KEY HAZARDS & RISKS SUMMARY

Emergency Management Plan

YORKE AND MID NORTH ZONE

Clare Valley, South Australia.

Government of South Australia

CONTENTS

councils

District Council of Barunga West
Clare and Gilbert Valleys Council
District Council of Copper Coast
Regional Council of Goyder
District Council of Mount Remarkable
Northern Areas Council
District Council of Orroroo/Carrieton
District Council of Peterborough
Port Pirie Regional Council
Wakefield Regional Council
Yorke Peninsula Council

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INTRODUCTION

Across South Australia there are a range of disasters, including natural disasters such as bushfires, storms, heatwaves and floods that can have significant effects on people's health and wellbeing along with severe impacts on communities, social, environmental and economic structures.

This is a concise summary of the Yorke and Mid North Zone Emergency Management Plan (ZEMP) which provides information on natural disasters and hazards identified as having a specific relationship to the Yorke and Mid North Zone.

Port Pirie, South Australia.

TOP HAZARDS AT A GLANCE FOR THE YORKE AND MID NORTH ZONE AND THEIR IMPACTS

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

The table above gives an indication of the greatest impacts of disaster events on different aspects of the community. The extent of the impact felt is influenced by the intensity of the event, the actions taken to reduce or avoid the effects and the ability of the community, businesses and government to respond and recover.

Flood - Flood is the most costly natural disaster in South Australia. It is important to be aware of flood and severe weather warnings, ensure you have adequate insurance if you live in a flood prone area and never drive in floodwaters.

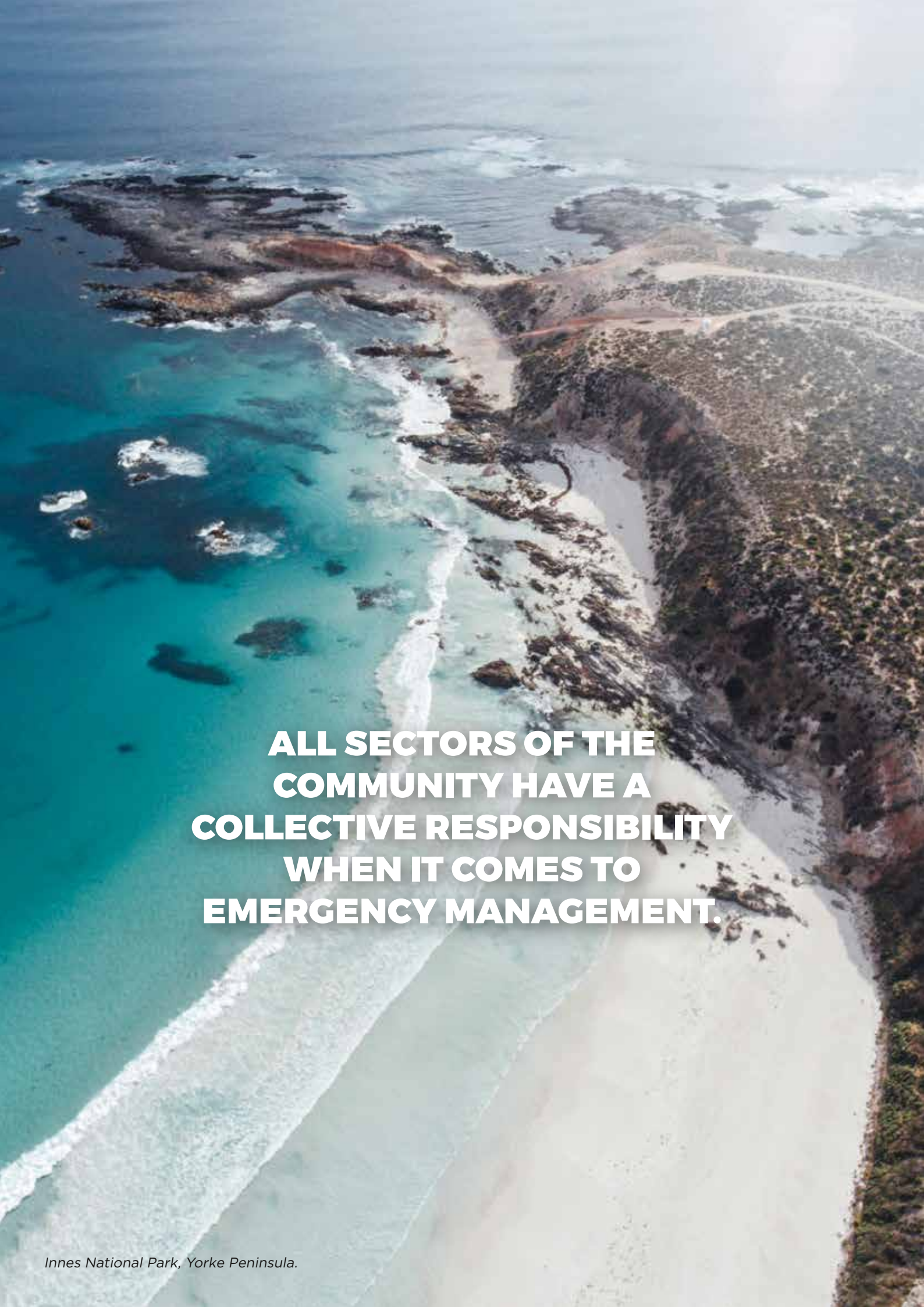
Bushfire - South Australia can expect 6 or 7 serious fires every 10 years. Be prepared for a bushfire if you live in a bushfire area, and be bushfire ready by having a bushfire plan.

