BUSHFIRE MANAGEMENT AREA PLAN

Government of South Australia

Lower Eyre Peninsula

SEPTEMBER 2019

Document Control

Version	Date	Summary of Changes	Author
1.0	October 2015	Provisional BMAP text document Approved	R Wald
2.0	20/5/2019	4 yearly review/rewrite commenced	A Riebe
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Endorsements

Version	Date	Name	Title	Signature
			Chair, Lower Eyre Peninsula Bushfire Management Committee	

Approvals

Version	Date	Name	Title	Signature
			Chair, State Bushfire Coordination Committee	

Distributions

This is a web based publically accessible Plan. Updated versions are loaded onto the web site (www.cfs.sa.gov.au). Hard copy versions are not produced or distributed.

Recognition of Aboriginal Culture

Aboriginal Australians have rights to maintain, control, protect and develop their intellectual property over cultural heritage, traditional knowledge and traditional cultural expressions.

Front cover image: Private land burn south of Port Lincoln (Photo credit: Aaron Macumber, November 2018).

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1. Introduction

Bushfire cannot be eliminated from the landscape, and there are circumstances when fire cannot be controlled, however planning and preparedness activities can reduce the frequency, spread and impact of bushfire events. The Lower Eyre Peninsula (LEP) is a bushfire prone environment with people, assets and areas of environmental sensitivity at risk during bushfire events. The *Fire and Emergency Services Act 2005 (FES Act 2005),* outlines the responsibilities of key Government organisations, the community and the public to prepare for, prevent or inhibit the spread of any bushfire.

The Lower Eyre Peninsula Bushfire Management Area Plan (BMAP) comprises the following elements:

- This written component outlining the planning process, context and other relevant information
- An online map that identifies assets and their risk levels, and includes pop up tables of information for each asset
- Spreadsheets containing lists of all Lower Eyre Peninsula BMAP assets, their risk rating and risk treatment strategies

Prevention and preparedness are vital components in reducing injuries and deaths, loss of assets, financial costs and aiding community recovery. The LEP BMAP is aimed at prevention and preparedness planning, processes and actions. The Plan outlines information, strategies and actions to prevent or mitigate (reduce) bushfire impact on assets and in the landscape, rather than focussing on the business continuity, emergency response or replacement costs. On Catastrophic Fire Danger Days it will be decisions and actions made by individuals that will largely determine loss of life and property. No amount of fuel modification will prevent the spread of fire during such conditions.

The LEP BMAP is able to be updated on a regular and ongoing basis following its initial approval and publication. The LEP Bushfire Management Committee (BMC) ensures the Plan is regularly reviewed and updated and that public consultation processes are undertaken where required. *(Refer to Section 3: Roles and Responsibilities)*.

This plan aims to recognise the role that fire plays in the Region's biodiversity and that fire is a natural element in this environment and much of the plant and animal life are dependent on it for their continued existence. There are however some environments where fire, particularly unplanned fire, can be detrimental.

The LEP BMC recognises and respects the Aboriginal people's enduring physical and cultural relationship to country and expertise with the use of fire in the landscape.

This BMAP has been prepared under specifications as determined by the State Bushfire Coordination Committee (SBCC) and Bushfire Management Committees and has linkages to the State Rural Fire Hazard Management Plan. The State Rural Fire Hazard Management Plan is specified by the EM Act in a format determined by the SEMC and is a strategic level document designed to provide policy and direction for the management of rural fire hazard across the state. The State Bushfire Management Plan is a requirement under *Section 73 of the FES Act 2005*, and sets the standards for preparation and implementation of the BMAPs.

1.1 Purpose and Scope

The *Fire and Emergency Services Act 2005 (FES Act 2005)* requires each of the nine South Australian Bushfire Management Committees (BMC's) to prepare and maintain a BMAP. Each BMC will adopt a BMAP that will:

- Identify existing or potential risk to assets from bushfire within the BMA
- Outline coordinated and collaborative bushfire prevention and mitigation strategies to achieve appropriate hazard reduction associated with bushfire management within its area
- Identify asset or land custodians responsible for the implementation of bushfire risk mitigation treatments
- Use or establish principles and standards to guide or measure the success of the bushfire management strategies and initiatives.

The purpose of the LEP BMAP is to provide strategic direction for bushfire management planning in the LEP Bushfire Management Area (BMA) (refer to location map on page 5), across the landscape regardless of tenure. The Plan will guide the bushfire mitigation works for local councils, Aboriginal Land Councils, government land management organisations and local communities. The Plan also provides essential inputs into state and local government planning, the application of building codes, fire fuel management, planning for emergency management response and prioritising for sound mitigation decisions and community information and education.

The scope of the LEP BMAP encompasses a range of asset categories and landscape wide areas of potential bushfire risk. Asset categories include areas of human settlement; industrial and business areas; and assets of social significance to local communities or the State as well as environmental assets. *(Refer to Section 4: Risk Assessment)*. Environmental assets have been assessed using a methodology that has been developed by the Ecological Technical Reference Group (ETRG), a working group of the SBCC. *(Refer to Section 4.2: Risk Assessment Methodology for Environmental Assets)*.

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Bushfire safety requires a partnership approach and is a shared responsibility between government agencies, private sector, non-government organisations, Traditional Custodians and the wider community. The planning process ensures consultation strategies provide all stakeholders with the opportunity to contribute to fire management planning and thus undertake appropriate action to address the risk of bushfire.

1.2 Objective

The protection of people, property and the environment is the fundamental objective of this plan, as a shared responsibility between government and the community. Community members and organisations are required to contribute to mitigating bushfire risk. The risk assessment process focusses on what can be measured (vegetation, fire intensity, separation distances, weather, topography, building resilience, access routes etc.) and what can be managed by applying risk treatment strategies.

The objective of this plan is to:

- Document the identification and assessment of the bushfire risk to assets within the LEP BMA
- Capture the current and future risk treatment strategies
- Identify those asset or land custodians responsible for implementing risk treatment strategies
- Support and inform planning at a local level
- Support Aboriginal Fire Management Aspirations
- Protect Life and Property
- Support the Protection of Areas of Cultural Significance under the guidance of Traditional Custodians
- Manage Fuels on a Landscape Scale

A future outcome of the BMAP will be the creation of community bushfire protection plans developed in consultation with local communities. These will be tailored to suit local communities and in language where appropriate to improve the common understanding of bushfire risk, risk treatment options and items to protect.

1.2.1 Constraints, Assumptions and Exclusions

The BMAPs are developed specifically for bushfire planning and preparedness. Issues relating to operational bushfire response or recovery are not addressed in this plan but are covered in plans, policies and procedures of government and non-government emergency and community service agencies.

The risk assessment process does not factor in ember attack due to the variability in determining the extent of impact of embers. A key criteria used in this risk assessment is the Bushfire Attack Level (BAL) assessment which determines the level of radiant heat dependant on topography and the proximity & type of vegetation. Ember proofing of properties is however a general recommendation in all communications to the public and is included in construction specifications for building in bushfire prone areas.

It is not feasible to risk assess every individual building or parcel of land for the inclusion into the LEP online BMAP. Although some individual privately owned residences, farms, small businesses etc., are not specifically identified in the Plan's online map by a point, polygon or line, they will still have a level of risk from bushfire. Every landholder has a responsibility to undertake bushfire prevention and preparedness activities relevant to their location and situation.

This LEP BMAP does not include details for implementation, monitoring, review or reporting. The requirements for these actions is in development and will be in a format as determined by the SBCC.

Weather conditions play a significant role in the likelihood of a bushfire occurring along with the potential fire behaviour and intensity. Bureau of Meteorology (BOM) historical weather data for the fire ban districts in each bushfire management area throughout the state has been used in conjunction with other inputs in determining risk assessment outcomes.

Formulas and data used during risk assessment workshops and in the development of this plan have been based on the best available information at the time of development, and may be subject to change over time as more accurate data and information becomes available. Average fuel loads have been assumed to complete the risk assessment process. However it is noted that seasonal variation (i.e. rainfall events) can dramatically change the amount of vegetation.

The FES Act 2005 Section 127 protects stakeholders from liability in relation to the development and implementation of a BMAP. *Refer to Section 1.3.1: Fire and Emergency Services Act* for more information.

1.3 Legislation

1.3.1 Fire and Emergency Services Act

A BMAP is a requirement under the *FES Act 2004 Section 73A*. In particular *Section 73A (1)* requires the BMC to prepare and maintain a BMAP for its areas. *Section 73A (3)* outlines that the BMAP must:

a) Identify existing or potential risks to people and communities within its area from bushfire; and

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b) Outline strategies to achieve appropriate hazard reduction associated with bushfire management within its area, especially through a coordinated and cooperative approach to bushfire prevention and mitigation; and

c) Identify action that should be taken by people, agencies and authorities to achieve appropriate standards of bushfire management within its area; and

d) Without limiting points (b) and (c), establish or adopt principles and standards to guide or measure the successful implementation of bushfire management strategies and initiatives; and

e) Include or address other matters prescribed by the regulations or specified by the SBCC.

Sections 73A(4) and 73A(5) direct that the BMAP must be consistent with the State Bushfire Management Plan, and such other plans, policies and strategies as may be prescribed by the regulations.

FES Act 2005 Section 127-Protection from liability provides protection to key stakeholders for information or actions undertaken in relation to BMAPs. In particular, *Section 127(4)* states:

(4) Without limiting subsection (1), no liability attaches to SACFS, the State Bushfire Coordination Committee, a bushfire management committee or a council (or the members of any of them) by virtue of the fact that a bushfire prevention plan—

(a) has not been prepared under this Act in relation to a particular part of this State; or

(b) has been so prepared but has not been implemented, or fully implemented.

Some examples may include the non-inclusion of an asset into a BMAP that is subsequently lost or damaged in a bushfire, or the inability of asset owners to undertake treatments assigned to assets.

1.3.2 Local Government Act

Chapter 2 Section 7 of the Local Government Act 1999 specifies the principle functions of a council. The functions that are specific to this plan include:

- *Section 7(d):* to take measures to protect its area from natural and other hazards and to mitigate the effect of such hazards; and
- *Section 7(f):* to provide infrastructure for its community and for development within its area (including infrastructure that helps to protect any part of the local or broader community from any hazard or other event, or that assists in the management of any area).

