KEY HAZARDS & RISKS SUMMARY

Emergency Management Plan

FAR NORTH ZONE

Bunyeroo Valley, Flinders Ranges.

Government of South Australia

CONTENTS

councils

Anangu Pitjantjatjara Yankunytjatjara Lands

District Council of Coober Pedy

Municipal Council of Roxby Downs

Outback Communities Authority

Port Augusta City Council

The Flinders Ranges Council

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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 have significant effects on people's health and wellbeing, along with severe impacts on community social, environmental and economic structures.

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

Umoona Mine Guided Tour

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

Hazard	People	Economy	Social/ Community	Environment
Extreme Weather - Heat				
Bushfire				
Flood				
Escape of Hazardous Material				

The table above gives an indication of the 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. Never leave your vehicle if you are stranded in remote areas.

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.

Escape of Hazardous Material – the Far North has many places where hazardous materials are manufactured, stored, transported, used and disposed of. Dangerous goods may be corrosive, flammable, explosive, spontaneously combustible, toxic, and oxidising or water reactive. Exposure or contact with some of these substances may cause cancer, skin disease, poisoning and respiratory illness. Ensure to include plastic sheets, duct tape and scissors to seal any areas where air can get inside your home or building within your emergency kit in preparation for Escape of Hazardous Materials.

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

Kati Thanda - Lake Eyre National Park - Wrightsair Scenic Flight

FAR NORTH ZONE IN FOCUS

4
councils
Outback Communities Authority plus APY Lands

1.6% of SA's population
28,212

800,000
square kilometres
land including ranges, arid lands, pastoral properties, mining leases and aboriginal lands
80% of SA's total area

employment
64%

$4.02b
Gross Regional Product

over
260,000
cattle
100,000 sheep
40,000 goats

18%
employed in resource extraction

11%
population indigenous

MAJOR Industries
Agriculture
LIVESTOCK
Tourism
mining
Resource extraction

KEY infrastructure
Moomba-Adelaide gas pipeline
Morgan-Whyalla water pipeline
Pt Augusta Highway
Woomera Test Range
CULTANA TRAINING AREA

HEALTH SERVICES
6
hospitals
8 HEALTH services

TOURISM
$425m
per year visitor spend
694,000
overnight visitors per year
516 tourism related businesses

Lake Eyre
Lake Torrens
LAKE FROME

by 2070
1.8°C WARMER
33cm SEA LEVEL RISE
6% DRIER

FLINDERS RANGES
Gammon Ranges
Wilpena Pound

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 Far North Zone Emergency Management Plan (ZEMP). The ZEMP relies on strong, cooperative, coordinated and consultative relationships among State Government agencies, local governments to work together in disasters. State Government, 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*

Lake Harry.

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.

Outback Sign, Far North Zone. Photo by Mark Sutton

MAJOR HAZARDS

The Far North Zone

1. Extreme Weather - Heat
2. Bushfire
3. Flood
4. Escape of Hazardous Materials

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, 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 Far North Zone Emergency Management Plan includes detailed information about the four relevant hazards in the Zone: extreme heat, bushfire, flood and escape of hazardous material, 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

62 CFS Brigades
11 SES units
1 MFS station
17 POLICE stations
8 AMBULANCE stations

History of Emergencies

1959/60 HEATWAVE

2000 BUSHFIRES

2011 Cooper Creek / Birdsville Track Lake Eyre **Flood**

2012 Leigh Creek **Flash Flood**

2012 Ernabella **Earthquake**

1. 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. During a heatwave the Far North can experience temperatures up to 50˚C (122˚F). Heatwaves are a particular risk for anyone who does not take precautions to keep cool, even individuals who are healthy.

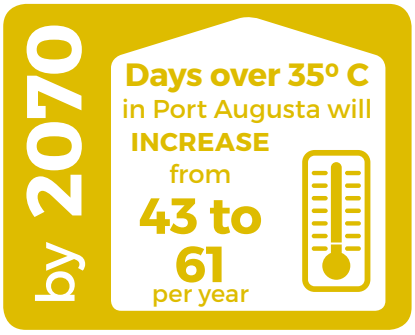
Parts of the Far North are very remote; the people who live in its isolated communities and the many people who visit this vast region can be especially at risk of being impacted by extreme heat. Those particularly vulnerable to severe impacts are, the elderly, children, those people driving in extreme heat along with those working or enjoying recreational activities outdoors.

Heatwaves can be the cause of death and significant health issues in people with kidney, heart disease and mental health issues.

Extreme heat can even cause damage to infrastructure by buckling railway lines, warping roads and damaging electricity infrastructure, which may exacerbate isolation and impact on the availability of emergency support. In extreme heat, many petrol stations are unable to pump fuel meaning that people may be unable to drive until the weather cools. Additional impacts to the economy include people not being able to work and business closures. Extreme heat can have critical impacts on livestock which can further affect earnings of farmers and the broader economy.

In extreme heat, people are encouraged to take shelter, keep cool, avoid driving unless essential, take ample drinking water when travelling and never leave children or animals in vehicles.

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 13 consecutive days with a max temp >37.8˚C (in Adelaide), causing at least $150 million in damage and reduced income for South Australia. 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

December 1979
- six days of 45˚C heat caused buckled railway lines, death of wildlife and livestock

January 1960
- this heatwave caused a number of deaths including babies and 5 people who died on an outback road

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 Zone 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. Key groups who could be most affected by a bushfire include tourists, campers, homeless and remote populations, emergency services personnel and last-minute evacuees.

Bushfire further has the potential to impact the economy, community and environment. There could be stock deaths, building damage and damage to State and Local Government infrastructure including roads which could result in lost earnings and substantial repair costs across the Zone. Disruption to freight routes could have nation-wide economic implications while at a regional level prevent the supply of crucial goods for remote communities.

