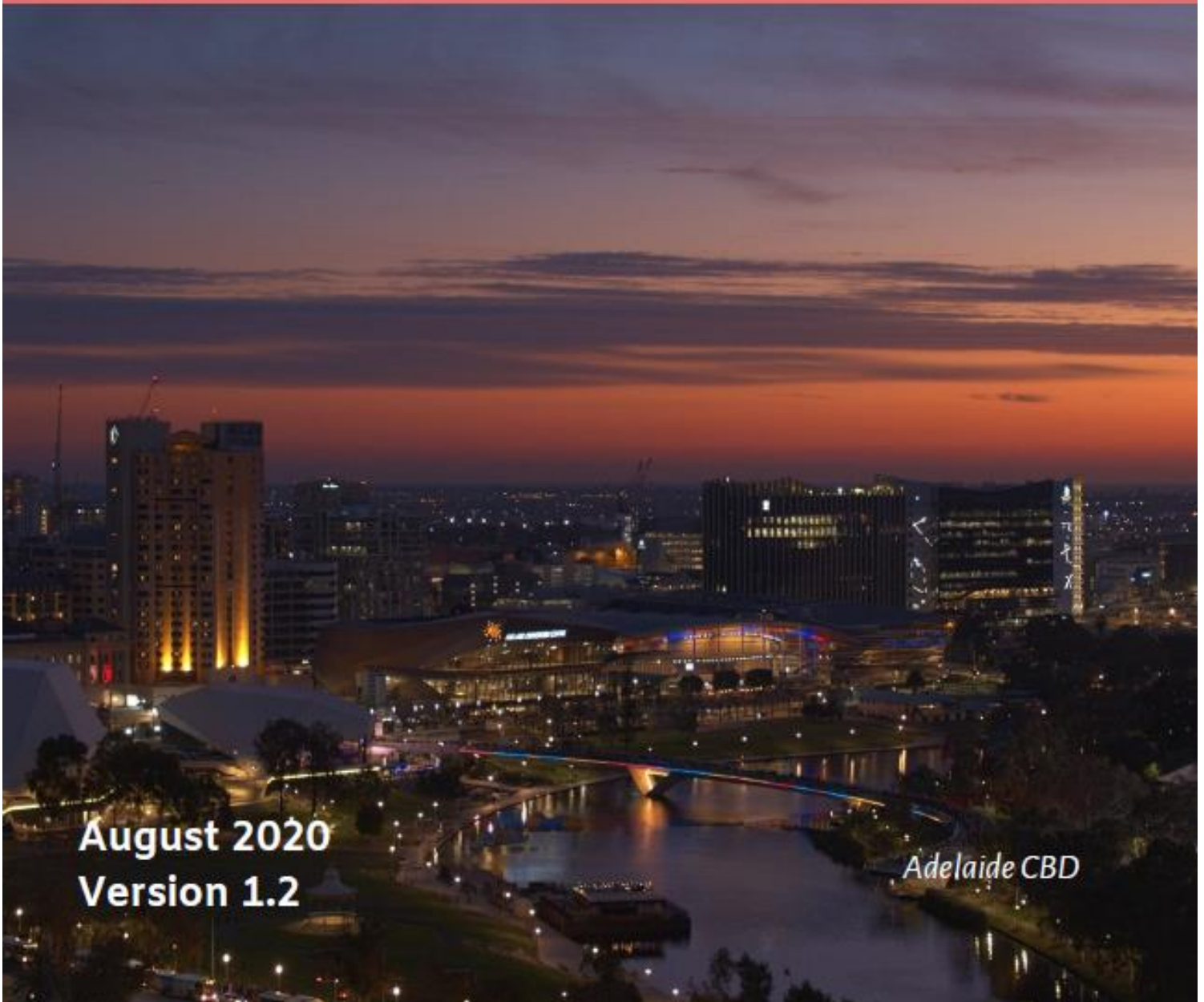


ZONE EMERGENCY MANAGEMENT PLAN


EASTERN ADELAIDE ZONE

**August 2020
Version 1.2**

Adelaide CBD



NOTE: This document has been designed for double-sided colour printing.

Authority		
Eastern Adelaide Zone Emergency Management Committee pursuant to Part 3 Annex D of the State Emergency Management Plan.		
Issuing Agency		
SES		
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<p>The Eastern Adelaide Zone Emergency Management Committee is responsible for preparing, updating and reviewing the Eastern Adelaide Zone Emergency Management Plan.</p> <p>The Zone Emergency Management Plan is reviewed biennially by 30 August every odd year.</p>		
Distribution List		
State Emergency Management Sub-committee members State Mitigation Advisory Group members Zone Emergency Management Committee members Chief Executives of all Eastern Adelaide Councils Chair of the neighbouring ZEMCs, namely Adelaide Hills, Fleurieu & Kangaroo Island, Western Adelaide, Southern Adelaide and Northern Adelaide ZEMCs.		
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Approval		
Name	Title	Signature
Mario Barone	Chair, EA Zone Emergency Management Committee	 : 24.09.2020
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1. Executive Summary

The Eastern Adelaide (EA) Zone Emergency Management Plan (ZEMP, the Plan) is the key regional emergency management document. It focusses on high-level risks that may impact the EA Zone, by taking an all-hazards approach and summarising the identified mitigation actions for the Zone. It sits within a suite of plans identified within the State emergency management arrangements.

The EA Zone has local and specific characteristics that need to be considered within the context of emergency management. Some of the important features and vulnerabilities that have been identified within the Zone are listed in figure 1 below.

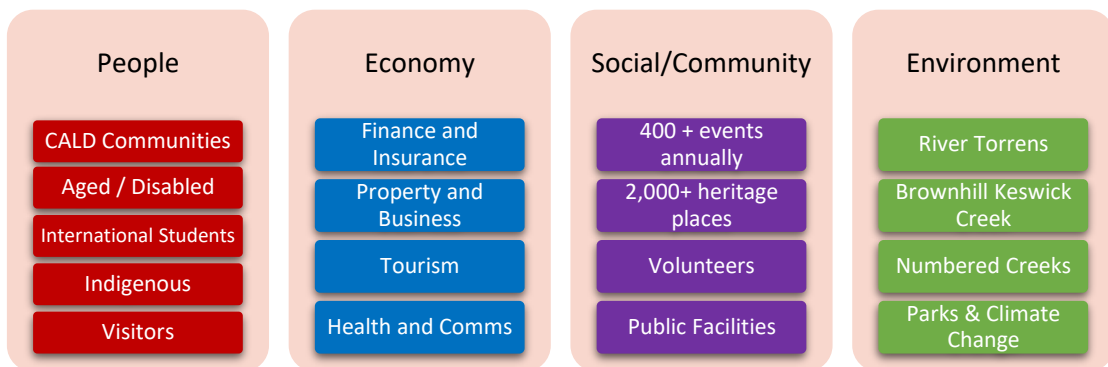


Figure 1: Vulnerabilities identified within the Zone

The hazards identified as priority within the Zone are extreme weather (heatwave and storm), flood, human disease, earthquake and rural fire. State hazards also considered were black system, escape of hazardous materials, terrorism, and urban fire. Top hazards and their impacts for the EA Zone are listed in figure 2 below.

Hazard	People	Economy	Social/Community	Environment
Extreme Weather - Storm				
Extreme Weather - Heat				
Flood				
Bushfire				
Earthquake				
Human Disease				

Figure 2: Top Hazards and their Impacts for the Eastern Adelaide Zone

The extent of the impact felt from an event is influenced by the intensity of the event, the actions taken to reduce or avoid the effects and the ability of the community, business and

government to respond and recover. Some of the high-level risks from hazards in this zone include:

- Death and injury to people
- Loss or damage to property and infrastructure
- Interruption and damage to industries and the economy
- Disruptions to communications and other essential services
- Increased demand on public services
- Environmental damage

The high-level risks were assessed and those that were identified as requiring treatment were considered further. A number of control improvements and treatment options were identified for each risk. Many of these treatments can be applied across all hazards, while others are hazard specific. Full details can be found in [Chapter 6](#). The top treatments identified is listed in the Table 1 below.

Name	Description	Responsible	Progress
Community Education	Develop and deliver education programs including resilience and insurance	State and Local Government	In progress
Emergency Planning (Councils)	All councils to have emergency management planning, and activities that strengthen disaster resilience in communities	Local Government	Council Ready Program In progress
Business Continuity Plans (BCPs)	Promote BCPs to businesses	State and Local Government	In progress
Eastern Adelaide ZEMP	Plan outlining all key hazards and risks, context and mitigation actions	EA ZEMC	Completed (under review)
Lifeline study of critical services	Evaluate essential service vulnerabilities, redundancies and interdependencies & provide awareness and communicate the risks to all levels of Govt/Business.	State Government	Commenced
Vulnerable persons consideration	Identify and record the location of vulnerable persons and provide additional checks and assistance following a disaster	State and Local Government	In progress

Recovery is an important feature of emergency management in the EA Zone and hence the Zone has a Zone Recovery Operations Plan which covers recovery within the Zone in detail. This includes a list of services and recovery stakeholders located within and servicing the EA Zone.

The Eastern Adelaide ZEMP has been condensed in to a document designed to be utilised by the general public. A copy can be located [here](#)¹.

¹ https://www.ses.sa.gov.au/site/about_us/publications_and_reports/key_hazards_risks_summary_for_zones.jsp

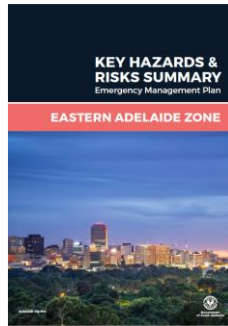


Figure 3: Public EA ZEMP

Further information relating to emergencies can be located on the sa.gov.au website [here](https://www.sa.gov.au/topics/emergencies-and-safety)².

² <https://www.sa.gov.au/topics/emergencies-and-safety>

2. About the Zone Emergency Management Plan (ZEMP)

The [State Emergency Management Plan](#) (SEMP)³ establishes and gives authority to the State's eleven Emergency Management Zones and Zone Emergency Management Committees (ZEMCs) to be responsible for risk management, planning and implementation of Zone-level actions to build resilience and support the State's emergency management arrangements.

The SEMP requires that each ZEMC will develop a Zone Emergency Management Plan (ZEMP) focussed on high-level risks that could impact the Zone.

Emergency management is a shared responsibility among all sectors of the community. The ZEMP supports this by integrating emergency management planning from the local level to the Zone/Regional level up to the State level.

The ZEMP relies on cooperative, coordinated and consultative relationships among State Government agencies, Local Governments, not for profit organisations, business and infrastructure owners and operators to ensure an efficient and coordinated approach is engaged to mitigate risks from hazards. The ZEMP is the key regional emergency management document. It outlines the key hazards and risks, the context and identifies mitigation options. This document sits between the state and local level emergency planning documents and assists in informing state level planning as well as provides a framework for council level plans.

The ZEMP is created using an all hazards approach. It includes a comprehensive summary of the findings of the National Emergency Risk Assessment Guidelines (NERAG) risk assessments that were conducted in the Zone as well as a summary of each of the other state-level hazards. It is recognised there are interrelationships between hazards, however the risk assessments used in this document are based on individual hazards as per the SEMP. Also included are the top-level treatment options identified for addressing residual risk for each of the priority hazards.

Each Zone has local and specific characteristics that need to be understood within the context of emergency management i.e. the climate, demographics, industry and infrastructure. The Zone context utilised during the risk assessments is summarised within the ZEMP and detailed information can be found in [Annex A](#) of the ZEMP.

Recovery is an important feature of emergency management and hence the Zone has a Zone Recovery Operations Plan which covers recovery within the Zone in detail. The ZEMP includes a summary of this plan.

The Eastern Adelaide ZEMP has been condensed in to a document designed to be utilised by the general public. It is a concise summary of the ZEMP, presented in an easily digestible format, aimed at those who require further information about emergency management within the Zone. A copy can be located [here](#)⁴. The correlation of all the relevant ZEMC documents are shown in figure 4 below.

³ <https://dpc.sa.gov.au/responsibilities/security-and-emergency-management/state-emergency-management-plan>

⁴ https://www.ses.sa.gov.au/site/about_us/publications_and_reports/key_hazards_risks_summary_for_zones.jsp



Figure 4: The co-relation of all ZEMC documents

Detailed operational response, relief and recovery arrangements for emergencies and disasters that occur in the Zone are not part of this plan. Details on these arrangements are available in the SEMP or by contacting the relevant agency, subject to document classification levels.

Further information relating to emergencies can be located on the sa.gov.au website [here](https://www.sa.gov.au/topics/emergencies-and-safety)⁵.

⁵ <https://www.sa.gov.au/topics/emergencies-and-safety>

3. South Australian Emergency Management Arrangements

Emergency management arrangements in South Australia are governed by the *Emergency Management Act 2004 (the Act)*. Section 9(1) (b) of the Act requires the State Emergency Management Committee (SEMC) to prepare and keep under review the State Emergency Management Plan (SEMP).

The SEMP describes South Australia's emergency management framework. It explains State and inter-jurisdictional coordination arrangements and defines the roles and responsibilities of the State's emergency management committee structure as shown in the below figure 5.

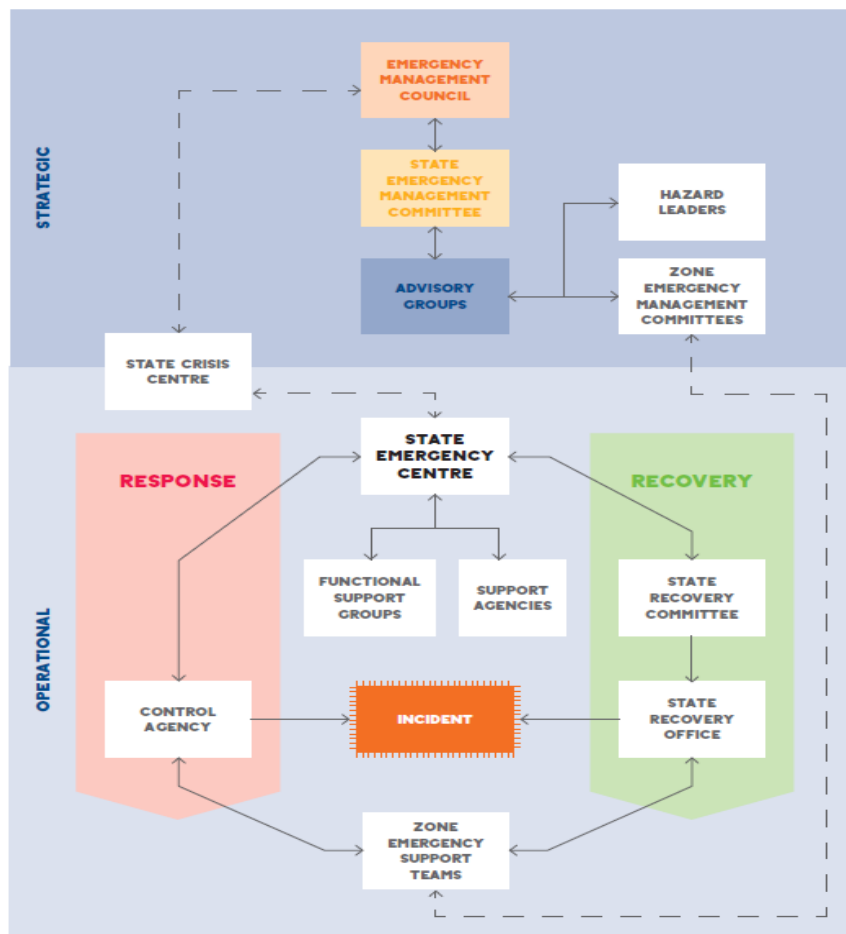


Figure 5: South Australia's Emergency Management Structure

SEMC has reviewed its sub-group model in order to achieve better alignment to its strategic priorities. In Sept 2019, SEMC gave in principle approval to a new model to be implemented in 2020.

The new model can be found on the [MS Teams - ZEMC page](https://sagov.sharepoint.com/:f/r/sites/SAEmergencyManagement/Shared%20Documents/3.1%20Zone%20Emergency%20Management%20Committee?csf=1&e=7I5YQP)⁶

⁶<https://sagov.sharepoint.com/:f/r/sites/SAEmergencyManagement/Shared%20Documents/3.1%20Zone%20Emergency%20Management%20Committee?csf=1&e=7I5YQP>

Advisory Groups

The Advisory Groups of the State Emergency Management Committee (SEMC) have the role of providing an oversight role for the areas of Prevention, Preparedness, Response and Recovery. The following Advisory Groups have been established:

- **State Mitigation Advisory Group (SMAG)** – responsible for prevention and preparedness
- **State Response Advisory Group (SRAG)** – responsible for response activities including the Functional Services
- **State Recovery Committee (SRC)** – responsible for the recovery activities including integration with response activities
- **State Public Information and Warnings Advisory Group (SPIWAG)** – responsible for public information and warnings
- **Emergency Management Assurance Advisory Group (EMAAG)** - is responsible for the SA Emergency Management Assurance Framework. The Assurance Framework establishes mechanisms to provide assurance to government and the community that the South Australian security and emergency management sector has the capacity and capability to deliver functions and responsibilities assigned under SEMP

Hazard Leaders

Hazard Leaders ensure the coordination of all aspects of the State's approach to each hazard, ranging from mitigation through to response and recovery. Further information regarding Hazard Leaders is available in the SEMP and the table 2 below.

The Hazard Leader oversees the risk assessment specific to their hazard. The Eastern Adelaide ZEMC contributes to the State risk assessments for relevant hazards and Hazard Leaders in turn contribute to the EA ZEMC risk assessments.

Table 2: Hazard leaders

Hazard	Hazard Leader
Animal and Plant Disease	Primary Industries and Regions South Australia
Black System	SA Police
Earthquake	Department for Infrastructure and Transport
Escape of Hazardous Materials	Safe Work SA – Department of the Premier and Cabinet
Extreme Weather	SA State Emergency Service
Flood	Department for Environment and Water
Human Disease	Department for Health and Wellbeing
Rural Fire	SA Country Fire Service
Terrorism	SA Police
Urban Fire	SA Metropolitan Fire Service

Control Agencies

A Control Agency is responsible for resolving an emergency relevant to its area of expertise (see table 3 below). The Control Agency works in conjunction with the Coordinating Agency, South Australia Police (SAPOL) to take control of the response to an emergency.

Table 3: Control Agencies	
Emergency Incident	Control Agency
Aircraft Accident	SA Police
Animal, Plant & Marine Disease	Primary Industries and Regions South Australia
Black System	SA Police
Bomb Threat	SA Police
Cyber Crisis	Department of the Premier and Cabinet (Office of the Chief Information Officer)
Earthquake	SA Police
Extreme Weather	State Emergency Service
Fire (Rural & Urban)	SA Country Fire Service or SA Metropolitan Fire Service respectively
Flood	South Australian State Emergency Service
Food / Drinking Water Contamination	SA Health
Fuel, Gas & Electricity Shortages	Department for Energy and Mining
Hazardous Materials Emergencies (including inland water oil spill)	SA Country Fire Service or Metropolitan Fire Service
Human Epidemic	SA Health
Marine Transport Accidents	SA Police
Marine Pollution (coastal)	Department for Infrastructure and Transport
Rail Accident	SA Police
Riverbank Collapse	SA Police
Road / Transport Accident	SA Police
Search & Rescue – Land & Sea	SA Police
Search & Rescue – Structure (USAR)	Metropolitan Fire Service or State Emergency Service
Siege / Hostage	SA Police
Telecommunications Crisis	Department of the Premier and Cabinet
Terrorist Incident	SA Police

Coordinating Agencies

South Australia Police is the Coordinating Agency for all emergencies, unless otherwise stated in the SEMP. The role of the Coordinating Agency is to ensure the Control Agency effectively responds to and manages an emergency incident, the threat is clearly understood, and Support Agencies provide an appropriate level of support.

Functional Support Groups

Functional Support Groups are groups of agencies required to perform functional roles that support response and recovery activities during an emergency. Functional Support Groups contribute to the coordination roles of the State Emergency Centre (SEC) and Zone Emergency Support Teams (ZESTs) and are led by an appropriate agency (see table 4 below).

Table 4: Functional Support groups and Lead Agencies	
Group	Lead
Ambulance and First Aid	SA Ambulance
Defence	Defence SA

Table 4: Functional Support groups and Lead Agencies	
Group	Lead
Emergency Relief	Housing SA
Engineering	SA Water
Government Radio Network	SA Police
Local Government	Local Government Association of South Australia
Logistics	SAFECOM
Mapping	Department for Environment and Water
Public Information	SA Police

Framework of Plans

The SEMP is further supported by a suite of coordinated plans including Hazard Plans, Support Plans, Functional Support Group Plans, the State Emergency Centre Operations Manual and Zone Plans. Plans are produced and maintained by different groups and go through an assurance process with the relevant SEMC sub group. This planning framework for emergencies is outlined in Table 5 below. Links to available plans are provided in [Chapter 5](#).

Table 5: Framework of Plans			
Plan	Responsibility for Maintenance	Assurance	Authority
Hazard Plans	Hazard Leader	State Mitigation Advisory Group	Lead Agency (Chief Executive)
Capability Plans	Lead Agency	State Response Advisory Group	Lead Agency (Chief Executive)
Control Agency Plans	Control Agency	State Response Advisory Group	Lead Agency (Chief Executive)
Functional Support Group Plans	Functional Support Group	State Response Advisory Group	Functional Support Group Manager
Zone Emergency Management Plan	Zone Emergency Management Committee	State Mitigation Advisory Group	Chair, Zone Emergency Management Committee
Operational Manuals	Agency responsible for function	Chief Executive, responsible agency	Agency responsible for function

Emergency Management Zones

There are eleven emergency management zones (four Adelaide metropolitan and seven regional zones) within South Australia. These zones align with the twelve State Government Regions (the Adelaide Hills Region is combined with the Fleurieu and Kangaroo Island Region to form one emergency management zone).