Additionally *Section 8(d) of the Local Government Act 1999* outlines the way in which councils are required to undertake their roles and functions. It specifies the need for consistency of all plans, policies and strategies with Regional, State and National objectives and strategies concerning the economic, social, physical and environmental development and management of the community.

1.3.3 State Emergency Management Act

Section 3 of the Emergency Management Act 2004 (South Australia) specifies that an "emergency means an event (whether occurring in the State, outside the State or in and outside the State) that causes, or threatens to cause:

a) The death of, or injury of, or other damage to the health of any person; or

b) The destruction of, or damage to, any property; or

c) A disruption to essential services or to services usually enjoyed by the community; or

d) Harm to the environment, or to flora or fauna.

At a regional level, this BMAP will provide valuable input into the Zone Emergency Management Plans (ZEMP) in relation to rural fire.

1.3.4 Acts, Codes and Regulations influencing Bushfire Management Planning

The following are some of the Acts, Codes and Regulations to be considered in developing and undertaking bushfire management planning and practices:

- *Native Vegetation Act 1991 (SA) Section 29*
- *Native Vegetation Regulations 2017 (SA)*
- *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) Section 18 and 269AA*
- *Code of Practice for fire management on Public Land in South Australia 2012-2016*
- *National Parks and Wildlife Act 1972 (SA)*
- *Natural Resources Management Act 2004*
- *Wilderness Protection Act 1992 (SA)*
- *Aboriginal Heritage Act 1988*
- *Native Title Act 1993*
- *Native Title (South Australia) Act 1994*
- *Crown Land Management Act 2009 (SA)*
- *Aboriginal Lands Trust Act 2013*
- *Pastoral Land Management and Conservation Act 1989*
- *Planning, Development and Infrastructure Act 2016*

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- *PDI (General) Regulations 2017*
- *PDI (Transitional Provisions) Regulations 2017*
- *Development Act 1993 (pending repeal to be replaced by the PDI Act 2016)*
- *Development Regulations 2008 (pending repeal to be replaced by associated regulations to the PDI Act 2016)*

The implementation of identified risk treatment strategies within this BMAP must comply with the requirements as directed by the above legislation. For example, the assessment and management of risk in regard to indigenous cultural heritage are performed in accordance with the requirements of the Aboriginal Heritage Act 1988. Notification of Traditional Custodians and native title claimants is required if ground disturbance works are to take place in areas of known cultural heritage. Under this Act it is illegal to harm, excavate, relocate, take away or be in possession of indigenous cultural heritage.

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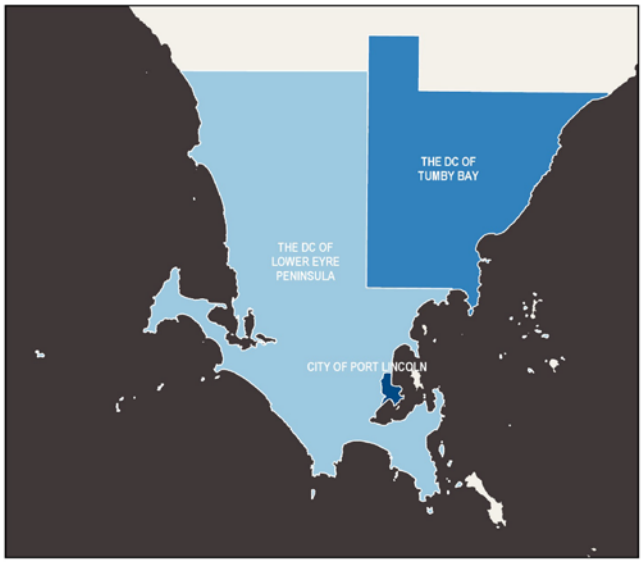
2. LEP Bushfire Management Area

2.1 Location

The LEP BMAP has been developed for the LEP BMA region of South Australia. The boundary incorporates the whole of the following council areas: (see map below)

- City of Port Lincoln
- District Council of Lower Eyre Peninsula
- District Council of Tumby Bay

The area covers approximately 7,259km² which is 0.74% of the State.



Map 1: LEP Bushfire Management Area

2.2 Population and Language

The population with the LEP BMA was counted at 22,178 in the last Census (2016). This is approximately 1.32% of South Australia's population.

Table 1: LEP Population

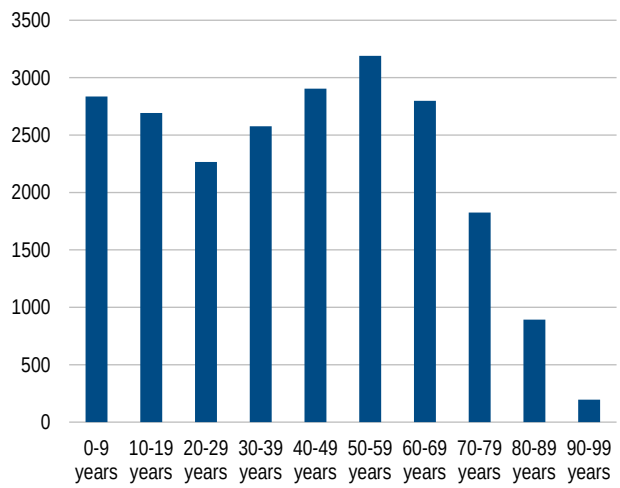
LGA	Population
City of Port Lincoln	14058
District Council of Tumby Bay	2606
District Council of Lower Eyre Peninsula	5510
Total	22,178

Table 2: LEP Language spoken

LGA	People that identify as Aboriginal or Torres Strait Islander	% Speaks a Language other than English
City of Port Lincoln	5.1%	3.7%
District Council of Tumby Bay	1.8%	1%
District Council of Lower Eyre Peninsula	3.1%	1.4%

Port Lincoln is the main city within the BMA with smaller population centres in the surrounding settlements and townships that support the rural agricultural areas. There are a number of coastal settlements that have small populations (e.g. 200 residents in Pt Neill and 1500 in Tumby Bay) during winter, escalating substantially during the summer to almost triple the populations. There are several major transport corridors that dissect the BMA. At any time there can be significant numbers of people on these roads or utilising roadsides rest areas.

Figure 1: Age Demographics



2.3 Economy

The region has strong links with its markets and produce is regularly sent interstate and overseas by road, air and sea. The region's top three industries are agriculture, fishing and tourism. Collectively those three sectors are worth in excess of half a billion dollars each year. Eyre Peninsula produces approximately 33% of South Australia's grain harvest and 65% of South Australia's seafood harvest.

The key employment industries across the LEP (Census 2016) are listed below.

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Table 3: Key Industries

Key Industry	No of Employees
Agriculture, Forestry and Fishing	1456
Accommodation and Food Services Tourism	621
Health Care and Associated Services	1135
Construction	818
Retail	1175

2.4 Land Tenure and Use

Land use within the LEP BMA comprises mainly cropping and grazing with crops such as wheat, barley, oats, canola and pulses. The cereal crops, sheep and cattle are the main agricultural industries in the north of the BMA with dairy farming and viticulture more prevalent in the south. Many coastal towns have commercial fishing fleets, the largest in Port Lincoln with associated land based infrastructure (factories, etc.). Rural living allotments are scattered throughout the Lower Eyre Peninsula BMA.

Tourism is a growing industry across the BMA with some growth in accommodation facilities, particularly small scale facilities such as B&Bs and glamping. There is a strong tourism focus particularly within coastal areas where camping and fishing are popular activities and settlements are served by a network of sealed highways and well-maintained open surface secondary roads

Department for Environment and Water (DEW) and SA Water are responsible for large tracks of land across the BMA. National Parks, Conservation Parks and Wilderness Areas cover approximately 13.3% of the BMA (see to Land Tenure map page 7). These land parcels are mainly high quality native vegetation, however there are also some private conservation areas and heritage agreement blocks within of the BMA. Wanilla Forest Reserve is the only commercial forest reserve in the BMA and is under the care and control of the Port Lincoln Aboriginal Community Council. Genesee Wyoming Australia Pty Ltd have responsibility for the infrastructure for the railway system in BMA.

Land use activities may influence a range of bushfire issues such as the chances of ignitions, ability of bushfire to establish and spread, opportunities for suppression and the risk treatments applied to reduce bushfire risk and impact. Although there are multiple land uses and land owners across LEP BMA, broader bushfire issues and risk treatments are assessed and applied using a tenure blind approach to bushfire management planning.

2.5 Topography

The main topographical features of the BMA are Koppio Hills (or Lincoln uplands) towards the southeast, Marble Range and Mt Greenly to the west.

Cleared cropping and grazing land lies west of the open sandy beaches on the east coast. This is followed by steeper undulating hills and valleys of the Koppio Hills. Areas of the remnant native vegetation are scattered throughout the hills, with corridors of native vegetation next to most of the dirt roads.

Beyond the Koppio Hills area, the farmland flattens out and native vegetation is less frequent, before arriving at the Marble Range to the west. The range is covered mostly in low mallee scrub or heath. North-west is a series of salt lakes, many of which are often dry. The southern cliffs and beaches of the Peninsula are bordered by land which is predominantly limestone and mallee scrub.

