

# KEY HAZARDS & RISKS SUMMARY

Emergency Management Plan

## BAROSSA ZONE



## CONTENTS

|                                |    |
|--------------------------------|----|
| INTRODUCTION                   | 3  |
| TOP HAZARDS AT A GLANCE        | 4  |
| BAROSSA ZONE IN FOCUS          | 6  |
| UNDERSTANDING OUR RISK PROFILE | 7  |
| MAJOR HAZARDS                  | 9  |
| 1. Extreme Weather – Heat      | 10 |
| 2. Extreme Weather – Storm     | 11 |
| 3. Bushfire                    | 12 |
| 4. Flood                       | 13 |
| 5. Animal and Plant Disease    | 14 |
| CHECKLIST                      | 15 |

### councils

Adelaide Plains Council  
Barossa Council  
Light Regional Council  
The Town of Gawler

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## INTRODUCTION
















Across South Australia there are a range of hazards 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 Barossa Zone Emergency Management Plan (ZEMP) which provides information on natural disasters and hazards identified as having a specific relationship to the Barossa Zone.



*Bethany Wines, Tanunda, Barossa Valley.*

## TOP HAZARDS AT A GLANCE FOR THE BAROSSA ZONE AND THEIR IMPACTS

| Hazard                      | People                                                                             | Economy                                                                             | Social/<br>Community                                                                 | Environment                                                                         |
|-----------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Extreme Weather<br>- Heat   |   |    |   |  |
| Extreme Weather<br>- Storm  |   |    |   |                                                                                     |
| Bushfire                    |   |    |   |  |
| Flood                       |  |   |  |                                                                                     |
| Animal and<br>Plant Disease |                                                                                    |  |                                                                                      |                                                                                     |

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.

**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.

**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.

**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.

**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 disease 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.



A photograph of a paved road stretching into the distance, flanked by tall palm trees. The sky is clear and blue. The text is overlaid in the upper center of the image.

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



## BAROSSA ZONE IN FOCUS

**4**

**councils**



population  
**71,386**

**SIZE**

**3,100km<sup>2</sup>**

metropolitan and  
residential areas,  
mangroves, wine regions,  
forests, valleys and plains



employment  
**34,588**

**\$2.7b**

Gross Regional  
Product



**3.7m**  
chickens

**400,000**  
sheep



**WORLD  
FAMOUS**  
Barossa  
Wine

**TOURISM**  
**\$216m**

per year

**842**

tourism related businesses

**MAJOR Industries**

Tourism

Wine  
Production

Agriculture

FORESTRY

**KEY**  
infrastructure

PORT WAKEFIELD ROAD  
Sturt Highway  
NORTHERN EXPRESSWAY  
Gawler Railway line  
Moomba-Adelaide  
Gas Pipeline  
Mannum-Adelaide  
Water Pipeline

**HEALTH SERVICES**

**5**  
hospitals

**10+**

aged care  
facilities



UNIVERSITY OF  
ADELAIDE  
Roseworthy  
Campus



HISTORIC  
**GERMAN**  
TOWNSHIPS

by **2070**

**10-  
20%**

DRIER



**1.5°  
C**

WARMER



SEA  
LEVEL  
RISE



Jack Bobridge,  
Heysen,  
Kidman and  
Mawson

**TRAILS**

**SOUTH PARA,  
WARREN &  
BAROSSA  
RESERVOIRS**



## 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](#)<sup>1</sup> (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 Barossa 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.**

<sup>1</sup>National Strategy for Disaster Resilience: [http://www.safecom.sa.gov.au/site/emergency\\_management/natural\\_disaster\\_resilience\\_program.jsp](http://www.safecom.sa.gov.au/site/emergency_management/natural_disaster_resilience_program.jsp)



*Barossa Canola Field.*





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.



## MAJOR HAZARDS

### The Barossa Zone

The Barossa ZEMC has identified five hazards which are most likely to impact the zone. These are:

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

### 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 most impacts in the Zone.

The Barossa Zone Emergency Management Plan includes detailed information about the five relevant hazards in the Zone: extreme heat, extreme storm, bushfire, flood and animal and plant disease 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

**21** CFS Brigades

**1** SES unit

**3** MFS units

**5** AMBULANCE stations

### History of Emergencies

**2016**  
**EXTREME STORM**  
& Statewide blackout

**2016, 2010, 2005**  
Gawler and Light River **FLOODS**

**2014**  
Eden Valley  
**BUSHFIRE**

**2015**  
Pinery  
**BUSHFIRE**

## 1. EXTREME WEATHER - 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 are a particular risk for anyone who does not take precautions to keep cool, even individuals who are healthy.