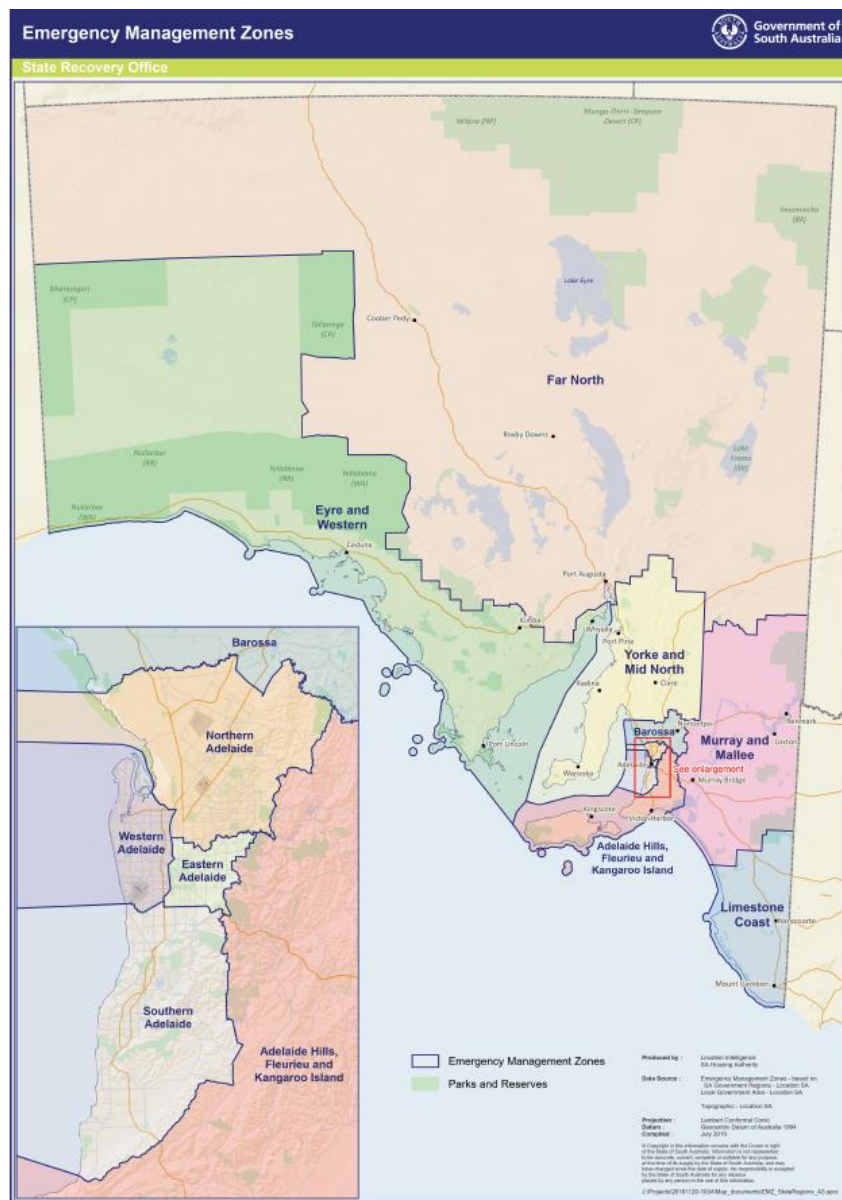


Figure 6: Emergency Management Zones

Eastern Adelaide (EA) Zone Emergency Management Committee

The EA Zone Emergency Management Committee (ZEMC) is responsible for risk management, planning and implementation of Zone-level actions to build resilience and support State emergency management arrangements. The ZEMC ensures National Emergency Risk Assessment Guideline (NERAG) consistent emergency risk assessments are conducted for key hazards; contributes to the development of risk treatment options; monitors implementation of risk treatments via Hazard Leaders and other relevant risk treatment plans; and develops a Zone Emergency Management Plan.

Maintaining networks across the Zone and with adjacent Zones and reviewing debriefs of major emergencies and exercises relevant to the Zone are also other roles, and responsibilities for ZEMCs as outlined in the SEMP. The SEMP also states that establishing a succession plan for ZEMC members and providing assurance that arrangements are in place to prevent and/or mitigate, prepare for, respond to and recover from emergencies as roles and responsibilities of the ZEMC.

Membership of the EA ZEMC consists of:

- ZEMC Chairperson
- Zone Emergency Management Coordinator – SAPOL Local Service Area Commander
- Zone Recovery Planner – appointed from the State Recovery Office
- Executive Officer – appointed from the SA SES
- ZEMC Members.

In accordance with Section 9(1) (e) of the Act, the SEMC has developed Guidelines for ZEMCs (Part 3 Annex D of the SEMP). They have been prepared to guide and assist (along with the ZEMC Induction Manual) ZEMCs to:

- meet obligations to the SEMC, the State Coordinator, State Advisory Groups and the SEMP;
- understand their roles and responsibilities; and
- prepare and maintain the ZEMP.

The ZEMC Terms of Reference provide guidance to the ZEMC. This includes:

- Meeting requirements;
- Succession planning and proxy arrangements;
- Member roles and responsibilities; and
- Administrative document templates.

A collection of all available ZEMC documents can be found on the [EA ZEMC SharePoint](#)⁷. All members of the ZEMC have access to this database.

Zone Emergency Support Teams

The EA Zone Emergency Support Team (ZEST) is coordinated by the SAPOL Local Service Area (LSA) Commander. The ZESTs are established to provide operational support to the Control Agency during the response and/or recovery phases of an emergency incident. The ZEST Operations Manual provides detail around activation and operating protocols of the ZEST.

The ZESTs conduct regular exercises to test plans and operational preparedness and may be requested to conduct a specific exercise by the ZEMC in order for the ZEMC to gain assurance in relation to that hazard.

The LSA Commander reports actions undertaken by the EA LSA, including outcomes of any activations in response to incidents or exercises, to the EA ZEMC. The EA ZEMC will ensure outcomes from emergency management exercises are incorporated into strategic zone emergency management planning activities and documents.

Local Government Emergency Management Arrangements

The local government sector in South Australia has a long history of acting to reduce disaster risks, build community resilience, and provide leadership and support in the aftermath of emergency events. When emergencies occur, councils are on the front foot in providing support to State Government emergency services, sustaining local services, and responding to community needs.

⁷<https://sagov.sharepoint.com/sites/SAEmergencyManagement/Shared%20Documents/3.1%20Zone%20Emergency%20Management%20Committee>

[The State Emergency Management Plan \(SEMP\)](#)⁸ sets out the role of local government in emergency management as follows:

“Local government has a fundamental enabling role in emergency management because of their strong relationships with local community networks and knowledge of locally available resources.

Local governments have responsibilities, in partnership with state government, to contribute to the safety and wellbeing of their communities by participating in local emergency management response and recovery.”

The SEMP also establishes the Local Government Functional Support Group (LGFSG), comprised of the LGA, the 68 South Australian councils, and the 6 Regional Local Government Associations. The role of the LGFSG is to coordinate the response from the local government sector during emergencies.

As well as the legislative and administrative roles under the SEMP, the *Local Government Emergency Management Framework 2019* sets out roles for councils in three key areas: disaster risk reduction, incident operations, and recovery.

This framework references the *Local Government Act 1999*, which identifies that one of the functions of a council is to take measures to protect their area from natural hazards. In addition, councils must “give due weight, in all its plans, policies and activities to regional, state and national objectives and strategies concerning the economic, social, physical and environmental development and management of its community (section 8).

Local Government Activities

Councils carry out a number of day-to-day activities that prevent emergencies from arising or minimise the impact of the emergency. Local government undertake and contribute to activities including land use planning, stormwater management, flood mitigation works, land management, fire prevention, building safety, road and traffic management, waste management, events and public health programs.

During an emergency, Local Government may support emergency services, other agencies and their communities under the iResponda operating platform developed by the Local Government Association. The iResponda operating platform provides a standardised framework and set of actions for all South Australian councils to work under while participating in incident operations.

Training of council staff in all aspects of emergency management is available through the LGA’s Emergency Management Development Program. This includes the various i-Responda modules, as well as the Introduction to Emergency Management online course delivered through the SES.

In larger incidents, coordination of council activities and resources to support the Control Agency may occur through the LGFSG. When a ZEST is established, the local government sector will be represented by the LGFSG. The LGFSG Plan and ZEST Operations Manual contain further details on these arrangements.

Council emergency management plans and council risk assessments are a valuable source of information about identified emergency risks within the Zone.

⁸ <https://www.dpc.sa.gov.au/responsibilities/security-and-emergency-management/state-emergency-management-plan>

Councils have a long-established role in supporting communities to recover after an emergency. After a major emergency, recovery becomes a 'whole of council' concern that impacts upon all aspects of the organisation, and requires a level of responsiveness to changing community needs that may go beyond 'business as usual'. As the level of government closest to affected communities, councils are critical to the effective coordination of recovery efforts. In many cases, councils will be asked to provide a representative to chair a Local Recovery Committee.

4. About the Zone

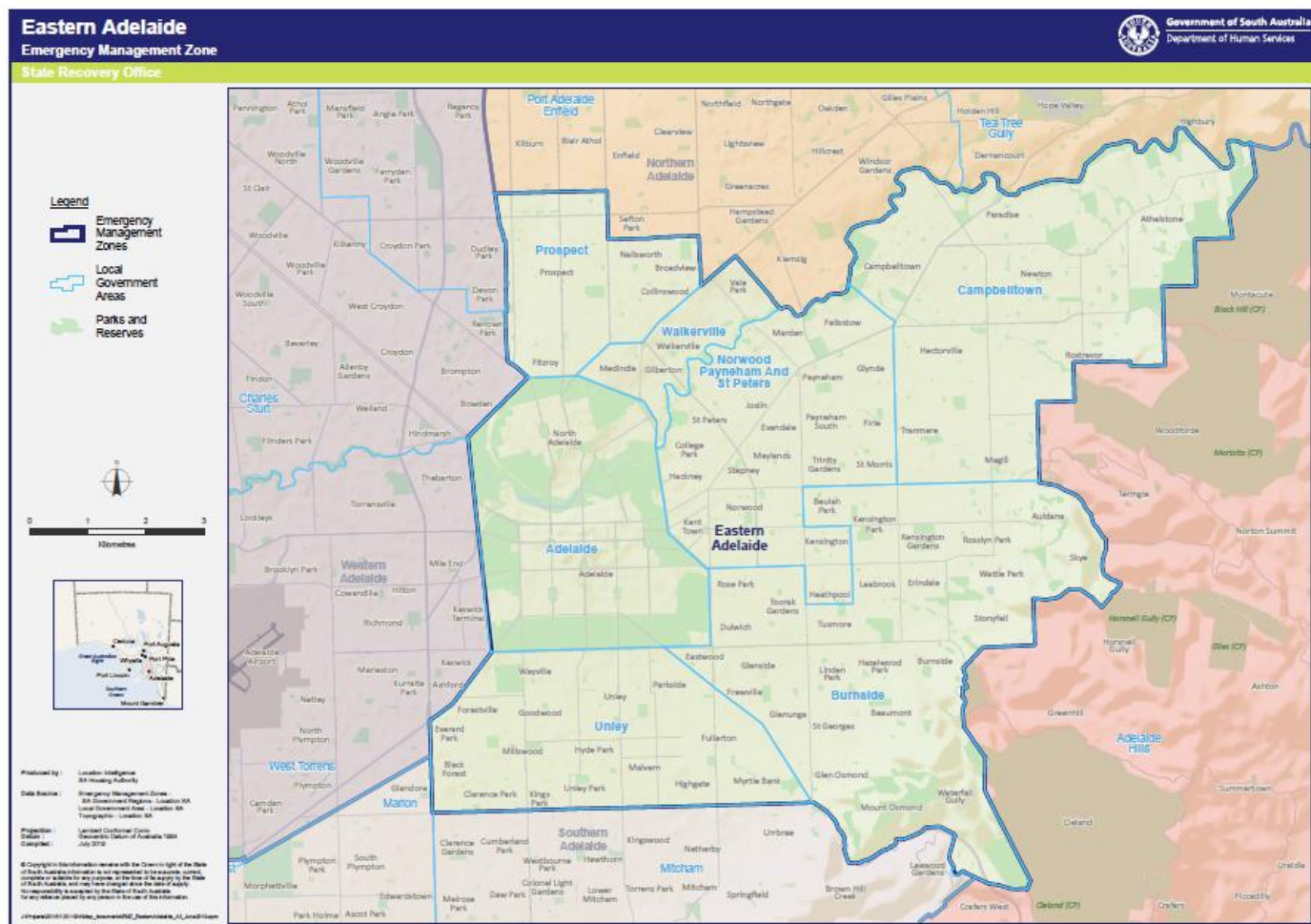


Figure 7: Eastern Adelaide Zone Map



Figure 8: Eastern Adelaide Zone Profile snapshot

Overview

The Eastern Adelaide (EA) Zone is one of the four regions which divide the Adelaide metropolitan area. The zone is the smallest of all zones in size, however the biggest in economic contribution to the State. The EA Zone includes the Local Government Areas (LGAs) of Adelaide, Burnside, Campbelltown, Norwood Payneham & St Peters, Prospect, Unley and Walkerville with an area of approximately 110 square kms. The population is approximately 225,855. The zone's population varies significantly from day to night-time. This is due to the fact that Adelaide City Council precinct has a day time population of 250,000 bringing the Zones day time population to just under half a million.

In line with state-wide trends, the population of the EA Zone is getting proportionately older, with 25% of the population 65 years or older. There is good public transport coverage, however many people rely heavily on private vehicles for commute.

The EA Zone is a key contributor to the state's economy contributing \$31.1billion to the State's Gross State Product (GSP). The main economic drivers of the zone include retail and professional/administrative services. Tourism is a key source of profit for the region, bringing in more than \$4.6 billion per annum.

The key critical infrastructure in the EA Zone includes:

- Water – the various pumping stations for supplying water to the Zone and the State, the pipelines used to transport the water.
- Government Infrastructure - Government Radio Network, key Commonwealth, State and Local Government buildings, infrastructure of essential services, Emergency services control centres, head offices, the State Emergency Centre and the backup State Emergency Centre and telecommunication infrastructure.
- Health Services – Major public and private hospitals, aged care facilities, disability services
- Major transport routes - the Melbourne to Adelaide corridor via the South Eastern Freeway and intra state train network.
- There are seven electricity sub-stations in the zone. They form part of a complex supply and demand network that feeds South Australia, Victoria, New South Wales, Queensland and Tasmania. There are no electricity generation facilities in the zone, including either wind or solar. The major power feed is Electra Net Cable which is above and underground and feeds into the city.
- The water in the zone is available through water pumping stations, water holding tanks and the Kangaroo Creek Reservoir (not in EA Zone).
- The major gas line is Adelaide Bridge. There are 17 suburbs with elevated pressure gas mains.
- General sewerage pipes run through the suburbs. Newton Transfer Station is the waste transfer station where waste is held before sending it to Bolivar.
- There are a number of data centres, exchanges and infrastructure for telecommunications in the zone.

Zone Vulnerabilities

Service based industries along with Tourism are the key source of income for residents of the EA Zone and supports the economy of the Zone. Emergencies and disasters have the ability to affect this by interrupting service industry and impacting the Tourism into the City and subsequent profits. Climate change may increase these impacts significantly.

There are several populations who are at increased risk during and after an emergency. These include those over 65 years of age, as they are less likely to be able to effectively respond to a threat or warning. They are often more isolated and can have existing health conditions. Transient visitors in the EA Zone are also at risk due to lack of knowledge or awareness of incidents. There is a significant number of homeless/rough sleepers in the Zone who are at a higher risk during and after an emergency along with huge number of international tertiary students who rely upon part – time jobs (which might be at risk due to emergencies) for supporting themselves while studying and are not eligible for any government assistance.

Zone Changes

In recent times, there has been a move away from manufacturing and heavy reliance on service-based industries. There has been a shift in the composition of the migrant communities coming in to the Zone. The main groups of migrants entering the region has changed from traditional European countries to China and India needing for communication to be in different languages other than just English.

More detailed information about the EA Zone is provided in [Annex A](#).

5. Risk Assessments

Under the State Emergency Management Plan (SEMP), the Zone Emergency Management Committee (ZEMC) is responsible for using “an all hazards approach and working within the Zone Emergency Risk Management (ZERM) Framework methodology to ensure that emergency risks to a zone are identified, analysed and evaluated, community vulnerabilities are considered, treatment options are identified and residual risk is managed through a Zone Emergency Management Plan (ZEMP).”

The Eastern Adelaide (EA) ZEMC and respective Hazard Leaders prioritised five hazards to undergo risk assessments from the list of ten State Hazards identified in the SEMP. These were:

- Extreme Weather;
- Flood;
- Earthquake;
- Human Disease; and
- Rural Fire.

In accordance with State and National emergency risk assessment priorities, the ZEMC used the methodology within the National Emergency Risk Assessment Guidelines, 2010 (NERAG, 2010), based on the Risk Management Standard (AS/NZS ISO 31000). This consistent approach enables comparison between other State and zone risk assessments as well as between hazards within the same zone.

The ZEMC conducted a program of risk assessment and risk treatment workshops for the EA Zone to inform the development and review of its ZEMP. Work on the five primary hazards began in 2012 and was finalised in 2014. The timeline of the priority hazards risk assessment workshops is detailed in figure 6 and the timeline for secondary hazard presentations are detailed in figure 7. The detailed results of each of the risk assessments for the EA Zone are recorded in the Risk Registers and the accompanying Risk Management Reports. For further detailed information, please refer to [Sharepoint](#)⁹. A summary of each of the Risk Management Reports is provided in [Chapter 6](#).

The ZEMC also received assurance in relation to the secondary hazards from relevant Hazard Leaders. Assurance around secondary hazards for the Zone remains ongoing.

Future Planning

The ZEMC is currently reviewing priority hazard risk assessments in line with NERAG 2 (2015). This will be done using a staged approach and will include a review of progress on control improvements and treatments.

Control Improvements and Treatments

The following are a selection of controls and treatments that have been improved or implemented since the risk assessment process was commenced.

National and State-level

- [Australian Vulnerability Profile](#)¹⁰

⁹ <https://sagov.sharepoint.com/sites/SAEmergencyManagement/Shared%20Documents/Forms/AllItems.aspx?FolderCTID=0x0120006BE086C9B07630429661F464150C1727&viewid=6e8bb891%2Dc5a7%2D417b%2D8237%2D43c32ed7af65&id=%2Fsites%2FSAEmergencyManagement%2FShared%20Documents%2F3%2E1%20Zone%20Emergency%20Management%20Committee>

¹⁰ <https://research.csiro.au/eap/australian-vulnerability-profile/>

- Black System Event Hazard Plan (new state hazard) (SAPOL)
- [Bushfire Management Area Plans](#)¹¹
- Council Ready Program
- Disaster Recovery Guide for Councils
- [Disaster Waste Management Guidelines](#)¹²
- Displaced Persons short term Accommodation Capability Plan and Guidelines
- Recovery Accommodation Plan (Medium to long term)
- Damage Assessment Support Plan
- Energy Support Plan
- Emergency Management Workforce Capability Framework
- Emergency Management Lessons Management Framework
- [sa.gov.au - Emergencies and Safety](#)¹³
- [Guidelines for Planning for People with Assistance Animals in Emergencies](#)¹⁴
- [Impact Recording Tool](#)
- [Joint Operating Guidelines – Community Sandbagging Facilities](#)¹⁵
- [Improving Dam and Levee Bank Management in South Australia](#)¹⁶
- iResponda Framework
- [Keeping South Australian's Safe: A Focus on Counter Terrorism](#)¹⁷
- SA Lifelines Capability Plan (SAPOL)
- [Local Government Emergency Management Framework](#)¹⁸
- Local Government – Emergency Management Splash Page (individual council websites)
- [Managing Animals in Emergencies Framework](#)¹⁹
- Mass Casualty Capability Plan
- [People at Risk in Emergencies Framework](#)²⁰
- [Public Information and Warnings Guidelines and Framework](#)²¹
- [Spontaneous Memorials Guideline](#)²²
- [State Disaster Resilience Framework](#)²³
- [Towards a Resilient State – SA's Climate Change Adaptation Action Plan](#)²⁴
- [Vulnerable Persons Consideration Report](#)²⁵
- [South Australia's Climate Change Strategy and Blue Carbon Strategy](#)²⁶

¹¹ https://www.cfs.sa.gov.au/site/prepare_for_a_fire/bushfire_management_planning/bushfire_management_area_plans.jsp

¹² https://www.dpc.sa.gov.au/_data/assets/pdf_file/0005/38354/Disaster-Waste-Management-Guidelines.pdf

¹³ <https://www.sa.gov.au/topics/emergencies-and-safety>

¹⁴ https://www.dpc.sa.gov.au/_data/assets/pdf_file/0019/33319/Guidelines-for-Planning-for-People-with-Assistance-Animals-in-Emerg_FINA....pdf

¹⁵ <https://lgasa-web.squiz.cloud/?a=464697>

¹⁶ <https://www.environment.sa.gov.au/topics/water/hazard-management>

¹⁷ <https://www.asial.com.au/documents/item/1277>

¹⁸ <https://lgasa-web.squiz.cloud/?a=465602>

¹⁹ https://www.dpc.sa.gov.au/_data/assets/pdf_file/0006/38355/Managing-Animals-in-Emergencie....pdf

²⁰ https://www.dpc.sa.gov.au/_data/assets/pdf_file/0018/34254/People-at-Risk-in-Emergencies-Framework.pdf

²¹ <https://dpc.sa.gov.au/responsibilities/security-and-emergency-management/state-emergency-management-plan/State-Emergency-Management-Plan-Part-3c.pdf>

²² https://www.dpc.sa.gov.au/_data/assets/pdf_file/0019/34255/Spontaneous-Memorials-Guideline.pdf

²³ https://www.safecom.sa.gov.au/site/initiatives/stronger_together_south_australias_disaster_resilience_strategy.jsp

²⁴ <https://www.environment.sa.gov.au/topics/climate-change/programs-and-initiatives/adapting-to-climate-change>

²⁵ https://dhs.sa.gov.au/_data/assets/pdf_file/0017/11852/VPID-REPORT-final-approved-updated-version-Aug-13.pdf

²⁶ <https://www.environment.sa.gov.au/topics/climate-change/programs-and-initiatives/climate-change-blue-carbon-strategy>