2.5.1 Water Catchments

Potable water is scarce on the peninsula, with the main source coming from underground aquifers. Population and industry demands are putting increasing pressure on these sources and combined with low rainfall and low recharge of the groundwater has seen a gradual increase in the salinity of the water drawn from the basins in the BMA. Investigations are underway to establish desalination options for the Peninsula

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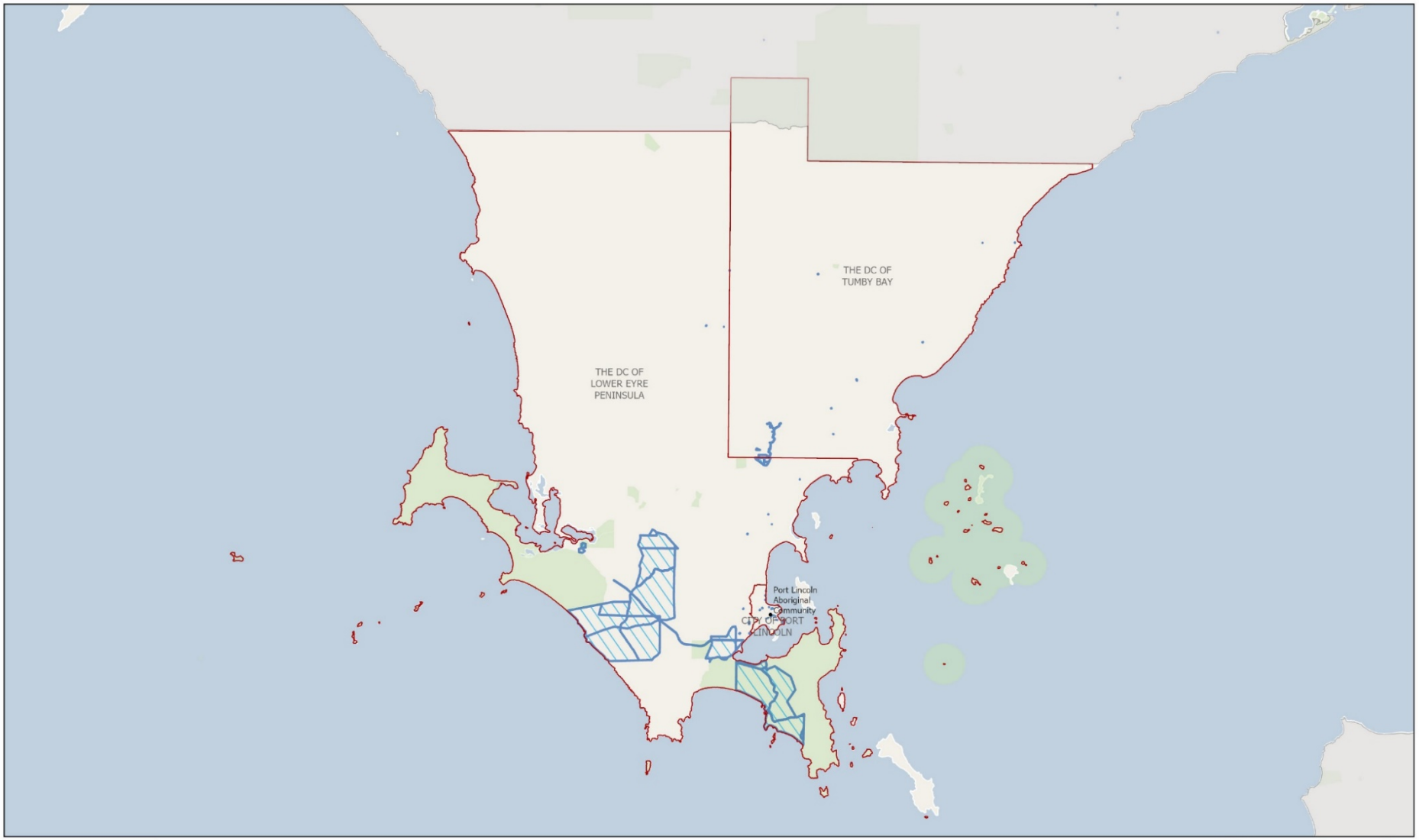

Lower Eyre Peninsula Bushfire Management Area Plan - Land Tenure

Local Government Areas
NPWSA Reserves
SA Water Land Holdings

0 10 20 30 40 50 km

Government of South Australia

Data Source: SACFS, DEW, DPTI, GA
Date produced: 8/10/2019
Projection: Lambert Conformal Conic

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2.6 Fire Weather and History

The LEP BMA encompasses the Lower Eyre Fire Ban District. (FBD). Fire Danger Season (FDS) dates are set annually by the CFS Chief Officer based on recommendations from the LEP BMC.

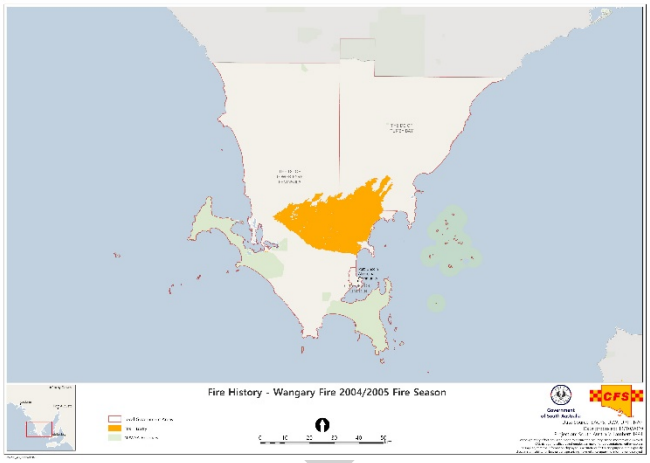
Historically the Fire Danger Season has generally commenced on 1st November and ended on 30th April however this can be amended depending on the climatic and other risk factors.

While there are large areas of native vegetation on the Lower Eyre Peninsula there are substantial areas of continuous fuel in the form of crops. This seasonal vegetation is often a key risk factor for assets and communities on the Eyre Peninsula.

When fire does occur in areas of native vegetation that are not regularly burnt, either from lightning strikes or inadvertent human activity, the result is often larger bushfires. There is an increased risk to the communities because these fires are less controllable and if large areas of natural habitat are lost in one fire event, ecosystems and natural processes will be permanently altered and wind and water erosion can increase.

Crown land under the care and control of the Environment Minister is subject to Fire Management Plans that consider methods of risk reduction using prescribed burning as a tool.

The 2005 Wangary fire (see Map 2 below) occurred in the lower part of BMA and through a significant part of South Australia's wheat belt where most of the land is either cropped or grazed. The fire burnt through 780km^2, with the loss of nine lives and injuries to another 115 people. The coronial inquest recorded the fire caused approximately $100 million in total property damage.



Map 2: Wangary Fire Scar

Other large fires in the recent past on the Lower Eyre Peninsula include:

- February 2001 – Tulka approx. 14000ha burnt
- December 2009 - Port Lincoln 512ha
- November 2012 - Tulka 1782ha
- November 2012 - Coomunga 1757ha
- May 2018 - Mungerowie 862ha burnt

Financial Year	No of bushfires	No of hectares burnt
2018/2019	9	192ha
2017/2016	8	1,246ha
2016//2017	3	134ha
2015/2016	7	2,620ha
2014/2015	2	106ha

See map Fire History 2009/10-2018/19 on page 9.

Also see the online map for a spatial representation and further detail of fire history across the Lower Eyre Peninsula.

2.6.1 Dry Lightning History

Lightning strikes occur in early to late summer and are often accompanied by rain. Lightning is a significant cause of fire starts on the Eyre Peninsula.

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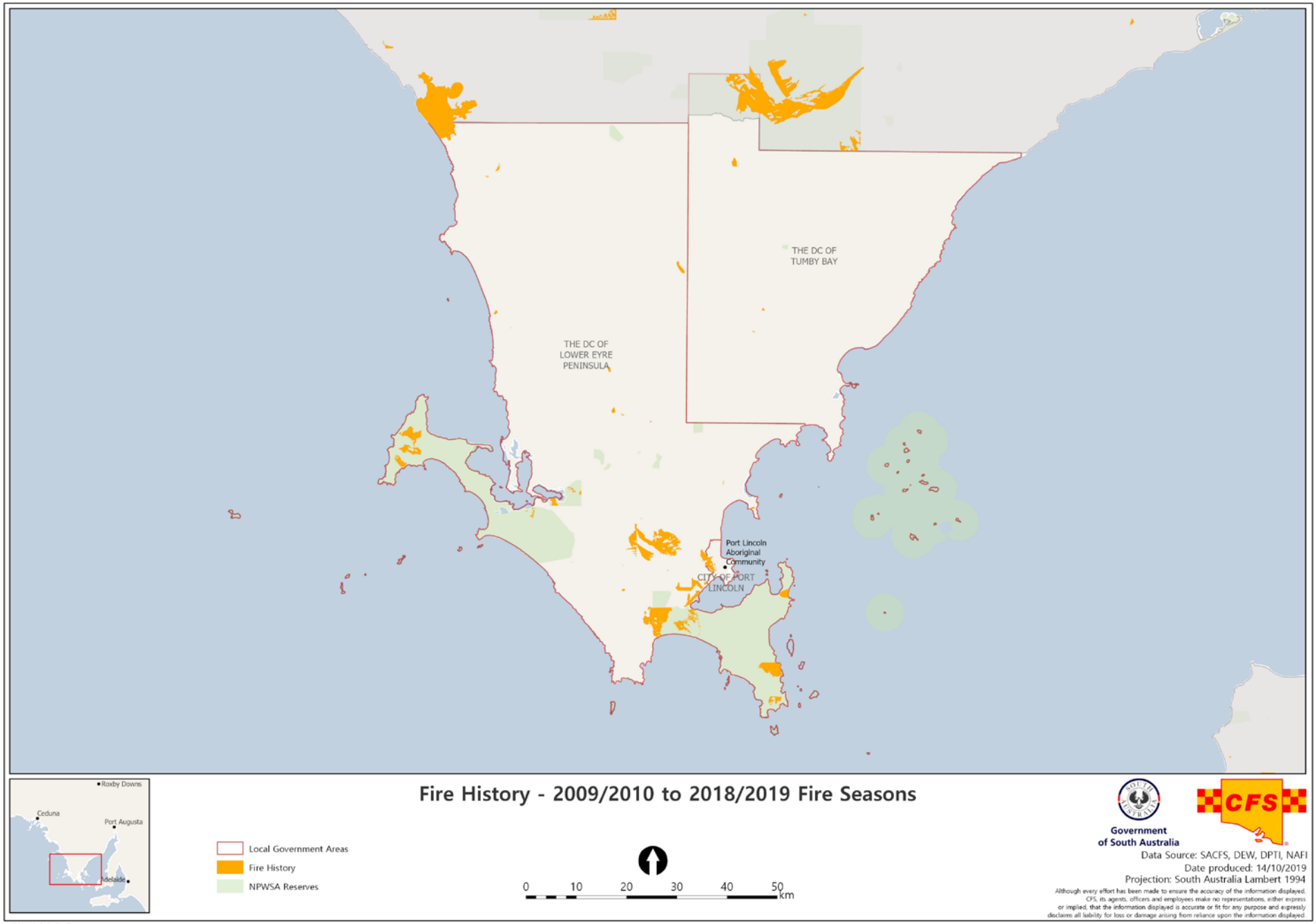


Fire History - 2009/2010 to 2018/2019 Fire Seasons

2.7 Cultural Fire Management

The Barngala and Nauo people are recognised as the traditional inhabitants of the Southern Eyre Peninsula with much of the Peninsula subject to the Nauo-Barngala Native Title Claim.