Extreme Weather (Heat) – Extreme heat causes more deaths in Australia than all other natural hazards combined. Take precautions to keep cool, take shelter from the heat and drink water; even individuals who are healthy can be affected. Never leave children or pets in cars as vehicles can quickly heat up to deadly temperatures even on relatively mild days.

Extreme Weather (Storm) – Extreme storms are more commonly observed than any other natural hazard in South Australia. To stay safe you should move vehicles under cover or away from trees; secure or put away loose items around your property and stay indoors, away from windows, while conditions are severe.

Animal and Plant Disease - A major outbreak of an animal or plant disease has the potential to cost billions of dollars in lost earnings. Exotic diseases can easily be mistaken for common diseases seen on South Australian farms every day. Seek professional assistance as soon as any problem is noticed to protect the future of the agriculture, viticulture and livestock industry

Earthquake – Adelaide is the most earthquake-prone capital city in Australia. Earthquakes occurring in urban areas pose a risk to residents and essential societal systems, including critical infrastructure. In an earthquake, it's important that you quickly **DROP** to the ground close to you, where you can avoid injury from flying debris; take **COVER** under something strong, like a sturdy table; and **HOLD** on to it until the shaking stops.



ALL SECTORS OF THE COMMUNITY HAVE A COLLECTIVE RESPONSIBILITY WHEN IT COMES TO EMERGENCY MANAGEMENT.

Innes National Park, Yorke Peninsula.

