traffic on the arterial network if the Link is not available for use	Recovery					X	
Social/Economic	Victoria	Citylink	Liaison with state authorities and local government regarding Citylink	Recovery					X	
Social	Victoria	Citylink	To facilitate steps to ensure the physical and mental wellbeing of all company personnel involved in the emergency	Recovery					X	
Social	Victoria	Citylink	To participate on a Community Recovery Committee, if required.	Recovery					X	
Social	Victoria	Coroners Court of Victoria	Identifying deceased persons and determining the cause and circumstances of their death.	Preparedness, prevention		X				
Social	Victoria	DEDJTR	Promote resilience through planning and preparedness, business continuity, linkages to emergency services, communication and networking, food supply prioritisation and surge capacity	Preparedness, prevention		X				
Social	Victoria	Department of Education and Training	Development of state-wide emergency plans for children's services	Preparedness, prevention		X				
Social	Victoria	Department of Health and Human Services	Relief and recovery coordination of emergency shelter, financial assistance and psychosocial support, including individual and household assistance and health and medical assistance	Recovery		X				
Social	Tasmania	Municipal Recovery Coordinators NGO Relevant State Service agencies	Coordination of immediate service requirements - Municipal	Recovery	X	X				
Social	Tasmania	Regional Social Recovery Coordinators Councils NGO DHHS THS	Social recovery, coordination of immediate service requirements – regional/state	Recovery	X	X				
Social	Tasmania	DHHS Councils State Growth	Accommodation (emergency)	Recovery	X	X				
Social	Tasmania	DHHS DOE NGO	Care for children	Recovery	X					X
Social	Tasmania	Council THS	Centres: assembly, evacuation, information, recovery	Recovery	X	X				X
Social	Tasmania	THS DOE NGO	Counselling	Recovery	X					X

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Social	Tasmania	THS NGO	Outreach services	Recovery	X					X
Social	Tasmania	THS NGO	Pastoral care	Recovery	X					X
Social	Tasmania	THS NGO	Personal and community support	Recovery	X					X
Social	Tasmania	DPAC Councils THS NGO	Management of donated goods financial and corporate	Recovery	X	X				X
Social	Tasmania	DPAC Councils THS NGO	Management of donated goods household items	Recovery	X	X				X
Social	NSW	Fire & Rescue NSW	Identifying and addressing the safety needs of at-risk community groups. Running effective community education events, projects and campaigns. Conducting local station-based community prevention and engagement activities. Developing strategic partnerships to enhancing community safety Increasing community and business preparedness and resilience in emergencies. Undertaking fire investigation and research to inform safety programs and reduce arson. Researching, identifying and addressing major community risks.	Prevention, preparedness		X				
Social	NSW	Fire & Rescue NSW	Training and equipping residents within FRNSW Fire Districts living near the bushland urban interface to prepare themselves, their families and their property for bushfires as part of the Community Fire Unit program Participating in multi-agency exercises designed to prepare emergency services to respond effectively to local hazards, as well as broad threats to the community including terrorism	Preparedness		X				
Social	NSW	NSW Rural Fire Service	Provision of community awareness and education identification, establishment and awareness of Neighbourhood Safer Places engagement and supporting strategies for vulnerable communities/ individuals	Preparedness		X				
Social	NSW	NSW SES	To work with the community to assist them in building their own resilience with the aim of risk avoidance in respect of flood, storm and tsunami	Prevention		X				
Social	NSW	NSW SES	To undertake research, risk assessment, emergency planning for flood, storm and tsunami, to develop and implement educational and other community capacity building programs, and to establish public warning and information management systems for these hazards.	Preparedness		X				
Social	NSW	NSW Department of Primary Industries – Agriculture & Animal Services Functional Area (AASFA)	Build awareness for emergency prevention and preparedness by primary producers, animal holding establishments and the community.	Prevention		X				
Social	NSW	Welfare Services Functional Area	Prevention is limited to the indirect process of building capacity within the human services sector to alleviate the impact of a disaster on individuals' psychosocial status. This contributes in some part to the prevention of disabling psychological conditions after a disaster, arising from the loss of valued relationships and possessions.	Prevention		X				
Social	NSW	Welfare Services Functional Area	The functional area provides training and guidance to staff and community partner volunteers in the provision of welfare services. The functional area also maintains currency of policy and systems to deliver financial assistance to affected individuals.	Preparedness		X				
Social/economic	Victoria	Australian Maritime Safety Authority	Development and implementation of legislation designed to enhance safety of ships and crews, and maintain qualifications of crews	Prevention, Preparedness			X			
Social/economic	Victoria	Citylink	Provision of information concerning the commercial issues	Preparedness, prevention, recovery						