The traditional cultural practices of Aboriginal people would have maintained mosaics of vegetation at different stages of succession after fire disturbance as part of their management of landscape. White settlement has disrupted the cultural processes that led to the complex fire regimes across the landscape. Most vegetation now experiences fire more rarely, and when fires do pass through they are often larger and more intense wildfires. Most native bushfood plants are sensitive to unplanned fire regimes.

Current fire management approaches are aimed at preventing or mitigating large-scale bushfires however the BMC note that on Aboriginal land, Aboriginal people can and will burn areas without necessarily engaging in any form of 'western' planning process, and this plan does not seek to change that in any way.

It is not the intention of the Plan to replace direct cultural fire management activities undertaken by Aboriginal People on their lands, whether executed by traditional or contemporary means. Rather, the Plan seeks to support Aboriginal People to undertake cultural fire management where appropriate.

To support cultural fire management by Aboriginal People an 'action based' approach is generally encouraged underpinned by sound working relationships between project partners with discussion and engagement occurring on country

On Aboriginal owned land, it is the Traditional Custodians who must have final say about the management of their country. It is important to recognise that management and use of land by Aboriginal People is governed by Traditional Custodians responsibility. Rather than focusing on documenting sites, or attempting to describe and codify traditional knowledge, the emphasis in management should be on encouraging the retention of traditional knowledge by Aboriginal People and by developing and maintaining sincere relationships with people and their land.

2.8 Climate

2.8.1 Temperature

The average temperatures on the Eyre Peninsula are typically Mediterranean in the southern coastal areas. This means hot dry summers and wet mild winters are experienced. In summer the temperature ranges between 24 - 35°C, although on extreme fire danger days the temperature can reach ≥40°C. The average winter maximums range between 16 - 18°C and the winter minimums tend to fall between 5 - 8°C.

2.8.2 Wind and Weather Patterns

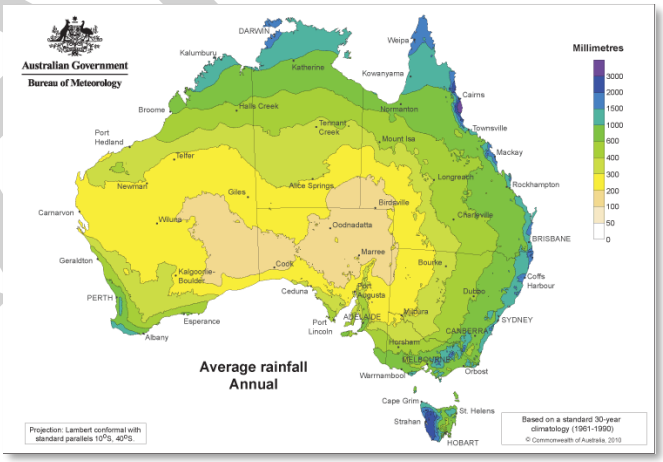
Northerly winds during summer are of the greatest concern because they are usually quite strong and are accompanied by high temperatures and low humidity. Sudden changes from northerly winds to cool gusty southerlies are not uncommon.

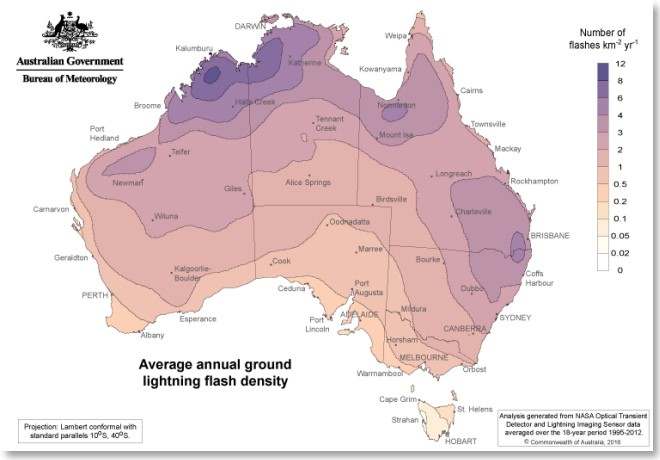
From December to March, the strongest and most frequent winds are from the south-east through to the south-west often reaching 30-40km per hour due to a strong sea breeze. In April to November the winds swing more westerly with the strongest winds being found near the coast. The effect of coastal winds can reach to approximately 75km inland. This distance may be affected by coastal ranges acting as a wind break.

2.8.3 Rainfall

The majority of the rainfall occurs between April and October. The southern areas occasionally experience "wet droughts" where too much rain effects primary production.

Port Lincoln and Wanilla Reserve receive on average 550mm and 613mm of rainfall. However, there are large monthly and seasonal variations in rainfall, which affects agriculture and land use even on the lower parts of Eyre Peninsula. Recent winters have seen significantly less than the historical average rainfall.





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2.8.4 The impacts of climate change

Climate change is having direct environmental impacts on water resources, primary production, infrastructure, flora, fauna and the health of our landscapes. Climate change factors are also contributing to increases in bushfire frequency and intensity resulting from:

- Longer fire seasons
- Less opportunities for hazard reduction burns
- Record hot and dry conditions
- More extreme and catastrophic fire danger days
- Severe weather events (dry lighting thunderstorms, sudden wind shifts)
- Reduced soil moisture
- Increase evaporation
- More demand for decreasing stocks of water

The Eyre Peninsula is already experiencing warmer and drier conditions

Rainfall - By 2030 the annual rainfall is conservatively projected to decline by 3.5% and by 15% by 2070. Climate change projections for rainfall see a larger seasonal decline for winter and spring (2030 – 7.5%, 2070 – 15%) than for summer and autumn (2030 - 3.5% , 2070 – 7.5%).

Maximum Temperature - By 2030 the annual average temperature is conservatively projected to increase by 0.8 ºC and by 1.75 ºC by 2070 ºC.

Fire Weather – fire severity and intensity is expected to increase substantially in coming decades (Climatecouncil.org.au).

> The specific ways that climate change will impact all aspects of fire management are not fully understood however the total number of days of very high to extreme fire weather is expected to increase.

Fuel accumulation rates, plant decomposition rates, fuel moisture, humidity and particularly rainfall patterns are becoming less predictable.

Additional information on climate change impacts can be found in the following websites:

- *Bureau of Meteorology: Climate Change and Variability*
- *Climate Change in Australia*

2.9 Environment

Humans depend directly and indirectly upon living systems for their health and well-being. Bushfire has both a negative and positive influence on these living systems. Lower Eyre Peninsula is home to:

- 109 threatened native flora species,
- 83 threatened native fauna species and,
- 11 threatened ecological communities.

Understanding how species, populations and ecological communities respond to fire regimes determines if preventative treatment actions are required to reduce the risk from bushfire. While most species have adapted tolerances to fire regimes so they can survive fire, intense bushfires can put some vulnerable species and ecological communities at risk and individuals may perish in a bushfire. Furthermore, indirect impacts stemming from the loss of habitat including food, shelter, nesting sites and movement corridors can have severe long term implications for populations.

In some parts of the landscape, native vegetation has been highly fragmented due to vegetation clearing. Fragmentation increases the risk of biodiversity loss as small fragments are less able to support flora and fauna, and are less resilient to disturbance. This is of most concern for species with limited abilities to disperse, with large home ranges or with no nearby habitat to move to.

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3. Roles & Responsibilities

3.1 State Bushfire Coordination Committee

The FES Act 2005 Section 71A outlines the functions of the State Bushfire Coordination Committee. Some of these functions include:

a) promoting the State-wide coordination and integration of policies, practices and strategies relating to bushfire management activities;

b) providing guidance, direction and advice to bushfire management committees;

c) preparing and reviewing the State Bushfire Management Plan and to keep under review the extent to which Bushfire Management Area Plans and strategies adopted or applied by bushfire management committees are consistent with the State Bushfire Management Plan;

d) approving and auditing Bushfire Management Area Plans prepared and endorsed by Bushfire Management Committees.

3.2 LEP Bushfire Management Committee

The LEP BMC has been established by the SBCC under the FES Act 2005, and under Section 73A(1) of this Act must prepare and maintain a BMAP for its BMA. This plan takes an unbiased landscape view of the strategic bushfire management needs of the BMA and is, therefore, boundary and tenure blind.

The key function of the LEP BMC is to coordinate all relevant stakeholders with a responsibility for bushfire management within the BMA, to undertake a risk assessment process, and oversee the implementation of risk mitigation strategies. The purpose of this process is to reduce the risk of fire negatively impacting on life, property, and the environment in accordance with the FES Act 2005. The role and responsibility of LEP BMC includes:

a) Promoting the coordination of policies, practices and strategies relating to bushfire management activities within its area;

b) Preparing and keeping under review a BMAP for its area and ensuring that the BMAP is consistent with the State Bushfire Management Plan;

c) Overseeing implementation of its BMAP and reporting to the SBCC;

d) Initiating or preparing the development of plans, policies, practices or strategies to promote effective bushfire management within its area;

e) Convening with local or regional forums to discuss issues associated with bushfire management within its area, including working with local communities to promote and improve effective bushfire management;

f) In the exercising and performance of their powers and functions:

   i. Having due regard to the impact of their actions on the environment; and

   ii. Seeking to achieve a proper balance between bushfire prevention and proper land management in the country; and

   iii. Performing any other functions assigned by the Minister or the SBCC.

3.3 Bushfire Management Committee Member Organisations

BMC member organisations are responsible for:

a) Contributing to the decision-making of the Committee

b) Preparing and implementing action or work plans to address relevant risk treatments or issues identified in the plan.

c) Ensuring input into the planning process by their BMC representatives

d) Providing information and make decisions on bushfire management planning issues within the area

e) Reviewing the Bushfire Management Area Plan information and drafts and make amendments if required

f) Determining methodologies for community and public consultation on key components of the BMAP

g) Assessing and endorsing BMAP updates or changes.

