



**Government  
of South Australia**

**State Bushfire Coordination Committee**

*Interim*  
**SOUTH AUSTRALIAN  
STATE BUSHFIRE MANAGEMENT PLAN**

**PART ONE**

**INFORMATION TO SUPPORT A STATE BUSHFIRE  
RISK ASSESSMENT**

**October 2010**

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Government of  
South Australia

PREPARE. ACT. SURVIVE.



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# INFORMATION FOR PUBLIC CONSULTATION

This document has been prepared by the State Bushfire Coordination Committee (SBCC) pursuant to Section 73 of the *Fire and Emergency Services Act 2005* (SA).

The SBCC has determined that this draft Interim State Bushfire Management Plan will be exhibited for public consultation for a period of four (4) weeks - commencing on 28th October 2010 and concluding on 26th November 2010 - during which time written submissions are invited from the public.

As such, members of the public, whether as private individuals or as members of community interest groups, are invited to comment on the plan. Submissions should be in writing, and as detailed and specific as possible. However, any comments, no matter how brief or general are welcome. All comments received will be referred to the State Bushfire Coordination Committee with the plan for their final deliberation and approval.

The closing date for public comments on this plan is Friday 26th November 2010.

Comments should be forwarded to:

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## PREAMBLE

The preamble provides the context for this interim iteration of the State Bushfire Management Plan.

Pursuant to Section 73 of the *Fire and Emergency Services Act 2005* (SA), the State Bushfire Coordination Committee is required to prepare a State Bushfire Management Plan. The legislation prescribes the contents of the plan as follows:

s.73

- (2) *The plan is to set out principles, policies and standards for bushfire management in the State from a high-level or strategic perspective.*
- (3) *The primary purpose of the plan is to identify major bushfire risks in the State and recommend appropriate action that will provide protection to life, property and the environment from the effects of bushfires.*
- (4) *Without limiting subsection (2), the plan must—*
  - (a) *set out principles to be applied in achieving appropriate levels of hazard reduction for bushfire management; and*
  - (b) *outline strategies to achieve the State-wide coordination and integration of bushfire management activities; and*
  - (c) *set standards or requirements that must be applied or observed in the preparation and implementation of Bushfire Management Area Plans; and*
  - (d) *include or address other matters prescribed by the regulations or specified by the Minister after consultation with the Chief Officer of SACFS.*

The State Bushfire Coordination Committee has resolved that an Interim State Bushfire Management Plan (SBMP) should be prepared for the 2010/2011 Fire Danger Season, with the full plan to be prepared prior to the 2011/2012 Fire Danger Season. From 2011/2012, the plan will be reviewed every four years, pursuant to s.73(5) of the *Fire and Emergency Services Act 2005* (SA). The SBCC further resolved that, given the extent of the material to be covered within the SBMP, the plan be divided into three parts, as set out below.

Part 1: a State level landscape based assessment of bushfire risk (s.73(3))

Part 2: a plan of bushfire management arrangements, encompassing:

- a. strategic management policy and principles, including definition of scope of risk treatments (ss.73(2); 73(3))
- b. strategic approach to hazard reduction (s.73(4)(a))
- c. strategies for state-wide coordination and integration of bushfire management activities (s.73(4)(b))

To assist in meeting the requirements of a Hazard Leader Plan under the SEMP, it is proposed that Part 2 of the SBMP be structured in accordance with a PPRR (Prevention, Preparedness, Response and Recovery) framework.

Part 3: a statement of requirements for bushfire management area plans (s.73(4)(c))

In this Interim State Bushfire Management Plan, the following elements are presented:

Part 1: State wide Bushfire Risk Assessment

Information collated to date to support bushfire risk assessment throughout South Australia. A substantial amount of data is being collated to assist Bushfire Management Committees to prepare Bushfire Management Area Plans, and this process is ongoing.

Part 2: Plan of Bushfire Management Arrangements

An interim statement of the legislative context for bushfire management, bushfire management policy principles, and the scope of their implementation within South Australia, including the required elements of the Hazard Leader Plan under the State Emergency Management Plan.