Zone-level

- Adelaide CBD Evacuation Capability Plan (SAPOL) which can be used to suit any Council/Zone
- Exercise Rumble – Recovery exercise
- Northern Adelaide Zone Emergency Risk Communication Plan
- [Public Zone Emergency Management Plans](#)²⁷
- [Regional Climate Change Adaptation Plans](#)²⁸
- [Resilient East Hot, Hot, Hot Hypothetical](#)²⁹
- [Resilient South Hot, Hot, Hot Hypothetical](#)³⁰
- ZEMC Induction Manual
- ZEMC Terms of References (updated)
- [Resilient East](#)³¹
- [Resilient South](#)³²
- [Adapt West](#)³³
- [Resilient Hills and Coasts Projects](#)³⁴

²⁷ https://www.ses.sa.gov.au/site/about_us/publications_and_reports/key_hazards_risks_summary_for_zones.jsp

²⁸ <https://www.environment.sa.gov.au/topics/climate-change/programs-and-initiatives/adapting-to-climate-change/regional-adaptation-plans>

²⁹ <https://www.cityofadelaide.com.au/city-living/sustainable-adelaide/climate-change#feelinghot>

³⁰ <https://www.resilientsouth.com/events1/feelinghothothot2019>

³¹ <https://www.resilienteast.com/>

³² <https://www.mitchamcouncil.sa.gov.au/environment/climate-change/resilient-south>

³³ <https://www.adaptwest.com.au/>

³⁴ <https://www.alexandrina.sa.gov.au/loose-pages/resilient-hills-and-coasts-project-reports>

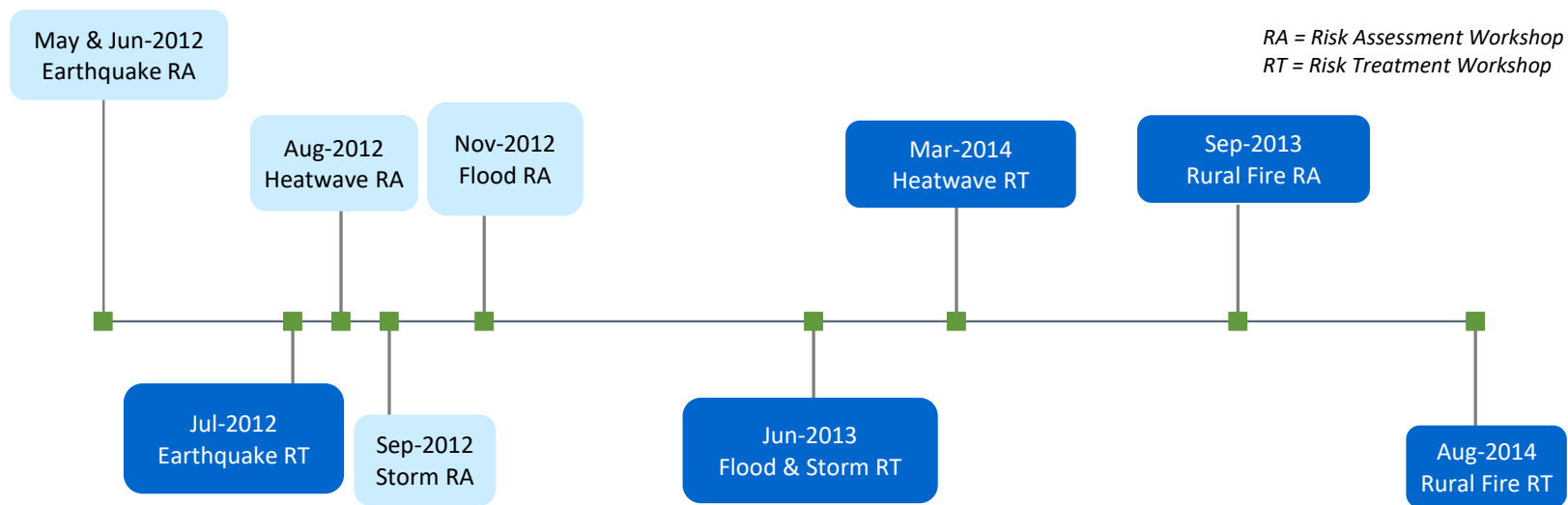


Figure 9: Eastern Adelaide Priority Hazard Risk Assessments Timeline

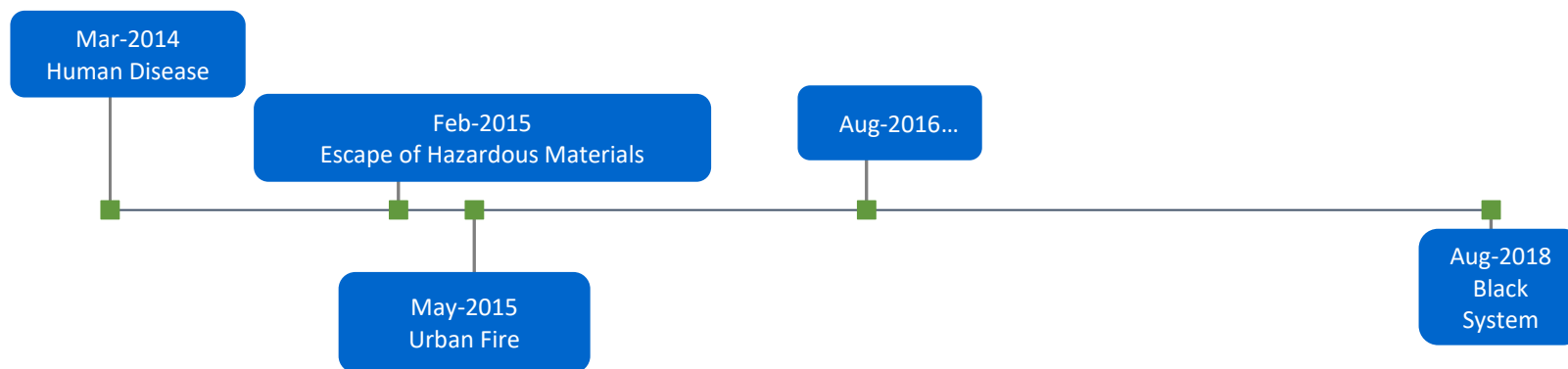


Figure 10: Eastern Adelaide Secondary Hazard Presentations Timeline

6. Eastern Adelaide Zone Hazards

The Eastern Adelaide (EA) ZEMC prioritised flood, extreme weather, earthquake, human disease and rural fire as the first five hazards to be assessed in this Zone. All other state hazards have been considered by the ZEMC.

The risk assessment, analysis and treatment process are detailed and extended process, incorporating a large amount of input from stakeholders and experts. The following is summarised from the relevant risk management reports.

Heatwave

In the last 200 years, severe and extreme heatwaves have taken more lives than any other natural hazard in Australia. It has the potential to adversely affect urban and rural communities, infrastructure and the natural environment. It can cause death and significant health issues (including mental health issues), extensive stock and crop losses, damage roads and bridges, disrupt power supplies and contribute to an elevated fire hazard.

The risks from severe and extreme heatwave to the EA Zone include impacts to people, the environment, the economy, public administration, the social setting and infrastructure. Extreme heat events considered were 1 in 2 year, 1 in 70 year and 1 in 1,000-year events.

Previously, heatwave warnings were based on data from a single location (Kent Town) which was then applied to the whole state. From 2019, the Bureau of Meteorology (BoM) began utilising a statistical model that can be applied at multiple locations across the state. It produces an indicator, Excess Heat Factor (EHF) that is specific for each location at which the model is run and thus provides a more meaningful gauge for warnings.

The EHF is calculated using the forecast maximum and minimum temperatures over the coming three days. It incorporates the actual temperatures over the previous 30 days, and considers what the “normal” temperature would be for those three days at that location, at that time.

High minimum temperatures overnight are likely to have a greater impact where communities, infrastructure and the environment are unable to recover from protracted heat stress. High temperatures can be exacerbated by high humidity. When temperatures spike for three or more consecutive days without an adequate drop in night-time temperature to cool the outdoor and indoor environments, there is a significant increase in the risk to vulnerable populations. Therefore, the definition of excessive heat events considers both daytime maximum temperatures and night-time minimum temperatures.

The National Heatwave Forecasting and Assessment Service provided by BoM gives advance notice of unusually hot conditions allowing government, emergency services and communities time to adopt measures to reduce the impact. SASES is responsible for providing the public with warnings for heatwave events.

The identification of different levels of heatwave enable the generation of tiered arrangements to manage heatwaves, with defined activation triggers and escalating response levels. Heatwave warnings are explained in the Table 7 below.

Heatwave Type	Warning	EHF	Impact
Low Intensity Heatwave	Advice	0 - 1	Most people expected to have adequate capacity to cope with this level of heat, but begin to see health effects
Severe Heatwave	Watch and Act	> 1 - < 3	Increased morbidity and mortality for vulnerable groups, such as those aged over 65, pregnant women, babies and young children, and those with chronic illness (e.g. renal disease, ischaemic heart disease).
Extreme Heatwave	Emergency Warning	>3	Will impact normally reliable infrastructure such as power and transports and are a risk for anyone who does not take precautions to keep cool, even those who are healthy.

Figure 11: Heatwave Warnings

SASES warning messages are distributed to the public via various channels, including traditional media (TV, radio, print), social media and the SASES website. The warnings are scaled depending on the level of the event and recognise:

- Heatwave events are prolonged.
- The impacts of heatwaves change or develop over the duration of an event. Each stage has its own specific risks.
- The members of the community who will be significantly impacted, and the level of that impact, is different depending on the intensity of the event.
- The threat from heatwave is invisible and is not well understood by the public.
- The threat from heatwave is often trivialised, or key messaging undermined, in order to make it 'newsworthy'.

Analysis of risks using the NERAG risk criteria found that there were 15 priority risks for the Zone related to death and illness, business interruption, increased demand on health (including mental health) services, and public facilities. The NERAG 2 review of these risks showed the risks remain the same as the original assessments using NERAG 1 however, the number of priority risks for the zone has changed to 11 from 15 (after amalgamating a few risk statements based on the topics).

The recommended actions to mitigate the top risks can be found in [Eastern Adelaide – All Hazards – Control Improvements and Treatments Table](#) and the [Heatwave Control Improvements and Treatments Table](#).

Extreme Storm

The risks from extreme storm to the EA Zone include impacts to people, the environment, the economy, public administration, the social setting and infrastructure. Extreme storm events considered were 1 in 2 year, 1 in 70 year and 1 in 1,000-year events.

Extreme storm includes severe weather and severe thunderstorms as defined by the Bureau of Meteorology. According to the Bureau of Meteorology:

Thunderstorm:

- Heavy rainfall leading to flash flooding (>30mm/h)
- Wind gusts (90 km/h or greater)

- Damaging hailstones (2 cm diameter or greater)
- Tornadoes

Synoptic Storm – could include some/all the above but also:

- Mean wind speed 63 km/h or greater (land gale)
- Storm tide/surge higher than astronomical tide causing damage/destruction to foreshore.

The scenarios used in the risk assessment were:

- 1 in 2-year event – 29 June 2012 – extreme wind event in EA causing loss of power and significant damage to personal property.
- 1 in 100-year event – 22 Jan 1991 hailstorm event caused an estimated damage of approximately \$25million which equates to \$112 million in today's value; the damage bill for ETSA amounted to nearly \$700,000 in 1991-dollar figures.
- 1 in 1,000-year event – hypothetical synoptically driven storm event triggering smaller scale very dangerous supercell thunderstorms moving across populated areas of the zone. This would be a long-lived and wide spread event across the State with the catastrophic impacts.

Analysis of risks using the NERAG risk criteria found that there were 32 priority risks for the Zone related to death and illness, business interruption, damage to building/stock, damage to Government infrastructure (State and Local Government), interruptions to major events, increased demand on health (including mental health) services, loss of electricity, impacts the community connectedness and cause degradation of the aesthetics (vegetation) of Zone. The NERAG 2 review of these risks showed the risks remain the same as the original assessments using NERAG 1 however, the number of priority risks for the zone has changed to 19 from 32 (after amalgamating a few risk statements based on the topics).

The recommended actions to mitigate the top risks can be found in [Eastern Adelaide – All Hazards – Control Improvements and Treatments Table](#) and the [Extreme Storm Control Improvements and Treatments Table](#).

Flood

In the State Flood Hazard Plan, flood is defined as:

- 'The covering of normally dry land by water:
- that has escaped or been released from the normal confines of:
 - Any lake, river, creek or other natural water course, whether altered or modified;
 - Any reservoir, canal or dam;
 - Coastal or marine waters on to land; and
 - Pipes, dams, levees or other infrastructure due to structural failure, operations, malfunction, accident or other reasons.
- flowing overland:
 - Towards a watercourse, lake, coast/marine water or other water body; and/or
 - From a watercourse or drain that is blocked.'

Flooding is the costliest natural disaster in South Australia, with the average annual cost of flooding for South Australia for the period 1967-2013 approximated at \$48m p.a. (\$2,210m total from 1967 to 2013, RMIT 2017). Apart from these economic costs, flood has broader impacts on people and infrastructure, as well as public administration, the environment and social setting.

In the EA Zone, flooding can occur from a range of sources including riverine, flash and infrastructure failure. These sources differ in their onset time, extent, duration and impacts. The flood risk scenarios considered during the risk assessment were:

- a storm event over the First to Fifth;
- a 1% Annual Exceedance Probability (AEP) storm event over metropolitan Adelaide; and
- a 0.2% AEP flood event comprising simultaneous flooding of several creeks and the River Torrens.

Risk evaluation for flood in the EA Zone led to the identification of 55 priority risks, comprising 16 intolerable risks and 39 'As Low as Reasonably Practical' (ALARP) (2) risks. The common themes of the priority risks were associated with loss of life, injury and displacement of people, increased demand on health services, economic loss to business, economic loss to State and Local Government and damage to property and personal belongings.

An examination of the confidence of the risks indicated that all risks had the potential to have their tolerability improved to ALARP (2) or less. This indicates that further analysis of all 54 priority risks is recommended prior to treatment, to see if the confidence can be improved and to re-analyse and re-evaluate the likelihood and consequences of the risks.

The single risk that remain ALARP (2) or higher regardless of improvements in confidence, and should be considered for treatment as the second priority is:

- ZEA.F.7. b.2. (There is the potential that intense rainfall will result in a 1% flood that will cause property damage resulting in large numbers of people being displaced from their homes)

It is recommended that:

- The Hazard Leader, relevant government agencies and/or local government considers progressing implementation of relevant prioritised control improvements and new risk treatments. This may require further analysis, redirection of existing resources, engagement with other agencies, seeking of additional funding etc.
- Further data collection and detailed analysis be undertaken to increase the confidence in the assessment. This could decrease the tolerability of these risks and therefore improve the confidence of the risk assessment outcomes.
- More detailed work is undertaken to assess the potential effectiveness of proposed control improvements or new risk treatments (including a cost/benefit analysis where appropriate)
- The EA ZEMC monitors and reviews the progress and reports to SMAG and SEMC.

Furthermore, the flood Hazard Leader recommends several improvements be made to the application of the NERAG methodology for Zone flood risk assessments during future reviews and updates. It is recommended that:

- The Risk Study Group determine impact metrics where these can be quantified using flood maps in combination with other data sources, for example, number of households inundated (to inform impact on people) and identifying specific critical and vulnerable facilities that are affected
- Evidence or justifications used as a basis for risk and confidence ratings are documented to improve the ability to review and update the assessment in the future
- All flood risk sources are considered separately and are documented as such in risk statements to enable risk treatments to be targeted to individual flood sources if required

- Risk statements are not considered for treatment unless the confidence is adequate and is supported by evidence.

The recommended actions to mitigate the top risks can be found in [Eastern Adelaide – All Hazards – Control Improvements and Treatments Table](#) and the [Flood Control Improvements and Treatments Table](#).

Rural Fire

The risks from rural fire to the EA Zone include impacts to people, the environment, the economy, public administration, the social setting and infrastructure. Rural fire events considered were 1 in 2 year, 1 in 20 year and 1 in 300-year events.

The Australasian Fire and Emergency Services Authorities Council (AFAC) defines rural fire as:

“An unplanned vegetation fire. A generic term which includes grass fires, forest fires and scrub fires both with and without a suppression objective.”

The scenarios used in the risk assessment were

- 1 in 2-year event – Carrick Hill rural fire event - 14 February 2008 - resulting in in which 10 hectares of land was burnt, Local community Road closures, Evacuations and fencing losses occurred. Sixteen County Fire Service (CFS) appliances, two Metropolitan Fire Service (MFS) appliances and 100 firefighters responded to this event.
- 1 in 20-year event – Cygnet River Fire in Kangaroo Island - 18 February 2013 in which 80 hectares of farm and bush land was burnt and impacting State and Local community, Telstra Telephone Exchange was damaged, 2 sheds and 1 vehicle were destroyed, and 100 km fencing was lost. This event impacted on the Water supply, damaged Roads, closed Airport and flights postponed and tourism business was affected. The estimated loss was > \$1,000,000. Fifty CFS fire fighters, 6 fire appliances and 2 aircrafts were used to bring this event under control.
- 1 in 300-year event – Ash Wednesday 2, 16 February 1983 – 208,000ha burnt. During this event, 180 fires were reported with 8 major fires and 208,000 hectares was lost. A State Disaster was declared and there was a huge impact on the national, state and local level. Twenty-eight people were killed (3 CFS fire fighters) and 2,676 injured with 133 hospitalised. 250,000 sheep and cattle were lost, 10,000 km fencing was burnt, 21,000 hectares of pine plantation and 190 homes were lost. The estimated losses were \$2-400m (1983 \$ values).

Analysis of risks using the NERAG risk criteria found that the top risks for the Zone related to serious injury/death to people.

CFS recommends that when a review of the Risk Assessment is undertaken that the scenarios consider ember attacks within the EA Zone.

The recommended actions to mitigate the top risks can be found in [Eastern Adelaide – All Hazards – Control Improvements and Treatments Table](#) and the [Rural Fire Control Improvements and Treatments Table](#).

Earthquake

The risks from an earthquake to the Eyre and Western Zone include impacts to the people, economy, infrastructure, public administration, social setting and the environment. Earthquake events considered were 1 in 1,000 year and 1 in 10,000-year events.

The scenarios used in the risk assessment were:

- 1 in 100-year event – based on magnitude 3.8 Richter earthquake at Mt Barker, 16 April 2010 which resulted in almost no impacts to the community.
- 1 in 1,000-year event – based on Newcastle 5.5 Richter earthquake, 1989. The impacts for EA Zone as per the Risk Frontiers report suggested that there would be at least 18 injuries and 2 deaths in the zone with \$2,808 million losses in the zone.
- 1 in 10,000-year event – based on Christchurch, 6 Richter earthquake, 22 Feb 2011 with the epicentres located within the EA Zone. The impacts for the zone as per the Risk Frontiers report suggested that there would be at least 115 injuries and 45 deaths in the zone with \$10,109 million losses in the zone. The events are assumed to occur during working hours and the predicted number of casualties is limited to those inside commercial or industrial buildings.

Analysis of risks using the NERAG risk criteria found that the top ten risks for the zone all related to either financial loss to the economy or serious injury/death to people. Of the financial losses the impact to businesses was the greatest risk, particularly the wholesale and retail trade, followed by the financial and insurance sector and property sector and damage/destruction to local and state government causing unrecoverable financial losses. The risk of death and serious injury to people came from damage to heritage, commercial, industrial, educational and residential and high-rise buildings.

The recommended actions to mitigate the top risks can be found in [Eastern Adelaide – All Hazards – Control Improvements and Treatments Table](#) and the [Earthquake Control Improvements and Treatments Table](#).

Human Disease

The Human Disease Hazard Leader, SA Health advised that the Pandemic Influenza (PI) state risk assessment and treatment workshop conducted for South Australia would provide the assurance needed for the Human Disease hazard to the zone and SA Health delivered a presentation to the ZEMC based on the findings from the State risk assessment workshops to the committee.

PI holds a global and national impact to people, social settings, environment and in turn public administration, infrastructure and the economy. It is relevant as a whole of State assessment as a pandemic will influence the entire state and/or nation, and although some areas may have a higher infection rate it will not be contained in a local area and the response would not differ.

Pandemics considered were a 1 in 100-year event based on the 2009 Swine Flu and a 1 in 1,000-year event based on the 1918 'Spanish' Flu. These historic events allowed the scenarios to be based on knowledge and research for assumed accuracy.

The greatest risks identified specific to the State of South Australia were:

- The potential to overwhelm the health care systems leading to an increase in moral and ethical decision making due to limited equipment and medications;
- Social distancing and reduction of mass gatherings leading to the perception of reduced access to daily services such as food, shopping, petrol and banking; and
- A reduction in workforce creating economic downturn and economic stress within the community.

Analysis of risks using the NERAG process risk criteria found that the current controls in place for Pandemic Influenza would ensure that in a 1 in 100-year event the State of South Australia would be able to run and operate at a reduced capacity under current measures.

It was the processes and controls around the 1 in 1,000-year scenario that were identified and required review. However, it was acknowledged that although the occurrence of this scenario is

possible, the chance of it developing to the height of its severity in 1918 would be very rare due to modern day implementations.

Recommendations focused on the vast number and variety of already existing controls rather than new treatment options suggesting that a concentration in improving existing controls would serve a greater purpose.

Viewed as potentially the controls that could hold the highest positive effect during a PI event were:

- Mandated Business Continuity Plans with loss of workforce considerations
- Robust links with Private Hospitals.

The current COVID-19 global pandemic outbreak highlights the risks posed by human disease to the Zone, State, County and the entire world. The impacts of COVID-19 are still being felt and it will be still some time before the complete impacts and implications are revealed completely. The EA Zone will request Health SA to consider providing a presentation about the updated risk assessments on human disease once they have been reviewed.

Escape of Hazardous Materials

The “Escape of Hazardous Materials Hazard Plan” describes a hazardous material as any substance that can escape controlled confinement and produce a risk to persons, infrastructure, the environment or the economy of the state. Typical hazardous material incidents include a loss of containment of the material or when operational control measures fail.

There are stringent regulatory controls associated with the transport, storage and handling of hazardous materials. Nevertheless, the scope of dangerous goods as listed under the Australian Dangerous Goods Code and their varying hazardous properties adds complexity and uncertainty to the risk assessment process, particularly in relation to their transport.

Four NERAG workshops and respective follow up treatment workshops for the escape of hazardous materials were conducted for the State, Western Adelaide, Far North and Northern Adelaide Zones.