Please refer to Appendix A for a list of the LEP BMC member organisations.

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3.4 Community

Bushfire prevention and preparedness is a shared responsibility of the State government, local councils and fire agencies, individuals, landholders and building managers (public and private), and the broader community. This BMAP assumes that all persons in the LEP BMA are responsible for the mitigation of the bushfire risk for themselves, their neighbours and their community, and therefore need to understand and partake in bushfire prevention and preparedness. This is especially relevant to the protection of life and the property and environmental assets not specifically identified, mapped or risk rated within this BMAP.

In particular, legislation (*FES Act 2005*) states that owners of land must take reasonable steps:

a) to prevent or inhibit the outbreak of fire on the land; and

b) to prevent or inhibit the spread of fire through the land; and

c) to protect property on the land from fire; and

d) to minimise the threat to human life from a fire on the land

To ensure that the community is observing these bushfire prevention and management activities, Fire Prevention Officers within the LEP BMA are required by the *FES Act 2005* to assess the extent of bushfire hazards within the council area, and provide advice to land holders and work with communities on bushfire prevention and preparedness. Where necessary, authorised Fire Prevention Officers can enforce the provisions of the *FES Act 2005* on private land.

While measures in this plan will assist to protect life and property, the work of agencies and authorities relating to fire prevention is only one aspect of limiting the impact of bushfire on the community. Property preparation and the public knowing how to stay safe during a bushfire are a vital aspect in preventing loss of life and property. Information relevant to all members of the community on bushfire prevention and preparedness can be found on the following link: SA CFS Fact Sheets

It is noted that methods of communication and engagement that are used in the some parts of the state may not be appropriate or viable across the LEP BMA, in particular in remote areas. Programmes and avenues of communication need to be carefully considered and specifically tailored to deliver the best results.

Visitor safety in National Park Reserves is a major consideration during the fire danger season and during bushfire suppression. Parks and Reserves may be closed temporarily due to forecast significant fire danger weather or during bushfires or other fire management related activities. Due to geographical expanse and remoteness, physical closures to all access points may not be possible. The public need to be educated to the fact parks and reserves may not be safe places during significant fire danger weather or during bushfires and the onus is on individuals to stay informed by monitoring forecasts, local radios stations or the CFS website or calling the Bushfire Information Hotline.

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4. Risk Assessment

The risk assessment methodology for life (Human Settlement) and property (Economic and Social Value) assets is outlined in section 4.1. (For the detailed methodology see BMAP Handbook). The process for determining risk outcomes for environmental assets uses a different methodology and is covered under Section 4.2.

The assets considered within this plan are divided into four classes: Human Settlement Assets, Economic Assets, Social Value Assets and Environmental Assets. Each of these asset classes are further broken down into asset categories as shown in Table 5.

Table 4: Asset Classes & Categories

Asset Class	Asset Category
Human Settlement Assets(Life)	• Special Fire Protection • Residential
Economic Assets (Property)	• Infrastructure • Commercial or Industrial
Social Value Assets (Property)	• Facilities or sites of Community Value • Historic buildings or sites
Environmental Assets (Environment)	• Community nominated • Threatened ecological community • Flora • Fauna • Significant habitat • Reserve system *(Refer to Section 4.2: Environment)*

Assets and Areas not risk rated

Land, assets, communities or people who are not specifically identified or mapped within this BMAP may still have a level of bushfire risk. This is particularly relevant to the more sparsely populated areas outside of rural townships and communities. Landholders in the LEP BMA, including people and asset owners not risk rated, have a responsibility to undertake bushfire prevention and preparedness activities relevant to their location and situation.

Bushfire Safer Places

Life and property assets within a Bushfire Safer Place have not been specifically risk assessed however the BMAP process may identify where changes have occurred that would initiate a reassessment of areas classified as Bushfire Safer Places such as an expansion of a township. The BMC can request a reassessment based on these changes.

Human Settlement (Life)

Human Settlement assets are those assets which are likely to be occupied by people and may be at risk from bushfire. Therefore, there is the potential for the loss of human life. This category also includes facilities such hospitals and nursing homes, schools and child care centres. These are classed as Special Fire Protection assets.

Economic (Property)

Economic assets considered within this plan are those identified by the BMC as of significance to the economy, and are at risk from the impact of bushfire. They include commercial and industrial sites, and infrastructure providing utilities such as energy, water, transport and telecommunications.

Social Value (Property)

Assets of social value identified in this plan include those of historic or community value. This category includes facilities such as halls, churches, institutes and recreational facilities.

Department of Premier and Cabinet Aboriginal Heritage Division maintains the Register of Aboriginal Sites and Objects. Information about Aboriginal heritage can be extremely sensitive and there are legislative and cultural restrictions related to whether and how this information is shared. These sites therefore have not been risk assessed and the BMC (or the assigned treatment agency) will, where required, contact the relevant Recognised Aboriginal Representative Body (RARB) and/or appropriate Traditional Custodians about considerations regarding Aboriginal sites in an area and any potential impact or considerations prior to the implementation of bushfire prevention activities. Aboriginal cultural heritage is also considered when Traditional Custodians apply their knowledge in identifying areas for fire management works.

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Environmental

The environmental assets listed below are assessed for negative impacts from bushfire. (For full environmental asset risk assessment methodology)

- Community nominated environmental assets sourced from the Atlas of Australia Living Australia BioCollect system
- Threatened ecological community listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* or under the *South Australian Provisional List of Threatened Ecosystems of South Australia*
- Flora native species listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* or the South Australian *National Parks and Wildlife Act 1972*
- Fauna native species listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* or the South Australian *National Parks and Wildlife Act 1972*
- Regionally important significant habitat
- Native vegetation contained in South Australian terrestrial reserve systems:
    - Natural world heritage properties listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
    - Natural national heritage places listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
    - Wilderness protection areas declared under the South Australian *Wilderness Protection Act 1992*
    - Heritage agreements declared under the South Australian *Native Vegetation Act 1991*
    - Reserves declared under the South Australian *National Parks and Wildlife Act 1972*
    - Native forest reserves declared under the South Australian *Forestry Act 1950*
    - Forest conservation areas declared under the South Australian *Forestry Act 1950*
    - Reservoir reserves under the care and control of SA Water
    - Groundwater basins under the care and control of SA Water
    - Indigenous Protected Areas
    - Nature Reserves owned and managed by the National Trust South Australia
    - Rail and Roadside reserves

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4.1 Risk Assessment Methodology for Life and Property Assets

The life and property assets identified and assessed for their risk from bushfire in this BMAP has been sourced from the community, local councils, infrastructure agencies, business groups, SA Government agencies, LEP BMC working groups, CFS and web based geospatial resources.

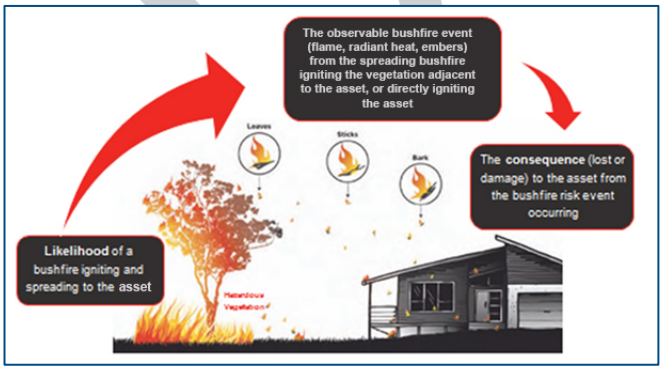
The risk rating outcomes for life and property assets currently identified in this Plan are determined using a number of inputs (risk drivers). Some of these include:

- Susceptibility of assets and people
- Vegetation type and its distance from the asset
- Predominant slope of the vegetation in relation to the asset
- Access and/or egress to and from the asset
- Frequency of ignitions in the general area of the asset

The life and property assets are geographically identified and presented with a coloured risk rating as either, a point, line or polygon in the online bushfire risk map that forms part of this plan. This plan also includes a table listing all relevant information relating to the risks, as well as existing and proposed risk treatment strategies and actions associated with each asset. The planning process allows for a single repository for all current and future assessments to be managed and maintained within the LEP BMA.

The risk assessment framework analyses a range of inputs to determine the potential likelihood of a bushfire igniting, establishing and spreading to assets, and the potential consequence (impact) to those assets.

Figure 2: Bushfire Risk Diagram



Combining the likelihood with the consequence provides the overall risk rating for an asset or area. *(Refer to Figure 4 Risk Matrix for Life and Property Assets).*

4.1.1 Weather Context

When the bushfire risk assessment was undertaken for this plan, the weather conditions taken into consideration were taken from over the fire danger season period for the last 5-7 years for each Fire Ban District (data was provided by Bureau of Meteorology).

The weather context assumes a Fire Danger Rating (FDR) of Extreme, typically characterised by fully cured fuels, high temperatures, low relative humidity and high winds.

Through their local knowledge of fire weather and fire behaviour, workshop attendees and other stakeholders are able to determine which assets would be at risk and aid in the determination of likelihood and impact of bushfire.

4.1.2 Likelihood

In determining the likelihood of a bushfire igniting and spreading and impacting an asset the following inputs are considered:

- Historical evidence of past bushfires and scarring across the landscape.
- The type and amount of vegetation within the landscape.
- The influence of land use factors and lightning on frequency of ignitions.

Inputs include Bureau of Meteorology data relating to local weather conditions within the LEP BMA, vegetation classification and fuel structures to undertake basic fire behaviour modelling. Local knowledge is also used to validate the system-derived likelihood calculations.

4.1.3 Consequence

The term “consequence” for the purpose of this plan applies only to the asset itself. It means “what will happen to the asset if it is impacted by a bushfire?” For example will it burn down, will it cease to function, will people be injured etc.? It does not refer to the wider level social, financial or business continuity consequences of losing the asset. These wider level consequences are to be considered following direction from the State Rural Fire Hazard Plan that has identified major risks to the state using the National Emergency Risk Assessment Guidelines (NERAG). Related actions and treatments will be considered in the implementation phase of the Bushfire Management Area Plans.