Part 3: Bushfire Management Area Planning Guidelines

The SBCC has approved interim Bushfire Management Area Planning Guidelines for Bushfire Management Committees while the New South Wales Rural Fire Service (NSW RFS) Bushfire Risk Management Planning Guidelines are under review and adaptation for South Australia.

The Planning Guidelines will include processes for incorporation of existing land management agency fire management plans and local government works plans.

**Please note:**

*It is important to highlight that the State Bushfire Management Plan is a strategic level document designed to provide policy direction for fire, emergency and land management agencies and Bushfire Management Committees. It should not be mistaken for a document providing guidance to the general public.*

# 1. INTRODUCTION

This section of the plan is designed to meet the requirement under the *Fire and Emergency Services Act 2005* (SA) to "identify major bushfire risks in the State" (s.73(3)). It will provide a state-wide bushfire risk assessment, including identification of Special Fire Protection Assets, vulnerable communities and essential services. The risk assessment will be undertaken within the framework of *AS ISO31000: 2009*, utilising an adaptation of the NSW RFS bushfire risk management planning guidelines.

It is anticipated that the initial iteration of this risk assessment will be developed for the full version of the State Bushfire Management Plan to be finalised prior to the 2011/2012 Fire Danger Season.

This interim document presents the best available quantitative information to support the risk assessment process. This information will be utilised by Bushfire Management Committees to develop interim Bushfire Management Area Plans. Collation of information to support bushfire risk assessment is an ongoing process. An outline of the information gathered to date, and further information to be obtained is provided below, together with an overview of the risk assessment process in relation to the data being collated. An outline of the quantitative data being collated is provided below.

It is important to note that there are a range of existing dynamic risk assessment processes in place within South Australia at the present time to support the management of bushfire risk. These include the seasonal outlooks compiled by the Bureau of Meteorology and the SA CFS, which inform determination of Fire Danger Season dates, mitigation measures, and preparatory resource allocation for suppression purposes. The seasonal outlooks assess the short and medium term rainfall, soil dryness, climatic cycles (through measures such as the El Nino/Southern Oscillation (ENSO) Index), and the state of grassland and forest fuels. More time specific climatic information informs decision-making regarding the declaration of Total Fire Ban days and associated community information and public warnings.

The state-wide risk assessment being developed will build upon and enhance these processes.

## 1.1 Quantitative Data to Support Bushfire Risk Assessment

In general terms, from a quantitative data collation perspective, the risk assessment process contains the following key elements:

- Establishment of the context for the risk
- Assessment of the likelihood of bushfire occurring in an area
- Assessment of the consequences of a bushfire occurring in an area.

It is important to note that the risk assessment process that will be utilised for the preparation of Bushfire Management Area Plans (BMAPs) incorporates qualitative as well as quantitative information, and includes extensive structured opportunities for community input into the planning process.

The present overview of data being collated to support the risk assessment process is intended to provide an indication of the nature of the quantitative information that will be used in the planning process.

Not all of this data has been collated at this stage. *The information included within this current document is highlighted in italics.*

Quantitative data to support context assessment:

- *land area by BMA (refer Appendix 2)*
- land tenure by BMA
- land use by BMA
- *FBDs and BMAs (refer Appendix 6)*
- *population by BMA: key centres (refer Appendix 3)*
- climatic data by BMA: rainfall (average, seasonal distribution), wind, temperature, soil dryness, curing, weather patterns, drought impacts
- *topography (refer Appendix 4)*
- *fuel hazard type by BMA (refer Appendix 5)*

Quantitative data to support likelihood assessment:

- *fire history: frequency (refer Appendix 7), last fire (refer Appendix 8), thresholds, all by BMA*
- fire cause statistics by BMA (*refer Appendix 1 - this data is currently being updated*)
- FDI history by FBD (and BMA)
- dry lightning history by BMA (for relevant BMAs only)

Quantitative data to support consequence assessment:

- vulnerable communities by BMA
- critical infrastructure/essential services by BMA (power, water, telecommunications, defence, weather, railways, roads, gas and oil, waste management etc.)
- Special Fire Protection Assets by BMA (eg. schools, child care centres, aged care facilities, hospitals, tourism accommodation etc.)