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Social/built infrastructure	Victoria	Department of Education and Training	Lead agency for: Helping students and staff of government schools to overcome immediate impact of emergency; providing advice and support to early childhood services and non-government schools and undertaking assessment, restoration, clearing and rehabilitation of public buildings and assets where DET is the manager.	Recovery		X				
Social	Victoria	Coroners Court of Victoria	To contribute to the reduction of the number of preventable deaths and fires through the findings of coronial investigations of deaths and fires, and the making of recommendations by coroners to promote public health and safety.	Preparedness, prevention		X				
Social/ environmental	Victoria	Department of Economic Development, Jobs, Transport and Resources	Responsible for relief coordination of food supply continuity and animal welfare	Recovery		X				
Social/ environmental	Victoria	Department of Health and Human Services	Implement legislation, programs and monitoring procedures to minimise public health risk from: infectious diseases, contaminated foods, contaminated water supplies, radiation and chemicals	Recovery		X				
Social/economic	NSW	Transport Services Functional Area	Provide transport support to the recovery operation including participation in Recovery Committees, where required.	Recovery		X				
Social/economic	NSW	Welfare Services Functional Area	The functional area is responsible for the delivery of Personal Hardship and Distress Grants to those eligible individuals and families to ensure that they have a safe and habitable home to live in. The functional area is also responsible for conducting outreach (doorknocking) to ensure that affected persons are aware of assistance measures available and to collect and provide information on community needs to inform the recovery process.	Recovery		X				
Social/ environmental, economic/built infrastructure	NSW	NSW SES	To develop operational capability development including; the recruitment and training of members, equipping of units, establishment of facilities and management systems for flood, storm, tsunami and the rescue functions assigned to the SES.	Preparedness, prevention		X				
Social/ environmental, economic/built infrastructure	NSW	NSW SES	To ensure that there is a seamless transition between SES-led response operations and any related recovery activities in the event of flood, storm or tsunami.	Recovery		X				
Social/ environmental, economic/built infrastructure	NSW	NSW SES	To ensure that after all significant flood, storm and tsunami events there is focus on learning from these experiences aimed at continuous improvement in the PPRR cycle.	Recovery		X				
Social/ environmental, economic/built infrastructure	NSW	NSW Department of Primary Industries – Agriculture & Animal Services Functional Area (AASFA)	Provide state and national representation on various emergency management committees Training and exercising Maintain the Biosecurity Sub Plan, AASFA Supporting Plan, policies and procedures	Preparedness		X				
Social/ environmental, economic/built infrastructure	NSW	NSW Department of Primary Industries – Agriculture & Animal Services Functional Area (AASFA)	Agricultural damage impact assessments Agricultural Natural Disaster applications Recovery workshops Attend Recovery Centres and Recovery Committees when activated Administer transport subsidies to primary producers	Recovery		X				
Social/ environmental	Victoria	DEDJTR	Food supply continuity by providing strategic and expert advice to Government and emergency agencies regarding impacts on food supply.	Preparedness, prevention		X				
Social/ environmental	NSW	NSW Rural Fire Service	Management of Hazard Reduction and Mitigation programs. Enacting legislative declarations (e.g., total fire bans). Facilitation and maintenance of hazard complaints on public and private land. Provision of arson/fire prevention community awareness and education campaigns. Provision of approvals and conditions regarding Development Applications in bush fire prone areas.	Prevention		X				

APPENDIX C: INSTITUTIONAL MAP OF RISK OWNERSHIP OF SHORT AND LONG TERM ACTIONS, NSW, SOUTH AUSTRALIA AND TASMANIA

State	Value	Hazard	Short term	LG	SG	FG	COM	B&I	SH	NO	Long term	LG	SG	FG	COM	B&I	SH	NO
Tasmania	Built environment	Heatwave	Contingency plan for power failure	X	X	X		X			Behaviour change							
Tasmania	Built environment	Heatwave	Develop business leaders group for heatwave resilience															
Tasmania	Built environment	Fire									Communities proactively vision, strategically plan their direction	X						
Tasmania	Economic	Flood	Business continuity plan								More mitigation funding FG			X				
Tasmania	Economic	Flood	Relocate															
Tasmania	Economic	Flood	UPS															
Tasmania	Economic	Heatwave	Contingency plan for power failure	X	X	X		X			Strategy for business resilience							
Tasmania	Economic	Heatwave	Develop business leaders group for heatwave resilience															
Tasmania	Economic	Heatwave	Program that looks at house design to reduce heat in new houses and pre-existing buildings	X	X													
Tasmania	Economic	Heatwave	Transition plan to less vulnerability or more robust ways of doing things					X										
Tasmania	Economic	Heatwave	Mentors/business coaches for natural disasters					X										
Tasmania	Economic	Fire									Promote importance of supporting local businesses in the short and medium term after an emergency							
Tasmania	Economic	Fire									Awareness that cash not goods is the best support as donation							
Tasmania	Environmental	Flood	Bunding								Pollution control measures LG SG	X	X					
Tasmania	Environmental	Flood									Flood modelling SG LG	X	X					
Tasmania	Environmental	Flood									Build cultural capacity to respond to local vulnerability							
Tasmania	Environmental	Heatwave	Urban planning to reduce heat	X	X													
Tasmania	Environmental	Heatwave	Bee research															
Tasmania	Environmental	Heatwave	Respect the risk															
Tasmania	Hard infrastructure	Flood	Stockpiling sandbags								Improved land use planning LG SG	X	X					
Tasmania	Hard infrastructure	Flood	Asset hardening								Better Australian standards							
Tasmania	Hard infrastructure	Flood									Levees							
Tasmania	Social	Flood	Road barriers SG LG	X	X						Emergency response plans							
Tasmania	Social	Flood	Flood signs SG LG	X	X						Community to empower itself about own risk							
Tasmania	Social	Flood	Customised education and knowledge sharing environmental vulnerability types SG LG	X	X						Multi-agency exercises							
Tasmania	Social	Flood	Evacuation training and planning SG															
Tasmania	Social	Flood	Engaging community in recovery processes/ empowering community to lead own recovery															
Tasmania	Social	Flood	Make an app, flood, learn local vulnerability															
Tasmania	Social	Flood	Planning and exercising translation from response to recovery															