The elements that contribute to the consequence of a bushfire on an asset are the Bushfire Attack Level (BAL) measuring the radiant heat and either the susceptibility of occupants in human settlement assets or the susceptibility of built structures.

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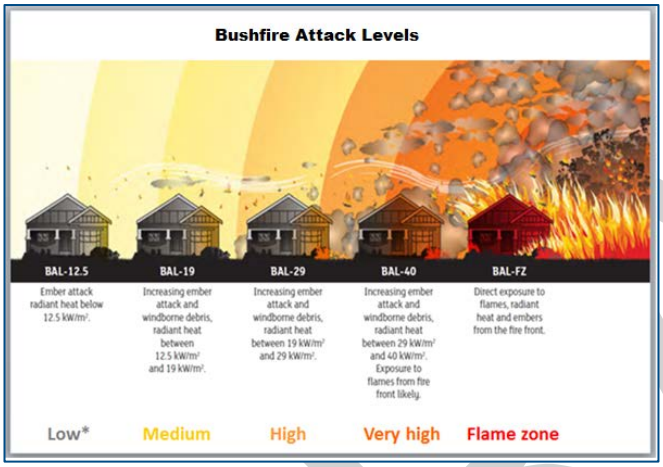
Bushfire Attack Level (Radiant Heat)

Bushfire Attack Level (BAL) is a measure of the radiant heat a building or structure is expected to be subjected to in the event of a bushfire on a day of Extreme FDR. This measure is used by the AS3959 Australian Standard for the construction of buildings in bushfire-prone areas in that buildings are rated to certain BALs.

The BAL is determined by classifying the type of vegetation around the building, the distance of the vegetation from the building, the slope of the land around the vicinity of the building. The higher the BAL, the higher the radiant heat will be at that site during a bushfire. The aim should be to maintain assets below a BAL of 12.5 Kw/m^2 thereby eliminating the ignition of the structure from radiant heat. It should be noted that this Standard does not take into account the potential impact of spark and ember on structures.

Figure 3: Bushfire Attack Levels



Susceptibility of Human Settlement Assets (Life)

This assessment refers to the susceptibility of the building's occupants to bushfire and therefore, the potential for the loss of human life. This assessment is based on the combination of three elements: the people who live in the area, the preparedness level of the assets and environmental factors. For example, a rural community with a very active Community Fire Safe Group, well prepared properties and a well maintained bushfire buffer zone may have a reduced susceptibility.

Susceptibility of Built Structures (Economic and Social Value Assets)

The susceptibility of a built structure being adversely impacted by bushfire is dependent on the type of construction and material used as well as its general condition. For example, concrete water tanks or steel towers have a very low susceptibility, whereas a timber barn would have a very high susceptibility.

Risk Rating Explanations

When interpreting the overall risk rating for each asset it is important to understand that these results provide a scale only by which one risk can be compared to another. They are derived through assessing specific risk criteria to determine the likelihood of a bushfire threatening an asset and the level of impact or consequence to an asset from the adjacent vegetation should it be ignited by bushfire. The definition for each overall risk rating is as follows

N/A

Properties and assets are constructed of materials that are unlikely to be impacted by bushfire and/or vegetation is at a significant distance away or virtually absent from the surrounding landscape.

Low

Properties and assets are well prepared or defendable from the potential impacts from a bushfire should a bushfire approach. Surrounding vegetation is either likely to be a significant distance away or of low levels.

Medium

Properties and assets are likely to be defendable with little preparation, although surrounding vegetation or topography still poses some risk.

High

Properties and assets that are not prepared for a bushfire or don't have adequate firefighting amenities or separation distance and are therefore susceptible to the impacts of bushfire. Fire is likely to reach assets with surrounding vegetation and topography fuelling fire intensity and behaviour.

Very High

Properties and assets require special consideration to the impacts of bushfire. Bushfires are likely to be able to reach assets with high intensity with only low expectations of being able to defend assets.

Extreme

Assets and properties are highly susceptible with heavy ember attack and likely flame contact from nearby flammable materials. There are limited options for safe egress or defendable space around a property from the effects of a bushfire due to continuous or dense vegetation or challenging topography.

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		Consequence			
		Minor	Moderate	Major	Catastrophic
Likelihood	Almost certain	High	Very High	Extreme	Extreme
	Likely	Medium	High	Very High	Extreme
	Possible	Low	Medium	High	Very High
	Unlikely	Low	Low	Medium	High

Figure 4: Risk Matrix for Life and Property Assets

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4.2 Risk Assessment Methodology for Environmental Assets

The *Standard for the identification and risk assessment of South Australian environmental assets from bushfire* (SBCC 2017) is used for the risk assessment of environmental assets and subsequent identification of priorities and risk treatments for the environmental component of BMAPs. The standard defines the methodology and process for the identification and risk assessment of environmental assets from the negative impact by bushfire. Preventative risk treatment/s are determined for each environmental asset and are prioritised to reduce risk. Effective risk treatments can eliminate or minimise the negative impacts of bushfire, in order to prevent the degradation or loss of environmental assets.

The environmental risk assessment does not address:

- maintenance or enhancement of natural ecosystems
- maintenance of temporal and spatial diversity of fire regimes through the application of ecological fire management guidelines
- assessment of potential environmental impacts of risk treatments identified for life and property assets, in particular overlay of Asset Protection and Bushfire Buffer Zones
- assessment of potential environmental impacts of vegetation clearance, including prescribed burning. This environmental risk assessment will provide information to inform operational planning, however, it is not intended to be the sole source of policy directing these matters
- assessment of environmental impacts of bushfire suppression activities. This environmental risk assessment will provide bushfire hazard information to inform bushfire response planning, however, it is not intended to be the sole source of policy directing these matters.

4.2.1 Methodology

The *Standard for the identification and risk assessment of South Australian environmental assets from bushfire* (SBCC 2017) has been developed to assess risk associated with bushfires, and is consistent with the Australian Standard AS/NZS ISO 31000:2009 Risk Management – principles and guidelines. The National Emergency Risk Assessment Guidelines (2nd edition, CoA, 2015) has been used to guide standardised environmental consequence levels, likelihood ratings, and a risk matrix to derive an overall risk rating for environmental assets.

Consequence assessments consider the likely impacts to the species regional population, entire regional distribution of the ecological community or habitats within the LEP BMA, rather than the local patch or individuals within a population.

The consequence level for an environmental asset is determined by its degree of permanent or long term damage from bushfire. Degree of damage is the amount to which the environmental asset is likely to experience degradation or damage due to exposure to a bushfire.

The assessment of likelihood, the chance of the bushfire impacting the environmental asset, is statistically measured by calculating the average period of time between bushfire occurrences of a given extent within the LEP Bushfire Management Area.

The risk rating matrix (Figure 6) for the environmental assets is determined by combining the consequence and likelihood levels.

		Consequence				
		Insignificant	Minor	Moderate	Major	Catastrophic
Likelihood	Almost certain	Medium	Medium	High	Extreme	Extreme
	Likely	Low	Medium	High	Extreme	Extreme
	Unlikely	Low	Low	Medium	High	Extreme
	Rare	Very low	Low	Medium	High	High
	Very rare	Very low	Very low	Low	Medium	High
	Extremely rare	Very low	Very low	Low	Medium	High

Figure 5: Risk Matrix for Environmental Assets

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5. Risk Treatment Strategies

Bushfires cannot be eliminated from the landscape; however a combination of risk treatment strategies can be applied to reduce either the likelihood and/or impact of bushfire and to increase community resilience, enhance the ability of firefighting agencies to access and suppress bushfires, limit the spread of bushfire, and protect life, assets and the environment. The SBCC has endorsed risk treatment strategies that include both asset specific and BMA wide risk treatments.

5.1 Bushfire Management Area Wide Risk Treatment Strategies

BMA wide risk treatments are the overarching bushfire prevention and preparedness activities that are applied to mitigate the occurrence, spread and consequence of bushfire to a number of assets, across selected areas, or throughout the whole BMA.

They broadly address the bushfire risk to assets and, thereby, reduce the overall level of bushfire risk in the BMA. Each of the risk treatment strategies will reduce either the likelihood and/or the consequence of bushfire depending on the targeted outcome of the programme.

BMA wide risk treatments may include legislative requirements, policies and programs of firefighting agencies, fuel hazard reduction, development and building regulations in fire prone areas and arson prevention programmes.

Some examples include:

- National and State Legislation, Policies, Guidelines and Codes such as the *South Australian Fire and Emergency Services Act and Regulations 2005*, that includes applicable fuel management requirements, firebreak standards and annual enforcement programmes.
- State and local planning frameworks such as the State Rural Fire Hazard Plan, LEP Bushfire Management Area Plan and roadside vegetation management strategies.
- Land management agencies may have specific fire management policies and plans which set out a range of mitigation strategies to minimise the impact of bushfire on built and environmental assets.
- CFS state-wide preparedness campaigns and management of Fire Danger Seasons, Fire Danger Ratings, Permits and Total Fire Ban declarations.
- Department for Education policies and procedures for schools at risk from bushfires.
- Building Code of Australia and State based Minister's Specifications.
- SA Police Operation Nomad.

A significant and effective component of BMA wide risk treatments is the management of vegetation (often referred to as "landscape risk treatments"). In response to the National Policy Statement for Bushfire Management, and recent bushfire inquiries and recommendations, the South Australian Government has mandated an increased programme of vegetation management and prescribed burning to reduce bushfire consequences to life, property and the environment. Landscape risk treatments that manage vegetation involve the use of prescribed burning, however where this may be undesirable or operationally not practical, strategies such as the mechanical removal of vegetation may be undertaken.

Landscape risk treatments that form broader strategic breaks of low fuel across areas of the LEP aim to enhance suppression capability and therefore reduce the risk of fire moving between large or distinct areas of high fuel. Landscape risk treatments also aim to reduce the risk of a bushfire impacting asset clusters such as townships or human settlement areas rather than individual residences.

All landscape risk treatment works are undertaken with consideration to all environmental and ecological issues and in accordance with required approvals such as the *Environment Protection and Biodiversity Conservation Act 1999*, and the *Native Vegetation Act 1991*.