Initially all of this data is being mapped by Bushfire Management Area in order to facilitate the preparation of interim Bushfire Management Area Plans by Bushfire Management Committees. There are also practical issues of scale, as much of this detailed data cannot be effectively presented on a state-wide scale. As the full version of the State Bushfire Management Plan is prepared, options for presentation of data at a State scale will be considered.

## 2. CONTEXT

*The information provided below is drawn in part from the former State Bushfire Prevention Plan.*

### 2.1 Location, Land Tenure & Land Use

#### 2.1.1 State Description

South Australia covers a total area of 984,377 square kilometres. South Australia is a land of generally low relief with the inland area largely covered by plains, sand and gibber deserts. Approximately 50% of the State is less than 150 metres above sea level and over 80% less than 300 metres. The Mount Lofty-Flinders Ranges are the major mountain system, extending north about 800 km from Cape Jervis to the northern end of Lake Torrens. The tallest mountains in the Mount Lofty Ranges do not exceed 1,200 metres, with Mount Lofty itself being 727 metres, and in the Flinders Ranges 1,168 metres.

In the south, the Mt Lofty Ranges are comparatively low, and the western side of these ranges slope steeply to the Adelaide Plains. On the eastern side, more gentle slopes merge into the South Australian Murray Darling Basin. To the north, the Flinders Ranges are higher and with sharper outline than the Mt Lofty Ranges.

The western half of the State is largely occupied by a low plateau over which an intermittent series of low ranges, including the Warburton, Stuart, Denison, Peake, and Everard Ranges, stretching from the Flinders to the Musgrave Ranges in the far north-west. Mt Woodroffe, the highest point in the State at 1,435 metres, is located in the Musgrave Ranges. The hills of the Gawler Ranges form the northern side of the Eyre Peninsula triangle and to the west of Whyalla lie the Middleback Ranges.

Surrounding the northern Flinders Ranges is a series of salt lakes that may fill after heavy rainfall, normally appearing as shallow depressions with salt or clay encrusted surfaces. Lake Eyre, the largest of these, is 16 metres below mean sea level and is fed by a series of intermittently flowing rivers, including the Finke, the Diamantina and Cooper Creek, which traverse the plains of the northeast. To the south of Lake Eyre are Lakes Gairdner, Frome and Torrens, the last being 240 kilometres in length. The River Murray is the state's only major river.

#### 2.1.2 Land tenure

South Australia Land Tenure (1993)	Area (thousand square kilometres)
Public	217.6
Private	576.8
Aboriginal Lands	189.6
<b>TOTAL</b>	<b>984.0</b>



<b>South Australia Public Land Tenure (2002)</b>	<b>Area (thousand square kilometres)</b>
Nature conservation reserve	213.0
Vacant crown land	2.5
Other crown land	4.6
Forestry reserve	1.3
Water reserve	0.5
Defence land	3.8
Mining reserve	0.1
Mixed category lands	0.7
<b>TOTAL</b>	<b>226.5</b>

<b>South Australia Private Land Tenure (1993)</b>	<b>Area (thousand square kilometres)</b>
Freehold	158.4
Crown leasehold	418.4
<b>TOTAL</b>	<b>576.8</b>

## **2.2 Climate and Bushfire Season**

### **2.2.1 Climate**

The basic climatic features of the South Australia are hot, dry summers with relatively mild nights, and cool but not severe winters with most rainfall occurring during the months of May, June, July and August.

#### **Average annual rainfall**

South Australia is the driest State in Australia with about 80% of the State normally receiving less than 250 millimetres of rain per annum. The average annual rainfall is highest along the Flinders and Mt Lofty Ranges, near the southern coasts coast, in the far South East of the State, and parts of Kangaroo Island. Averages decrease rapidly to less than 250 millimetres within 150 to 250 kilometres inland.

#### **Seasonal distribution of rainfall**

In the southern areas of the State, rainfall has a marked winter maximum. Rainfall from November to March is generally light and unreliable. A high evaporation rate during these months means that there is no summer growing season. The first significant rains generally arrive during late April or May; winter is usually the wettest period with rains tending to decrease during September and October. By contrast the occurrence of rainfall over the interior of the State is erratic but a trend towards a slight winter maximum is discernible in southern parts of this area. [north east often has summer rain with thunderstorms]

## Wind

The prevailing winds across South Australia are generally south-easterly during the summer months, with prevailing fire weather conditions dominated by northerly to north-westerly winds. A well-defined sea-breeze is common along the whole of the coastal fringe from October through to April or May. During the winter months north-westerly winds predominate, but the proportion of west to south-west winds is also high.