State Workshops - A State level workshop was conducted in December 2013, based on two separate scenarios involving the release of flammable gas/vapour at the Santos plant at Port Bonython. The first scenario (1 in 1,000-year event) involved an explosion and fire resulting from the accidental release of LPG from the processing plant. The second scenario (1 in 100-year event) involved an explosion and fire resulting from the release of LPG whilst a road tanker was refuelling. A follow up treatment workshop was conducted in February 2014.

Analysis of risks using the NERAG risk criteria found that the top four risks for the State all related to financial loss to the economy, loss of life and injury and negative impact on the environment.

A number of recommendations arose from the workshops and are summarised below as steps which could be considered for further work:

- Further workshops to be conducted to invite a broader range of stakeholders from other organisations outside Government. For stakeholders unable to attend workshops it is proposed that the outcomes of the risk assessment be provided to them for further comment.
- Further investigation and research to be completed on those risks which are complex and interrelated between hazards to identify the potential impacts these may pose to the State.

- The risk that identified no guarantee of supply of LPG or other materials produced be further investigated to better define it and assess its likelihood, consequence and tolerability. Possible treatments can then be identified and stakeholders informed for action as necessary.

Western Adelaide, Northern Adelaide and Far North Zone Workshops - Zone workshops were conducted in conjunction with the SA MFS including Urban Fire hazard. The workshops used NERAG to assess scenarios namely; a nitric acid road spill, a release of chlorine gas from a wastewater treatment plant, a release of flammable liquid from a berthed vessel leading to fire and explosion, an escape of LPG from a reticulated LPG storage facility, release of ammonium nitrate as a result of a truck accident leading to fire and explosion, a collision between a petrol tanker and a train resulting in fire resulting in a fuel release and fire and a release of flammable gas at a gas supply depot resulting in fire and explosion.

The analysis of the risks using NERAG risk criteria found top risks in the economy, people, public administration and social setting categories. The common theme of these risks is associated with infrastructure and critical transport networks, ability to continue to provide services for a surge of a particular injury or when a major health facility is impacted, social settings and impacts to inhabitants of affected areas, including the potential for injuries and fatalities, as well as death, injury and displacement of pets and impacts to businesses due to damage to business premises.

A number of recommendations arose from the workshops and the key ones are summarised below:

- The Hazard Leader considers prioritised control improvements and new risk treatments which may require more detailed work to assess the effectiveness of a proposed control improvement or new risk treatment. This includes cost/benefit analyses where appropriate; engaging with other agencies that 'own' an existing control and explore the opportunity for joint initiatives; seeking additional funding if the agency has insufficient resources.
- Further development of scenarios to better suit the NERAG methodology with the aim of improving confidence in the risk assessment.
- Further investigation between hazards to identify the potential impacts they may pose in the zone
- Councils to consider and progress implementation of relevant prioritised control improvements and new risk treatments.

Based on the presentation, the ZEMC was encouraged to consider the risks associated with hazardous escapes in their respective Council areas. Further to the presentation, it was determined other measures undertaken may be sufficient (e.g. conducting emergency management and response exercises based on realistic scenarios).

Urban Fire

An Urban Fire is defined as any instance of uncontrolled burning or potential for uncontrolled burning which may result in significant risks or damage to residential, commercial, industrial, institutional, transport or other assets in urban, inland waterway and gulf water areas.

As part of its assurance role the ZEMC sought advice from the MFS including an overview of the hazard, associated risks and existing controls, and potential impacts on the Zone. The risks from urban fire to the EA Zone includes impacts on people, the economy, public administration, the environment and infrastructure.

Similar risks were analysed at the State-level Urban Fire Risk Assessment in August 2013 using the NERAG methodology, and the outputs of that risk assessment inform this summary. The scenarios

developed for that risk study included a major grass and scrub fire severely impacting a suburban environment. The rural urban interface along the outer eastern council boundaries of the EA Zone has a similar risk profile.

The Adelaide City Council is a part of the EA Zone and has much of the State's major building infrastructure. It is the major employment centre for the State with approximately 200,000 persons working and travelling into the CBD daily. A major urban fire in the CBD would have significant impact on the economy, public administration and people.

Some significant risks in urban fires in the EA Zone include hospitals, high rise buildings, schools and places of mass gatherings.

Effective control measures for urban fire have been well established for over 150 years in South Australia and today include:

- Fire stations strategically positioned across the Zone to provide a response time of less than 7 minutes within the response area
- A range of operational procedures including:
 - trained personnel staff fire stations 24/7 throughout the metropolitan area
 - internal (change of quarters) and external (mutual aid) arrangements in place to maintain adequate levels of response capability
 - response to emergencies is predetermined based on risk to ensure that sufficient resources are deployed to deal with an emergency
- Legislation requiring the installation of smoke alarms in residential properties
- Legislation, both State and Commonwealth (Building Code of Australia) requiring that major building developments comply with fire safety standards
- Legislation for MFS to monitor certain classes of buildings to ensure a prompt response
- Provision of fire safety education to the general community
- Provision of targeted fire safety education for vulnerable people
- Triennial inspections of health care facilities to ensure fire safety standards are maintained
- Preplanning of significant life / industrial/ commercial risks
- Review and comment on emergency planning by major hazard facilities
- Establishment of Building Fire Safety Committees (BFSC) comprising Council and MFS/CFS officers who conduct programmed inspections of existing buildings and make recommendations or direct improvements in fire safety.

Emerging urban fire risks include:

- Higher density housing in the redevelopment of existing housing or industrial sites where roadways are narrower, houses are built closer together and properties share common walls increasing the risk of fire spread
- High-rise Transport Orientated Developments on arterial roads which include higher density living (and therefore more people are at risk if a fire occurs), an increased risk of vertical fire spread and potential access problems.
- Changes in building design and the materials used that change the rate of fire spread and increase risk to building occupants
- An ageing population with associated ability/mobility issues.

Animal and Plant Disease

In 2013, the Animal and Plant Disease Hazard Leader, Primary Industries and Regions South Australia (PIRSA), undertook a number of risk assessments for the Animal and Plant Disease Hazard in South Australia using the NERAG.

The risk assessments were prepared and conducted by PIRSA and South Australian Fire and Emergency Services Commission (SAFECOM) in 2013.

The objective of the process was to assess the risks to the State from animal or plant disease outbreaks in order to prioritise the State's emergency management efforts through prevention, preparedness, response and recovery activities for the hazard.

Two scenarios were considered for each disease, one medium and one large as experts consider the consequences will never be minor, due to economic impacts. Three specific diseases were chosen as representative of the Animal and Plant Disease Hazard (Foot and Mouth Disease, Karnal Bunt Disease and Pacific Oyster Mortality Syndrome (POMS)). Experts determined that these diseases would have the most severe impact on South Australia in their relevant sectors.

Stakeholders participating in the risk assessments included personnel from emergency management, industry and State and Commonwealth Government sectors.

At the Foot and Mouth Disease workshops, risk analysis results showed that prevention, preparedness and response measures were considered robust and that recovery could be strengthened with some refinements. However, for Karnal Bunt and POMS further measures were identified for improvement across prevention, preparedness, response and recovery phases.

The Animal and Plant Disease Hazard Leader has progressed work on the outcomes of the three risk assessments through the following actions:

- A combined forum across animal and plant industries on planning for recovery from a Biosecurity incident
- Presentations to ZEMCs that have identified Animal or Plant Hazards within their Zone
- A series of reports developed for distribution to relevant stakeholders
- Update the Animal and Plant Disease Hazard Plan
- Evaluation and implementation of the new treatments identified.

Terrorism

The below information was current at the time of the preparation of this plan. For the most current information, it is always best to check the [National Security website](https://www.nationalsecurity.gov.au/Pages/default.aspx)³⁵.

Terrorism remains a major issue not only in Australia but also internationally and holds a global and national impact to people, economy, social setting, public administration and environment.

A 'terrorist act' is defined under Australian law as an act or threat, intended to advance a political, ideological or religious cause by coercing or intimidating an Australian or foreign government or the public, by causing serious harm to people or property, creating a serious risk to the health and safety of the public, or seriously disrupting trade, critical infrastructure or electronic systems (for full definition see s100.1 Commonwealth Criminal Code Act 1995).

The terrorism hazard is a combination of circumstances or conditions which may lead to or result from a terrorist act and which require an all hazards approach in the context of prevention, preparedness, response and recovery. The modern methods of terrorism can be multimodal where firearms/persons or vehicle borne improvised explosive devices (including secondary and diversionary devices) are used or it can be home-grown/lone wolf syndrome where individuals who are radicalised to extreme thinking and violent actions cause the damage.

³⁵ <https://www.nationalsecurity.gov.au/Pages/default.aspx>

The direct costs of terrorism involve the immediate losses associated with a terrorist attack and encompass the value of damaged structures, deaths, injuries, lost wages, destroyed goods, clean-up, and reduced commerce. Indirect or secondary costs of terrorism include psychological suffering by those who were directly or indirectly exposed, loss of government reputation, attack-related subsequent expenses such as higher insurance premiums, enhanced security costs, counter-terrorism expenses, and lost future commerce. Acts of terrorism, such as chemical, biological, radiological and nuclear terrorism can have direct impact on the environment or specific natural resources such as water. Destruction in any act of terrorism may inevitably cause secondary pollution effects, many of them serious.

South Australian agencies use Australian Security Intelligence Organisation (ASIO) processes and state-based risk and threat assessments, and the National Terrorism Threat Advisory System to determine the appropriate responses for specific sectors, events or individuals within the State.

SAPOL has responsibility for maintaining a capability to support the Australian Intelligence Community (AIC) that gather, analyse and disseminate threat and/or threat level risk information relative to identified sectors, events, organisations and individuals. As a hazard leader, SAPOL has responsibility for developing and keeping under review the State's risk assessment of the terrorism hazard. A threat assessment for South Australia has been completed and is reviewed (annually) by SAPOL and key stakeholders. The threat assessment is security classified. SAPOL provides regular intelligence briefings and papers to relevant and affected parties as appropriate.

The risk assessment particularly emphasises critical infrastructure sites and crowded places as potential targets for terrorist attack.

Plans with a linkage or support to the South Australian Terrorism Hazard Plan include the [National Counter Terrorism Plan](#)³⁶, National Counter Terrorism Handbook which is issued on a restricted basis to appropriate agencies and is a security classified document, the [State Emergency Management Plan](#)³⁷ (SEMP) which is a four-part plan for dealing with emergencies in South Australia and the SAPOL Counter Terrorism Emergency Response Plan which is retained by the Control Agency SAPOL is a security classified document. The National Counter Terrorism Plan identifies agreed responsibilities of the Australian Government, in partnership with the States and Territories. This Plan acknowledges those responsibilities and identifies accountability as necessary for effective planning and response.

As Terrorism Hazard Leader, SAPOL has responsibility for consulting the relevant agencies and organisations and preparing, maintaining and reviewing a coordinated Terrorism Hazard Plan.

Owners/operators/organisers of Critical Infrastructure and crowded places are ultimately responsible for determining and discharging their own legal obligations and managing the risks to their operations that might have a material, financial, legal or reputational impact on the organisation, or harm staff, customers or other parties. Owners/operators/organisers are encouraged to:

- Maintain an awareness of their operating environment
- Provide adequate security for their assets, based on threat and risk
- Actively apply risk management techniques to their planning processes
- Conduct regular reviews of risk assessments and security, emergency and contingency plans
- Report any incidents or suspicious activity to State police

³⁶ <https://www.nationalsecurity.gov.au/Media-and-publications/Publications/Documents/ANZCTC-National-Counter-Terrorism-Plan.PDF>

³⁷ <https://www.dpc.sa.gov.au/responsibilities/security-and-emergency-management/state-emergency-management-plan>

- Develop and regularly review business continuity plans, including identifying interdependencies
- Conduct training and exercise their security, emergency and contingency plans
- Participate in government exercises to assist in harmonising prevention, response and recovery arrangements with relevant controlling agencies.
- [Crowded Places Self-Assessment Tool](#)³⁸ on the SAPOL website.

Within the Plan, prevention and preparedness identify a range of measures undertaken before a terrorist event. These include mitigation, deterrence and disruption of terrorist threats and strategic and tactical denial (denying terrorists the environment and conditions necessary for the preparation and execution of an attack). Activities focusing on prevention and preparedness bolster the capability to respond and recover.

The following elements of the terrorism hazard are addressed in the Plan within prevention and preparedness:

- Threat and risk assessment
- Legislation
 - Terrorism offences and powers
 - Hazardous materials
 - Chemicals of security concern
- Intelligence
- Countering violent extremism
- Sectors vulnerable to terrorism
 - Critical infrastructure
 - Crowded places and major events
- Border security
 - Transport
 - Surface
 - Aviation
 - Maritime
 - Dignitary and foreign missions
- SAPOL maintains counter terrorism capabilities to respond to terrorist incidents and SAPOL capabilities includes:
 - Management of training and exercises
 - Detection, assessment and render safe improvised explosive devices and conduct post-blast examinations.
 - Technical support
 - Chemical, biological, radiological and nuclear (including State Chemical Biological Radiological and Nuclear Capability Plan)
 - Mass casualty (including mass casualty capability support group plan)
 - Urban search and rescue (including urban search and rescue capability plan)
 - Disaster victim identification (including disaster victim identification capability plan)
 - Rapid damage assessment (including rapid damage assessment capability plan)
 - Specialist advice on critical infrastructure through SAPOL Critical Infrastructure Support Group
 - Arrangements for SA Government agencies and their contractual suppliers for cyber security.

³⁸ <https://www.police.sa.gov.au/your-safety/crowded-places>

Black System

Electricity is a key aspect in the functioning of systems and services within the community. The following three definitions are used to separate a Black System Event from the range of day to day smaller area failures that can affect electricity supply to the community.

Black System Event - The National Electricity Rules (NER) define a black system event as:

The absence of voltage on all or a significant part of the transmission system or within a region during a major supply disruption affecting a significant number of customers.

It can appear as follows:

- an outage affecting the whole of the South Australian Energy Market region
- all local generation trips and every on-grid electrical device shuts off (including traffic and street light buildings, industry and residences). Only sites with uninterruptible power supplies (UPS) or back-up generators will retain power to the extent those redundancies permit
- requires a system restart of local generation
- requires incremental load restoration

Major Power Outage - The NER defines a major power outage as:

The unplanned absence of voltage on a part of the transmission system affecting one or more power stations and which leads to a loss of supply to one or more loads.

It can appear as follows:

- significant threat to public safety as power supply is significantly disrupted
- widespread power supply disruption (but some regions still enabled) – likely extended duration
- pre-arranged disruption to power supply (load shedding) considered inadequate or inappropriate
- one or more National Energy Market (NEM) jurisdictions enabling their relevant energy emergency legislation
- electricity demand being managed through mandatory restriction of the use of electricity (note that appeals for voluntary demand reduction would not trigger level 5 of power system emergency management)
- potential for or actual serious business continuity and commercial impact.

Electricity Shortage - An electricity shortage is defined as *incidents whose effects (through intensity and/or duration) can reasonably be expected to seriously damage the health, safety or welfare of the community or the economic welfare of the State.*

On 28 September 2016, a severe and widespread weather event resulted in a state-wide blackout and damaged parts of the transmission network. Black System Events are relatively rare in South Australia however, the nature and scope of blackouts indicate that changes are increasing and that it is appropriate for specific planning to occur.

The Independent Review of the Extreme Weather Event South Australia 28 September – 5 October 2016 (the Burns Review) identified the need to develop a state-wide plan for the management of any future like events, which resulted in the Black System hazard being added to the state hazards list in the SEMP.

The two primary sources of Black System event risk have been identified as:

- weather related events that affect physical transmission infrastructure

- supply related events that affect overall supply of electricity (either by amount of supply or safety system activation).

SAPOL have prepared the Black System Event Hazard Plan including a risk assessment and a number of capability plans to address the needs of this event. The Hazard Plan requires review every two years in line with the requirements of the State Emergency Management Plan (SEMP). The role of the Black System Event Hazard Leader is described in Part 2 Arrangements, paragraph 3.1.3 *Roles of a Hazard Leader* of the State Emergency Management Plan (SEMP).

The following risks and priority levels were determined from a state level risk assessment workshop conducted in 2017. The results of that workshop are contained in the “South Australian Black System Event Risk and Consequence Assessment”. As per the requirements of the NERAG, the five impact categories of People, Economy, Public Administration and Environment were assessed at the risk assessment workshop. The risks that were rated Priority 1 or 2 require definitive action be taken to address the risk.

A 1 in 1,000-year Black System Event combined with a heatwave impacting the health of more vulnerable residents in the State (e.g. aged, ill infants) has been rated as the only Priority 1 risk (this same risk statement for the 1:10 year event is rated as a Priority 2). The People impact category also highlights the health of residents (from a 1 in 1,000-year Black System Event combined with a heatwave) in the state as a priority 2 risk as well.

The common theme for the remaining Priority 2 risks are associated with the Economy impact category and relate to impacts to the state revenue and financial hardships to businesses.

Lower rated risks are associated with the Social Setting impact category; loss of community functioning and morale and the Public Administration impact category; State Government ability to provide core services.

For the Emergency Management Zones, this hazard did not necessarily require a NERAG workshop. SAPOL as the Hazard Leader for the Black System Event hazard provided a presentation to the ZEMC’s summarising the outcomes of the state level NERAG risk assessment workshop.

Based on the presentation, the ZEMC’s are encouraged to consider the risks associated with the Black System Event hazard in their respective Council areas.

Control Improvements and Treatments

Table 6: Eastern Adelaide – All Hazards – Control Improvements (CI) & Treatments (T)

Name	Summary	Responsible	Timeframe	Status	Hazards (where CI/T exists)	Comments
Community Education Programs Community Education – General Resilience Community and Business Education – Insurance Community Engagement and Education Programs	All Hazards - Community Education Programs (CI): develop/deliver a multi-faceted communication strategy to deliver messages to the community on what to do to avoid harm to themselves, their families, friends and neighbours during extreme heat events, floods (flood safe), storms (storm safe) and bushfires (prepare act survive, bushfire safe).	State and Local Govt	Mid-term	Commenced	Extreme Heat (CI) Extreme Storm (CI) Rural Fire (CI) Flood (CI)	http://www.sa.gov.au/topics/emergencies-and-safety This page assists in educating the public on risks and ways to better prepare for emergencies - all hazards. SES ran the 132500 campaign successfully in 2018 and the campaign is underway this year Workshops conducted in some rural areas for small businesses with varying results. The template can be accessed by contacting Rural Business Support (http://www.ruralbusinesssupport.org.au/)
Communication information through Councils Public Information Notifications (media) Community education - seasonal targeted advice (T)	All Hazards – Community and Business Education - Insurance (T): Promote the strategy of adequate and appropriate insurance as part of general resilience building to the community (including businesses). Engage Insurance Councils of Australia to promote, through relevant agencies, the importance of people having appropriate and adequate insurance.	State Govt, Insurance companies and private business	Mid-term	Progress under review	Extreme Heat (T) Extreme Storm (T) Rural Fire (T) Earthquake (T)	Workshops conducted in some rural areas for small businesses with varying results. Workshops in the Riverland were cancelled, but the template can be accessed by contacting Rural Business Support (http://www.ruralbusinesssupport.org.au/)
Rural Fire – Community Engagement and Education Programs (CI)	All Hazards - Community Education – General Resilience (T): Communicate with and educate the community about risks to build understanding of risk profile. Create and distribute information to build community resilience on an all hazards basis including how to create emergency plans and emergency kits and promote being self-sufficient for at least 72 hrs without power, water, electricity or extra food in the event of a disaster. Include promotion of insurance, regularly checking policies to avoid underinsurance and learning first aid.	State Govt	Long-term	Progress under review	Extreme Heat (T) Extreme Storm (T) Rural Fire (T) Flood (T) Earthquake (T)	http://www.sa.gov.au/topics/emergencies-and-safety This page assists in educating the public on risks and ways to better prepare for emergencies - all hazards. SES ran the 132500 campaign successfully in 2018 and the campaign is underway this year

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Table 6: Eastern Adelaide – All Hazards – Control Improvements (CI) & Treatments (T)

Name	Summary	Responsible	Timeframe	Status	Hazards (where CI/T exists)	Comments
	Community education - seasonal targeted advice (T) - Determine how best to identify and record the location of vulnerable persons in the community to provide additional checks and where necessary assistance to them following a disaster. Community education program delivered through a multifaceted campaign both generic and specifically targeted to vulnerable communities. E.g.: Vulnerable groups include CALD/Aged etc	State Govt	Mid-term	Progress under review	Extreme Storm (T) Flood (T)	
	Rural Fire – Community Engagement and Education Programs (CI): Develop and deliver a specific community education program relating to rural fire to all relevant Zone Councils. CFS to then work with communities to encourage engagement to build community resilience. (e.g. Prepare Act Survive, Bushfire Safe)	State and Local Govt	Mid-term	Progress under review	Rural Fire (CI & T)	
	Earthquake – Community Engagement and Education Programs (CI): distribute existing earthquake preparedness and risk mitigation information to higher risk zones across the State. At times of increased interest issue media releases promoting earthquake awareness and preparedness and direct the public on where to find relevant information. Inform the public about cost effective mitigation measures to reduce or prevent damage to their houses, its contents and themselves.	State Govt	Long term	Progress under review	Earthquake	

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

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Table 6: Eastern Adelaide – All Hazards – Control Improvements (CI) & Treatments (T)

Name	Summary	Responsible	Timeframe	Status	Hazards (where CI/T exists)	Comments
	Communication information through Councils (CI): Have hazard information (website links, leaflets, information sessions etc.) available through councils	State and Local Govt	Mid-term	Commenced	Extreme Heat (CI) Extreme Storm (CI) Rural Fire (CI) Flood (CI)	http://www.sa.gov.au/topics/emergencies-and-safety This page assists in educating the public on risks and ways to better prepare for emergencies - all hazards. Public ZEMPs are promoted through https://www.ses.sa.gov.au/site/about_us/publications_and_reports/key_hazards_risks_summary_for_zones.jsp
	Public Information Notifications (media) (CI): get assurance from relevant media organisations on how their notifications are implemented, - improve and harness media network to provide validated information to reduce likelihood of mis-information, test the current notification system; ensure the information to the public is accurate and misinformation is corrected via Public Information FS.	State Govt	Mid-term	Progress under review	Extreme Heat (CI) Extreme Storm (CI) Rural Fire (CI) Flood (CI)	
Business Continuity Plans – Local Government	All Hazards- Business Continuity Plans – Local Government (CI): Gain assurance from Local Government that BCPs and council emergency management documentation are in place, are current and regularly tested, and relate to all hazard events.	Local Govt	Mid-term	Commenced	Extreme Heat (CI) Extreme Storm (CI) Earthquake (CI) Rural Fire (CI) Flood (CI)	Included in LGA's Council Ready Program
BCPs - Business						
BCPs – Hospitals						
Business Resilience Campaign	All Hazards - Business BCPs (CI): Increase awareness of the effects of having an effective, adequate and current BCP in place. Promote BCPs for businesses on Local and State Government websites.	State and Local Govt and Private Business	Mid-term	Progress under review	Extreme Heat (CI) Extreme Storm (CI) Earthquake (CI) Rural Fire (CI) Flood (CI)	
Business Recovery Planning						