State	Value	Hazard	Short term	LG	SG	FG	COM	B&I	SH	NO	Long term	LG	SG	FG	COM	B&I	SH	NO
Tasmania	Social	Heatwave	Awareness program on effects of heatwave LG SG FG B&I	X	X						Deep collaboration to develop a comprehensive plan for understanding the risk at a deeper level							
Tasmania	Social	Heatwave	Accessing funding for articulating community values to create greater understanding LG SG	X	X						Upskilling facilitators to run programmes so they empower and encourage risk ownership		X	X				
Tasmania	Social	Heatwave	Education to build community leadership programs. Rebuilding social inclusion.								Strategic plan for how people see where they are going							
Tasmania	Social	Heatwave									Engage key stakeholders who have an investment							X
Tasmania	Social	Heatwave									Obtain national ownership and responsibility supporting long term action							X
Tasmania	Social	Heatwave									Experiential learning							
Tasmania	Social	Fire									Maintain resilient connections individuals						X	
Tasmania	Social	Fire									Capacity building: develop resilient networks that can function during and after event including local leaders/champions							
Tasmania	Social	Fire									Build common understanding of hazard, values, objectives risks, strategies							
Tasmania	Social	Fire									Inclusive prep programs and comprehensive engagement framework							
Tasmania	Social	Fire									Appropriate governance frameworks for delivery programs							
Tasmania	Social	Fire									Build community resilience for social connectedness							
New South Wales	Built environment	Fire	Building infrastructure, retrofit campaign, Hazard management	X	X	X		X			Land use planning controls	X	X					
New South Wales	Built environment	Fire	Pre-incident planning and response capability		X						Building controls	X	X					
New South Wales	Built environment	Fire	Reduced insurance premiums for built environment resilience measures					X			Project management for reconstruction to reduce costs							
New South Wales	Built environment	Fire									Regulation to protect vulnerable people Build to local economy, use local leverage, stop profiteering							
New South Wales	Built environment	Fire									Plans in place for facilitating development approvals				X	X		
New South Wales	Built environment	Flood	Develop code for rebuilding, damaged buildings		X	X					Develop code for ?: rebuilding, damaged buildings		X	X				
New South Wales	Economic	Heatwave	Promote flexible working hours and remote working B&I					X			Promote flexible working hours and remote working					X		
New South Wales	Economic	Heatwave	Business continuity plans that identify alternative supply chains B&I					X			Business continuity plans that identify alternative supply chains					X		
New South Wales	Economic	Heatwave	Insurance (and education about need for it) B&I					X			Insurance (and education about need for it)					X		
New South Wales	Economic	Heatwave	Security planning for commercial evacuation/refuge points B&I					X			Security planning for commercial evacuation/refuge points					X		
New South Wales	Economic	Fire	Identification documents – company awareness of how to respond strategies		X	X					Business continuity planning					X		

State	Value	Hazard	Short term	LG	SG	FG	COM	B&I	SH	NO	Long term	LG	SG	FG	COM	B&I	SH	NO
New South Wales	Economic	Fire	Accessible insurance essentials					X			Diversify economic sectors	X	X		X			
New South Wales	Economic	Fire	Contract preparation arrangements for accommodation within the community for areas affected	X	X													
New South Wales	Economic	Fire	Encourage facilities e.g., aged care to network and share resources to temporarily accommodate residents, establish networks		X			X										
New South Wales	Economic	Flood	Levee bolstering					X			Siting of caravan parks (problem of who pays, existing use rights) LG	X						
New South Wales	Economic	Flood	Levee stabilisation		X	X		X			Flood insurance clarity, legal reform, planning support B&I SG FG, community		X	X	X	X		
New South Wales	Economic	Flood									Business continuity planning B&I					X		
New South Wales	Environmental	Heatwave	Identify species that are less heat tolerant SG, FG, LG,	X	X	X					Urban planning and suburb development to consider green spaces							
New South Wales	Environmental	Heatwave	Investment in habitat resilience and protection SG, FG, LG	X	X	X												
New South Wales	Environmental	Heatwave	Programs to engage community with environment that boosts community value of natural assets SHARED						X									
New South Wales	Environmental	Heatwave	Address heat island affect with planting															
New South Wales	Environmental	Fire	Strategic prep, pre flood (planting, weed control) LG, SG FG								Land use planning and conservation offsets	X	X					
New South Wales	Environmental										Fire impacts on catchment hydrology research		X					
New South Wales	Environmental										Encourage participation in community Bushcare programs	X	X					
New South Wales	Environmental										Encourage community investment in natural areas	X	X					
New South Wales	Environmental	Flood	Strategic prep, pre flood (planting, weed control)	X	X	X					Environmental management and e flows program for extreme events SG FG		X	X				
New South Wales	Social	Heatwave	Support for community groups working with people at risk LG, SG, CSO	X	X		X				Investment in science education (primary, secondary, tertiary)		X	X				
New South Wales	Social	Heatwave	Link to heat message into community events CSO, LG	X			X				Develop community cohesion, ask funding bodies to prioritise programmes that support community cohesion		X	X				
New South Wales	Social	Heatwave	CALD community events that are friendly to a range of cultural groups LG, CSOs	X			X				Learning from climate analogues							
New South Wales	Social	Heatwave	Public messaging, early warning systems, resilience training (coping skills, capacity building) CSO, LG, SG,	X	X		X											
New South Wales	Social	Heatwave	Media training (to ensure unsensationalised coverage) SG		X													
New South Wales	Social	Fire	Community preparation campaigns	X	X						Recontextualise risk around loss of livelihood	X	X					
New South Wales	Social	Fire	Community street meetings	X	X	X	X	X			Run research on social demographic to understand cultural vulnerability		X	X				
New South Wales	Social	Fire	Facilitatory knowledge exchange	X							Pre approve access to low interest loans to cover costs		X			X		