## Temperature

Due to the ocean's moderating effects, daily variations in temperatures tend to increase with distance from the coast. However, the Mt Lofty and Flinders Ranges are cooler than the surrounding country due to their altitude. During summer, mean maximum temperatures range from less than 25°C along the southern coasts to more than 37°C in the far north. In winter minimum temperatures are generally greater than 7°C along the coasts. Most of the inland has values higher than 3°C. However, mean minima of less than 3°C are found on the higher parts of the ranges. The highest temperature recorded in South Australia was 50.7°C at Oodnadatta on 2 January 1960, and the lowest -8.2°C at Yongala on 20 July 1976.

## Influence of Climate and Meteorology

Both climate and weather have an influence on fire fuels and fire behaviour. The fire season in South Australia generally reaches its peak in summer and the length of the season is influenced by seasonal weather patterns.

### 2.2.2 Fire Weather Conditions

#### Weather Patterns and Frontal Movements

The movement of anti-cyclones (High Pressure systems) from west to east in 5-7 day cycles influences South Australian weather. As a result, during summer, fire danger can be expected to increase at intervals of five to seven days when the presence of the anti-cyclones over the Tasman Sea allows a stream of dry northerly air to flow across the State. The strength of the northerly wind depends on the intensity of the pressure gradient to the west of the high pressure cell. If a High stays over the Tasman Sea for several days and becomes what is referred to as 'a blocking High', serious fire danger may be prolonged and reach a peak even when a minor front comes through. Almost all serious fire weather in South Australia has occurred under the presence of a blocking High.

The arrival of a cold front behind the High does not always quickly alleviate extreme fire danger. Winds commonly blow strongly from the north and then through to the northwest or west as a front approaches. As the front passes, these winds are replaced by a strong south-westerly. Unless the change brings immediate rain, there is usually a delay before the cool, moist southerly air cools and moistens the fuels.

## **Drought Impacts**

Drought conditions across South Australia can significantly impact the community in a number of ways. These include fire danger seasons commencing earlier, the number of incidents increasing significantly, fire suppression becoming more difficult and may not be achieved quickly, sufficient supplies of fire fighting water may be scarce, all of which may increase the risk of significant property loss or damage. During these type of events, consideration is required on preparing the community and control agencies to cope with unusual impacts.

### **2.2.3 Fuel Hazard**

Bushfire hazard refers to the combination of environmental factors which influence bushfire behaviour and includes factors such as topography, aspect and vegetation type, quantity and arrangement.

The predominant fuel type in South Australia is characterised by annual grasses which dry-off (cure) during the drier months of the year resulting from the typical influence of the Mediterranean climate in South Australia. In the southern and coastal areas of the State, the curing process generally commences in October in the west of the State and gradually spreads to the wetter areas, such as the Mt Lofty Ranges and the Lower South East, until the grasslands are fully cured in December.

Grassland fuel loads at the beginning of the fire danger season average 4-5 tonnes per hectare (depending on seasonal influence), however harvesting in cropping areas serves to reduce some of this hazard. Grass fuel loads in other areas do not change significantly until later in the season when the influences of grazing and natural decomposition processes come into effect. The status of grassland curing is monitored by CFS and is used in the declaration of official 'Fire Danger Season' dates each year and is considered as a factor in the declaration of a 'Total Fire Ban' day.

Other fuel hazards include forests of both soft and hardwoods, native vegetation, pasture and cropping land and water catchments. Parts of the State with significant areas of remnant native vegetation are confined to Kangaroo Island, the Lower Eyre Peninsula, lower Yorke Peninsula, the Mount Lofty Ranges and the Murray Mallee.

### **Soil Dryness and Fuel Curing**

Climate also influences soil dryness which trends to dryness over the summer months. Soil dryness influences fuel moisture content in bushland areas of the State, with a trend of lower fuel moistures in the summer months resulting in increased fire behaviour.

