

The Role of the Earthquake Hazard Leader in South Australia

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ABSTRACT:

In late 2007 the Building Management division of the Department for Planning, Transport and Infrastructure, Government of South Australia (State) accepted the role of Earthquake Hazard Leader for South Australia. In accordance with the State Emergency Management Plan:

- “Hazard Leaders are to ensure that all aspects of the State’s approach to a hazard, including mitigation, response and recovery measures are co-ordinated. This may include risk assessments for the State, land use planning, engineered preventative actions, specific training for response agencies, public information and specific recovery needs.”
- “The objective of the Hazard Leader organisation is to identify and gather together a group of Government, non-Government and if necessary private agency stakeholders and develop a State level plan.”

Since accepting the role the major achievements of the Earthquake Hazard Leader have been as follows.

- Development of the Earthquake Hazard Plan following ISO 31000 principles on risk management. The Plan provides information on the earthquake hazard, local vulnerabilities and response and recovery arrangements in South Australia (SA).
- Organisation of a state level discussion exercise based upon an earthquake scenario.
- An update of the State Guidenote, “Strengthening Existing Government Buildings for Earthquake” to align with AS1170.4 – 2007.
- Development of a new guidenote, “Earthquake Considerations in Leasing” that assigns star ratings to buildings leased by government.
- Drafting of an Earthquake Hazard Communication Plan.

The work of the Earthquake Hazard Leader is ongoing with the aim of continuous improvement to the State’s preparedness for the earthquake hazard.

Keywords: earthquake hazard leader, hazard plan, communication plan

INTRODUCTION

In 2001 a series of risk management workshops held in SA identified the need for a more co-ordinated approach to hazard management across government, emergency services and the community. The State Emergency Management Committee subsequently identified ten hazards, added the roles and responsibilities of Hazard Leaders to the State Emergency Management Plan and assigned Hazard Leaders. The Department for Planning, Transport and Infrastructure accepted the role of Earthquake Hazard Leader in late 2007.

SOUTH AUSTRALIAN STATE EMERGENCY MANAGEMENT ARRANGEMENTS

In Australia State Governments:

- have primary operational responsibility to respond to an emergency or disaster in their jurisdictions;
- maintain emergency management policies, legislation and plans; and
- determine prevention strategies and operational responses to threats and may seek assistance from, or provide assistance to, other jurisdictions.

In SA the State Emergency Management Committee is the peak emergency management planning committee that reports to the Emergency Management Council, a committee of Cabinet. The State Emergency Management Plan outlines responsibilities, authorities and the mechanisms to prevent, or if they occur manage, and recover from, incidents and disasters. The State Emergency Management Plan does not assume a particular incident or event, and is based on the “all hazards” principles as endorsed by Emergency Management Australia.