Heatwaves can be the cause of death and significant health issues in people with kidney, heart disease and mental health issues. This can increase the demand on the health sector significantly.

The environment, including the health and population numbers of critically endangered species may be affected by extreme heat. Other wildlife, stock and pets can also suffer.

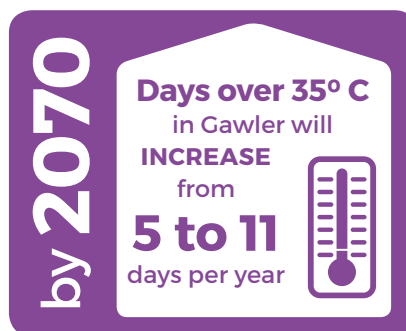
At an economic level, extreme heat has the potential to damage crops, grapes and livestock, temporarily stop outdoor work and prevent industries from functioning. Damage to business stock, interruptions to major events and decreased tourism can also reduce earnings. Impacts to infrastructure can also be expensive. Extreme heat can damage roads and railways, cause electrical failures and reduce drinking water supply as power is not available for pumping.

All of these factors, particularly loss of earnings and death and illness, can contribute to stress within the affected community.

**Extreme heatwaves are a particular risk for anyone who does not take precautions to keep cool, even individuals who are healthy.**

The risk of death and serious illness is particularly high for the elderly, children and those working 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.



### 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



**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](http://www.sa.gov.au/topics/emergencies-and-safety/types/extreme-heat)**



## 2. EXTREME STORM

Extreme storms are more commonly observed than any other natural hazard in South Australia and the Zone experiences storms several times per year. 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 Zone experiences storms several times per year. The extreme storm risk assessment identified a number of risks to the Zone. Extreme storms can result in death and injury, people having to find alternate accommodation due to property damage, increased demand on health services and essential services and impacts to sporting events and gatherings.

The economy can be impacted by damage to workplaces, Local Government infrastructure, crops, grapes, livestock and greenhouses. Extreme storms can have impacts to infrastructure which can also result in significant economic losses. Damage to wastewater, roads and major freight routes, telecommunications, electrical infrastructure are all possible.

It may be hard for the public to access usual Local Government services as infrastructure may be damaged or there may be additional resources required to manage the impacts of the storm.

If sporting events or large festivals (for example a Day on the Green) are cancelled there is a possibility of a decrease in social morale.

### 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** – Based on the Port Broughton storm in 1979. Impacts of this event included:

- 50 homes destroyed and over 200 damaged
- Planes at airfields damaged
- Many street trees blown down
- Power lines in many suburbs brought down
- Millions of dollars damage to horticultural production

**Scenario 2** – A hypothetical escalation of Scenario 1. Impacts include:

- Widespread loss of food
- Breakdown in transport systems
- Overwhelming of the health sector
- Significant and extended power failures

### RECENT EXTREME STORM EVENTS

**September 2016** – a state-wide extreme storm led to state-wide power outages and flooding in the Zone. The storm cost \$367m to businesses state-wide.

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](http://www.sa.gov.au/topics/emergencies-and-safety/types/extreme-storm)**

### 3. 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. Barossa has a history of being affected by bushfire.

The bushfire risk assessment, showed that some of the main impacts of a bushfire in the Zone could be to people. Deaths and injuries can occur from people evacuating under dangerous conditions at the last minute, traffic accidents due to poor visibility, people attempting to rescue pets and those who refuse to evacuate or are trapped in properties.

Bushfires can destroy native vegetation contributing to loss of species, amenity and soil erosion.

Significant infrastructure impacts from bushfires in the Barossa are possible, including destruction of wine storage facilities, agricultural and gas and water infrastructure which can contribute to economic loss. Damage and loss of buildings and homes, Local Government infrastructure, vineyards, livestock and businesses can also affect the Zones economy. This may result in longer term impacts as a result of delayed insurance claims, delays to small business operation and reduction in tourism earnings.