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Table 6: Eastern Adelaide – All Hazards – Control Improvements (CI) & Treatments (T)

Name	Summary	Responsible	Timeframe	Status	Hazards (where CI/T exists)	Comments
BCPs – Infrastructure, essential services and public facilities BCPs – NGOs and Volunteer organisations BCPs – places of cultural significance	All Hazards - Hospitals (CI): Seek assurance from Public and Private Hospitals that BCP's are in place and are current and regularly tested	State Govt and Private Hospitals	Mid-term	Progress under review	Extreme Heat (CI) Extreme Storm (CI) Earthquake (CI) Rural Fire (CI)	
	Business Resilience Campaign (T): Include business in community education programs and determine ways to engage businesses in emergency management planning and exercises.	State and Local Govt and Private Business	Mid-term	Progress under review	Extreme Heat (CI) Extreme Storm (CI) Earthquake (CI) Rural Fire (CI)	
	BCPs - Infrastructure Owners and essential services (CI) - research the effectiveness and currency of infrastructure owner business BCPs (including privately owned infrastructure), other essential services and other public facilities	State Govt and Private Business	Long-term	Progress under review	Extreme Storm (CI) Extreme Heat (CI)	
	BCPs – NGOs (CI) - research the effectiveness and currency of NGOs' and Volunteer organisations BCPs	State Govt	Mid-term	Progress under review	Extreme Storm (CI) Extreme Heat (CI)	
	BCPs – places of cultural significance (CI) – Seek assurance that places of cultural significance such as museums and galleries to develop business continuity plans to agreed evaluation criteria to ensure it meets a high standard and is exercised annually	State Govt	Long-term		Extreme Storm (CI)	
	Business Recovery Planning (T): Assist business recovery planning including consideration of wage subsidies, rates deferment, tax incentives, temporary accommodation, legal and financial advice and business recovery centres.	State and Local Govt and Private Business	Mid-term	Commenced	Extreme Storm (T) Flood (T) Earthquake (T)	Workshops conducted in some rural areas for small businesses with varying results. Workshops in the Riverland were cancelled, but the template can be accessed by contacting Rural Business Support (http://www.ruralbusinesssupport.org.au/)

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Table 6: Eastern Adelaide – All Hazards – Control Improvements (CI) & Treatments (T)

Name	Summary	Responsible	Timeframe	Status	Hazards (where CI/T exists)	Comments
Lifeline Study of Critical Services	All Hazards (T): Whole of Government (SEMC) undertake lifelines study that evaluates essential service vulnerabilities, redundancies and interdependencies providing an awareness of the risks and communicate these to all levels of Government/Business. Retrofit critical systems where necessary to maintain minimum standards/maximum acceptable interruption times.	State	Long-term	Commenced	Rural Fire (T) Extreme Heat (T) Extreme Storm (T) Earthquake (T) Flood (T)	SA lifeline capability plan is in draft awaiting approval from DPC
Vulnerable persons considerations	All Hazards - Vulnerable persons considerations (T): 1. Develop a state framework to strengthen the resilience of vulnerable people. 2. Identify and facilitate initiatives that enhance consideration of vulnerability in emergency management planning and operational processes across all hazards having regards to risk priorities identified in South Australian Risk Assessments	State Govt and other NGOs	Mid-term	Progress under review	Extreme Heat (T) Extreme Storm (T) Rural Fire (T) Flood (T)	The Vulnerable Persons consideration report is complete, the next phase is implementation of this plan. The framework was endorsed by the SEMC. Phase 1 of the project complete. Phase 2 will commence sometime in the future
EA ZEMP	All Hazards (CI): Complete the EA ZEMP incorporating all prioritised hazards and disseminated to relevant agencies and departments.	EA ZEMC	Short-term	Complete	Extreme Heat (CI) Extreme Storm (CI) Rural Fire (CI) Flood (CI)	ZEMPs are updated biennially with any changes and reviewed after major emergency events
Promote and/ Implement Mitigation research	Promote Mitigation research (T): Encourage collaborative research that provides evidence for reducing exposure to the risk.	State Govt	Long-term	Progress under review	Extreme Heat (T) Extreme Storm (T) Flood (T) Earthquake (T)	
Mutual Aid Agreements between State and Local Govt (T)	All Hazards – Mutual Aid Agreements between State and Local Govt (T): Review the adequacy of existing mutual aid arrangements and further develop agreed operational protocols between Local Government and Emergency Services sector	State and Local Govt	Mid-term	Progress under review	Flood (T) Extreme Heat (T) Extreme Storm (T)	

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Table 6: Eastern Adelaide – All Hazards – Control Improvements (CI) & Treatments (T)

Name	Summary	Responsible	Timeframe	Status	Hazards (where CI/T exists)	Comments
Mutual aid agreements – interstate (CI)	Mutual Aid Agreements (interstate) (CI): review what agreements are in place across the emergency and functional services and enhance or create agreements as necessary. Hold exercises with partner organisations.	State	Mid-term	Progress under review	Earthquake (CI)	
Mutual Aid Agreements between Councils (T)						
Mutual Aid Agreements - Local govt and Private Contractors (CI)	Mutual Aid Agreements - Local govt and Private Contractors (CI): research into the extent of mutual aid agreement between councils and private contractors and investigate delegation arrangements in or after major events	Local Govt	Mid-term	Progress under review	Extreme Storm (CI) Flood (CI)	This can be a part of LGFSG and/or Council Ready project
Mutual Aid Agreements between Hospitals and Aged Care Centres (T)	All Hazards – Mutual Aid Agreements between Councils (T): ZEMC Councils to ensure that they have mutual agreements and support mechanism in place to assist one another in the event of a disaster (all hazards)	State and Local Govt	Mid-term	Complete	Rural Fire (T) Extreme Storm (T) Earthquake (T)	This is a part of LGFSG function now
	Mutual Aid Agreements between Hospitals and Aged Care Centres (T): review the adequacy of existing mutual aid agreements and MOUs and what other agreements would be beneficial. Promote the establishment and implementation of such agreements.	State Govt	Mid-term	Progress under review	Extreme Storm (T) Flood (T)	
Local Government environmental health officers	Extreme Storm and Extreme Heat (CI) - research into potential capacity issues following an extreme weather event Flood (CI) - Check the authorisation requirements of Environmental Health Officers to work across different councils in order to overcome capacity issues in a post-disaster environment.	Local Govt	Mid-term	Commenced	Extreme Heat (CI) Extreme Storm (CI) Flood (CI)	Included in LGA's LGFSG arrangements
Disaster Waste Management Plan (T)	Disaster Waste Management Plan (T): Plan for the disposal of large volumes of disaster generated waste including recycling as much as possible. Interim storage sites to be identified.	State Govt	Mid-term	Complete	Extreme Storm (T) Earthquake (T) Flood (T)	

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Table 6: Eastern Adelaide – All Hazards – Control Improvements (CI) & Treatments (T)

Name	Summary	Responsible	Timeframe	Status	Hazards (where CI/T exists)	Comments
Public Warning Systems (T) & Alert SA Website and Information (CI)	Alert SA Website and Information (CI): Test & report on the effectiveness of Alert SA Website for extreme storm events (by measuring number of hits on the website during an event or community awareness of the website's existence) and provide improved community awareness. Public Warning Systems (T): Ensure that appropriate public warning systems are in place to provide timely information, advice and warnings to the community	State Govt	Mid-term	Commenced	Extreme Heat (CI) Extreme Storm (T) Rural Fire (CI) Flood (T)	Alert SA is active for only Bushfire currently, will be expanded soon to include other hazard notifications
Home Care Services – Govt. and Non Govt (CI) National Disability Insurance Scheme (NDIS) (CI)	Research existing BCP standards and review any gaps relating to continuity of services relating to all hazards events and establish a set of criteria to include in Government and non-Government Home Care Services BCP standards Arrangements have changed in the Home care services since the introduction of NDIS. Seek advice and assurance on NDIS capability and capacity.	State and Local Govt and private sector		Changed to NDIS	Extreme Heat (CI) Extreme Storm (T) Rural Fire (CI) Flood (T)	Arrangements have changed in the Home care services since the introduction of NDIS. Seek advice and assurance on NDIS capability and capacity.
Building Design (Building Code of Australia) (CI)	Building Design (Building Code of Australia) (CI): All new homes and care facilities to incorporate design features, structures and cooling to assist with mitigating the impacts of extreme heat events	State and Local Govt	Long-term	Progress under Review	Extreme Heat (CI)	
	Identify the gap between buildings which comply with building codes in relation to resistance to strong winds and which buildings do not	State and Local Govt	Long-term	Progress underway	Extreme Storm (CI)	
	Research the extent of building codes in relation to flood	State and Local Govt	Long-term	Progress underway	Flood (CI)	
	Research the extent of building codes in relation to resistance to bushfire	State and Local Govt	Long-term	Progress underway	Rural Fire (CI)	

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Table 6: Eastern Adelaide – All Hazards – Control Improvements (CI) & Treatments (T)

Name	Summary	Responsible	Timeframe	Status	Hazards (where CI/T exists)	Comments
Post Disaster Building Review (T)	Post Disaster Building Review (T): Undertake a review of predetermined relief centre sites for the structural and functional adequacy of these buildings in the zone having a post disaster function considering all hazards scenarios. Where inadequacies are revealed institute appropriate measures. Also consider essential services or backups to them for such buildings.	State Govt	Mid-term	Progress under review	Extreme Storm (T) Rural Fire(T) Earthquake(T)	Emergency Relief Functional Support Group has provided councils with a list of sites identified as possible relief centres.
Specific indigenous & remote communities' programs/education	Specific indigenous & remote communities' programs/education (T): Assistance to Indigenous communities and remote communities in preparing their houses/family/visitors for extreme heat events	State Govt	Mid-term	Progress under review	Extreme Storm (T) Extreme Heat(T)	

[Return to Chapter 5 - Zone Priority Hazards here](#)

Table 7: Heatwave Control Improvements (CI) and Treatments (T)

Name	Summary	Responsible	Timeframe	Status	Comments
DECD Emergency Management All Hazards Information pack (CI)	Complete the review of the All Hazards Information Pack which includes school closures in some instances and inform the relevant stakeholders	State Govt	Short-term	Progress under review	
LGA Extreme Heat Guide (CI)	LGA/Councils to review the extreme heat guide and promote and encourage local councils to develop heatwave plans relevant to their council areas.	Local Govt	Mid-term	Commenced	Included in LGA's Council Ready Program
SES Warnings (CI)	test the effectiveness of the transmission of information for extreme heat to the community.	State Govt	Short-term	Progress under review	SES implemented SES warnings for extreme heat in 2019 which is targeted to geographical regions
Climate Change Vulnerability Assessments (T)	Identify key environmental, economic and social characteristics, local changes expected from climate change. Assign level of risk and adaptive capacity to determine overall vulnerability	Local Govt	Mid – term	Complete	Climate change vulnerability assessments are completed. Implementation of actions identified through this process underway
Cooling Stations (T)	Installing water fountains/misting stations/cooling packs given out throughout the zone	Local Govt	Long-term	Progress under review	

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Management of events (T)	Engage with local governments to have standard clauses for risk assessments inserted into lease agreements or approvals for event held on council land	State and Local Govt	Mid-term	Progress under review	
Information provided to travellers in Extreme Heat (T)	Provide appropriate information to traveller in and out of the Zone	State Govt	Short-term	Complete	SES ran the 132500 campaign successfully in 2018 and 2019 which included messaging around travelling
Injury and death to chance accidents (T)	Specific messaging to be distributed with extreme heat warnings, highlighting the need for caution regarding: - Branch drop; and - Water safety - drownings.	State Govt	Short-term	Complete	SES ran the 132500 campaign successfully in 2018 and 2019 which included messaging around branch drop and water safety

[Return to Chapter 5 – Heatwave here](#)

Table 8: Extreme Storm Control Improvements (CI) and Treatments (T)						
Name	Summary	Responsible	Timeframe	Status	Comments	
Displaced Persons Accommodation Support Plan Displaced Persons Short Term Accommodation Capability Plan (CI)	Test the effectiveness of the Displaced Persons Accommodation Support Plan for any events (previously known as Displaced Persons Accommodation Support Plan)	State Govt	Mid - term	Complete		
Community Recovery Package (CI)	Liaise with SRO to either exercise for this or understand how this would be implemented after a disaster	State Govt	Short – term	Complete		
Australian Red Cross REDiPlan Community Education (CI)	Significantly increase the size of the REDiPlan program or similar to educate more persons in planning for a disaster using REDiPlan.	Red Cross and State	Mid-term	Progress under review		
Counselling Services (CI)	Review Counselling Services' response and recover capability	State	Mid-term	Progress under review		
Local Government – Tree Management Policy (CI)	conduct an audit of significant and potentially dangerous trees and implement appropriate management strategies	Local Govt	Long-term	Progress under review		
Post disaster provisions in the Building Act / Legislation (T)	Clarify powers, responsibilities and approvals required to manage buildings and their reoccupation following major storm damage. Empower local government to enforce compliance with structural safety requirements, in particular where public safety is considered by council to be at risk.	State Govt	Short-term	Progress under review		
Assessment of potentially damaging trees (Private property rate payers) (T)	Local Government encouraging ratepayers and residents to have an assessment for potentially damaging tree/s on the ratepayer's property	State and Local Govt	Long-term	Progress under review		
Storm Hazard Knowledge Management System (T)	Investigate the feasibility of developing a repository of all information and research relevant to the extreme storm hazard and planning for it.	State Govt	Mid-term	Progress under review		

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Surge capacity accommodation in storm events for homeless (T)	Ensure contingencies are in place for homeless shelters etc. to cope with additional homeless people seeking shelters (may want to identify the use of halls etc. before the event)	State Govt	Mid-term	Progress under review	
Local Government Risk assessments for land slide (T)	Local Govt (owned) to identify and treat areas of landslide/landslip areas	Local Govt	Mid-term		
SA Water Risk Assessments for Land Slide (T)	SA Water to identify and treat areas of landslide/landslip areas	SA Water	Mid-term		
Control Agency for landslide (T)	Seek direction from SEMC as to the Hazard leader/control agencies for landslide/landslip	State Govt	Mid-term	Progress under review	
Quarries and Mines controls (T)	research PP controls for quarries particularly related to water runoff	State Govt	Short-term	Progress under review	
Stormwater management plans (T)	Brown Hill and Keswick Creek Storm Water Management Plan & Urban Storm Water Management Plan	State and Local Govt	Long-term	Progress under review	
Targeted weather information for homeless (T)	Targeted weather information for homeless at specific places such as homeless shelters etc.	State Govt	Mid-term		

[Return to Chapter 5 – Extreme Storm here](#)

Table 9: Flood Control Improvements (CI) and Treatments (T)					
Name	Summary	Responsible	Timeframe	Status	Comments
Community Recovery Package (CI)	Liaise with SRO to either exercise for this or understand how this would be implemented after a disaster	State Govt	Short – term	Complete	
Public Health Directives (boil water notice, food safety, wellbeing initiatives) (CI)	Ensure that all community information (through councils, SES, etc) includes information regarding where to source information	State Govt	Short – term	Progress under review	
SA Veterinary Emergency Management Plan (SAVEM) (CI)	seek assurance that response and recovery capabilities and any capacity issues are reviewed, and the plan tested	State Govt	Short-term	Complete	
Displaced Persons Accommodation Support Plan Displaced Persons Short Term Accommodation Capability Plan (CI)	Ensure agencies responsible for providing shelter for displaced persons have developed strategies for implementation (as recommended by Bushfire Taskforce)	State Govt	Short-term	Complete	
Australian Red Cross REDiPlan Community Education (CI)	Significantly increase the size of the REDiPlan program or similar to educate more persons in planning for a disaster using REDiPlan.	Red Cross and State	Mid-term	Progress under review	
Counselling Services (CI)	Review Counselling Services' response and recover capability	State Govt	Mid-term	Progress under review	

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Name	Summary	Responsible	Timeframe	Status	Comments
Land Use Planning (CI)	Implement the Land Use Planning and Building Codes SA Capability and Investment Plan including adding of hazard information to the Planning Policy Library.	State Govt	Long-term	Progress under review	
BoM Flood Warning Service (CI)	work with councils to increase the local flood warning service in this zone. Need to link rain rates to flooding outcomes in five creeks.	State Govt Local Govt	Mid-term	Progress under review	
Building Safety Assessment (CI)	Setup and train local government representatives to undertake rapid damage assessment including building safety assessment using the LGA Emergency Assessment and Reporting System (EARS) currently under development.	State Govt Local Govt	Mid-term	Progress under review	
Inspection & Maintenance Program – Local Government (CI)	research into the extent of the inspection and maintenance program for local roads	Local Govt	Mid-term	Progress under review	
Road and rail inspection and maintenance program - State Government (CI)	research into the extent of the inspection and maintenance program for state road and rail network	State Govt	Mid-term	Progress under review	
Local Government Disaster Fund (CI)	Confirm results of the local Government Disaster Fund review and determine future actions.	Local Government	Short-term	Progress under review	
Stormwater management plans (T)	Brown Hill and Keswick Creek Storm Water Management Plan & Urban Storm Water Management Plan	State Local Govt	Long-term	Progress under review	
Mass Casualty Plan (T)	Ensure there is an appropriate plan to cover the management of a mass casualty incident on an all hazards basis.	State Govt	Short-term	complete	
Flood Hazard Intelligence System (T)	Establish a repository of all information and research relevant to the flood hazard and planning for it.	State Govt	Mid- term	complete	Flood Mon & flood awareness websites are in use
Engaging Industry Specific Organisations (T)	CFS and other Hazard Leaders to engage with industry peak bodies to conduct an all-hazard education program that includes understanding their risk and implementing strategies to minimise that risk.	State	Mid-term	Progress under review	
Post disaster demolition policy (T)	Promote Demolition Code of Practice as provided by SAFEWORK SA as it applies to all buildings including heritage listed buildings.	State Govt	Mid-term	Progress under review	
DECD school flood plans to include kindergarten & childcare centres (T)	Identifying schools at risk and developing an action plan for flood (need to verify if there is already a plan)	State Govt	Mid-term		
Swift Water Rescue Infrastructure (T)	Special, cost effective infrastructure to assist people who are caught out in swift waters, especially for the water systems which travel under the roadways	State Govt	Mid-term	Progress under review	

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Table 9: Flood Control Improvements (CI) and Treatments (T)					
Name	Summary	Responsible	Timeframe	Status	Comments
Long term Infrastructure (T)	Minimising the flood impacts by installing long term infrastructure such as raising roads above certain flood levels.	State Govt Local Govt	Long-term		
Heritage Building and Maintenance Upgrade (T)	Include requirements around assessment and seismic upgrading of heritage listed buildings and/or their facades as part of government grant funding to private owners of heritage listed buildings.	State Govt	Long-term		
Improve Road Construction Standards (T)	Investigate strategies to improve the resilience of crossings to prevent/reduce flood water entering the sub base and undermining the roads and paths. Ensure all road constructions follow strict criteria to reduce flood damage.	State Govt Local Govt	Long-term		
Building Assessment for reoccupation approval (T)	1. Map existing systems and processes to clarify powers, responsibilities and approvals required to manage buildings, rapid damage assessment and their reoccupation following major storm damage. 2. Where appropriate, examine opportunities to empower local government to enforce compliance with structural safety requirements, in particular where public safety is considered by council to be at risk.	State and Local Govt	Mid-term	Progress under review	
Infrastructure Repairs (CI) - Public Transport - Local Government (including machinery, signage & personnel) - Private Sector - Water Storage, Treatment, Transmission and Distribution	Public Transport: Research into the extent of the repairs and maintenance program that public transport services have in the Zone.	State Govt	Short-term	Progress under review	
	Local Govt: Ensure formal mutual aid agreements in place between the Eastern Adelaide councils to assist with infrastructure repairs (including machinery, equipment, etc.)	Local Govt	Short-term	Progress under review	
	Private Sector: Research into the extent of the repairs and maintenance program that private services have in the Zone. Seek assurance from private essential services owners that repairs, and maintenance program are undertaken.	State Govt	Mid-term	Progress under review	

[Return to Chapter 5 – Flood here](#)

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Table 10: Earthquake Control Improvements (CI) and Treatments (T)

Name	Summary	Responsible	Timeframe	Status	Comments
Education of Architects and Structural Engineers (CI)	Undergraduate programs to include earthquake engineering, masonry construction and quality assurance and highlight consideration of earthquake loads in design.	Education Sector and Commonwealth and State Government	Long-term	Progress under review	
Education of tradespersons (CI)	Trade courses in masonry construction and engineering service installation to consider basic structural engineering aspects and the earthquake code.	Commonwealth and State Govt and Education Sector	Long-term	Progress under review	
Land Use Planning (CI)	Ensure land use planning considers liquefaction risk based upon liquefaction risk mapping for higher risk zones.	State Govt	Long-term	Progress under review	
Earthquake Exercises (CI)	Hold desktop earthquake exercises with the Control Agency, Functional Services and Zones and hold an earthquake exercise with Zone Emergency Management Committees in higher risk zones.	State Govt Local Govt	Short-term	Progress under review	State-wide exercise completed in 2018
Earthquake Evacuation Drills (CI)	Include earthquake evacuation drills as part of normal fire warden training and hold training drills.	State Govt	Mid-term	Progress under review	
Building Safety Assessment (CI)	Setup and train local government representatives to undertake rapid damage assessment including building safety assessment using the LGA Emergency Assessment and Reporting System (EARS) currently under development.	State Govt Local Govt	Mid-term	Progress under review	
Rapid Damage Assessment (CI) Rapid Damage Assessment Tool and Capability Plan	Complete development and implementation of the electronic database system piloted during the Rapid Impact Assessment Solutions Project	State Govt	Mid-term	Complete	Plan and Impact Recording Tool in place and used successfully for various events
Evacuation Guidelines (CI)	Seek assurance from control agency that evacuation guidelines are tested and exercised	State Govt	Short-term	Adelaide CBD Evacuation Capability Plan - complete	This plan can be modified to suit any Council/Zone
Community Education - Earthquake Specific (T)	Significantly expand promotion of the "Drop, Cover, Hold" safety action to the community.	State Govt	Mid-term	Progress under review	
Mass Casualty Plan (T)	Ensure there is an appropriate plan to cover the management of a mass casualty incident on an all hazards basis.	State Govt	Short-term	complete	
Heritage Building and Maintenance Upgrade (T)	Include requirements around assessment and seismic upgrading of heritage listed buildings and/or their facades as part of government grant funding to private owners of heritage listed buildings.	State Govt	Long-term		
Detailed scenario analysis / building assessment (T)	Improve confidence in the risk assessment and planning for an earthquake response through undertaking more detailed scenario	State Govt	Mid-term	Progress under review	