HAZARD LEADERS

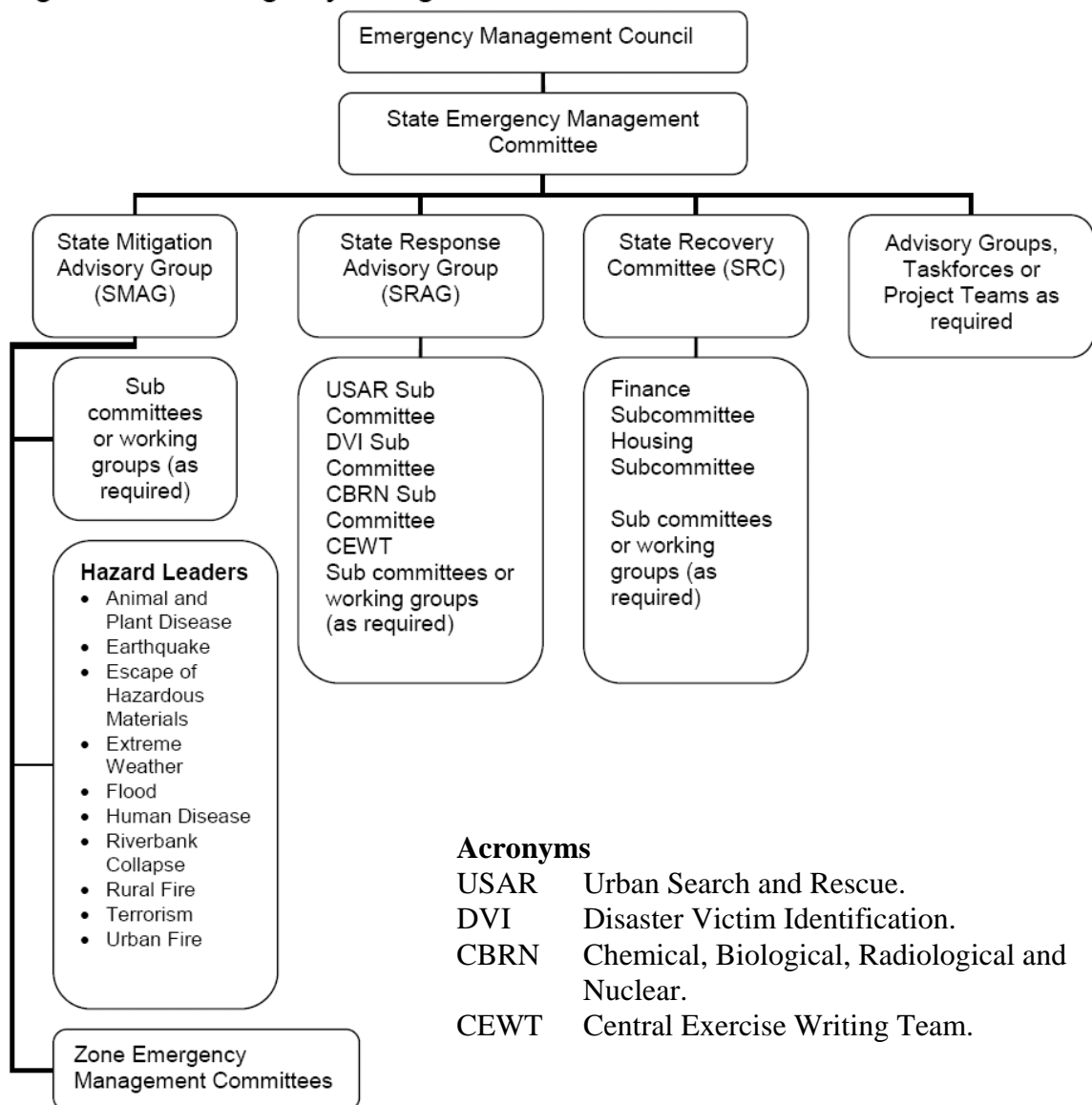
In accordance with the State Emergency Management Plan:

- “A Hazard Leader is the agency which has the knowledge, expertise and resources to undertake a leadership role for the planning of emergency management activities pertaining to the prevention of, preparedness for, response to and recovery from its appointed hazard. Hazard Leaders have the authority of the State Emergency Management Committee to bring together all agencies of government and any required Commonwealth, local or non-government entities to undertake this planning role. The Hazard Leader provides a facilitation and oversight role to the comprehensive planning process.”
- “Hazard Leaders work with the various Advisory Groups and Functional Services in order to ensure that all aspects of the State’s approach to a hazard, including mitigation, response and recovery measures are co-ordinated. This may include, but not be limited to areas such as risk assessments for the State relative to a particular hazard, land use planning, engineered preventative actions, Natural Disaster Resilience Program works, specific training for response agencies, public information and specific recovery needs.”
- “The review function of Hazard Leaders operates horizontally across the aspects of Prevention, Preparedness Response and Recovery.”
- “The objective of the Hazard Leader Organisation is to identify and gather together a group of Government, non-Government and if necessary private agency stakeholders and develop a State level plan for an identified hazard and any sub-hazards that may be applicable to the same topic.”