Damage to the Zone's facilities including Roseworthy campus and Turretfield Research Centre may cause stress to the community. Community services may further be affected by increased demand on health services and State Government infrastructure.

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

#### 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 - Wangary Fire - January 2005

- 9 people killed, 115 injured
- 93 homes, 316 sheds, 45 vehicles and 139 farm machines destroyed
- 6,300kms of fencing lost
- 47,000 livestock losses
- Estimated loss > \$100m

##### 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

##### Eden Valley - January 2014

This fire destroyed four homes, burnt 25,000 hectares, destroyed hundreds of kilometres of fencing and killed livestock and native animals.

##### Pinery - November 2015

Very fast moving fire which resulted in loss of 2 lives, 90 hospitalisations, 91 properties destroyed and death of a significant number of animals.



**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>**



## 4. FLOOD

In the Barossa Zone, flooding is mainly caused by riverine flooding in the Gawler and Light Rivers, the North and South Para Rivers and several creeks including Lyndoch, Jacobs and Greenock Creek.

Both Gawler and Light Rivers have an extensive history of flooding, most recently in 2016, 2005 and 1992. These river channels get smaller as they near the coast, meaning that the lower portions of the rivers flood easily, with water spreading extensively over the floodplain. Flooding of the Gawler River causes significant economic losses, particularly within the horticultural area of Virginia.

The Zone is also impacted by stormwater flooding and coastal inundation. Stormwater flooding occurs when drainage infrastructure becomes blocked. This is generally localised and occurs in heavy rainfall caused by storms. Coastal inundation occurs along Middle Beach, Webb Beach, Thompson Beach and Parham where a number of residential properties are affected due to the low topography and poor drainage.

A range of scenarios including coastal flooding and riverine flooding were considered during the risk assessment.

Some of the key risks identified included death and injury of people from fast-moving water or driving through floodwater. Communities may also be affected by flooding by isolation due to floodwaters and people having to relocate temporarily or long term due to property damage, particularly in the Adelaide Plains Council from Gawler River floods.

Significant economic impacts due to damage to major industry and agriculture has occurred in all major floods in the Zone and this is identified as a key risk for the Zone. Damage to roads including the major transport roads in the Barossa can cause inconvenience and be very expensive and time-consuming to repair.

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

|      |                                                                               |
|------|-------------------------------------------------------------------------------|
| 1983 | The North Para and Gawler Rivers flooded with Nuriootpa inundated.            |
| 1992 | Gawler River flooded three times.                                             |
| 2005 | Gawler flood.                                                                 |
| 2016 | Major flooding of Gawler and Light Rivers causing millions of dollars damage. |

Some impacts have been significantly reduced in the Barossa Zone due to mitigation efforts such as temporary flood walls in Nuriootpa and the Bruce Eastick Dam on the North Para River. Further measures are being considered.

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>**

## 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 Barossa 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 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](http://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

### Pacific Oyster Mortality Syndrome (POMS) Disease

- The first Australian case of POMS was recorded in 2010 in New South Wales, with the most recent outbreak detected in Port River in February 2018.
- Since February 2018, a state-wide surveillance program detected NO POMS virus in the oyster growing areas in the State (Eyre Peninsula and Kangaroo Island) and are declared as POMS free.
- A ban on the removal of all bivalve shellfish from the Port River estuary system, including West Lakes is declared to reduce the potential spread of the disease.
- General restrictions have been in place for importing oysters into SA to prevent disease introduction and safeguard South Australia's \$32 million oyster growing industry



# ARE YOU PREPARED?

## Checklist

### Are you prepared?

- ☐ Do you know what types of emergency and disaster 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/](http://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/](http://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](http://redcross.org.au/prepare)
- **CFS Bushfire plan:**  
[cfs.sa.gov.au/site/prepare\\_for\\_a\\_fire/5\\_minute\\_bushfire\\_plan.jsp](http://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](http://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!**



*St. Hugo Wines, Rowland Flat.*

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



**[sa.gov.au/topics/emergencies-and-safety](https://sa.gov.au/topics/emergencies-and-safety)**



**your local radio station** (ABC Radio 891 AM)



**[bom.gov.au](https://bom.gov.au)** for Bureau of Meteorology (BoM) weather and warnings updates including local seven day forecasts.



**Government  
of South Australia**