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Table 10: Earthquake Control Improvements (CI) and Treatments (T)

	analysis of buildings and their vulnerability to earthquake loads in the Adelaide CBD and major shopping and entertainment strips				
Post disaster provisions in the Building Act / Legislation (T)	Clarify powers, responsibilities and approvals required to manage buildings and their reoccupation following a major earthquake. Empower local government to enforce compliance with structural safety requirements, in particular where public safety is considered by council to be at risk. Establish uniform policies on demolition and rebuilding, include special requirements for heritage listed buildings	State Govt	Short-term	Progress under review	
Earthquake hazard knowledge management system (T)	Establish a repository of all information and research relevant to the earthquake hazard and planning for it.	State Govt	Mid-term	Progress under review	
Knowledge of liquefaction risk (T)	Improve our knowledge of liquefaction risk in the zone through investigation and mapping and publish results.	State Govt	Mid-term	Progress under review	
Structural drawing availability (T)	Establish a system across local government whereby the structural drawings of significant buildings are available remotely to engineers involved in building safety assessments following an earthquake.	State and Local Govt	Long-term	Progress under review	
Dangerous buildings policy – footpaths and public assembly/high occupancy (T)	Assess and where necessary upgrade <ul style="list-style-type: none"> Assess and where necessary upgrade places of public assembly where significant loss of life may occur due to structural failure in an earthquake. Buildings with suspended awnings or parapets or other projections likely to be dangerous to the public in an earthquake where part of the footpath has been licensed for commercial use. 	State and Local Govt	Long-term	Progress under review	
Demolition Planning (T)	Develop post disaster demolition protocols including consideration of service disconnections	State Govt	Mid-term	Progress under review	
Post Disaster Rebuild (T)	Consider how a major post disaster demolition and infrastructure rebuild program might be implemented.	State Govt	Mid-term	Progress under review	
Building Officers (T)	Check the authorisation requirements for Building Officers to work across different councils in order to overcome capacity issues in a post-disaster environment	State Govt	Short-term	Progress under review	
Building Assessment for reoccupation approval (T)	1. Map existing systems and processes to clarify powers, responsibilities and approvals required to manage buildings, rapid damage assessment and their reoccupation following major storm damage.	State and Local Govt	Mid-term	Progress under review	

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

Table 10: Earthquake Control Improvements (CI) and Treatments (T)

	2. Where appropriate, examine opportunities to empower local government to enforce compliance with structural safety requirements, in particular where public safety is considered by council to be at risk.				
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[Return to Chapter 5 – Earthquake here](#)

Table 11: Rural Fire Control Improvements (CI) and Treatments (T)

Name	Summary	Responsible	Timeframe	Status	Comments
Bushfire Management Area Plan (CI)	The CFS to have the BMAP completed and adopted.	State	Short-term	Complete	
Aged Care Facilities - Risk Assessment & Treatment Program (State Level) (CI)	get assurance that the State Level Program is completed for EA Zone facilities	State	Mid-term	Progress under review	
DECD Emergency Management All Hazards Information pack (CI)	Complete the review of the All Hazards Information Pack which includes school closures in some instances and inform the relevant stakeholders	State Govt	Short-term	Progress under review	
Community Education and Preparedness (CI)	Have checklists provided to residents of the community to enable them to see what rural fire mitigation they should have in place and what tools they should have in their households to assist them in an emergency.	State	Mid-term	Complete	5-minute bushfire ready plan and bushfire ready plan
Bushfire Safer Places (CI)	Finalise Bushfire Safer Places and communicate them to general public	State	Short-term	Complete	
Engaging Industry Specific Organisations (T)	CFS and other Hazard Leaders to engage with industry peak bodies to conduct an all-hazard education program that includes understanding their risk and implementing strategies to minimise that risk.	State	Mid-term	Progress under review	
Fire Protection Equipment for all new dwelling in bushfire prone areas (T)	Promote the adoption of the NZ model within the building industry for installation of domestic fire protection equipment for new dwellings in bushfire prone areas. Suggest retrofit to existing building	State Govt	Mid-term	Progress under review	

[Return to Chapter 5 – Rural Fire here](#)

Short term – less than 2 years after ZEMP signing date

Mid-term – 2-5 years after ZEMP signing date

Long term – 5 years + after ZEMP signing date

Progress has occurred since identified as a control improvement or treatment

Control Improvement or Treatment name previously used

7. Recovery Plan

About the Eastern Adelaide Zone Recovery

The Eastern Adelaide (EA) Zone Recovery Operations Plan outlines the responsibilities, authorities, mechanisms and resources to recover from emergencies within the Zone. The Recovery Plan aligns with recovery arrangements in the State Emergency Management Plan (SEMP).

The EA Zone Recovery Planner is responsible for preparing and updating the Recovery Operations Plan with support from the State Recovery Office and in consultation with Zone Emergency Management Committee.

The Zone Recovery Operation Plan will be available from Microsoft Teams.

Scope of Recovery Operations

Recovery is defined in the SEMP as “The conduct of human, economic and environmental measures necessary to re-establish the normal pattern of life of individuals, families and communities affected by an emergency, including:

- a. the restoration of essential facilities and services;
- b. the restoration of other facilities, services and social networks necessary for the normal functioning of a community;
- c. the provision of material and personal needs;
- d. the provision of means of emotional support;
- e. the recovery of the natural environment; and
- f. support to assist the recovery of business”

Figure 12: Recovery definition

Recovery can be described as a developmental process that commences with first response, may last for weeks and potentially extends to months or years after an emergency as communities adapt to a new state of normality.

Recovery starts while response activities are in progress, relying on the systems, information and directions established by response agencies. Recovery efforts tend to gain momentum as the response phase nears completion and become the dominant emergency management activity.

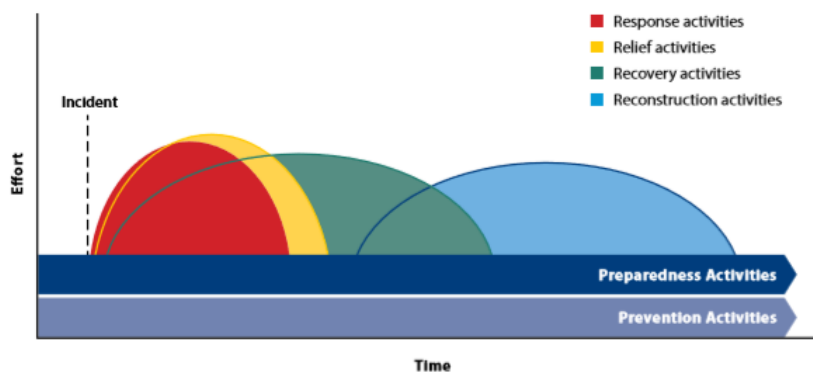


Figure 13: Emergency Operations Model

Immediate relief services that provide essential support to disaster affected communities are activated by the Emergency Relief Functional Service during response.

All planning and implementation of recovery is underpinned by the [National Disaster Recovery Principles](#)³⁹ as shown in the figure 14 below:

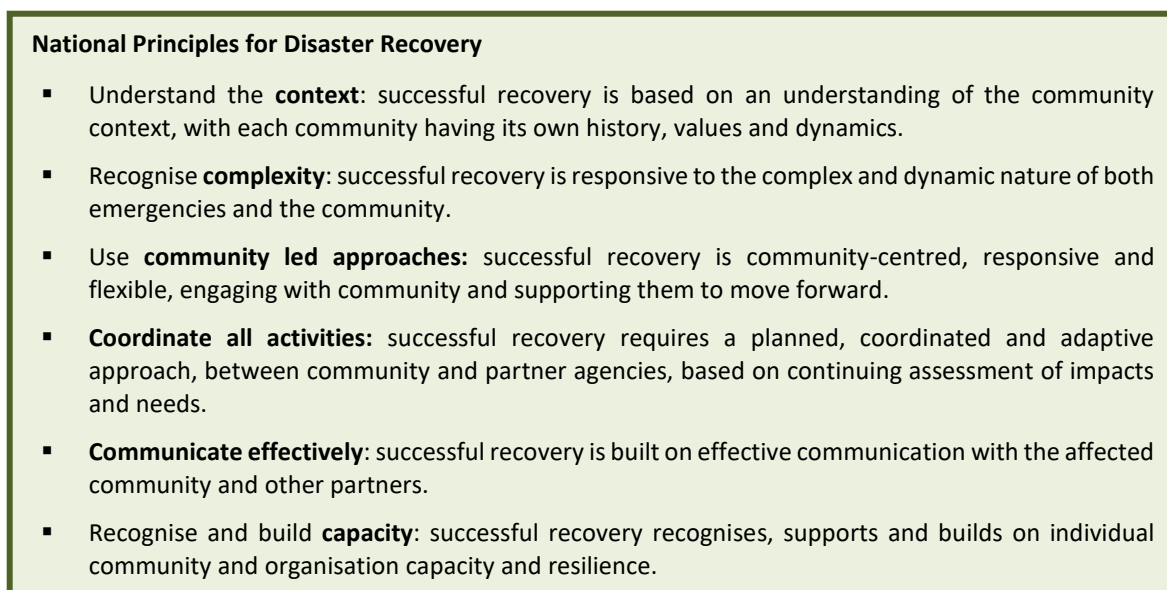


Figure 14: National Principles for Disaster Recovery

Recovery operations need to address the core values of an affected community, commonly described as the four components or environments:

- psychosocial (people, families and communities)
- infrastructure (public and commercial built assets, homes, roads, paths, essential services etc.)
- economy (employers, industry, investments, job creation etc.)
- environment (natural heritage, land management, ecological conservation, cultural etc.)

Recovery planning occurs at a range of levels, including:

- state, involving the SRC (formal)
- regional, involving the Zone Emergency Management Committee (formal)
- local, involving a local government area, community or facility (informal).

The SEMC has established the SRC to provide advice in relation to recovery planning and operations. Membership includes representatives from a range of state government departments, local government and non-government organisations.

Disaster Recovery and Resilience, within Department of Premier and Cabinet (DPC), works across government and the non-government sector to increase the State's disaster recovery capability. It provides executive support to the State Recovery Coordination Group and assists the Assistant State Coordinator - Recovery in the provision of advice to the Government, State Committees and Zones.

Disaster Recovery and Resilience assists the Zone Recovery Planner and the ZEMC to develop the Zone Recovery Operations Plan to ensure a consistent state-wide approach to recovery planning.

³⁹ <https://knowledge.aidr.org.au/resources/national-principles-disaster-recovery/>

The ZEMC has responsibility for providing assurance that arrangements are in place to prevent/ and or mitigate, prepare for, respond to and recover from emergencies.

Local government is recognised as a leader within local communities and its role in recovery includes:

- participating in recovery committees and coordination
- delivering services or activities to help restore the community, and
- engaging with the community and stakeholders to support community-led recovery.

Recovery Operations

The framework of roles, responsibilities and accountabilities established for managing the recovery from an emergency ensures the inclusion of community; the coordination of effort; the connection with appropriate authority; and effective action.

Following an emergency, the SRC takes an operational role, a Local Recovery Coordinator may be appointed/designated, and a Local Recovery Committee should be established. The actual structure for recovery management and coordination may vary according to the scale and nature of the event and the impacts on the community.

The ZEMC through its Council members are encouraged to ensure that Mayors and Elected Members are aware that there are pre-arranged roles and responsibilities for the management of many aspects of recovery and that these must be considered before taking action if recovery is to be effective and coordinated.

The Zone Recovery Operations Plan also describes all the aspects of recovery operations from initial activation through to scaling back and/or ceasing activities. Core elements of recovery operations include: assessing the impacts of a disaster and understanding the community's needs; facilitating communication and public information; providing relevant support and enabling recovery capacity.

Formal arrangements are in place to partner with NGOs to manage volunteers, emergent groups, donated goods and charities. The State Emergency Relief Fund (SERF) is activated during significant events to manage and allocate cash donations. Community leaders should always encourage the public to donate money in preference to goods and to register if they want to volunteer to help.

The [Disaster Recovery Funding Arrangements \(DRFA\)](https://www.disasterassist.gov.au/Pages/related-links/disaster-recovery-funding-arrangements-2018.aspx)⁴⁰ is a Commonwealth Government program providing partial reimbursement to the State Government for certain costs expended related to relief and recovery services during a natural disaster. The Recovery coordination arrangements are described in the figure below.

⁴⁰ <https://www.disasterassist.gov.au/Pages/related-links/disaster-recovery-funding-arrangements-2018.aspx>

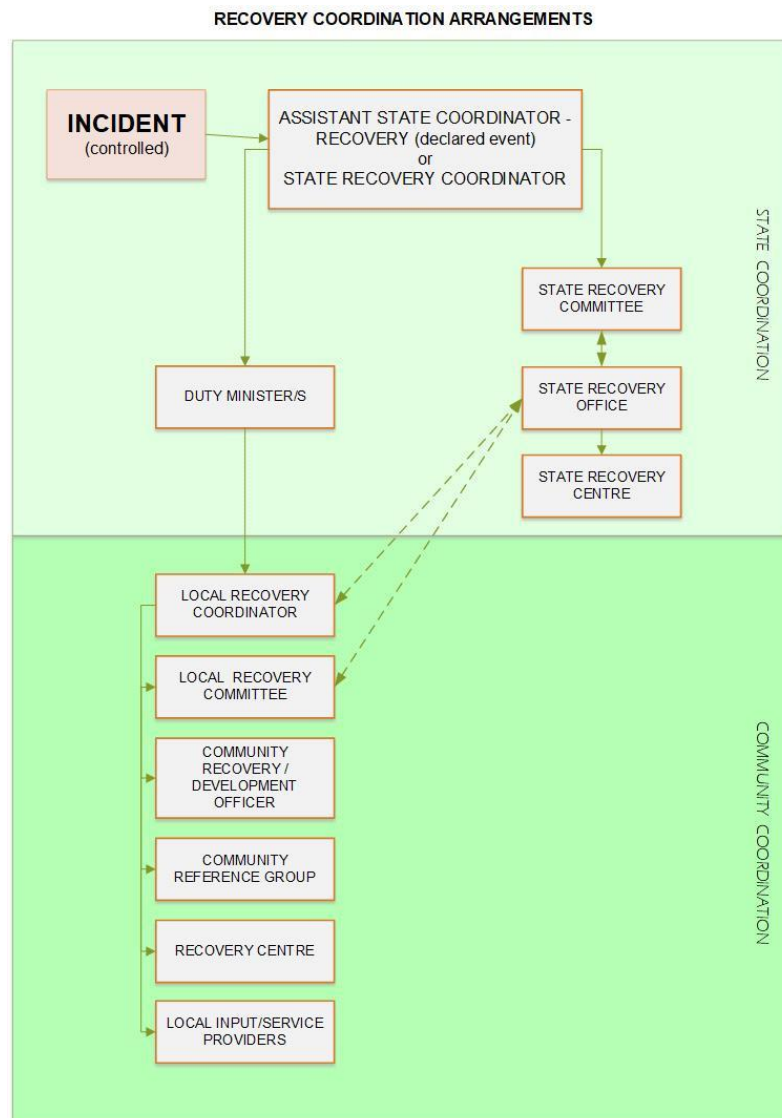


Figure 15: Recovery Coordination Arrangements
(These roles are described in the Zone Recovery Operations Plan)

8. Glossary

Glossary of Terms

Community	A group of people with a commonality of association and generally defined by location, shared experience or function.
Comprehensive Approach	The Comprehensive approach includes activities across the full prevention, preparedness, response and recovery (PPRR) spectrum.
Control	The overall direction of emergency management activities in an emergency situation. Authority for control carries with it the responsibility for tasking and coordinating other organisations in accordance with the needs of the situation.
Control Agency	The agency that shall exercise control over the emergency response for specific emergency incidents as per the Emergency Management Act.
Coordination	The bringing together of organisations and elements to ensure effective response and recovery operations
Economy	NERAG category – Relates to the economic impact of the emergency on the governing body as reported in the annual operating statement for the relevant jurisdiction, and industry sectors as defined by the Australian Bureau of Statistics.
Emergency	An event that causes or threatens to cause: <ul style="list-style-type: none"> ▪ the death of, or injury or other damage to the health of, any person; or ▪ the destruction of, or damage to, any property; or ▪ the disruption to essential services or to services usually enjoyed by the community; or ▪ harm to the environment, or to flora or fauna.
Emergency Management	A range of measures to manage risks to communities and the environment. It involves the development and maintenance of arrangements to prevent or mitigate, prepare for, respond to, and recover from emergencies and disasters.
Emergency Risk Assessment	The process used to determine emergency risk management priorities by evaluating and comparing the level of risk against predetermined standard, target risk levels or other criteria.
Emergency Risk Management	A systematic process that produces a range of measures that contributes to the wellbeing of communities and the environment. The process considers the likely impacts of hazardous events and the treatment measures by which they can be reduced.
Environment	NERAG category – Relates to the impacts of the emergency and its effects on the ecosystem of the area, including fauna and flora.

Glossary of Terms

Functional Support Group	A grouping of participating agencies coordinated by a lead agency that performs a functional role as part of the State Emergency Centre arrangements to support response and recovery operations for an emergency.
Hazard	Source of potential harm.
Hazard Leader	The Agency which, because of its legislative responsibility or specialised knowledge, expertise and resources undertakes a leadership role for planning emergency management activities pertaining to the prevention of, preparedness for, response to and recovery from a specific hazard. The role has the responsibility to lead and oversee a multi-agency approach to planning for the identified hazard.
Infrastructure	NERAG category – Relates to the impacts of the emergency on the area's infrastructure/lifelines/utilities and its ability to service the community.
Mitigation	Measures taken in advance of, during or after, a disaster aimed at decreasing or eliminating its impact on society and environment.
People	NERAG category – Relates to the direct impacts of the emergency on the physical health of people/individuals and emergency services (i.e. health system) ability to manage.
Preparedness	Arrangements to ensure that, should an emergency occur, all those resources and services which are needed to cope with the effects can be efficiently mobilised and deployed.
Prevention	Regulatory and physical measures to ensure that emergencies are prevented, or their effects mitigated.
Public Administration	NERAG category – Relates to the impacts of the emergency on the governing body's ability to govern.
Recovery	<p>Any measures taken during or after an emergency to assist the re-establishment of the normal pattern of life of individuals, families and communities affected by the emergency and includes:</p> <p>the restoration of essential facilities and services; and</p> <p>the restoration of other facilities and services necessary for the normal functioning of a community; and</p> <p>the provision of material and personal needs; and</p> <p>the provision of means of emotional support;</p>
Relief	The provision of immediate shelter, life support and human needs of person affected by, or responding to, an emergency. It includes the establishment, management and provision of services through emergency relief centres.
Response	Any measures taken during an emergency to protect life or property or to otherwise respond to the emergency;

Glossary of Terms

Risk	The effect of uncertainty on objectives. For emergency risk assessments, the effect is usually a negative deviation from the expected and is characterised by hazardous events and the likelihoods of particular consequences.
Risk Assessment	The overall process of risk identification, risk analysis and risk evaluation.
Risk Management	Coordinated activities to direct and control a community or organisation with regard to risk.
Social Setting	NERAG category – Relates to the impacts of the emergency on society and its social fabric, including its cultural heritage, resilience of the community.
Stakeholders	Those people and organisations that can affect, be affected by, or perceive themselves to be affected by a decision or activity.
State Advisory Groups	Pursuant to Section 11 of the Act, the SEMC has established Advisory Groups to advise the SEMC in relation to disaster mitigation, response and recovery activities. The advisory groups may establish working groups as required.
State Emergency Management Committee (SEMC)	The strategic planning committee that reports to the Emergency Management Council on matters that relate to the preparedness of the State against identified hazards or protective security matters.
Support Agency	An agency which provides essential services, personnel or material to support or assist a control agency or affected persons.
Vulnerability	The conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards.
Zone Emergency Management Committee (ZEMC)	The ZEMC is responsible for planning and implementing Zone-level actions in support of the State Emergency Management Plan. The ZEMC will use an all hazards approach across the full PPRR spectrum to conduct emergency risk assessments compliant with the approved risk management process; identify and evaluate risk treatment options and develop Risk Treatment Plans; and develop a Zone Emergency Management Plan, and other plans, as required.
Zone Emergency Support Team (ZEST)	A support function within an emergency management zone, at which representatives of local agencies come together to share information and undertake tasks for the Control Agency or other Support Agencies in support of response and recovery operations. The ZEST may operate from a pre-planned facility or at a Control Agencies' incident management team location.