State	Value	Hazard	Short term	LG	SG	FG	COM	B&I	SH	NO	Long term	LG	SG	FG	COM	B&I	SH	NO
New South Wales	Social	Fire	Contextualise risks in a personal context	X							Alternative work options ready to activate, recovery planning	X	X					
New South Wales	Social	Fire	Evacuation emergency planning plans	X			X				Adaptive management of parks and forests							
New South Wales	Social	Flood	Public flood plans publicised seasonally	X	X						Education on weather and floods	X	X					
New South Wales	Social	Flood	Floodwatch seasonal planning	X	X	X		X			Community involvement in local emergency management committees							
New South Wales	Social	Flood	Flood warning, social media, phone trees	X	X	X					Actions that help build strong harmonious cohesive communities	X		X				
New South Wales	Social	Flood	Floodsafe for vulnerable people, house ready and evacuation plans	X			X				Community driven preparedness strategies			X				
New South Wales	Systemic	Heatwave	Promote leading practice internationally								Promote leading practice internationally							
New South Wales	Systemic	Heatwave	National framework for temperature scenarios to mage								National framework for temperature scenarios to mage							
New South Wales	Systemic	Heatwave	Defined responsibilities in recovery plans								Defined responsibilities in recovery plans							
South Australia	Built infrastructure	Flood	Building/construction								Building/construction							
South Australia	Built infrastructure	Flood	Preparing access and maintenance of/to public infrastructure								Preparing access and maintenance of/to public infrastructure							
South Australia	Built infrastructure	Flood	Upgrading/rebuild/retrofit crucial community infrastructure (memorial halls, sporting facilities, churches)								Upgrading/rebuild/retrofit crucial community infrastructure (memorial halls, sporting facilities, churches)							
South Australia	Built infrastructure	Heatwave	Build appreciation of public gathering spaces as social important								Incentives for watered green open space to counter heat island effect							
South Australia	Built infrastructure	Heatwave	Activation of space								Housing design, integrated design: heat, water use, insulation, power, open space							
South Australia	Built infrastructure	Heatwave									Resilient infrastructure (power, transport) link to procurement		X					
South Australia	Built infrastructure	Heatwave									Retrofitting infrastructure	X						
South Australia	Built infrastructure	Fire	Education campaigning, ongoing	X	X						Develop a business case for renewal of pipes and obtain funding to implement		X	X				
South Australia	Built infrastructure	Fire									Land use planning codes to ensure not building more infrastructure in high bushfire prone areas SG		X					
South Australia	Economic	Flood	Insurance (adequate, appropriate)								Greater regulation of insurance to be more consistent							
South Australia	Economic	Flood	Business continuity	X	X			X			Education – long term planning for resilience and business growth							
South Australia	Economic	Heatwave	Addressing free riders towards social capital						X		Water policy to encourage behaviour : rainwater tanks, alternative water sources,		X					
South Australia	Economic	Heatwave	Low incentives for mitigating heatwave								Industry mitigation trading hours		X					
South Australia	Economic	Heatwave									Heat interruption insurance		X		X			
South Australia	Economic	Heatwave									Financial arrangements for heat tolerance		X					
South Australia	Economic	Heatwave									Industrial relations, flexible working hours			X				
South Australia	Economic	Fire	Longer term resource engagement plan for CFS		X						Develop business continuity program to encourage uptake of these	X	X			X		
South Australia	Economic	Fire									Education re records							
South Australia	Environmental	Flood	River management	X	X						Significant sites protected (short term maintenance, long term planning)							
South Australia	Environmental	Flood									River planning (NRM boards)		X					