YORKE AND MID NORTH ZONE IN FOCUS

11 councils

population **76,670**

SIZE **35,961** square kilometres

COASTLINE, RANGES, PLAINS, MANGROVES

employment **87.4%**

$3.67b Gross Regional Product

$643m grain production

over **2 million** sheep

CLARE VALLEY

5178ha wine grapes

population

32% over 60 years

18% 0-14 years

MAJOR Industries

Tourism

VINEYARDS

Agriculture

forestry

livestock

MINING

KEY INFRASTRUCTURE

Beetaloo and Bundaleer Reservoirs

MOOMBA – ADELAIDE GAS PIPELINE

Windfarms

Lithium battery

HEALTH SERVICES

20 hospitals

30+ aged care facilities

TOURISM

Clare Valley **$96m**

$179m Yorke Peninsula

OVER **45,000** INTERNATIONAL VISITORS

Light

Broughton

Wakefield

HUTT

Gilbert

RIVERS

by **2100**

6% DRIER

1.5°C WARMER

RAINFALL **14.1 – 26.9%** DECLINE

2 national parks

12 conservation parks

UNDERSTANDING OUR RISK PROFILE

Disasters are having an increasing financial and social impact on individuals, communities and businesses. There are large upfront costs for response and recovery and long–term impacts on wellbeing. The cost of disasters, both direct and intangible, are expected to rise significantly in the coming years.

In 2011, the Australian Government released the National Strategy for Disaster Resilience[1] (the Strategy). The Strategy aims to promote a shared responsibility between governments, business, not-for-profit organisations, communities and individuals. The Strategy recognises that Australians need to focus more on understanding risks relevant to their community and preparing for potential impacts.

Keeping the community informed is a key aspect in building community resilience – before an emergency to help with prevention and preparedness, while responding to the emergency and after, to help with recovery.

This plan is a public version of the Yorke and Mid North Zone Emergency Management Plan (ZEMP). The ZEMP relies on strong, cooperative, coordinated and consultative relationships among State Government agencies and local governments to work together in disasters. State Government and Local Government have plans to maintain effective service delivery to ensure that an efficient and coordinated response and recovery can be delivered to any disaster.

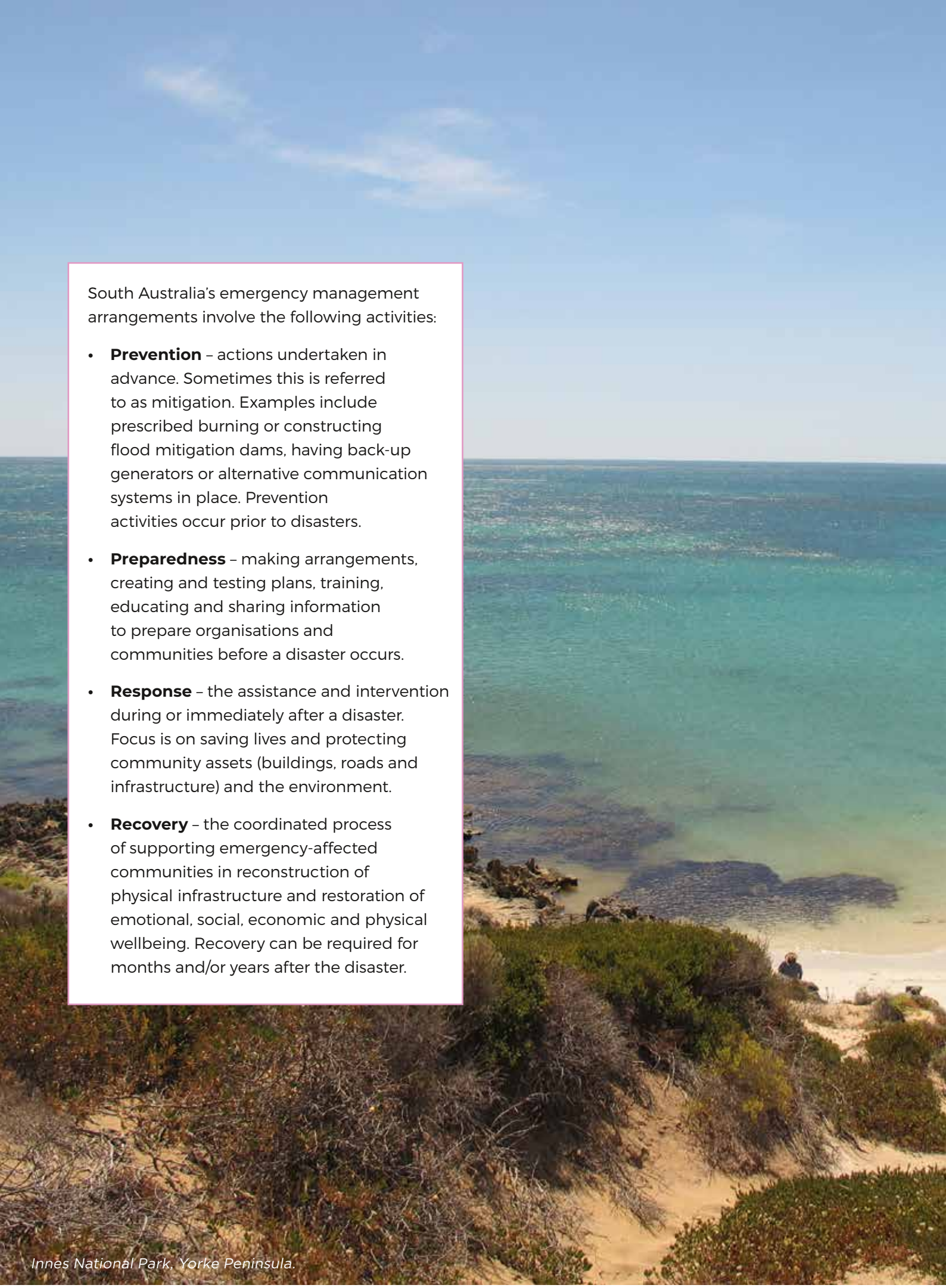
All sectors of the community have a collective responsibility when it comes to emergency management.