9. Abbreviations

List of Abbreviations

ABS	Australian Bureau of Statistics
AEP	Annual Exceedance Probability
AFAC	Australasian Fire and Emergency Services Authorities Council
AIC	Australian Intelligence Community
ALARP	As Low As Reasonably Practicable (NERAG)
AS/NZS	Australian Standard/New Zealand Standard
ASIO	Australian Security Intelligence Organisation
BCP	Business Continuity Plan
BMAP	Bushfire Management Area Plan
BNHCRC	Bushfire and Natural Hazards Cooperative Research Centre
CFS	Country Fire Service
CI	Control Improvements
CWMS	Council Wastewater Management System
DEW	Department for Environment and Water
DHS	Department of Human Services
DRFA	Disaster Recovery Funding Arrangements
EA	Eastern Adelaide
EMAAG	Emergency Management Assurance Advisory Group
ICT	Information and Communication Technology
LGA	Local Government Association
LGFSG	Local Government Functional Support Group
LSA	Local Service Area (SAPOL)
MFS	Metropolitan Fire Service
MOU	Memorandum of understanding
NDIS	National Disability Insurance Scheme
NDRRA	National Disaster Relief and Recovery Arrangements
NERAG	National Emergency Risk Assessment Guidelines 2010
NERAG 2	National Emergency Risk Assessment Guidelines 2015
NGO	Non-Government Organisation
PI	Pandemic Influenza
PIRSA	Department of Primary Industries and Regions

List of Abbreviations

POMS	Pacific Oyster Mortality Syndrome
PPRR	Prevention, Preparedness, Response and Recovery
PPRR	Prevention, Preparedness, Response and Recovery
RA	Risk Assessment
RT	Risk Treatment
SAAS	SA Ambulance Service
SAFECOM	South Australian Fire and Emergency Services Commission
SAPOL	SA Police
SEC	State Emergency Centre
SEMC	State Emergency Management Committee
SEMP	State Emergency Management Plan
SES	State Emergency Service
SMAG	State Mitigation Advisory Group
SPIWAG	State Public Information and Warnings Advisory Group
SRAG	State Response Advisory Group
SRC	State Recovery Committee
SRO	State Recovery Office
T	Treatments
USAR	Urban Search and Rescue
ZEMC	Zone Emergency Management Committee
ZEMP	Zone Emergency Management Plan
ZERM	Zone Emergency Risk Management
ZEST	Zone Emergency Support Team

10. Annex A – Zone Context

Overview

The Eastern Adelaide (EA) Zone is one of the four regions which divides the Adelaide metropolitan area. The zone is the smallest of all zones in size (approx. 110 km²), however the biggest in economic contribution to the State (\$31.09 billion). The Zone includes Central Business District of Adelaide, major financial and banking institutions, Universities, key communication infrastructure and has beautiful view to the city from the foot-hills in the council areas of Burnside and Campbelltown. The zone covers a diverse range of geographical features, and is hilly in some places and rather flat in others

Major river systems include River Torrens, First to Fifth Creeks, part of Brownhill and Keswick Creek and Glen Osmond and Parkland Creeks. Tree lined suburbs and natural reserves at the foothills with numerous parks in all the councils provide mixed vegetation among high density residential areas. Approximately 16% of the zone is dedicated to parks and open spaces.

With a bustling population and growing businesses, EA Zone has still managed to have a balance between open spaces and dense urban living. The Zone is part of the Kaurna country and includes significant cultural heritage areas. What is apparent across the whole zone is the rich cultural heritage, and the fact that this area was one of the oldest areas to have been settled in South Australia. The zone maintains its culture through stringently protecting existing cultural and heritage areas and with strict controls on development.

Councils represented

Council	Population (2018)	Area (km ²)	Data by Region (ABS Stats)	Profile Id
Adelaide City Council ⁴¹			Adelaide (C) (LGA) ⁴²	Adelaide ⁴³
City of Burnside ⁴⁴			Burnside (C) (LGA) ⁴⁵	Burnside ⁴⁶
Campbelltown City Council ⁴⁷			Campbelltown (C) (LGA) ⁴⁸	Campbelltown ⁴⁹
City of Norwood Payneham and St Peters ⁵⁰			Norwood Payneham St Peters (C) (LGA) ⁵¹	NPSP ⁵²
City of Prospect ⁵³			Prospect (C) (LGA) ⁵⁴	

⁴¹ <https://www.cityofadelaide.com.au/>

⁴² <https://bit.ly/2RIT775>

⁴³ <https://profile.id.com.au/adelaide>

⁴⁴ <https://www.burnside.sa.gov.au/Home>

⁴⁵ <https://bit.ly/37fOvMI>

⁴⁶ <https://profile.id.com.au/burnside>

⁴⁷ <https://www.campbelltown.sa.gov.au/>

⁴⁸ <https://bit.ly/38uY8qH>

⁴⁹ <https://profile.id.com.au/campbelltown-sa>

⁵⁰ <https://www.npsp.sa.gov.au/>

⁵¹ <https://bit.ly/2TKpVPQ>

⁵² <https://profile.id.com.au/npsp>

⁵³ <https://www.prospect.sa.gov.au/>

⁵⁴ <https://bit.ly/30M9F23>

The City of Unley ⁵⁵			Unley (C) (LGA) ⁵⁶	Unley ⁵⁷
Town of Walkerville ⁵⁸			Walkerville (M) (LGA) ⁵⁹	

Climate & Weather

The Zone enjoys Adelaide's Mediterranean climate with mild, wet winters and hot, dry summers. The climate and weather of the Zone is affected in part by the Mt Lofty Ranges to the east, bringing some additional rainfall and the Gulf St Vincent to the west. There is an average of 2,500 hours of sunshine each year.

Most areas of the Zone are susceptible to severe storms including inundating rains, high winds and hail. This can lead to flash flooding. Parts of the Zone, including parts of Adelaide CBD (parklands), Greenhill Road and other major roads, are subject to flooding from high flows from the Numbered Creeks. The entire Zone experiences severe heatwaves which can be devastating. There is evidence of urban heat island affect within part of the Zone. Parts of the Zone is also susceptible to bushfire or rural fire, especially towards the hills facing areas of Burnside and Campbelltown. There is also significant risk from ember attacks to the entire Zone. All of these events pose a risk to lives, property, infrastructure and industry (from damage to a variety of crops). [Annex B](#) provides details of some historic events in the Zone.

Weather Observations

The Zone has high maximum temperatures and low minimum temperatures. During the summer months, some areas of the Zone have experienced temperatures above 44°C, whereas during the winter months the minimum temperature can be below 1°C. Overall, the Zone does not have a high rainfall average.

Table 13: Weather Statistics

Location	Avg. Annual Rainfall	Avg. Annual Rain Days	Record Max. Temp	Record Min. Temp
Kent Town	551mm	117	45.7°C	-0.4°C

Climate change

Climate change is being addressed by the Regional Climate Change Committee, Resilient East; however, it is important to touch on what the predictions are. The latest CSIRO projections for climate change in the region indicate reduced rainfall in the EA region in the future, which, if this eventuates, will have significant impacts on the Zone

Climate change projection models for the EA region indicate⁶⁰:

- temperatures in the region will increase by 2°C by 2050
- frequency of events with consecutive days over 40°C is projected to double by 2050
- annual rainfall may decrease by 7% by 2050
- intensity of the rainfall is predicted to be increased by 10% by 2050, increasing the risks from intense storms and flash flooding
- extreme fire risk days per year will increase by 200% by 2090

⁵⁵ <https://www.unley.sa.gov.au/home>

⁵⁶ <https://bit.ly/2RL13oH>

⁵⁷ <https://profile.id.com.au/unley>

⁵⁸ <https://www.walkerville.sa.gov.au/>

⁵⁹ <https://bit.ly/30WzAVb>

⁶⁰ <https://www.environment.sa.gov.au/topics/climate-change/programs-and-initiatives/adapting-to-climate-change/regional-adaptation-plans>

Demographics

According to ABS, there were approximately 227,067 people residing in the region in 2018. EA Zone shows very little variation in the population since the 2016 census indicating that the population of this zone has plateaued. The Zone's population varies significantly from day to night time. This is because Adelaide City council precinct has an average daily population twice the zone population or 21% of the state population in day time. Most council areas (except Adelaide City Council) almost double their population over night in comparison to the day time populations. The night time population is taken as the base level for calculating the thresholds for the EA zone risk criteria.

These figures do not take into consideration the homeless people within the Zone. Vulnerable communities include aged, CALD, indigenous, unemployed, overseas tertiary students and disabled.

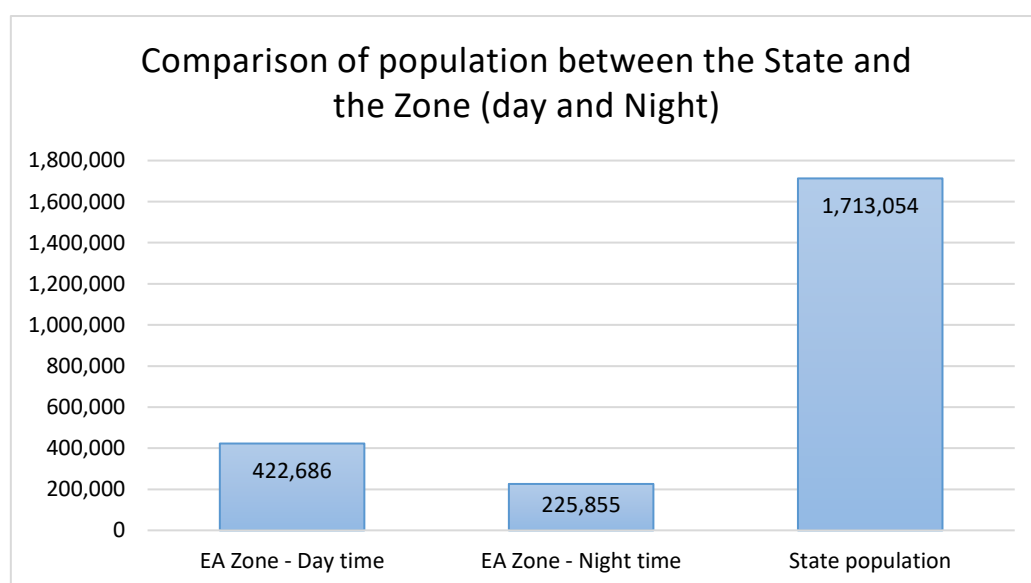


Figure 16: Day and Night population in comparison with the State's population (Source: ABS census 2016)⁶¹

Age of Population

As with the rest of Australia, the population of the EA Zone is ageing. 25% of the total population are aged over 60. This needs to be considered as the older population may need greater assistance before, during and after emergencies. They may be at an increased risk of health issues and isolation in day to day life and this may be exacerbated in the event of an emergency. This will cause a greater impact on health and community services. The population projection shows the zone will continue to grow at a rate lower than the State average. The youth population is particularly high in the City of Adelaide (27% of ACC's population), while older people are most prevalent in Burnside, Campbelltown and Walkerville.

⁶¹ https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/401?opendocument

Culturally and Linguistically Diverse (CALD) Communities

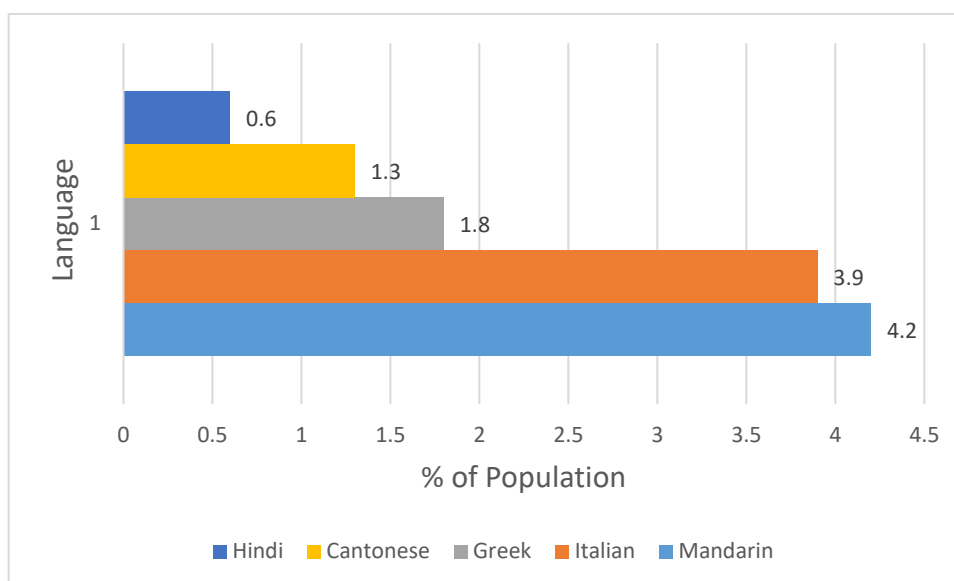


Figure 17: [Languages \(other than English\) Spoken at Home](#)⁶²

There are approximately 50 different nationalities represented in the region, with the majority of migrants born in England, China, Italy, India and Malaysia. The most widely spoken language other than English, in the region, is Mandarin. In recent times, there has been an increase in residents who were born in China and India.

There are also a large number of multicultural transient workers and tourists who reside within this Zone at certain times of the year. These people may have a very limited knowledge of the hazards they may experience and how to prepare, response and recover from emergencies. Emergency management information that is produced needs to consider these multicultural populations in both format and content.

Indigenous

In 2016, there were 1,097 aboriginal people counted in the EA Zone representing only 0.6% of the total zone's population significantly below the State average of 2%.

[Homeless / Rough sleepers](#)⁶³

There were approximately 640 adults just in the Adelaide City identified as homeless according to Law and Justice Foundation (NSW) 2018 showing a significant increase in the homeless and rough sleepers since 2010.

Disability

People who require assistance with core activities may have differing needs and challenges to social inclusion and connection within the community and may require greater assistance to prepare, respond and recover from an event.

According to the 2016 census data, there were about 10,000 people aged 15 to 64 years in the zone who reported that they need assistance with self-care, mobility or communication because

⁶² https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/401?opendocument

⁶³ [http://www.lawfoundation.net.au/ljf/site/templates/resources/\\$file/Homelessness_SA.pdf](http://www.lawfoundation.net.au/ljf/site/templates/resources/$file/Homelessness_SA.pdf)

of a disability or long-term health condition. This represents 4.9% of the total population in this age group, lower than the State average of 3.1%.

Other Vulnerable communities

Other groups of the population who may be considered vulnerable include the unemployed and tertiary students (especially overseas students living by themselves). Unemployed residents may be considered a vulnerable community as their access to adequate resourcing to evacuate in an emergency may not be adequate. They may also have difficulty preparing themselves to be self-sufficient for an extended period after an event.

Mobility

Public Transport is available in the form of buses, trains, trams and O-Bahn, however more than half of the working population use their car for journey to work. 62% of residents of the zone also work within the zone, while 38% travel to other areas for work.

In comparison with Greater Adelaide, EA is home to above average proportions of dwellings with no or one motor vehicle, and below average proportions of dwellings with two or more vehicles. This indicates a great reliance on the road network and therefore road infrastructure should be considered a priority when managing impacts from emergencies. If evacuations were necessary – it could be assumed that the majority of people would evacuate via car. On the other hand, households without access to a motor vehicle can struggle to access services, facilities and employment that are not readily available on foot or via public transport. In addition, a lack of access to a motor vehicle can contribute to social isolation, especially in neighbourhoods with poor public transport services or in households where the income earner uses the motor vehicle for travel to work.

Community Capacity

This is defined as the community's capacity (human and physical) to contribute to the prevention of disasters, such as available volunteers and level of experience in dealing with disasters (frequency and magnitude). It isn't something easily measured. It is a fluid thing that can change as communities grow or decline and as younger generations come through.

Emergency Services

The Zone is serviced by several [CFS brigades](#)⁶⁴, [MFS stations](#)⁶⁵, [SAPOL](#)⁶⁶, [SA Ambulance Services](#)⁶⁷ and [SES units](#)⁶⁸. These agencies are able to assist when preparing for, responding to and recovering from events.

Local Councils also have the capacity to provide assistance within council areas and across the Zone.

Volunteers

According to Volunteering in South Australia survey report conducted in 2016 by Office of Volunteers, DHS stated that 68% of the South Australian surveyed volunteered in some capacity in the last 12 months. The Census question, which this data is derived from, confirms that these statistics count each volunteer as one person, no matter how many places they volunteer for or

⁶⁴ <https://www.cfs.sa.gov.au/site/home.jsp>

⁶⁵ <http://www.mfs.sa.gov.au/>

⁶⁶ <https://www.police.sa.gov.au/>

⁶⁷ <http://www.saambulance.com.au/>

⁶⁸ <https://www.ses.sa.gov.au/site/home.jsp>

how many hours they do. The [2018 Volunteering in SA Survey Report](#)⁶⁹ found that since 2010, volunteering rates and hours in South Australia have remained relatively stable.

It is important to note that these rates refer to all volunteers not just those who volunteer in an emergency management capacity; however, it could be expected that some who volunteer in other areas would be prepared and able to assist in an emergency.

Type	Percentage
Management/Committee Work/Co-ordination	19
Teaching/Instruction/Providing Information	13
Preparing/Serving Food	11
Administration/Clerical/Recruitment	10
Coaching/Refereeing/Judging	8

It also needs to be considered that many volunteers are ageing and may be in need of these services themselves soon, decreasing the capacity for volunteers to respond in times of emergencies. There is also the issue of volunteers getting time off of work to volunteer for an event. This reduces the availability of volunteers during business hours. Spontaneous volunteers also need to be considered separately from trained volunteers. Further information can be found in the [Spontaneous Volunteers Handbook](#)⁷¹.

The capacity of local businesses to assist in an incident also needs to be considered (e.g. supermarket or op shop providing goods during and after an incident). The history of local businesses' ability to respond to emergency management events is high due to the community spirit within the Zone.

Industry

The EA Zone is a key contributor to the state's economy contributing \$31.1billion to the State's GSP. The main economic drivers of the zone include retail and professional /administrative services. There are some industrial activities for example in the areas of Stepney and Glynde in the City of Norwood Payneham & St Peters and quarry in Burnside.

There are also a number of home-based businesses throughout the zone scattered in the Prospect, Norwood and some foothill suburbs.

Tourism industry as well as the heavy reliance on infrastructure need to be considered in the EA Zone.

Industry statistics

Service based industries (health care, social assistance, education and training, professional and scientific and technical services) and retail trade form the largest industries in the Zone, and loss of any sector of these industries would have widespread consequences not only within the Zone, but also across the state.

The 2016 statistics indicate that there are a very high number of businesses in the EA Zone that have an operational turnover under \$200k and between the \$200 and \$500k range. There were altogether about 37,000 businesses in the zone with 23,000 small businesses in the turnover

⁶⁹ https://dhs.sa.gov.au/_data/assets/pdf_file/0020/80714/Volunteering-in-South-Australia-2018-Final-Report.pdf

⁷⁰ https://dhs.sa.gov.au/_data/assets/pdf_file/0020/80714/Volunteering-in-South-Australia-2018-Final-Report.pdf

⁷¹ <https://knowledge.aidr.org.au/resources/handbook-12-communities-responding-to-disasters-planning-for-spontaneous-volunteers/>

range of less than \$200,000 indicating the Zone has a high number of small to medium businesses which might be impacted by disasters if proper preparations aren't undertaken by the businesses.

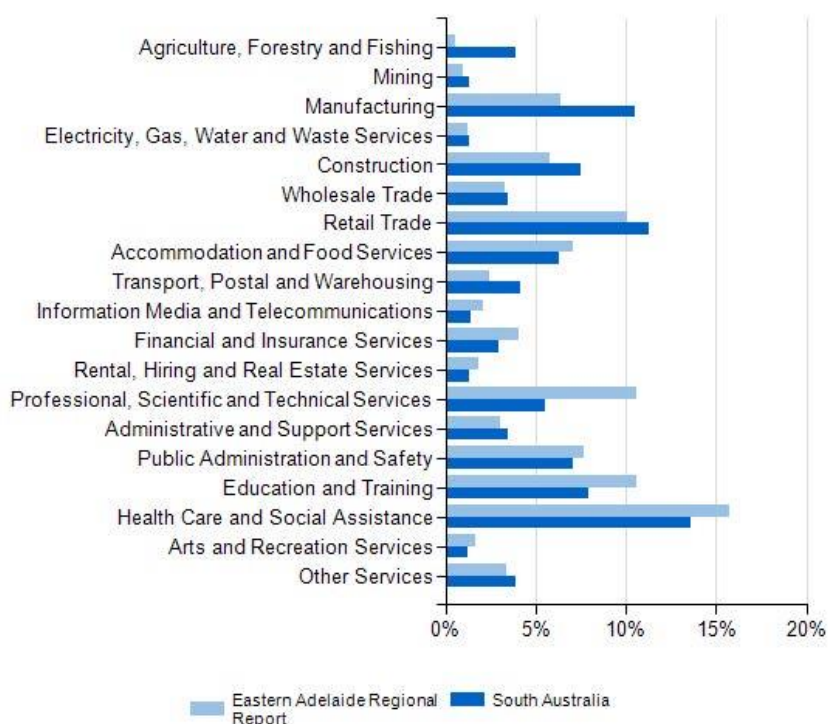


Figure 18: Employment by Industries 2016

Tourism

Tourism needs to be considered not only in relation to its impact on the economy, but also the damage that can occur to the Zone's branding after an emergency. The Zone is known for being a tourism destination and it is an important sector of the Zone's economy. However, Tourism is also driven by events such as the Santos Tour Down Under, 86%, the Superloop Adelaide 500, 87% and the Fringe and Festival in February and March⁷². From Dec 2017 to Dec 2019, Adelaide had achieved 89% of their 2020 target of \$4.6 billion and 53% of their 2030 target of \$8.1 billion.

Table 15: Visitors to the Eastern Adelaide Zone

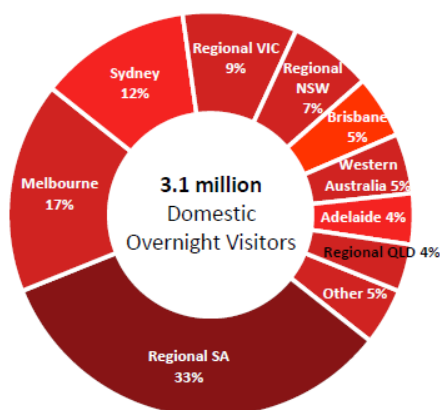
	Number of visitors	Nights stayed
Overnight Visitors	3,489,000	18,624,000
Day visitors	5,234,000	N/A

Many of these visitors are from parts of Australia and the world that may be geographically very different. This needs to be considered for emergency management planning as many visitors may

⁷² <https://tourism.sa.gov.au/documents/CORP/documentMedia.ashx?A={36010655-07B7-4D02-B3CE-6EC69F0AF53F}&B=True>

not have previously experienced some of the hazards and risks that they may be faced with in this Zone. Emergency management information needs to be suitable for these visitors.