### **2.2.4 Bushfire Season**

The Fire Danger Season dates for each Fire Ban District generally reflect the bushfire season in each area of the State. Depending upon the season, these dates

may be adjusted. There will often be a period of weeks either side of the official Fire Danger Season when bushfires may occur, particularly if unusual weather conditions are experienced.

In general terms, the northern, western and north eastern areas of the State commence their FDS in early-mid November, and the southern areas late November - early December. This reflects the generally later grass curing rates in the cooler, higher rainfall regions of the State.

The Fire Danger Season concludes in mid-late April around the State, reflecting the general timing of autumn-winter season-breaking rainfall events.

The table below outlines the 'standard' Fire Danger Season dates. As noted above, these may be adjusted according to seasonal conditions.

Fire Ban District	Start Date	Finish Date
Adelaide Metropolitan	1 December 2010	30 April 2011
Eastern Eyre Peninsula	1 November 2010	15 April 2011
Flinders	1 November 2010	15 April 2011
Kangaroo Island	1 December 2010	30 April 2011
Lower Eyre Peninsula	1 November 2010	15 April 2011
Lower South East	22 November 2010	30 April 2011
Mid North	15 November 2010	30 April 2011
Mount Lofty Ranges	1 December 2010	30 April 2011
Murraylands	15 November 2010	15 April 2011
North East Pastoral	1 November 2010	31 March 2011
North West Pastoral	1 November 2010	31 March 2011
Riverland	15 November 2010	15 April 2011
Upper South East	15 November 2010	15 April 2011
West Coast	1 November 2010	15 April 2011
Yorke Peninsula	15 November 2010	30 April 2011

### 2.2.5 Climate Change

The impacts of climate change for preparing for and controlling bushfires need to be assessed by all agencies and strategies and strategies need to be developed to meet community needs. This may include the further development of dry fire fighting, additional prevention / mitigation legislation and stricter land use legislation.

## 2.3 Population Information

*Refer Appendix 2.* Detailed demographic information for each BMA is being collated.

## 2.4 History of Bushfire Frequency and Ignition Cause

### 2.4.1 Major Causes of Ignition

Fire cause statistics (refer Appendix 1) indicate that just over 7% of all incidents in the 2000-2005 period were the result of ignitions following lightning strikes. The remaining 93% of incidents had anthropogenic (human) causes. Of these, 37% were the result of escaped burn offs and campfires or re-kindles. A further 10% were the result of ignitions caused by machinery. 0.5% were deliberately lit.

### 2.4.2 Fire History in South Australia

Current maps of fire history are attached. It is important to note that the fire history information presented on the maps is based on best available data. The data included in the maps was initially based upon fires recorded in protected areas, and does not include many fires that have occurred on private land.

*The following fire history information is extracted from the former State Bushfire Prevention Plan, and has been updated to include recent incidents.*

Research undertaken by Luke and McArthur (1978) indicates that South Australia can expect serious fires somewhere in the State in six or seven years out of every ten.

#### 1917 to 1945

Data on fire occurrence before World War 2 in South Australia is not comprehensive but summarised newspaper reports from that time indicate that for the period between 1917 and 1945 there were forty-four fires recorded. The most widespread fires occurred in 1933-34, 1938-39 and 1943-44. In each of these seasons significant damage was experienced in south-east districts, in or near the Adelaide Hills, and on Eyre Peninsula.

Forty-three of these fires occurred between December and March; four in December, eleven in January, twelve in February and sixteen in March.

#### 1950s

During December 1951 fires caused by lightning burnt about 450,000 hectares in the eastern and north-eastern pastoral districts. A contributing factor to the extent of these fires was high fuel loads resulting from above average rainfall earlier in the year. Losses of stock, feed and fencing were heavy.

The next widespread fire, known as 'Black Sunday', occurred in the Adelaide Hills on January the 2<sup>nd</sup> 1955. Extreme fire weather conditions were recorded in Adelaide during the morning and afternoon, followed by a strong south-westerly change. Two fire fighters lost their lives and damage, spread over a total area of at least 40,000 hectares, was estimated at \$4,000,000.