State	Value	Hazard	Short term	LG	SG	FG	COM	B&I	SH	NO	Long term	LG	SG	FG	COM	B&I	SH	NO
South Australia	Environmental	Heatwave	Build perception of heatwaves	X	X						Reduce heat islands		X					
South Australia	Environmental	Heatwave	Learnings from events and stories	X	X						Greener urban landscape		X					
South Australia	Environmental	Heatwave	Education programs	X	X													
South Australia	Environmental	Heatwave	Analyse data	X	X													
South Australia	Environmental	Fire									Burn off		X					
South Australia	Environmental	Fire									Replanting		X					
South Australia	Social	Flood	Education: message on preparation needed		X						Education: (cultural change) how to deal with emotional/psychological impact e.g., stormbirds		X					
South Australia	Social	Flood	Hazard leader and control agency: reduce psychological impact of experience from individual awareness > reduced long-term psycho-social impact								Generate demand for this type of education – hazard leaders							
South Australia	Social	Flood	Community events								Targeted community building connections							
South Australia	Social	Heatwave	Identify communication channels across CALD communities, e.g., using schools as children are interpreters/messengers	X	X						Build perception of heatwaves	X	X					
South Australia	Social	Heatwave	Develop history of heatwaves – stories and education SES hazard leader		X						Learnings from events and stories	X	X					
South Australia	Social	Heatwave	Survey data – research								Education programs	X	X					
South Australia	Social	Heatwave									Analyse data	X	X					
South Australia	Social	Fire	Program for getting risk into decision making, long term risk and systemic risk								Bushfire management committee EMC Zone emergency management committees more inclusive, change management program ongoing							
South Australia	Social	Fire	Managing expectations: e.g., what sort of help would you need for 72 hours															
South Australia	Social	Fire	Education of the nature and habits of bushfire: prepare infrastructure, prepare EM plans															
South Australia	Social	Fire	Reassess and capacity resources tools to develop a program		X													
South Australia	Social	Fire	Planning agency meetings state level already, but get together social clubs: Lions, Rotary, sports clubs to discuss plan and what they can contribute	X	X		X											
South Australia	Social	Flood	Social "Flood safe program"								Social media - using to generate knowledge/concern							

APPENDIX D: INSTITUTIONAL MAP OF RISK OWNERSHIP USING THE RAP CRITERIA, VICTORIA

Hazard	Value	Value category	RAP	2–12 Months							1–2 Years							2+ Years						
				LG	SG	FG	COM	B&I	SH	No owner	LG	SG	FG	COM	B&I	SH	No owner	LG	SG	FG	COM	B&I	SH	No owner
Flood	Financial aspects of livelihood	Economic	R						X															
Flood	Financial aspects of livelihood	Economic	A						X															
Flood	Financial aspects of livelihood	Economic	P	X	X	X	X				X	X	X	X										
Fire	Lack of Mojo	Economic	R					X								X								
Fire	Lack of Mojo	Economic	A		X																	X		
Fire	Lack of Mojo	Economic	P				X								X									
Fire	Loss of income	Economic	R							X							X							
Fire	Loss of income	Economic	A				X								X								X	
Fire	Loss of income	Economic	P				X								X								X	
Flood	Reputational risk	Economic	R						X															
Flood	Reputational risk	Economic	A		X				X															
Flood	Reputational risk	Economic	P		X				X															
Flood	Animal health	Environmental	R		X		X	X																
Flood	Animal health	Environmental	A		X																			
Flood	Animal health	Environmental	P		X		X	X																
Fire	Visual reminder of loss	Environmental	R																					
Fire	Visual reminder of loss	Environmental	A																					
Fire	Visual reminder of loss	Environmental	P																					
Fire	Water quality-ill health	Environmental	R		X																			
Fire	Water quality-ill health	Environmental	A		X																			
Fire	Water quality-ill health	Environmental	P		X																			
Flood	Water quality and supply	Environmental	R		X							X							X					
Flood	Water quality and supply	Environmental	A		X							X							X					
Flood	Water quality and supply	Environmental	P		X	X	X					X		X					X		X			
Fire	Local values lost	Social	R						X												X			
Fire	Local values lost	Social	A		X						X										X			
Fire	Local values lost	Social	P				X				X	X	X					X	X	X				
Flood	Mental health and psychological impacts	Social	R						X															
Flood	Mental health and psychological impacts	Social	A		X																			
Flood	Mental health and psychological impacts	Social	P		X		X																	
Flood	Psycho-social livelihood	Social	R						X							X							X	
Flood	Psycho-social livelihood	Social	A				X	X						X	X						X	X		
Flood	Psycho-social livelihood	Social	P						X						X								X	
Fire	Social dysfunction	Social	R	X	X						X	X												X
Fire	Social dysfunction	Social	A		X							X												X
Fire	Social dysfunction	Social	P		X							X												X

APPENDIX E: KEY ACTIONS, INSTITUTIONAL OWNERS AND INSTRUMENTS

Young et al. (2015), adapted from PC (2014)

Key actions	Institutional owner and key agencies	Key primary instruments	Related instruments
1. National coordination and strategy development			
■ Provide strategic direction through the development of key policies and documents ■ Provide oversight and direction from a national perspective of coordination ■ Lead national policy coordination	■ Federal government leads but shared ownership with all other levels of government. Key agencies include: ■ Attorney General's Department ■ COAG, Ministerial councils, ANZEMC ■ The Ministerial Council for Police and Emergency Management – Emergency Management (MCPEM-EM) ■ Emergency Management Australia (EMA) ■ Infrastructure Australia ■ Regional Development Australia	■ National Disaster Resilience Framework (2009) ■ Critical Infrastructure Resilience Strategy (2010) ■ National Strategy for Disaster Resilience (2011) ■ NATCATDISPLAN (2010) ■ Trusted information sharing network	■ National Consumer Law (2011) ■ Building Code of Australia ■ *Climate Adaptation Outlook: A Proposed National Adaptation Assessment Framework (2013)* ■ National Climate Change Adaptation Action Plan (2007) ■ Australian building codes and standards. ■ National Sustainability Framework for Financial Reporting and Asset Management Approach to Asset Planning and Management (2007) ■ *Environment Protection and Biodiversity Conservation Act (1999)* ■ Australian Heritage Commission Act (1975). ■ Cooperative Approach to Integrated Coastal Zone Planning Framework and Implementation Plan (2006) ■ Industry Innovation and Competiveness Agenda (2014) ■ *Public Governance, Performance and Accountability Act 2013* ■ *Work, Health and Safety Act 2011* ■ *Natural Resources Management (Financial Assistance) Act (1992)*