The BMC is supportive of land management agencies and communities in collaborating to assist with on-ground works and the use of fire for both cultural and community protection purposes.

5.2 Asset Specific Risk Treatment Strategies

Asset specific risk treatments are activities used to modify the characteristics of a hazard to reduce either the likelihood and/or consequence of bushfire on an asset. The LEP BMC allocate risk treatment strategies to reduce the risk to assets within the LEP BMA.

Asset specific risk treatment strategies are allocated to mitigate individual risks within the BMAP Risk Treatment Register and are designed to mitigate specific elements of the risk i.e. the radiant heat, susceptibility of the asset to sparks and embers, the intensity of the bushfire and/or the potential of a bushfire starting and establishing. Asset specific risk treatment strategies are allocated to asset owners and/or land managers and will assist in developing work plans and details of risk treatment actions and timeframes.

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Some examples of asset specific risk treatments include:

- Property preparedness by ember proofing and clearing debris around a building
- Asset Protection Zone (APZ) of modified vegetation in and around an electrical substation
- Bushfire Buffer Zone (BBZ) of modified vegetation to prevent the spread of fire and reduce the likelihood of large patch of habitat being damaged.
- The maintenance and creation of fire access tracks and fire breaks around assets.

5.3 Risk Treatment Strategies and Actions

Risk Treatment Strategy	Risk Treatment Action
Land and Property Management	• Asset Protection Zone • Bushfire Buffer Zone • Firebreaks & Fire Access Tracks • Prescribed Burning • Fuel Reduction • Property Preparedness • Exclude known critical habitat from all fire • Create moveable low fuel area within and surrounding habitat • Prevent fire from burning entire habitat patch in single event
Legislative & Administrative	• Policy, Standards & Codes of Practice • South Australian Planning and Design Code (and Design Standards, Practice Directions and Practice Guidelines) • Bushfire Prevention Activities (FPO Activities)
Community Engagement, Education & Information Provision	• Community Development Programmes • Education • Information Provision
Appropriate Risk - No Treatment	• No Treatment required • Monitor and review to ensure risk level remains acceptable
No Current Treatment – More Information/Decision required	• More Information required to determine appropriate treatment • More information and analysis required • Monitor and Review
Not assessed	• More work is needed to assess risk

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Land and Property Management Actions:

5.3.1 Property Preparedness

Property preparedness relates to action taken by landholders to reduce the risk of bushfire impacting on a house or other buildings. The primary focus of property preparedness should be the reduction of fuel hazards around the property and the elimination of ignition sources in areas surrounding or on structures, by:

- reducing or removing fine vegetation fuels (long grass, dried leaves, shrubs etc.)
- removing other flammable materials and liquids
- reducing the risk of impact from windblown burning embers, flame contact and intense heat radiated from bushfires.

If the occupants plan to stay and defend their home during a bushfire, having a well prepared property is essential.

The CFS webpage includes information and fact sheets on property preparedness and asset protection zones.

5.3.2 Asset Protection Zones

An Asset Protection Zone (APZ) surrounds or is adjacent to an asset listed in the BMAP Risk Register.

APZs should be managed so that the Overall Fuel Hazard (as an average throughout the zone) does not exceed Moderate. Dry grass in an APZ should be maintained at 10cm or less.

APZs are designed to reduce fire spread, intensity, radiant heat and direct flame contact to an asset. The location of an APZ should include areas such as existing cleared areas, roads and driveways which have low fuel levels.

The *Native Vegetation Act (1991)* allows for the clearing of understorey for up to 20m around a residence for fire protection[1]. An APZ may be extended beyond 20m where slopes occur downhill from the asset where vegetation types have high fuel levels (*refer to AS3959 2011*[2]). An APZ may similarly be less than 20m where the ground slopes uphill from assets or where vegetation fuel levels are low.

An APZ may be used to reduce the risk of impacts to assets identified in the BMAP Risk Register, for example residential buildings, industrial, commercial or heritage buildings, essential infrastructure, and cultural or environmental assets or items.

A Standard was approved by the SBCC in 2017 for creating and maintaining APZs, BBZs and Conservation Zones. For current information on APZs, BBZs and Conservation Zones please refer to the *Bushfire Management Zone Standard and Guidance for Use.*

5.3.3 Bushfire Buffer Zones

A Bushfire Buffer Zone (BBZ) is an area, beyond an APZ, where additional fuel management can reduce the risk of bushfire impact on assets. These zones often complement an APZ around a significant asset.

BBZs may also be used to provide strategic fuel reduced areas, which may include fuel breaks through or around a large block of vegetation, with the aim of reducing:

- the impact of bushfire burning a whole large block of native vegetation or several adjacent smaller areas of native vegetation;
- the potential for a bushfire to burn out of vegetated land into surrounding land; or
- the potential for a bushfire to burn into vegetated land from surrounding land.

Please refer to the *Bushfire Management Zone Standard and Guidance for Use.*.

On DEW & SA Water managed land APZs & BBZs are displayed spatially on the online map however where these treatments have been identified elsewhere, as either an existing or proposed treatment, they are indicated on the online map as text in the pop-up box linked to the asset. The LEP BMC is working with the treatment agencies to capture the location of these zones spatially.

5.3.4 Firebreaks and Fire Access Tracks

Firebreaks and fire access tracks are strategic fire management works which may be implemented as measures to assist with

[1] See the brochure *Reduce the Impact of Bushfire* for more detail.

[2] AS3959-2009, amended 3-2011, Construction of buildings in bushfire-prone areas, Standards Australia.

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bushfire mitigation or suppression. The standard for firebreaks and tracks has been defined in the *South Australian Firebreaks, Fire Access Tracks and Sign Standards Guidelines (2015 Government Agencies Fire Management Working Group GAFMWG)* and was endorsed by the SBCC.

A firebreak is an area or strip of land where vegetation has been removed or modified to reduce the intensity and rate of spread of fire that may occur. A fire access track is designed, constructed and maintained for the safe passage of firefighting vehicles undertaking fire suppression activities. Whilst firebreaks and fire tracks may be constructed or designed for a specific purpose, it does not necessarily exclude a fire track to also act as a fire break, or vice versa, in some instances. See the *GAFMWG Standard* document for further information on firebreaks, fire access tracks and sign standards.

Firebreaks and refuges have been identified on DEW & SA Water lands. These mainly include existing areas of low fuel such as major roads, salt pans and areas of grazed land adjacent conservation areas.

5.3.5 Prescribed Burning

Prescribed burning is the controlled application of fire under specified environmental conditions to a predetermined area and at the time, intensity, and rate of spread required to attain planned resource management objectives. Prescribed burning is a tool used to achieve fuel hazard reduction management for bushfire risk mitigation and to achieve environmental, land management and research objectives.

The State Government public land agencies of DEW, SA Water and ForestrySA share agency resources to undertake fuel hazard reduction prescribed burning at a landscape scale across public lands to reduce the risk of bushfire impacts entering or emanating from a government managed reserve. DEW is currently reviewing the Ecological Fire Management Guidelines with input from key stakeholders and interest groups.

Information on DEW prescribed burns can be found on the following link: DEW Prescribed Burns.

For private land holders looking to undertake prescribed burning in native vegetation the requirements are outlined by the Native Vegetation Council. DEW's Burning on Private Land Project aims to assist land owners in determining the feasibility and suitability of prescribed burning of a tool as well as identifying pre- and post-burn work.

Where burning occurs on Aboriginal land it may be for cultural reasons or to reduce fuel loads. The LEP BMC recognises that some areas may be off limits for burning for various reasons and that this information may be sensitive and is only provided to the public where approval from Traditional Custodians is given.

Legislative and Administrative Actions:

5.3.6 Bushfire Prevention Activities Conducted by a Fire Prevention Officer

Fire Prevention Officers undertake fire prevention activities as outlined in the *South Australian Fire and Emergency Services Act 2005 (Part 4A Division 2)* and *Regulations 2005*. Bushfire prevention activities undertaken by Fire Prevention Officers include:

- assessing the extent of bushfire hazards within the relevant council area;
- assisting the council in providing advice and information to any bushfire management committee whose area incorporates any part of the relevant council area in connection with the preparation or review of the committee's Bushfire Management Area Plan;
- providing advice to owners of property in respect of bushfire prevention and management;
- carrying out any other functions assigned to the Fire Prevention Officer by the regulations.

5.3.7 Policy, Standards and Codes of Practice

The policies, standards and codes of practice refer to current overarching bushfire management practices, performance measures and desired outcomes of the fire management activities on private and public lands. They provide a framework for the safe and effective management of potential ignition sources and fire on private and public land in South Australia. Examples include codes on Pile Burning, Harvesting and Use of Wood Ovens, and policies requiring permits for fire activities.

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This strategy may also include emergency management policies that individual organisations such as schools, health and community services and utilities have or require to mitigate bushfire risk to their assets. Examples may include closing assets or not driving through high risk areas on catastrophic fire danger forecasts.

Where seasonal conditions increase the risk to an area the BMC will consider amendments to existing policies and standards, or the creation of new ones. The BMC may also consider the need to publicise seasonally relevant policies, standards or codes of practice in order to prevent ignitions, protect travellers etc.

5.3.8 Council Planning and Development Policy and Standards

Key objectives outlined within planning strategy documents and Development Plans across Government and in local area Development Plans (as required under *Section 22 of the Development Act 1993*), should give consideration to the protection of life, property and assets including infrastructure, the region's cultural heritage (indigenous and non-indigenous) and environmental assets from hazards such as bushfire.

Ministers and or Local Government may amend such policies and strategies in order to accurately address key objectives relative to the risk identified in their local area.

Current planning policies relating to bushfire risk, contained in relevant Development Plans, may be reviewed in this context as part of future Development Plan amendments. Notably, the State Government has embarked on the implementation of key planning reforms over the next 1-5 years, as part of a new planning system and the Planning, Development and Infrastructure Act, 2016. Pending the timing and sequencing of the introduction of new planning rules and governance systems, there is potential to also review future policy approaches relating to bushfire risk and asset protection through this process.