The relatively mild 1957-58 fire season was followed by a dry autumn during which, in April 1958, eight fire fighters lost their lives in a pine plantation fire in the south-

east.

Towards the end of the 1950s rainfall was above average in many districts; consequently a number of large fires occurred from 1959 to 1961. In 1959 there were two major fires; one near Kongorong, in the South East, covered 28,000 hectares. It caused damage estimated at about \$1,500,000, and cost the life of a grazier. The second fire burnt about 76,000 hectares of grassland and scrub near Wudinna, on the Eyre Peninsula.

### **1960s**

During 1960, damage estimated at \$388,000 occurred when a fire burnt an estimated 6,000 hectares in northern Yorke Peninsula. Two other major fires occurred that year; one near Wirrabara in the Flinders Ranges, with damage estimated at \$20,000 in an area of 8,000 hectares; and the other near Tintinara where 100,000 hectares of pasture and scrub were burnt.

In 1961, a fire in pastoral country burnt a large area near the Wilpena Pound in the northern Flinders Ranges.

The next major fires occurred in 1968-69. A fire in the pastoral area in the Far North West of the State burnt an area of about 900,000 hectares. This was followed by a fire of about 8,000 hectares near Murdinga, on the Eyre Peninsula, where damage amounted to \$140,000.

### **1970s**

Luke and McArthur (1978) report that from July 1966 to June 1972 the average number of fires attended annually in South Australia was about nine hundred. The total area burnt each year averaged 190,000 hectares, ranging from 15,000 hectares to 900,000 hectares depending on the fire season. The estimates of financial loss ranged from \$38,000 to \$245,000 with an average of \$210,000.

Huge areas of arid and semi-arid pastoral country were burnt in 1974-75. The area burnt has been estimated at sixteen million hectares; three million hectares of pastoral country and thirteen million hectares of unoccupied land. A large proportion of the north-west of the State was burnt during the period from early November until early in February.

Fire report summaries included in the SACFS annual reports from 1978 and 1979 refer to four major fires during the 1978-79 fire season; 1,000 hectares at Yadlanue Station and 1,200 hectares at Wilmington in December 1978, 1,100 hectares at Pinnaroo in January 1979 and 7,400 hectares at Caveton in February 1979. A 480 hectare fire was also reported at Meningie in December 1979.

### **1980s**

Fire report summaries included in the SACFS annual reports from the 1980s refer to forty major fires during the decade. The most significant of which were the Ash Wednesday I and II fires which occurred in February 1980 and February 1983. The focus on the devastation of these fires however tends to draw attention away from

the fact that during the 1980s there were over 830,000 hectares burnt. Ten fires, predominantly in the sparsely populated north east of the state, were in excess of 10,000 hectares each. One, attributed to forty three lightning strikes in the pastoral area in November 1989, was estimated to be in excess of 600,000 hectares.

Fires that posed a threat to settled areas during the 1980s were; Ash Wednesday I (3,770 hectares - February 1980); Horsnell Gully (400 hectares – April 1980); Ash Wednesday II (February 1983); Black Hill (1,500 hectares – January 1985); Pt Lincoln (200 hectares – February 1985); Kapunda (1,200 hectares – March 1986); Strathalbyn (6,000 hectares – November 1987); Kapunda (2,569 hectares – December 1987); Morialta (300 hectares – January 1988); and Kersbrook (400 hectares – March 1988).

### **1990s**

Fire report summaries included in the SACFS annual reports and from SACFS incident reports from the 1990s refer to seventy major fires during the decade. Seven fires, predominantly in the sparsely populated north east of the state, were in excess of 10,000 hectares each. The largest fires recorded were; Ernabella (900,000 hectares – January 1990); Flinders Chase (25,000 hectares – October 1991); Ngarkat (50,000 hectares – January 1999); and Ngarkat (110,000 hectares – January 1999).

Three significant fires that posed a threat to settled areas during the 1990s were; Clare (400 hectares – April 1994); Rapid Bay (300 hectares – January 1995); Heathfield (450 hectares – January 1995).