[1]National Strategy for Disaster Resilience: *http://www.safecom.sa.gov.au/site/emergency_management/natural_disaster_resilience_program.jsp*

Corny Point, Yorke Peninsula.

South Australia's emergency management arrangements involve the following activities:

- **Prevention** – actions undertaken in advance. Sometimes this is referred to as mitigation. Examples include prescribed burning or constructing flood mitigation dams, having back-up generators or alternative communication systems in place. Prevention activities occur prior to disasters.
- **Preparedness** – making arrangements, creating and testing plans, training, educating and sharing information to prepare organisations and communities before a disaster occurs.
- **Response** – the assistance and intervention during or immediately after a disaster. Focus is on saving lives and protecting community assets (buildings, roads and infrastructure) and the environment.
- **Recovery** – the coordinated process of supporting emergency-affected communities in reconstruction of physical infrastructure and restoration of emotional, social, economic and physical wellbeing. Recovery can be required for months and/or years after the disaster.



Innes National Park, Yorke Peninsula.

MAJOR HAZARDS

The Yorke and Mid North Zone

1. Flood
2. Bushfire
3. Extreme Weather (heatwave)
4. Extreme Weather (storm)
5. Animal and Plant Disease
6. Earthquake

Risk Assessment Process

The arrangements for the State to manage emergencies are outlined in the State Emergency Management Plan (SEMP).

The SEMP identifies the State's eleven Emergency Management Zones. Each of these Zones has specific characteristics that are vulnerable to disasters, for example different demographics, industry, infrastructure, businesses and economic factors.

Each Zone has a Zone Emergency Management Committee (ZEMC) made up of Local and State Government and emergency management staff. These committees have a risk assurance role and provide regional leadership in emergency management in their Zones. One of their main roles is the development of a Zone Emergency Management Plan. This is important as understanding the potential impact of disasters on the region is essential for planning and preparation.

Zone Emergency Management Plans were produced by conducting risk assessment workshops with stakeholders from government and non-government organisations. These workshops used realistic scenarios about a hazard. Attendees then assessed which risks were the most likely to occur and could have the greatest impacts in the Zone.