Key actions	Institutional owner and key agencies	Key primary instruments	Related instruments
2. Natural hazard information and research			
■ Undertake research and analysis	Federal Government is accountable and research delivers through the following agencies: ABS, BOM, CSIRO, Geoscience Australia and BNHCRC, research agencies, universities, private industry	■ National Disaster Resilience Framework (2009) ■ National Strategy for Disaster Resilience (2010) ■ *Australia Research Council Act (2001)* ■ AS 5037—2005 Knowledge Management standard	■ National Adaptation Framework ■ National Climate Change Adaptation Action Plan (2007) ■ Industry Innovation and Competiveness Agenda (2014)
■ Provide jurisdiction specific information for preparation, response and recovery efforts ■ Information delivery through municipal and regional bodies ■ Facilitation of knowledge sharing across community, private business and industry. ■ Research development and collation in jurisdictional area	State government in collaboration with: ■ Local government ■ Regional bodies ■ Peak industry bodies ■ Community organisations ■ NGOs/NFPs ■ EMA, AEMI	■ Risk assessments and strategies (all states and territories) ■ Fire management and Natural Hazard Response Plans (all states and territories) ■ Trusted Information Sharing Network ■ AS 5037—2005 Knowledge Management Standard	■ Regional, state and municipal adaptation plans (all states and territories) ■ Regional development plans ■ Municipal development plans
■ Provide local community with specific information for preparation, response and recovery efforts ■ Enabling knowledge sharing across local private and community areas ■ Provision of information to State Government of context specific information	Local government in collaboration with: ■ State Government and associated agencies ■ Regional bodies ■ Community ■ NGO/NFP ■ Private industry and business ■ EMA, AEMI	■ Municipal and State Emergency Management and Response plans ■ Fire management and Natural Hazard Response Plans (all states and territories) ■ AS 5037—2005 Knowledge Management Standard	■ *Local Government Act* (all states) ■ Regional and municipal adaptation plans ■ National Sustainability Framework for Financial Reporting and Asset Management Approach to Asset Planning and Management (2007) ■ Community Business Partnership ■ Regional Development Plans (all states and territories)

Key actions	Institutional owner and key agencies	Key primary instruments	Related instruments
3. Natural hazard information and research			
- Provision of relevant and sector specific information in relation to risks - R&D to develop new market opportunities as a result of change - Undertaking sector specific research	Industry and business - Peak bodies to develop and provide sector specific information and research - Individual organisations information is updated - public liability, vendor agreements, standards, regulations - Government (all levels) - Australian Business Roundtable for Disaster Resilience and Safer Communities - EMA	- ISO standards: 13000, 14001, 2600, 9000 - AS NZS 31000: 2009, 5050 2010 - Community Business Partnership - AS 5037—2005 Knowledge Management standard	- Industry Innovation and Competitiveness Agenda Federal (2014) - Emergency Management Arrangements - Community Engagement Action Plan (EMA)
Information dissemination through community and social networks	Civil society - Private industry/business (media) - State and local government NGOs and community organisations - Regional bodies - EMA, BoM	- Community Engagement Action Plan (EMA) - State Government guidelines on warnings, signals - BoM - National Emergency Management Volunteer Action Plan (2012)	- State and Local Government Communication and Engagement plans - AS 5037—2005 Knowledge Management standard
4. Planning and readiness			
- Risk assessments, business continuity - Planning - Budget provisioning - Planning – asset management	Federal Government - Related government departments, committees and agencies in particular the Attorney General's Department - Treasury and Finance	- NERAG - Critical Infrastructure Resilience Strategy (2011) - National Strategy for Disaster Resilience (2011) *Public Governance, Performance and Accountability Act (2011)*	- Building Code of Australia - AS/NZS ISO 31000:2009 - Cabinet Implementation Unit Toolkit, 4:Risk (2013) *Climate Adaptation Outlook: A Proposed National Adaptation Assessment Framework (2013)*