Origin of Domestic Overnight Visitors to Adelaide



Origin of International Visitors to Adelaide



Figure 19: [Visitor Origin](#)⁷³

Public Spaces and Events

While the majority of the zone can be considered as highly urbanised, there are many places where people gather and some significant events that can draw crowds from all over the state, interstate and overseas. Some of these places could also be considered for use in times of recovery.

Shopping Centres

Some larger shopping centres are located in Burnside (Burnside Village), Adelaide (Adelaide Central Market), Prospect (North Gate) etc. There are other smaller shopping centres within the zone (The Avenues, Sefton Plaza, North Park, Firlie, Newton shopping centres). EA is also home to several strip shopping areas such as The Parade, Rundle Mall and Unley Road etc. The zone is also renowned for its 'eat streets' such as the Melbourne Street, Gouger Street, O'Connell Street, Rundle street etc.

Educational Facilities

There are numerous educational facilities, such as approx. 80 schools (private and public), 8 Universities and TAFE campuses, located throughout the region. The Zone also has several English language schools, 70+ child care centres, Montessori and Kindergartens and other educational facilities such as alternative medicine schools. Further details about these facilities can be located on SharePoint.

Sporting Facilities

EA Zone is home to the world-famous Adelaide Oval which can accommodate 53,500 patrons for football and cricket. Other facilities (including indoor sports and recreation) that also need to be highlighted include: Prospect Oval, Broadview Oval, Wayville show grounds, MARS stadium and St Bernards Recreation Centre. There are several other venues/spaces where people gather for sporting or social events with in the zone. Swimming pools are located in North Adelaide, Burnside, Norwood and Unley which attracts big crowds in summer months.

⁷³ <https://tourism.sa.gov.au/documents/CORP/documentMedia.ashx?A={36010655-07B7-4D02-B3CE-6EC69F0AF53F}&B=True>

Public events

EA Zone hosts more than 400 events annually which attract both national and international media coverage and tourists. Festive season such as Mad March has multiple events happening at the same time such as the Fringe Festival, Adelaide Festival, WOMAdelaide and Superloop 500. Some of the other major events include: Royal Adelaide Show, Tour Down Under, The Parade Food, Wine and Music Festival, Adelaide Cabaret Festival, Tasting Australia, Christmas Pageant, Carols by Candlelight, Wine Festival, Adelaide Film Festival, Carnevale, Schutzenfest, Indian Mela, Glendi, Symphony under the stars and OzAsia. There are many more festivals which occur across the Zone throughout the year.

Adelaide Convention Centre, Adelaide Festival Centre, Royal Adelaide Show Grounds, Adelaide Festival Theatre etc. attract huge crowds all year along for various events. There are many other live theatre venues including Adelaide Town Hall, Dunstan Playhouse, Her Majesty's Theatre to name a few.

Cultural activities, celebrations, events and festivals of local, regional, state and national and international significance generate a very high proportion of the zone's revenue. The influx of people to the Zone's major events during extreme weather and other emergencies such as human pandemic, also needs to be considered.

Objects of Significance

Built heritage of the EA Zone is diverse with national, state and local heritage places. There are approximately 2286 places with heritage listing in South Australia. There are 2 National Heritage listed places within the EA Zone and 633 State heritage listed places within the zone. Some of the examples include the Town Halls of Adelaide, Burnside, Norwood and Walkerville; Adelaide GPO, the old Parliament house, Ayres House in the CBD, Norwood Wesleyan Methodist Church, St Andrew's Anglican Church, Capri Cinema, Adelaide Cemetery, Adelaide Goal and Tabor College. There are several parks and structures, a range of dwellings of significant heritage. There are also several objects of environmental significance (such as protected flora and fauna). Further information is available in the [SA Heritage Places Database](#)⁷⁴.

Significant Infrastructure

Significant infrastructure includes assets that may be required in an emergency as well as those that would cause an impact on the community if affected in an emergency. This includes health services, emergency services, major government facilities and main transport routes. The age and condition of the infrastructure also needs to be considered for emergency management planning.

Hospitals, aged care and disability services

The region has 15 hospitals (both public and private) and many health facilities and clinics. [SA Health](#)⁷⁵ have further details.

There are over 140 residential care facilities (aged care facilities, nursing homes and lodges). The [Aged Care Guide](#)⁷⁶ provides further details. There are also several facilities within the Zone for those with disabilities. Further information can be found through [NDIS website](#)⁷⁷.

⁷⁴ <http://maps.sa.gov.au/heritagesearch/HeritageSearchLocation.aspx>

⁷⁵

<https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/about+us/our+local+health+networks/our+local+health+networks>

⁷⁶ <https://www.agedcareguide.com.au/nursing-homes/find?lat=-34.450007,140.568162,8z>

⁷⁷ <https://www.ndis.gov.au/contact/locations/-34.9256%2C138.6002/50/11104>

Emergency services

Emergency services infrastructure is adequate within the Zone. The majority of services have cross brigade/station agreements to ensure coverage if an incident affects the emergency services infrastructure. It should be noted that emergency services in this zone are reliant on the roads and bridges which service the zone, as well as radio and electronic communications.

Government buildings and facilities

A vast majority of the State government administrative buildings and Commonwealth administrative buildings are in this zone. Important government infrastructure located within the Zone includes: Government Radio Network (circular system which can continue to operate even if several towers are affected), essential services infrastructure, telecommunication infrastructure, Traffic Control Centre, Adelaide Railway Station, Adelaide Bus Depot, Interstate train terminal, state emergency centre and back up state emergency centre, triple zero call centre and Australian Broadcasting Corporation..

Major roads and bridges

Another type of critical infrastructure is roads. These include freight traffic from Victoria down Glen Osmond and Portrush Roads through the South Eastern Freeway. Glen Osmond Road leads to the airport whilst Portrush Road connects to the Northern Industrial suburbs and the state's north and in addition, they act as the major commuter arteries for Adelaide Hills and forms the eastern part of Adelaide's outer bypass route. There are many major roads on culverts – Goodwood road underpass, Portrush Road, Bradman Drive, Unley Road, Greenhill Road, Anzac Highway. There are many major arterial roads built on creeks which can be susceptible to flooding (e.g. Payneham Road). A map showing traffic volumes can be found [here](#)⁷⁸.

Public Transport

The Eastern Region is served by heavy rail passenger network which consists of six lines (Belair, Outer Harbour, Grange, Gawler and Noarlunga and Tonsley railway lines) the Northeast Busway (O-Bahn) and the Glenelg-Adelaide tramway and the bus network which brings commuters to the CBD and surrounding areas from greater Adelaide.⁷⁹

The major transport infrastructure is located at the

- Buses (Adelaide Bus Terminal, Newton bus depot)
- O-Bahn junction at Klemzig
- Rail (Adelaide Railway Station, Goodwood Road Subway)
- Tram (Blackforest station bridge, Adelaide CBD)

Rail

The rail link is also important with a passenger and freight rail link between Adelaide and Melbourne running through the EA Zone.

Essential Services

Detailed information on critical infrastructure is maintained by state government; some of which is not accessible for security reasons.

⁷⁸ <http://location.sa.gov.au/viewer/?map=hybrid&uids=138>

⁷⁹ <https://www.engineersaustralia.org.au/sites/default/files/shado/Infrastructure%20Report%20Cards/SA/transport.pdf>

Electricity

ElectraNet owns and manages the electricity transmission network across the zone. Their major power feed includes high voltage lines from Cherry Gardens to Happy Valley and Morphett Vale East, the lines are both above and underground and they feed to the city.

SA Power Networks operates the electricity distribution network, delivering electricity to the properties from high voltage lines through substations and distribution lines.

There are 5 Substations in the zone:

- substations in ACC – 1 in North Adelaide
- 1 in Burnside
- 2 in Campbelltown - 1 in Magill & 1 in Newton
- 1 in Unley

It is also important to note that water pumping stations cannot operate for extended period without electricity. This means that extended power outages can cause water outages, especially for irrigators. It is also important to note that equipment connected to nbn access network will not work during a power blackout. Make sure to have battery operated radio and have your mobile phone fully charged.

Renewable energy sources, such as solar farms are becoming more common in the Zone.

Water

Water infrastructure includes natural water courses, constructed systems, wetlands, riparian habitat, groundwater and water sensitive urban design (WSUD) features. These aspects assist with managing the storm water, including flood mitigation.

Stormwater assets are the responsibility of the councils, and include pipes, culverts, pits, channels, pump stations, basins (retention and detention), wetlands and bio filtration systems. The major water infrastructure includes the Torrens Weir and water holding tanks.

Water courses have been significantly modified from natural condition and are highly channelised, cleared of vegetation and receive increased runoff as a result of urban development. Damage/failure to Kangaroo Creek Reservoir which is not in EA Zone can cause flooding in Torrens River and flooding suburbs surrounding the river.

Other items that need to be considered include sewerage (general sewerage pipes, Newton transfer station where waste is held before sending it to Boliver), blue-green algae during times of low flow and high temperatures.

Gas

Envestra owns the natural gas distribution network to the zone. There are major gas lines near Adelaide Bridge; near RAH. There are 17 suburbs with elevated pressure gas mains

Telecommunications

Telecommunications coverage in the region is reasonably good. The region has broadband services coverage in the Zone.

Hazardous Sites

When considering hazardous sites, both static and transported goods need to be considered. Some examples of hazardous sites in the Zone include bulk storage of chemicals used for agriculture, gas pipelines and the transporting of dangerous goods by truck or train, through the region. CBD acting as a transport hub for hazardous materials with 20% of the freight passing through the city⁸⁰.

Local arrangements or protocols are supported by assurance from a state level in relation to these issues.

⁸⁰ https://www.dpti.sa.gov.au/traffic_volumes#metro

11. Annex B – Historical Events

Further details can be found at the [AIDR Knowledge Hub](#)⁸¹

Table 16: Floods in South Australia – 1836 – 2005 edited by D. McCarthy, T. Rogers & K. Casperson) & Council Reports beyond 2005

Event	Year	Impacts
Rainfall at Second and Third Creeks	7 Dec 2010	NPSP Report: <ul style="list-style-type: none"> • Roadway above Third Creek crossing of John Street significantly damaged and closed for 3 days • Loss of 2 footpaths for approx. 2 weeks • Significant damage to Third Creek drainage reserve • Flood operating cost (doesn't involve damage costs) in the order of \$100,000
Localised Flooding	2008	
Rainfall at First Creek – 1:100-year event	7 Nov 2005	NPSP Report: <ul style="list-style-type: none"> • Creek broke banks in a few locations • 10 dwellings were flooded • Significant amounts of silt and debris deposited on roads, footpaths and properties, damaged vehicles, outbuildings and garden fixtures Burnside Report: <ul style="list-style-type: none"> • Section of Waterfall Gully Road collapsed requiring total rebuild • Council cost \$221,073 Remedial works funded by NRM - \$100,000
Flash-flooding	21 Dec 2003	Norwood) NPSP, Burnside
Heavy rains, flash flooding	25-26 Nov 2002	Burnside
flash flooding	18 May 2002	Unley
Minor flooding	25 Aug 2001	(Black Forest), Unley
Heavy rain	6 Jun 2001	24 to 28 mm recorded in 60 minutes at several suburban gauges. 'Major' flood of the Glen Osmond Creek around Unley Road.
12 days of rains, minor flood in eastern suburbs	26 May – 8 June 2001	
Steady rain, minor flooding	17 May 2001	Minor flooding to houses
Torrential rain and strong winds, flooding	25 Jan 2001	More than 20 homes and businesses suffered flood damage
Heavy rain	14 Aug 2000	Minor flooding in several suburbs
General flooding	26 May 2000	Across metropolitan area
Heavy rain	9 Apr 2000	Flooding because of insufficient capacity of channel for Third creek.
Strong winds and rain	22 Mar 2000	Minor local flooding in several Adelaide suburbs

⁸¹ <https://knowledge.aidr.org.au/collections/australian-disasters/>

Heavy rain	19 Nov 1999	Flooding nearby property, Glen Osmond Creek overflowed
Storm - Flash-flooding (described as the worst in two years)	22-23 May 1999	ACC, Burnside, Prospect. Hutt St and Dequetteville Terrace in the city, Prospect Road at Blair Athol. Dozens of houses were damaged by floodwaters
Thunderstorms, floods	22 Sep 1998	Metropolitan Adelaide
Rains	11 Apr 1998	Metropolitan Adelaide
Widespread flooding	17 – 19 Dec 1992	Eastern Adelaide suburbs and state wide
Floods	4 Jul 1990	Payneham and St Agnes
Heavy rains, minor flooding	15 -17 Jul 1987	Flooding in Adelaide Plains. Creeks from Adelaide Hills caused more flooding in the Adelaide Plains
Heavy rains caused flash flooding	19 Feb 1987	Throughout Adelaide, Traffic delays and more than 50 houses and other buildings flooded
Heavy rains over 3 days	23-26 Jun 1981	Adelaide and surrounding suburbs. Minor flooding on Hutt street in Adelaide, turned to widespread damage in the city with number of houses inundated when creeks overflowed.
Floods	1983	
Floods in East Parklands, Adelaide	21 April 1968	Adelaide, NPSP. Floods of one foot reported, flooding also occurred along Payneham Rd. Rundle Mall store of Harris Scarfe was flooded when an outside gutter over-flowed.
February rains	20 Feb 1968	Adelaide City Council - Flooding in Adelaide city streets to a depth of three feet.
Floods	19 Jan 1968	Adelaide suburbs - Extensive flooding, more than an inch of rain fell in the morning. The main cause of flood was the build-up of debris during the summer months. Major roads in metropolitan area were flooded. Train line wash aways were extensive and included the Transcontinental Line and the Central Australia Line.
Floods	2 Jul 1964	Overflowing drains along Goodwood Road, Adelaide, caused flooding to a depth of 18 inches.
Heavy rains over two days	26-27 Apr 1963	Adelaide suburbs - Number of houses inundated. One man drowned in a stormwater drain at Mitchell Park; flash floods
Floods	27-30 Mar 1959	Parts of Magill and Murray Park were flooded due to heavy rain and subsequent silting.
Continuous rain and flooding of streams in metropolitan areas	28 June 1956	Many Adelaide suburbs - Large stretches of land and homes in many Adelaide suburbs were under water as a result of the continuous rain and flooding of streams in the metropolitan areas.
Heavy rain and flooding	12 May 1951	Eastern suburbs of Adelaide
Floods in the city	16 Dec 1936	Adelaide and surrounding suburbs - City and suburbs were flooded in Adelaide. The worst affected area covered Waymouth, Pirie and Grenfell Streets where there was damage to business premises. Hundreds of houses in the residential areas were flooded, especially in the western and eastern areas of the town.
Heavy downpour in Adelaide	1 Jan 1936	Localised flooding of houses and streets at St Peters.

Flooding due to inadequate culverts	29 May 1925	Evening downpour resulted in flooding along Unley Road which was blamed on inadequate culverts.
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Table 17: Bushfire Events

Event	Year	Councils affected	Impact
Black hill fire	2010 New Year's Eve	Campbelltown	
Ash Wednesday	16 Feb 1983	Many council areas within the State	180 fires reported state-wide, 8 major fires, 208,000 hectares burnt, 3500 firefighters, State Disaster declared. 28 people killed (3 CFS fire fighters), 2676 injuries with 133 hospitalised 250,000 sheep and cattle destroyed, 10,000 km fencing lost, 21,000 ha pine plantations, 190 homes lost. The event costing at estimated losses \$2-400m (in 1983-dollar value).

Table 18: Extreme Weather Events since 1980⁸²

Event	Date	Councils affected	Impact
Extreme Heat wave	Jan/Feb 2009	All	Daily maximum temperatures exceeded 40 degrees for 6 consecutive days and the daily average for the period 27 January to 7 February 2009 was 40.5 degree. Some of the impacts were: deaths, breakdown of some utility supply networks, increased hospital load, increase in rural fires and many die due to the heat. Overnight blackout at Walkerville IGA supermarket ruined perishable food worth \$30,000.
Extreme Heat wave	Mar 2008	All	13 consecutive days with a max temp > 37.8° (Adelaide). Some sporting and social events cancelled. \$150 million cost to Adelaide. Construction work ceased.
Lightning and storm	12 Jul 2012	Kensington park, Burnside	17-yo boy struck by lightning in Kensington Park around 2.30 pm, and died about a week later
Storm	Feb 2014	Burnside, Campbelltown and NPSP	Damaging winds up to 90km/h with gusty in excess of, a significant number of fallen trees which brought down power lines resulting in extended power outages in some suburbs, damaged cars, houses and power lines
Severe Wind Event	23 August 2012	All	Damaging winds up to 90km/h with gusty showers, a significant number of fallen trees damaged cars, houses and power lines at 3pm in Northpark Shopping Centre injuring a woman, crushing 3 cars and damaging 3 more cars with an estimated damage of \$120,000. SES responded to 60 calls for help mostly for trees down – some roof damage; 1,670 homes and businesses without power in inner eastern suburbs; Total of 30,000 people affected by power outages in the 24 hr period.
Strong wind	2 Apr 2008	Adelaide	exact duration not known. Widespread tree damage with local power failures and isolated roof damage across a large area (Adelaide, MLR, KI, YP, ML, USE, LSE) associated with extreme fire weather. Severe wind gusts of up to 137 km/h. Severe mean wind speeds of up to 72 km/h. Report of a 'mini tornado' or microburst at Waitpinga. Sandstorms in the Riverland/Murraylands as

⁸² <http://www.bom.gov.au/australia/stormarchive>

Table 18: Extreme Weather Events since 1980⁸²

Event	Date	Councils affected	Impact
			a result of the winds.
Tornado	20 May 2007	Adelaide	Tornado associated with a shower damaged several houses and trees.
Hail Storm Event	19 Nov 2003	Adelaide suburbs	Hail of 3-4cm resulted in damage to pergolas, windows, solar panels and skylights.
Tornado	4 Jun 2003	Adelaide	Shed designed to withstand 50 m/sec winds was extensively damaged. Numerous trees down or shredded and roof damage.
Tornado	18 May 2002	Adelaide	Damage assessed by Bureau personnel. F0 to F1 damage. Debris spread over 100 to 200 width but damage over 50 to 100m.
Tornado	6 Sep 2000	Adelaide suburbs	Damage included many trees, tiles moved and removed from roofs, fences blown down, carports, shade-cloth structures etc. destroyed.
Tornado	23 Jul 2000	Adelaide suburbs	Roof and tree damage, length and width of path uncertain. And low level of damage.
Hail Storm Event	22 Jan 1991		Produced hail of unprecedented size over Metropolitan Adelaide (7 - 9 cm) with damage in Adelaide estimated at \$25m (equates to \$112m in today's dollars); SES received >100 callouts to roof damage (insufficient tarps to go around); many windows broken & cars damaged; >2,000 private insurance claims lodged; Aircraft at Adelaide Airport damaged; \$1m damage to new cars at Mitsubishi damaged, several people sustained minor injuries
Wild electrical storms throughout the State caused flash-floods	2 Oct 1999	all	40 separate incidents
Tornado from damage path. Substantiated by witness who described a whistling/whining noise at the time and said that the wind lasted for only 2 to 10 seconds. Damage inspection conducted (D. Griffiths) on 11/7/98.	8 July 1998	Norwood Payneham & St Peters	Main damage was to gum trees along the park beside Riverside Ave and along Beaufort Crescent and Maple Street. Tornado in Adelaide suburb of Felixstow (GA&MLR); Tornado caused tree and minor building damage (rated as F0). Path of significant damage 1.2 km long and 50-100 meters wide. Penneshaw tornado and Torrensville wind event occurred on same day.
Two fierce wind and rain storms struck Adelaide and surrounding areas	6 Dec 1986		Most damage was caused by wind, there was some flooding. Roads in the Adelaide Hills and the Far-North were flooded
Tornado	11 June 1931	Adelaide, Burnside, Campbelltown	Path of destruction from North Adelaide to Kensington Gardens; damaged more than 100 private homes; damaged business and schools (including St Peters); uprooted trees in Botanical Gardens; narrowly missed the

Table 18: Extreme Weather Events since 1980⁸²

Event	Date	Councils affected	Impact
			zoo; severely damaged the Magill Tram depot blowing the roof off, caused minor injuries due to flying objects and looters became a problem

Table 19: Human Disease⁸³

Event	Year	Impact
Swine Flu (H1N1 Influenza) incident	2008-2009	37,636 cases of pandemic (H1N1) influenza reported in Australia; 191 associated deaths Australia wide; 17 deaths in South Australia (above normal deaths seen by the flu) (These numbers are likely to be an underestimate of the true figures); 9170 notified cases in South Australia. Reduced labour productivity with an estimated loss of \$314 million to the State, which included slight reduction in tourism industry. Increased demand on health services, Hospitals operating at capacity but still able to cope, GP clinics fully booked. Fear of disease being spread over piggery farms and fear of water contamination and waste from piggeries reduced sales of pork affecting the industry
Spanish flu	1918	4.5% of the South Australian population died of influenza, in today's terms number of deaths is estimated at around 73,800. 20% of people admitted to hospital died and created social distancing & social isolation issues. Temporary hospitals, flu clinics, established to assist hospitals to cope, nurses and doctors, medical supplies were in short supply. Education / child care facilities, mass gatherings were closed. Mass burials of bodies due to numbers, state borders guarded stopping travel/traffic to reduce contamination with people unable to leave or enter towns (boundaries established); access to daily services (food/shopping, petrol, banking) restricted; Industries unable to run due to limited employees, businesses closed/industry collapse, decreased earnings due to decreased trade and production, Import and export decreased and International and interstate travel reduced. Estimated loss of \$1.46 billion to the State. Challenges included providing governance due to social distancing and isolation, increased level of waste in medical facilities, increased landfill & incineration of waste, issues around sales, animal husbandry and programmed culling for animals associated

Table 20: Earthquake^{84 85}

(This table includes earthquakes above 3.5 magnitude earthquake. Further information is available [here](#) and [Geoscience Australia](#))

Town/nearby place	Date	Impact
Upper Sturt	18 Oct 2011	3.3 magnitude earthquake 2.2 km from Upper Sturt, 17 km deep

⁸³ Source: State Human Disease National Emergency Risk Assessment Guideline Report, version 1, author: Health SA

⁸⁴ <https://earthquaketrack.com/p/australia/south-australia/recent>

⁸⁵ <https://earthquakes.ga.gov.au/>