The Yorke and Mid North Zone Emergency Management Plan includes detailed information about the six relevant hazards in the Zone: flood, bushfire, extreme storm, extreme heat, animal and plant disease and earthquake, and the main risks associated with each. Information about the priority hazards and their likely impacts are detailed in the following pages.

Risk assessments used *The National Emergency Risk Assessment Guidelines* based on ISO 31000 to ensure a consistent and rigorous approach.

EMERGENCY SERVICES

91 CFS Brigades
13 SES units
5 MFS units
26 AMBULANCE stations
31 POLICE stations

History of Emergencies

1902 WAROOKA **EARTHQUAKE**
2010 STOCKPORT **FLOOD**
2014 BANGOR **FIRE**
2015 PINERY **FIRE**

1. FLOOD

The Yorke and Mid North Zone covers a large region which is mostly rural. The largest rivers in the Zone include the Wakefield, Broughton, Gilbert and Light Rivers. There are also many small watercourses which can cause significant flash flooding including Burra Creek and Hutt River at Clare.

The Zone is also impacted by stormwater flooding and coastal inundation. Stormwater flooding occurs in urban areas when drainage infrastructure becomes blocked. This is generally localised and occurs in heavy rainfall. Coastal flooding is a risk in low-lying coastal settlements including Port Pirie, Port Wakefield, Port Germein and Port Broughton.

Some flood mitigation infrastructure, such as levee banks and sea walls exist throughout the Zone, notably at Port Pirie and Port Wakefield.

The assessments showed that the main risks to people were death and injury, of particular concern was people driving through floodwater or those caught in fast moving water.

Floods also significantly affect the economy through disruption and damage to transport infrastructure such as roads and loss to agricultural, livestock, viticulture and tourism sectors. Communities are also affected, as people are unable to return to their homes due to property damage. It is very important to never drive through floodwaters and ensure that you have adequate insurance if you live in a flood-prone area.

For information on how to minimise the impact to you and your family visit: http://www.sa.gov.au/topics/emergencies-and-safety/types/flood

Risk Assessment Scenarios

To understand the impact of flood on the Zone, the following scenarios were considered as part of the risk assessment:

Scenario 1 – based on 2010 Stockport flood

- Over 70 people required emergency accommodation
- 42 homes flooded
- Many residents received emergency relief funding

Scenario 2 - hypothetical flood event

A severe storm causing flash flooding at Port Pirie and coastal inundation across much of the Zone.

Flood is the most costly natural disaster in South Australia. For the period of 1967-2013 the cost of flooding was approximate $48 million per year.

The main types of flooding include:

Flash flooding – flooding that occurs quickly from heavy rainfall and can be very localised

Riverine flooding – flooding that occurs in a river catchment or watercourse

Infrastructure failure – including structural failure of pipes, dams or levees

Coastal inundation – that occurs from large waves from storm events

RECENT FLOOD EVENTS

1994	Coastal flooding at Port Germein. Property damage and 70 caravan park occupants isolated.
2007	Port Pirie flooded by summer thunderstorms with damage to property, council buildings and railway.
2010	Stockport flooded by Gilbert River with many residents left homeless.
2011	Flash flooding at Eudunda from thunderstorms.

2. BUSHFIRE

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

"An unplanned vegetation fire. A generic term which includes grass fires, forest fires and scrub fires."

South Australia can expect 6 or 7 serious fires every 10 years. The Yorke and Mid North Zone has a long history of bushfires including the Bangor and Pinery fires in 2014 and 2015.

The bushfire risk assessment showed that the main risks to people were death and injury. This was a particular concern for vulnerable people including disabled, children, elderly, outdoor workers and emergency services personnel.

Bushfire also significantly affects the economy through people not being able to attend workplaces, as well as disruption and damage to infrastructure such as electricity, water and wastewater infrastructure and telecommunications.

Communities can also be affected as people are unable to return to their homes due to loss of houses or businesses, interruption to public services and amenities or access and egress to their properties.