Key action	Institutional owner and key agencies	Key primary instruments	Related instruments
4. Planning and readiness			
		▪ Federal Risk Management Policy (2014) ▪ National Emergency Management Volunteer Action Plan (2012)	▪ National Climate Change Adaptation Action Plan (2007)
External ▪ Risk assessments ▪ Budget provisioning	Federal ▪ Attorney Generals Department ▪ Treasury and Finance ▪ Related external agencies, committees and subcontractors	▪ NEMP ▪ NERAG ▪ Federal Risk Management Policy (2014)	▪ Natural Resources Management (Financial Assistance) Act 1992 ▪ Building Code of Australia
Organisational ▪ Risk assessments, business continuity planning ▪ Budget provisioning ▪ Planning – Asset management	State and territory governments ▪ Related government departments and agencies ▪ Attorney General's Department, ▪ Treasury and Finance ▪ Agencies and stakeholders.	▪ NERAG ▪ State Work, Health and Safety Act 2011 ▪ State Government Risk Policies and Guidelines ▪ State Building Codes and standards	▪ State, regional and municipal Adaptation risk assessments and plans. ▪ State Government
External ▪ Risk assessment ▪ Budget provisioning	State and Territory governments ▪ Related government departments and agencies ▪ Attorney General's Department, ▪ Treasury and Finance ▪ External agencies and stakeholders.	▪ Disasters Act 1982 (NT), ▪ Disaster and Management Act 2003 (Qld) ▪ Emergencies Act 2004 (ACT) ▪ Emergency Management Act 2004 (SA) ▪ State Emergency and Rescue Management Act (1989) (NSW) ▪ Emergency Management Act (2013) (Vic) ▪ Emergency Management Act (2005) (WA) ▪ NERAG	▪ State Building Codes and standards ▪ Regional Development Plans (all states and territories) ▪ State, regional and municipal Adaptation risk assessments and plans.

Key actions	Institutional owner and key agencies	Key primary instruments	Related instruments
4. Planning and readiness			
▪ **Organisational** ▪ **Risk assessments, business continuity planning** ▪ **Planning – asset management**	Local Government ▪ Associated agencies, committees and subcontractors	▪ *Local Government Act* (all states) ▪ Emergency Management Acts as detailed above (all states and territories ▪ *Standards and guidelines for mitigation activities such pile burning*	▪ National Sustainability Framework for Financial Reporting and Asset Management Approach to Asset Planning and Management (2007)
▪ **External** ▪ **Risk assessments** ▪ **Budget provisioning**	Local Government ▪ State Government bodies, committees and associated agencies	▪ *Local Government Act* (all states) ▪ Emergency Management Acts as detailed above (all states and territories) ▪ *Standards and guidelines for activities related prescribed burning*	▪ State, regional and municipal adaptation risk assessments and plans ▪ Heatwave plans (Local Government Vic) ▪ Regional Development Plans (all states and territories) ▪ National Sustainability Framework for Financial Reporting and Asset Management Approach to Asset Planning and Management (2007)
▪ **Risk assessments, business continuity planning**	Private industry ▪ Peak industry bodies ▪ Government (all levels). ▪ The Community Business Partnership	▪ NEMP ▪ ISO/AU:NZ Standards ▪ *Standards and guidelines for activities related prescribed burning*	▪ State and regional adaptation plans (all states and territories) ▪ Building Code of Australia ▪ Industry Innovation and Competiveness Agenda (2014) ▪ Vendor agreements ▪ Common law acts
▪ **Preparation and management of private properties and assets in relation to possible natural hazard events** ▪ **Local volunteer organisations training and information provision.** ▪ **Development of hazards management plans, e.g., evacuation plans for fire.**	Civil Society ▪ The Community Business Partnership ▪ Local Government ▪ State government volunteer based agencies such as CFA, SES	▪ National Disaster Resilience Framework (2009) ▪ Local and state fire management and response plans ▪ Trusted Information Sharing Network ▪ *Standards and guidelines for activities related to prescribed burning.*	▪ State and regional adaptation plans (all States and Territories) ▪ Building Code of Australia ▪ Vendor agreements ▪ AS 5037—2005 Knowledge Management Standard

Key actions	Institutional owner and key agencies	Key primary instruments	Related instruments
5. Risk modification			
▪ **Mitigation activities** ▪ **General infrastructure spending** ▪ **Transfer risk by purchasing insurance**	Federal, state and local governments 　▪ Insurance bodies (ICA, VMIA) 　▪ Infrastructure Australia 　▪ Regional Development Australia	▪ National Disaster Resilience Framework (2009) ▪ Critical Infrastructure Resilience Strategy (2010) ▪ National Strategy for Disaster Resilience (2011)	▪ Building Code of Australia ▪ Adaptation activities all states and municipalities (e.g., Victorian Adaptation Sustainability Partnership Fund) ▪ *Natural Resources Management (Financial Assistance) Act (1992)*
▪ **Risk transfer through buying insurance** ▪ **Mitigation activities** ▪ **Invest in management of mitigation activities related to resilience building**	Private/industry 　▪ Federal, state and local government 　▪ Peak bodies 　▪ Australian Building Codes Board 　▪ Australian Business Roundtable for Disaster Resilience and Safer Communities	▪ National Strategy for Disaster Resilience (2011) ▪ State building laws, standards, regulations, codes (all states) ▪ NEMP	▪ Building Code of Australia ▪ State and regional adaptation plans (all states and territories) ▪ Coastal Protection Plans (WA, Tas, Vic, NT, Qld, SA) ▪ Vendor agreements ▪ ISO/AS:NZ standards ▪ Warranties
▪ **Risk transfer through buying insurance** ▪ **Mitigating activities**	Civil Society 　▪ Australian Business Roundtable for Disaster Resilience and Safer Communities 　▪ EMA 　▪ Insurance and finance companies	▪ National Strategy for Disaster Resilience (2011) ▪ Local and State Government planning requirements (all states and territories) ▪ NEMP	▪ Vendor agreements ▪ Adaptation activities (all states and municipalities)
▪ **Land use planning** ▪ **Building regulations**	Federal, state and local governments 　▪ Local Government and Planning Ministers' Council 　▪ Regional Development Australia 　▪ COAG 　▪ Relevant peak bodies from the construction and building industries	▪ All government planning policies, plans, strategies and regulations ▪ Building Code of Australia ▪ State building laws, standards, regulations, codes (all states) ▪ Regional Development Plans ▪ Critical Infrastructure Resilience Strategy 2010	▪ Precinct planning (all Local Governments) ▪ State, regional and municipal development plans