### **2000s**

Fire report summaries included in the SACFS annual reports and from SACFS incident reports from the first three years of the decade until the end of 2003 refer to fifty three major fires. Four fires, predominantly in the sparsely populated pastoral areas of the state, were in excess of 6,000 hectares each. The largest fires recorded were; Mt Rescue (18,000 hectares – November 2002); Gawler Ranges (15,000 hectares – December 2002); De Mole River (6,800 hectares – November 2002); and Ngarkat (6,000 hectares – December 2001).

Three significant fires that posed a threat to assets in the Mt Lofty Ranges and the Fleurieu Peninsula during the first three years of the new century were; Brownhill Creek (1,000 hectares – June 2000); Rapid Bay (1,200 hectares – January 2001); Hillbank (350 hectares – December 2001); and Morphett Vale (300 hectares – December 2003).

### **February 2001**

During the 2 weeks of the 1<sup>st</sup> to the 9<sup>th</sup> of February 2001 a fire in the vicinity of Tulka on the Lower Eyre Peninsula burnt through approximately 14,000 hectares of bushland and coastal vegetation. The township of Tulka consisting of 46 homes suffered significant losses with 11 houses destroyed and a further 10 suffering major damage. Many other assets were also damaged including; caravans, trailers, vehicles, boat, rainwater tanks and sheds.



### **11<sup>th</sup> January 2005**

On this day SA experienced extreme fire weather with Fire Danger Indices in excess of 300 recorded on the Eyre Peninsula. Two fires of major significance occurred, one at Wangary on the Eyre Peninsula and the other at Mt Osmond in the Adelaide Hills. The Wangary fire burnt approximately 78,000 hectares with significant losses including 9 fatalities, 93 houses, 237 sheds, approximately 47,000 livestock, and 6,300 kilometres of fencing. The Mt Osmond fire burnt approximately 120 hectares with the loss of 3 buildings, 4 vehicles and 4 kilometres of fencing.

### **10<sup>th</sup> January 2007**

On January 10<sup>th</sup> 2007 an area 30 km South East of Adelaide known as Mount Bold was impacted by a bushfire. The fire burnt through a mix of scrub, plantation, grass and forested areas. Up to 400 firefighters, more than 80 appliances, water bombers and observation aircraft attended to the fire.

The Mt Bold fire burnt around 2,000 hectares and threatened approximately 60 homes in the Kangarilla and Echunga area. One dwelling was destroyed and numerous sheds, livestock and equipment sustained various degrees of fire damage.

### **6th - 16th December 2007**

On 6th December 2007 a significant dry lightning storm ignited in excess of 14 fires on Kangaroo Island. Of these, six developed into major bushfires and burnt out of control for ten days. The suppression response mobilised for these fires was the largest in South Australian history, and involved 1400 people and resources from South Australia, Victoria, New South Wales, Queensland and Western Australia.

22% (90,982ha) of the total land mass of Kangaroo Island was burnt, with one fatality, and nearly 3000ha of agricultural and forestry land and assets destroyed.

### **13 January 2009**

The outskirts of the City of Port Lincoln was hit with the only major fire for the 2008/2009 fire danger season, with a fire at Proper Bay on 13 January 2009. Burning around 252 hectares of grass and scrubland. The fire destroyed four houses, two fish processing factories and two vehicles.

### **19 November 2009**

A lightning storm that passed across South Australia resulted in CFS responding to more than 100 fires within 24 hours. Fires were concentrated in the Eyre Peninsula, Flinders Ranges, Mid North, Yorke Peninsula and Lower South East regions. More than 2000 CFS volunteer firefighters, 300 fire tankers and aircraft worked across the State responding to the fires. The CFS was supported by ForestrySA, DEH, SES, SAMFS and Farm Fire Units. The major incidents were as follows: Curramulka (1250ha); Pine Point (300ha); Formby Bay (30ha); Spring Gully (20ha); Wirrabara (20ha).

### **23 December 2009**





The City of Port Lincoln was again directly threatened by bushfire just prior to Christmas in 2009, with 6 houses and around 30 sheds and outbuildings on the city fringe destroyed. The fire burnt an area of 650ha.

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# APPENDICES

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## Appendix 1 - Fire Cause Statistics for Rural South Australia (2000-2005)

A updated table (2005-2010) is under preparation, with data to be presented by Bushfire Management Area.