- “Hazard plans are state level documents based on the principles of the State Emergency Management Plan but with an emphasis towards a particular hazard.”
- “Hazard plans are required to be reviewed annually.”
- “Hazard Leaders are to ensure that their hazard plan includes any particular issues relative to evacuation of the public and planning for that to occur.”
- “Hazard Leaders shall develop and implement community education programs and information systems.”
- “Where any agency planning conflicts with the Hazard Leader, the matter shall be referred to State Emergency Management Committee.”

The State Emergency Management Plan sets out the SA Emergency Management Committee structure as shown in figure 1 below including the involvement of Hazard Leaders in this structure.

Figure 1: S.A. Emergency Management Committee Structure

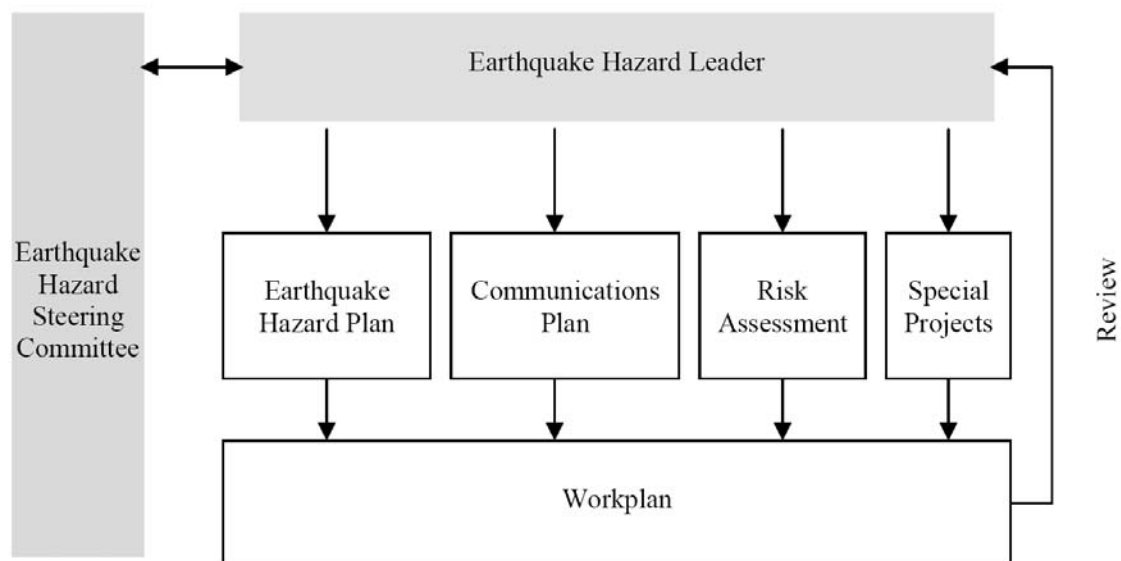


Hazard Leaders report to the State Emergency Management Committee through the State Mitigation Advisory Group. The State Mitigation Advisory Group is responsible for oversight of the states prevention and preparedness activities.

SA EARTHQUAKE HAZARD LEADER

Since accepting the role of Earthquake Hazard Leader the Department for Planning, Transport and Infrastructure has worked to fulfil its roles and responsibilities as set out in the State Emergency Management Plan. The work of the Earthquake Hazard Leader can be set out in the following framework.