Key action	Institutional owner and key agencies	Key primary instruments	Related instruments
6. Relief and recovery arrangements			

▪ **Provision of funds**
▪ **Relief and recovery funding policies**
▪ **Monitor and review**
	Federal Government
	  ▪ State and local government, private industry and business and civil society
	  ▪ Research Bodies
	  ▪ COAG Committees and councils
		▪ Provide recovery funding through the NDRRA
		▪ Provide relief funding through the AGDRP
		▪ NPANDR and NEMP
		▪ COMDISPLAN (2014)
		▪ NATCATDISPLAN (2010)
			▪ Cabinet Implementation Unit Toolkit, 5: Monitor Review and Evaluation 2013
			▪ *Work, Health and Safety Act (2011)*
			▪ *Public Governance, Performance and Accountability Act (2013)*
			▪ *Natural Resources Management (Financial Assistance) Act (1992)*

▪ **Funding and financing of recovery**
▪ **Development of EM recovery plans**
▪ **Utilise Australian Government recovery funding**
▪ **Monitor and review**
	State Government
	  ▪ Department of Treasury and
	  ▪ Finance, Department of Premier and Cabinet (all states)
	  ▪ Associated agencies (NFP, NGO, CFA, SES)
		▪ NDRRA
		▪ NPANDR and NEMP
		▪ State Emergency Management Recovery plans
			▪ Guidelines and reporting requirements for expenditure (all states and territories)
			▪ *Work, Health and Safety*
			
			Act (2011)

▪ **Funding and financing of recovery**
▪ **Development of EM recovery plans**
▪ **Utilise Australian Government recovery funding**
▪ **Monitor and review**
	Local Government
	  ▪ Financial and insurance bodies
	  ▪ Australian Business Roundtable for Disaster Resilience and Safer Communities
	  ▪ Federal Government
	  ▪ EMA
	  ▪ CFA, SES
		▪ NDRRA
		▪ NPANDR and NEMP (applies to the resilience building)
		▪ Local Emergency Management Recovery plans
		▪ Community Business Partnerships
			▪ Reporting requirements for expenditure and grant acquittals
			▪ National Sustainability Framework for Financial Reporting and Asset Management Approach to Asset Planning and Management (2007)
			▪ *Work, Health and Safety Act (2011)*

GLOSSARY

Built assets and infrastructure. 'Hard' assets such as housing, business establishments, roads, communications, energy and water infrastructure.

Disaster. A serious disruption to community life which threatens or causes death or injury in community and/or damage to property which is beyond the day-to-day capacity of the prescribed statutory authorities and which requires special mobilisation and organisation of resources other than those normally available to those authorities.

Domains Geographical areas of jurisdiction such as local, state or national government areas, or institutional areas, such as the public and private economy.

Emergency management. A range of measures to manage risks to communities and the environment; the organisation and management of resources for dealing with all aspects of emergencies.

Emergency management involves the plans, structures and arrangements required to integrate the normal endeavours of government, voluntary and private agencies in a comprehensive and coordinated way to deal with the whole spectrum of emergency needs, including prevention, response and recovery.

Hazard. A source of potential harm or a situation with a potential to cause loss; a potential or existing condition that may cause harm to people or damage to property or the environment.

Institution. Institutions are rules and norms held in common by social actors (individuals, groups and organisations) that guide, constrain, and shape human interaction. Institutions can be formal, such as laws and policies, or informal, such as norms and conventions. Institutions can influence human interaction through direct control, through incentives and through processes of socialization.

Mitigation. Measures taken in advance of a disaster aimed at decreasing or eliminating its impact on society and environment. Largely used synonymously with prevention.

Preparedness. Measures to ensure that, should an emergency occur, communities, resources and services are capable of coping with the effects; the state of being prepared.

Prevention. Measures to eliminate or reduce the incidence or severity of emergencies.

Recovery. The coordinated process of supporting emergency-affected communities in reconstruction of the physical infrastructure and restoration of emotional, social, economic and physical wellbeing.

Response. Actions taken in anticipation of, during, and immediately after an emergency to ensure that its effects are minimised, and that people affected are given immediate relief and support.

Risk. The likelihood of harmful consequences arising from the interaction of hazards, communities and the environment; the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood; a measure of harm, taking into account the consequences of an event and its likelihood.

Risk owner. Asset owner who faces a potential loss. A person or entity that has been given authority to manage a particular risk and is accountable for doing so(ISO, 2009).

Shared ownership. Shared ownership is where multiple owners hold responsibility of some kind for an asset or a risk.

Values. Things considered important because they are useful or appreciated for their existence. Values can be tangible: goods and services with a direct monetary value; or intangible: values that do not have an explicit monetary value but are still considered important. Intangible values include environmental and social values such as community connectivity, beauty of a landscape and environmental services such as clean air and water. These values also help to support the economy and enhance resilience.

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