Significant damage can occur to the environment including soil degradation, destruction of wildlife habitat and potential pockets of extinction of native flora and fauna.

It is important to be aware of your bushfire risk and have a plan in case a bushfire threatens your home.

For information on how to minimise the impact to you and your family, visit: http://www.sa.gov.au/topics/emergencies-and-safety/types/bushfire

Risk Assessment Scenarios

To understand the impact of bushfire on the Zone, the following scenarios were considered as part of the risk assessment:

Scenario 1 – Bangor – January 2014

- Burnt 33,000 ha over 31 days
- Over 700 sheep perished
- 3 homes and 6 shed destroyed

Scenario 2 - Ash Wednesday – January 1983

- 28 fatalities, over 600 injuries
- Estimated loss of up to $400m in 1983 $
- 190 homes lost
- 250,000 sheep and cattle lost
- 21,000 hectares of pine plantation burnt

RECENT BUSHFIRE EVENTS

Pinery, November 2015 - this fire was very fast moving and resulted in two deaths, 90 hospitalisations, 91 properties destroyed and death of a significant number of animals

3. EXTREME HEAT

Extreme heat causes more deaths in Australia than all other natural hazards combined.

Extreme heat, also known as a heatwave, is defined as three or more days of high maximum and minimum temperatures that are unusual for that location.

Heatwaves can be the cause of death and significant health issues in people with kidney, heart disease and mental health issues. The risk of death and serious illness is particularly high for the elderly, children and those working or enjoying recreational activities outdoors. People are encouraged to take shelter from the heat, drink water and keep cool. Never leave children or pets in cars as they can heat quickly to deadly temperatures even on relatively mild days. Heatwaves are a particular risk for anyone who does not take precautions to keep cool, even individuals who are healthy.

Animals, the natural environment and infrastructure, such as power, communications, water and transport are also at risk. Heatwaves can also impact the continuity of service provision from businesses and government. Local Government services may also be impacted and experience an increase in demand.

For more information on how to minimise the impact to you and your family visit: www.sa.gov.au/topics/emergencies-and-safety/types/extreme-heat

Risk Assessment Scenarios

To understand the impact of extreme heat on the Zone, the following scenarios were considered as part of the risk assessment:

Scenario 1 - In March 2008 a heat event with 15 consecutive days with a max temp >37.8˚C (in Adelaide), caused at least $150 million in damage and reduced income for South Australia. There was a threefold increase in heat related hospital admissions.

Scenario 2 - The January / February 2009 heat event which ran for 13 consecutive days across South Australia with temperatures up to almost 49˚C recorded and over 34 deaths in South Australia.

Scenario 3 - A hypothetical heat scenario - a combination of the extended period of the 2008 event and the intensity of the 2009 event with expected breakdown of critical infrastructure such as electricity, transport network and communications. Likely impacts included increased demand on ambulance and hospitals, hundreds of deaths, outdoor work ceases and food shortages.

RECENT EXTREME HEAT EVENTS

Heat Event of 2014

- 38 deaths
- 294 heat-related emergency presentations at hospitals

4. EXTREME STORM

Extreme storms are more commonly observed than any other natural hazard in South Australia. The Bureau of Meteorology has identified two types of extreme storm that can impact the Zone. These are:

Thunderstorm:

- Heavy rainfall leading to flash flooding (>30 mm/h)
- Wind gusts (90 km/h or greater)
- Damaging hailstones (2cm diameter or greater)
- Tornadoes

Synoptic Storm (could include some/all of 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 extreme storm risk assessment identified a number of risks for the Zone. Extreme storms can cause injury or death as well as increased demands on health services. They may cause houses to become unliveable due to damage or lack of essential services and result in people having to find other accommodation.

Damage to crops and vineyards, loss of livestock and damage to agricultural infrastructure could result in economic losses in the relevant sectors. The Zone's valuable tourism industry may be impacted as a result of this damage and employment attendance may be reduced.