Figure 2: SA Earthquake Hazard Leader Framework



Earthquake Hazard Steering Committee

The Earthquake Hazard Steering Committee is made up of representatives from the South Australian Emergency Management, Earthquake Engineering and Seismology Communities whose involvement has been identified as critical to the management of earthquake risk in South Australia. The Committee is chaired by the Earthquake Hazard Leader. The Committee assists the Hazard Leader by providing high level advice and feedback on the development and implementation of the Hazard Plan and other initiatives. Representatives include;

- South Australia Police
- State Recovery Office
- South Australian Metropolitan Fire Service
- South Australian State Emergency Service
- SA Water, sponsor of the Engineering Functional Service
- Primary Industries and Resources South Australia, Geological Survey.
- Local Government Association
- Adelaide University

Earthquake Hazard Plan

The Earthquake Hazard Plan follows the format of ISO31000, the International risk management standard and the National Emergency Risk Assessment Guidelines (NERAG) developed by the Tasmanian State Emergency Service for the National Emergency Management Committee. The Hazard Plan describes earthquake risk as a function of hazard, exposure and vulnerability.

The hazard is described in terms of its measurement, impact, elements at risk and sub hazards. Sub-hazards described include aftershocks, soil liquefaction, landslides, fault ruptures, tsunami and fire.

Exposure is described by referring to SA's earthquake history and known earthquake risk. Vulnerability is described as those properties that make elements at risk more vulnerable to the earthquake hazard.

The Hazard Plan also identifies:

- existing prevention and preparedness controls;
- existing response and recovery controls;
- new controls undergoing development;
- a summary of roles and responsibilities across mitigation, response to and recovery from an earthquake;
- a guide to possible earthquake impacts and response tasks across Emergency Services and supporting government agencies;
- guidelines for evacuation; and
- building safety assessment information to be read in conjunction with the SA Rapid Damage Assessment Support Plan.

Hazard Plans are not response plans but in providing the above information:

- assist emergency services and support agencies in their planning for the earthquake hazard; and
- identify the preparedness of the state for the hazard, the known gaps in preparedness and how these gaps are being closed. In doing so the plan provides an assurance to government of continuous improvement.

Earthquake Hazard Communication Plan

An Earthquake Hazard Communication Plan has been drafted by the Earthquake Hazard Leader to provide:

- personal safety and preparedness information to be used in a community education campaign;
- a strategy for delivering a community education campaign; and
- pre-scripted messages for emergency services to adapt and use in an earthquake response. These are based heavily on information released by New Zealand government agencies following the Christchurch earthquakes.

The personal safety message is DROP, COVER, HOLD. In an earthquake:

- DROP to the floor somewhere close to you
- Seek COVER under a strong table
- HOLD on to a table leg to keep it from moving away from you
- Alternatively take shelter next to an interior wall away from windows, tall furniture and fireplaces. Protect your head and neck with your arms.

The key strategies to communicate earthquake safety and preparedness messages to the community are:

- place preparedness information on the peak government website, www.sa.gov.au/emergency/earthquake ;
- place preparedness information in local government offices and libraries;
- at times of increased interest in the earthquake hazard such as the reporting of interstate or international earthquake events provide a media release and undertake interviews directing the community to the government website for information on being better prepared.

Earthquake Hazard Risk Assessment

A key requirement of all Hazard Leaders is the development and maintenance of a state level risk assessment for their hazard. The Earthquake Hazard Leader is currently updating the state earthquake risk assessment to comply with the National Emergency Risk Assessment Guidelines and become part of the State Emergency Risk Assessment System (SERAS). SERAS will be a tool to assist the State Emergency Management Committee in making decisions around mitigation priorities for hazards across the state. By adopting the National Emergency Risk Assessment Guidelines SA's earthquake risk will be compared with other identified hazards through the use of standardised consequence, likelihood and risk evaluation tables. Risk assessments using the National Emergency Risk Assessment Guidelines rely upon the consideration of impact scenarios. Geoscience Australia is assisting the Earthquake Hazard Leader by providing earthquake scenarios for the Adelaide metropolitan area.

Special Projects

Special projects are one off mitigation activities involving the Earthquake Hazard Leader. Special projects undertaken to date include developing policies around management of government buildings and holding a major earthquake exercise.