Fire Cause	00-01	01-02	02-03	03-04	04-05	05-06	TOTAL
Unknown – suspected human	473	521	466	355	160		<b>1975</b>
*Burning and burn offs – without permit or out of Fire Danger Season	163	164	180	69	225		<b>801</b>
Campfire / BBQ / Incinerator / Rubbish Heap	133	177	172	55	136		<b>673</b>
*Burning and burn offs – with permit	166	179	118	52	110		<b>625</b>
Rekindle	128	117	105	109	146		<b>605</b>
Lightning	118	68	197	37	96		<b>516</b>
Other	125	112	88	65	73		<b>463</b>
Harvesting	77	60	47	49	59		<b>292</b>
Slasher / Mower	54	59	38	38	38		<b>227</b>
Matches, smoking devices, candles etc	58	55	53	30	24		<b>220</b>
Undetermined	0	0	0	0	210		<b>210</b>
Mechanical cutting Tool / Welders	30	46	45	22	48		<b>191</b>
Vehicle – Other	49	47	34	1	31		<b>162</b>
Vehicle Exhaust (not used in harvesting)	22	38	13	17	15		<b>105</b>
Electrical – Powerlines	15	35	18	1	34		<b>103</b>
Fireworks	15	6	14	10	11		<b>56</b>
Deliberate	0	0	0	0	34		<b>34</b>
Internal Combustion Engines (not otherwise classified)	7	2	5	3	3		<b>20</b>
Bird scarer / Rabbit fumigator / other vermin control device	2	6	4	2	0		<b>14</b>
Unknown – suspected lightning	4	1	2	2	4		<b>13</b>
Electrical – Other	1	1	0	5	2		<b>9</b>
Mechanical malfunction	0	1	2	0	0		<b>3</b>
Cooking / Food Preparation	0	0	2	1	0		<b>3</b>
Electrical – Appliance (not including heaters)	1	0	1	0	0		<b>2</b>
Industrial Processes	1	0	0	0	0		<b>1</b>
Gas Appliance	1	0	0	0	0		<b>1</b>
Chemical Reaction	0	0	1	0	0		<b>1</b>
<b>TOTAL</b>	<b>1643</b>	<b>1695</b>	<b>1605</b>	<b>923</b>	<b>1459</b>		<b>7325</b>

\* Burn-offs during the Fire Danger Season are allowed under permit issued by an authorised officer through Section 81 of the Fire and Emergency Services Act, 2005. Outside of the Fire Danger Season there are no restrictions under the Fire and Emergency Services Act for the lighting and maintaining of fires, unless a Total Fire Ban is declared.

## Appendix 2 - Land Area by BMA

BushFire Management Area	Area sq km	Area Ha
Outback	815,656.26	81,565,626.49
Murray and Mallee	48,007.21	4,800,721.37
Kangaroo Island	4,398.08	439,808.12
Upper Eyre Peninsula	36,508.28	3,650,828.73
Lower Eyre Peninsula	7,386.39	738,639.04
Flinders Mid-North Yorke	41,418.60	4,141,860.48
Adelaide Mt Lofty Ranges	3,227.04	322,703.92
Limestone Coast	21,378.29	2,137,829.64
Fleurieu	2,956.17	295,617.06
Adelaide	632.74	63,274.24

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## Appendix 3 - Population by BMA

These maps present an overview of population centres within each BMA.

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## Appendix 4 - Topography by BMA

These maps present the topography of each BMA, including major townships and water bodies.

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## Appendix 5 - Major Vegetation Groups by BMA

These maps present the Major Vegetation Groups in each BMA (refer map legend). Note that planted vegetation is also included in these maps (ie. plantation forestry, revegetation).

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## Appendix 6 - Fire Ban Districts and BMAs

These maps depict the boundaries of Fire Ban Districts and the boundaries of BMAs.

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## Appendix 7 - Fire Frequency by BMA

These maps depict fire frequency within the BMA based upon best available information. In many areas it is noted that incidents occurring on private land may not be depicted, as until recently the data has primarily included incidents on public land.

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## Appendix 8 - Last Fire by BMA

These maps depict the last fire within the BMA in 10 year blocks. The same data has been used for these maps as for the fire frequency maps, and the same qualification applies.

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