Transport routes including roads, major freight routes, ports, marinas and boat ramps are expensive to repair and can cause additional economic losses to businesses.

Storms can further cause public inconvenience, as Local and State Government agencies may experience damage to maintenance depots which may result in service disruptions.

To stay safe people should:

- Move vehicles under cover or away from trees;
- Secure or put away loose items around your property.
- Stay indoors, away from windows, while conditions are severe.

For information on how to minimise the impact to you and your family or business visit: www.sa.gov.au/topics/emergencies-and-safety/types/extreme-storm

Risk Assessment Scenarios

To understand the impact of storm on the Zone, the following scenarios were considered as part of the risk assessment:

Scenario 1 – Example Port Broughton 14 November 1979

- 50 homes destroyed
- 200 homes extensively damaged
- Caravans damaged
- Power lines down

Scenario 2 - hypothetical storm event - synoptically driven extreme storm event, triggering smaller scale, very dangerous supercell thunderstorms. Long-lived and widespread.

- Long term power outages
- Extensive damage to houses
- Large number of deaths and/or injuries
- Roads blocked by trees
- Health and other response agencies overwhelmed

RECENT EXTREME STORM EVENTS

September 2016 extreme storm - several tornadoes formed in the Yorke and Mid North Zone reaching speeds of up to 269km/hour, causing damage to transmission towers and power outages across the state. The storm also resulted in flooding and property and infrastructure damage and cost $367m to businesses state-wide.

5. ANIMAL AND PLANT DISEASE

A major outbreak of an animal or plant disease has the potential to cost billions of dollars in lost earnings. It could affect farmers, their produce and livelihoods. Exotic pests and diseases can also damage the State's reputation for producing premium food and wine and risk trade overseas and locally.

The specific diseases chosen as representative of the hazard within the Yorke and Mid North Zone were Foot and Mouth disease and Karnal Bunt disease, with Phylloxera also recognised as having the potential for serious impacts.

Exotic diseases can easily be mistaken for common diseases seen on South Australian farms every day. The Department of Primary Industries and Regions South Australia (PIRSA) subsidises investigation of illness and deaths to ensure exotic diseases are not the cause.

For more information regarding Animal and Plant Disease visit: www.sa.gov.au/topics/emergencies-and-safety/types/animal-and-plant-disease

Foot and Mouth Disease (FMD)

- FMD is highly contagious and one of the most serious viral diseases affecting livestock
- FMD can cause serious production losses but the most serious impact is to livestock trade
- Australia's major trading partners either do not import or impose serious restrictions on livestock imports from infected areas
- It is important to seek veterinary assistance as soon as any problem is noticed to protect the future of the livestock industry

Karnal Bunt / Partial Bunt Disease

- A highly invasive fungal disease of wheat
- Infected grain has black powdery spores on the seed head and a strong fishy odour and flavour
- Karnal Bunt has potential to dramatically decrease grain yield and saleability
- Once introduced spores can persist for years, making eradication difficult
- Several chemical control methods exist for Karnal Bunt, but much work is needed in identifying resistant host varieties

Phylloxera Disease

- Phylloxera *(Daktulsphaira vitifoliae)* is a tiny insect pest that destroys grape vines by feeding on their roots. Infested vines die within six years
- Phylloxera is currently confined to Victoria and New South Wales
- Almost 75% of vines in South Australia are susceptible. Introduction of phylloxera could severely affect our $2.35 billion wine trade
- There is no treatment, so infected vineyards must be replanted on phylloxera-resistant soil or by using tolerant rootstock
- The best way to avoid spreading the disease is to keep tourists away or ensure their footwear and clothing is safe before entering vine rows

6. EARTHQUAKE

An earthquake is shaking of the surface of the earth caused by underground movement, such as along a fault line or by volcanic activity. They range in strength from slight tremors to major shaking, lasting from a few seconds to a few minutes and may be followed by aftershocks. Apart from the damage caused by ground shaking, earthquakes can also lead to liquefaction (soil becoming liquid) which can cause extensive damage to buildings.