In 2001 a policy of strengthening existing government buildings for earthquake was developed by the then Principal Engineer of the Building Management division of the Department for Transport, Energy and Infrastructure. The policy has since been applied to government buildings being modified by significant alteration, addition or renovation. The policy requires that such buildings undergo a seismic assessment and if necessary upgrade to resist earthquake loads. In recognition of the difficulty and cost of seismic upgrades less than full code compliance is accepted in most cases in line with AS3826 – Strengthening Existing Buildings for Earthquake. The aim of the guidenote is to minimise the hazard to life during

an earthquake. The policy was updated in 2010 to reflect changes in AS1170.4 – 2007 Earthquake actions in Australia.

A large number of government agencies, including emergency services, are located in leased accommodation. Therefore it is important that consideration be given to the vulnerability of leased buildings to the earthquake hazard in order to ensure an effective emergency response and continuation of government services should a major earthquake occur. A new guidenote has been written to address two main risks.

- Life Safety – the minimisation of hazard to life by ensuring the structures of buildings leased by government have a low probability of collapse in an earthquake.
- Business Continuity – reducing interruption to government business caused by earthquake damage to leased buildings occupied by government agencies.

In accordance with the guidenote a structural engineer's assessment is required of buildings to be leased by government and a star rating given to inform the leasing agency as to the strength of the building in relation to the current earthquake code requirements. A minimum standard of 1/3 current capacity is required. The guidenote is being implemented as new leases are arranged.

In 2010 the Earthquake Hazard Leader assisted the SA Central Exercise Writing Team to hold the peak annual emergency exercise in the State based upon an earthquake scenario. Exercise preparation involved mapping the effects of a magnitude 5.5 earthquake using the Modified Mercalli scale and giving detailed descriptions of likely damage in each Modified Mercalli zone for different infrastructure types. Stakeholders were then asked to submit information on their assets and possible damage to them to the Hazard Leader for incorporation into an overall scenario. The scenario was used in a high level facilitated discussion exercise attended by over 100 representatives from across emergency services, government agencies and essential service owners/operators.

The Earthquake Hazard Leader and Earthquake Hazard Steering Committee have also recently been tasked by the State Emergency Management Committee with reporting relevant lessons for SA from the 2010/11 earthquakes in New Zealand. The Steering Committee plans to review the recommendations from the New Zealand Royal Commission of Inquiry into building failure caused by the Canterbury earthquakes as well as interviewing State employees who assisted in response and recovery activities in Christchurch after the 22 February 2011 Christchurch earthquake.

Earthquake Hazard Workplan

The Earthquake Hazard Workplan was developed by the Hazard Leader to record and track progress on closing known gaps in the states preparedness for an earthquake response and recovery. Over time gaps will be closed through the work of the Hazard Leader, emergency services and government agencies while further risk assessments and earthquake exercises will identify more issues that need to be added to the Workplan. The Workplan is therefore the method by which the Earthquake Hazard Leader monitors and reports to government continuous improvement in the state's earthquake preparedness. The Workplan is aligned to the National Disaster Resilience Strategy endorsed by the National Emergency Management Committee.

CONCLUSIONS

A major earthquake impacting a heavily populated area of SA represents a high consequence but low likelihood risk making it one of the more challenging hazards to manage. The consequences of even a moderately sized earthquake occurring near Adelaide are potentially very complex and would involve most if not all government organisations, local governments and the private sector. Through the establishment of the Hazard Leader role the State has raised the profile of the earthquake hazard and instituted a planning process that is methodically:

- identifying stakeholder organisations
- reviewing their planning for earthquakes
- identifying controls necessary to reduce risk
- developing new controls.

During 2010 and 2011 earthquake events around the world, most notably in Japan and New Zealand, have increased the awareness of South Australians to the earthquake hazard. This raised awareness has assisted the Earthquake Hazard Leader in engaging with the public, emergency services and government agencies to improve their preparedness for the earthquake hazard. The challenge will be to continue to move forward in this respect when the profile of the earthquake hazard is less prominent.

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