From a social perspective, communities may experience an increased demand on health services, closure of schools and a degree of stress, isolation and upheaval especially during recovery.

Environmental risks include impacts to natural habitats and critically endangered species.

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

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

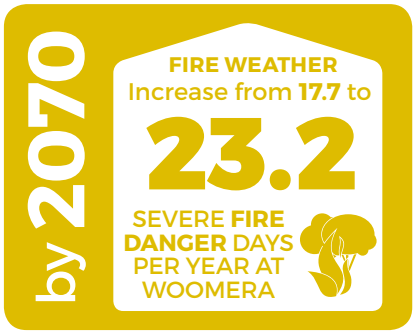
To understand the impact of bushfire on the Zone, the following scenarios were considered as part of the risk assessment:

Scenario 1 - Boorabbin Fire (WA) – 28 December 2006

- Closure of major highway
- Death of three truck drivers after highway was opened too early

Scenario 2 - hypothetical event in the Cooper Basin

- Impacts to satellites and gas sites
- Threatens Strzelecki and Innamincka Reserves
- Could cause impacts to tourists
- Up to $25 million damage



3. FLOOD

Don't drive or walk through floodwaters

The Far North is typically dry but has a history of severe periodic flooding. While flooding in the Far North can often be a tourist drawcard it also has risks.

In the Far North, flooding is caused by heavy rainfall as tropical cyclones from Queensland and Western Australia move into the Zone; coastal flooding of low lying areas at Port Augusta; and riverine flooding of the many creeks and watercourses within the Flinders ranges and Outback Region. Floodwaters can flow south from Queensland in large events lasting for months and smaller watercourses are prone to flooding due to their potential to respond to rainfall in less than six hours. Significant watercourses include Saltia Creek, Cooper Creek, Hamilton River, Diamantina River, Strezlecki Creek, Lipson Creek, Eyre Creek, Georgina Creek, and other small watercourses filling into Lake Eyre. These watercourses are predominately ephemeral.

Flooding can occur rapidly, however it can take a long time for the waters to recede. Roads can become impassable, quickly trapping unprepared locals and tourists and isolating remote towns and communities towns for extended periods.

One of the more significant impacts of flooding is damage to road surfaces, which can be extremely expensive and take a long time to repair. Damage to mining sites and property and personal belongings of residents or tourists may also occur.

Flood may cause loss of livestock and subsequent financial losses to the agricultural sector.

It is very important that you aware of flood warnings for the Far North, do not camp in creek beds and never drive through floodwaters.

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

1974	Significant rains in the first half of the year caused flooding across the Zone at many towns and communities for several months. There was notable property, mining, road and rail damage and many livestock were lost. Air drops to communities and rescues of stranded people were required due to being isolation by floodwater.
2011	Large monsoonal rains filled Lake Eyre from flooded creeks in the Lake Eyre Basin. Cooper Creek was flooded for around six months resulting in infrastructure damage, road closures and isolated communities.

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

4. ESCAPE OF HAZARDOUS MATERIALS AND URBAN FIRE

Escape of hazardous materials is identified as a priority hazard for the Far North Zone due to a large number of industries in the Zone and a large number of vehicles carrying dangerous goods through the region. Some identified hazardous materials include ammonium nitrate, nitric acid and liquid petroleum gas (LPG).

These substances have the potential to cause a range of impacts to Far North Zone if they are incorrectly handled or involved in an accident, which causes them to be released into the environment.

Some of the most significant impacts of hazardous materials include death and injury of people exposed to these materials or caught in subsequent explosions or fires, damage or destruction of properties and business and people unable to return to their houses in the short and long term while the situation is brought under control.

There can also be substantial disruption to transport routes, telecommunications infrastructure and power infrastructure. This can have additional flow on effects such as disruptions to food supply and mining and agricultural sectors. Some services including hospitals and emergency response agencies may be overwhelmed.

Environmental impacts can include pollution of drinking water and waterways and disturbance of asbestos as a result of explosions.

For information on what can be done to minimise the impact to you and your family visit: http://www.sa.gov.au/topics/emergencies-and-safety/types/chemical-emergency

Risk Assessment Scenarios

To understand the impact of escape of hazardous materials and urban fire on the Zone, the following hypothetical scenarios where considered as part of the risk assessment:

Hypothetical Scenario 1 – an incident on Port Augusta Bridge

- A truck that is carrying ammonium nitrate and a car collide
- Traffic stops with an exclusion zone of 1km enforced around bridge
- 2 people killed in initial explosion and fire, several injured
- Structural damage to bridge and houses within close proximity to explosions
- Environmental impacts to landscape, contamination in wetlands, mangroves and storm water drains.

Hypothetical Scenario 2 – LPG gas leak in Roxby Downs reticulated gas storage tanks

- A car drives through a slow gas leak and causes a vapour cloud gas explosion
- Damage to houses within 600m of explosion
- Three further explosions and a large fire occur
- 43 people injured, about 2000 evacuated

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/ 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

The Breakaways Conservation Park, Kanku, Coober Pedy SA. Photo source: Tourism Australia.

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

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

ABC 639am and your local radio station (Andamooka SA 105.9 FM/107.5 FM, Coober Pedy SA 106.1 FM/107.7 FM, Leigh Creek South SA 1602 AM/106.1 FM, Marree SA 105.7 FM/107.3 FM, Port Pirie SA 639 AM, **Port Augusta - 5AU and 1242AM**, Roxby Downs SA 102.7 FM/101.9 FM, Woomera SA 1584 AM/105.7 FM, Spencer Gulf North SA 102.7 FM/106.7 FM, Quorn SA 107.9 FM)

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

Government of South Australia