Earthquakes are measured on the Richter Scale, with 9.5 being the highest possible magnitude. Australia averages 80 earthquakes per year with a magnitude greater than 3.0. An earthquake of 5.5 is experienced approximately every two years and a 6.0 every five years.

Earthquake was considered for the Zone as there has been earthquake activity in the past.

Earthquakes may cause injury and death. Damage to residential, commercial and industrial buildings, as well as stock and equipment is possible. Local Government, agriculture and viticulture may be impacted and essential services may be damaged causing disruption and public inconvenience

In an earthquake, it's important that you quickly:

- **DROP** to the ground close to you, where you can avoid injury from flying debris.
- Take **COVER** under something strong, like a sturdy table.
- **HOLD** on to it until the shaking stops.

For information on how to minimise the impact to you and your family or business visit: https://www.sa.gov.au/topics/emergencies-and-safety/types/earthquake

RECENT EARTHQUAKE EVENTS

In 1997, Burra experienced a 5.0 magnitude earthquake. While no major damage was caused, it was felt up to 170km away.

In 1902, Warooka experienced a 6.0 magnitude earthquake causing 2 deaths and 1 injury and widespread damage to the town's stone buildings.

Risk Assessment Scenarios

To understand the impact of earthquake on the Zone, the following scenarios were considered as part of the risk assessment:

Scenario 1 – 5.5 magnitude – hypothetical event near Port Pirie

- $115m damage to residential homes
- $98 million damage to commercial and industrial buildings
- 1 severe injury or death
- 8 light to moderate injuries

Scenario 2 – 6.3 magnitude – hypothetical earthquake near Port Pirie

- $184m damage to residential homes
- $121 million damage to commercial and industrial buildings
- 1 severe injury or death
- 7 light to moderate injuries

ARE YOU PREPARED?
Checklist

Are you prepared?

- [ ] Do you know what types of emergency and disasters might affect you?
- [ ] Does your household have an emergency plan? (more details on this page)
- [ ] In the last year, have you done anything to protect your home? (e.g. clear gutters or vegetation)
- [ ] Do you have appropriate and adequate insurance cover?
- [ ] Have you prepared an emergency kit? (visit sa.gov.au/emergencies/ and look up emergency preparation for more information)

To assist in your Emergency Management Planning, the following list provides questions to consider:

- [ ] Who will you include in the plan? Family, pets, neighbours, grandparents, children etc
- [ ] What will you do if some of you are not home?
- [ ] Consider when to evacuate during flood, storm, bushfire or other emergencies
- [ ] Where will you evacuate to? Meeting place near home, meeting place away from home?
- [ ] Can you keep your business going during and after disasters? (go to sa.gov.au/emergencies-and-safety/ for more information)

Think about the different kind of emergencies that could affect you.

Have you considered making a plan? For help with making a plan:

- **Red Cross**: redcross.org.au/prepare
- **CFS Bushfire plan**: cfs.sa.gov.au/site/prepare_for_a_fire/5_minute_bushfire_plan.jsp
- **Emergency plans**: sa.gov.au/topics/emergencies-and-safety/prepare-for-an-emergency/emergency-plan

Equipment connected over the nbn™ access network will not work during a power blackout.

Make sure you have a battery powered radio and your mobile phone is fully charged.

Disasters happen - don't think if, think when!

Government of South Australia

NOTES

Sims Cove, Yorke Peninsula.

Warnings and advice can be obtained from a number of sources:

sa.gov.au/topics/emergencies-and-safety

your local radio station (ABC Radio 639 AM – Port Pirie, ABC News Radio 102.7 FM)

bom.gov.au for Bureau of Meteorology (BoM) weather and warnings updates including local seven day forecasts.

Government of South Australia