Community Engagement, Education and Information Provision Actions:

5.3.9 Community Engagement

Community education and engagement activities can extend from simple information provision to extended training and empowerment programmes. These activities can be, and are, undertaken by many different groups (CFS, MFS, local councils, SAPOL, Red Cross, etc.). The type of programme or information that needs to be provided is dependent on the audience and their level of risk. Research has shown that information provision on its own, whilst important, does not lead to a sufficient level of planning and preparation for bushfires. Community engagement programmes have the potential to achieve positive outcomes at both the individual (resident, household, etc.) and community level, provided they are planned, well implemented and resourced appropriately. Materials should be designed by, or in consultation with, community and/or relevant subject matter experts or agencies.

Information provision for travellers has been identified as particularly important due to the large numbers of tourists to LEP particularly during summer. Work is being undertaken by relevant agencies to develop consistent signage to be placed at strategic locations (roadside rest stops etc.) to inform travellers about fire restrictions and bushfire safety.

5.4 Risk Treatment Implementation Plan

Once the LEP BMAP has been approved by the SBCC, risk treatment/action implementation plans will be developed in conjunction with the BMC, Councils, asset and land manager/owners in order to document and report how the chosen risk treatment strategies and their associated activities will be implemented. These plans should include:

- Risk and risk treatment identifiers
- Existing and proposed risk treatments
- Responsibility for risk treatment implementation
- Prioritisations of risk treatments

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- Actions required to undertake risk treatments
- Timeframes for the completion of risk treatments
- Performance and success measures
- Reporting and monitoring procedures

The risk treatment implementation plan will enable Councils and land managers to develop or inform local works plans and will provide a mechanism for the LEP BMC to monitor timeframes and progress of risk treatments.

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6. Reviewing, Monitoring and Reporting

6.1 Monitoring

The SBCC approves new or reviewed BMAPs and provides guidance, direction and advice to bushfire management committees.

The LEP BMC is required to monitor all aspects of the BMAP contents, risk assessments and risk treatments on an ongoing basis including:

- Changes to accepted risk levels
- Changes in circumstances or assessment criteria
- Additional information (should it become/when it becomes available)
- Changes in social, political or legislative/regulative environments
- Changes to the BMC area or organisational responsibilities
- Progress toward the completion of the risk treatment actions listed in the BMAP
- The timeliness of the risk treatment works in the BMAP
- Compliance of risk treatment works with relevant Acts, Codes and Regulations. *(Refer to Section 1.3: Legislation).*

6.2 Reviewing

As stipulated in the *FES Act 2005* this BMAP must be formally reviewed at least once in every four year period from the approval date of the original plan.

However, as a live Plan, the LEP BMC will ensure that the BMAP is reviewed, in part or wholly, whenever an amendment, context or risk issue is identified or brought to the attention of the BMC, or to assess the progress of risk treatment works against stated timeframes. A summary of actions and amendments will be reported by BMCs to the SBCC on at least an annual basis.

6.3 Reporting

LEP BMC is required under FES Act 2005 to report to the SBCC on its progress implementing the bushfire risk management strategies identified in the plan.

BMC member organisations will need to report to the LEP BMC on the progress of risk treatment actions outlined in the BMAP. A pilot online tool is currently in development to enable a simple and efficient way for treatment agencies to report their progress in implementing risk treatments.

Where amendments, additions or deletions within the BMAP are required the CFS BMPU will provide support and assistance to the BMC so that member agencies can confidently assess any changes.

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7. Risk Registers

7.1 Overview of Risk and Risk Treatment Registers

The Risk Register and Risk Treatment Register are integral components of this BMAP, along with the online map and this context document. The Registers are current as of the date this document was approved. Due to the dynamic nature of risk, the BMC will monitor and update the status of risks and risk treatments once the risk treatment works have been completed, or where there is a change in the factors that determine the level of risk.

The information pertaining to each risk is to be monitored by the BMC and updated and maintained by the CFS Bushfire Management Planning Unit on the secure Bushfire Risk Information Management System (BRIMS).

7.2 Risk Registers

The Risk Registers list information relating to each asset identified within the LEP BMC and the overall risk rating that has been determined for each asset. The level of risk for life and property assets in the risk register does not necessarily indicate its level of priority for mitigation works. For example, a substation with a risk rating of extreme may have a much higher priority for risk treatments than a communication tower with the same risk rating due to being a critical link in the electricity grid. The BMC and member organisations will identify, monitor and report on priorities for mitigation works. The environmental assets that have been identified as requiring a risk treatment have been assigned a level of priority and this is included in the risk register.

7.2.1 Risk Treatment Registers for Life and Property Assets

The Risk Treatment Register for human settlement (life), economic and social value (property) assets details the risk treatment strategies and actions that have been allocated to each asset. The register also includes the agency or agencies who are involved in implementing, or supporting the implementation of, a risk treatment strategy or action. A copy of the Risk Treatment Strategies Register is available by contacting the Bushfire Management Planning Unit: *cfs.bushfiremanagementplanning@sa.gov.au*

7.2.2 Risk Treatment Register for Environmental Assets

The Risk Treatment Register for environmental assets is a record of the assessment of bushfire risk to environmental assets and the recommended preventative risk treatment strategies and actions to mitigate this risk. The register includes the asset name, consequence and likelihood of the bushfire risk occurring, recommended treatment strategies and actions, and who is responsible for managing the risk. A copy of the Risk Treatment Strategies Registers are available for each of the five environment asset category types and are available to download from the online map or by contacting the Bushfire Management Planning Unit: *cfs.bushfiremanagementplanning@sa.gov.au*

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Appendix A Lower Eyre Peninsula BMC Member Organisations

Listed below are the Member Organisations of the LEP Bushfire Management Committee. It should be noted that although not members of the LEP BMC, many other Government and non-Government organisations are consulted on, and contribute to the LEP BMAP.

For further information on the roles and responsibilities of the Bushfire Management Committee and Member Organisations, please refer to:

- *Section 3.2: LEP Bushfire Management Committee*, and
- *Section 3.3: Bushfire Management Committee Member Organisations*

LEP BMC Member Organisations

Member Organisation	Member Organisation
• City of Port Lincoln	• District Council of Tumby Bay
• District Council of Lower Eyre Peninsula	• Conservation Council of SA
• SA Country Fire Service	• Primary Producers SA
• SA Police	• Department for Environment and Water
• Department for Planning, Transport and Infrastructure (DPTI)	• SA Country Fire Service Volunteer Association
• SA Water	• SA Metropolitan Fire Service
• Eyre Peninsula Natural Resource Management Board	

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Related Documents

Name of Document
A Template for a Local Council Roadside Vegetation Management Plan, Native Vegetation Council (2012)
AS 3959-2009/Amendment 3-2011; Construction of buildings in bushfire-prone areas (2009)
AS/NZS ISO 31000:2009 Risk Management - Principles and Guidelines (2009)
Bushfire Management Zone Standard and Guidance for Use (2017)
CFS – Code of practice – Vegetation and rubbish pile burning – (April 2015)
Crown Land Management Act 2009 (SA)
Department of the Premier and Cabinet South Australia's Strategic Plan - Creating Opportunity. Department of the Premier and Cabinet, Government of South Australia (2004)
Development Act 1993 Development Regulations (2008)
Emergency Management Act (South Australia) (2004)
Emergency Management in Australia Concepts and Principles Manual 1 (2004)
Environment Protection and Biodiversity Conservation Act (Commonwealth) Section 18 and 269AA (1999)
Fire and Emergency Services Act and Regulations (2005)
Guidelines for Plantation Forestry in South Australia 2009
Guidelines for the Management of Roadside Vegetation, Native Vegetation Council (2012)
Minister's Specification SA 76, Maintenance and testing of essential safety provisions, (2015 edition)
Minister's Specification SA 76A, Fire Safety Requirements in Caravan Parks and Residential Parks, (December 2007)
Minister's Specification SA 76C, Protection of buildings exposed to brush fences, November (2007)
Minister's Specification SA H3.2, Concessions for farm buildings, (2015 edition)
National Bushfire Management, Policy Statement for Forests and Rangelands (2014)
National Construction Code (Formerly the Building Code of Australia, BCA) (2016)
National Parks and Wildlife Act 1972 (SA)
Native Vegetation Act 1991 (SA) Section 29 (1991)
Native Vegetation Act 1991 and Regulations (2003)
Native Vegetation Regulations 2003 (SA) Section 5A-1 and 5(1)(zi) (2003)
SA CFS - Rural Fire Hazard Plan (2014/15)
South Australian Firebreaks, Fire Access Tracks and Sign Standards Guidelines (2015)
State Bushfire Management Plan (2010)
Wilderness Protection Act 1992 (SA)

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Definitions and Acronyms

Name	Description
Agencies	Refers to any State or Federal Government Department that is the manager or owner of the land or asset.
AIRS	Australian Incident Reporting System
APZ	Asset Protection Zone is a fuel reduced area surrounding a built asset or structure.
AS/NZS ISO 31000:2009	AS/NZS ISO 31000:2009 Risk Management - Principles and Guidelines. The agreed international standard that dictates the fundamental principles behind risk management.
Asset	A term used to describe anything of value within communities that may be impacted by bushfire. This may include residential areas, infrastructure, commercial, environmental, heritage and community valued sites.
Asset Owner	The owner occupier or custodian responsible for the care or management of an asset. The responsibility may be defined by ownership, lease or contract. Also refer to the *Fire and Emergency Service Act 2005* for more information.
Asset Risk Treatment Strategies	Strategies allocated to modify the bushfire risk to specific assets that have been assessed.
BAL	Bushfire Attack Level is the level of radiant heat that is likely to impact on an asset
BBZ	Bushfire Buffer Zone consists of strategic firebreaks of sufficient width and continuity to provide a substantial barrier to the spread of bushfire.
BMA	Bushfire Management Area
BMAP	Bushfire Management Area Plan as defined under the *Fire and Emergency Services Act 2005 S73A*.
BMC	Bushfire Management Committee as defined under the *Fire and Emergency Services Act 2005 S72A*.
BOM	Bureau of Meteorology
BRIMS	Bushfire Risk Information Management System - A systematic process that identifies assets at risk from bushfire, assesses the level of risk, captures current and proposed risk treatments, risk treatment owners and time frames for implementation and provides a framework for continuous review and monitoring of the risks and their risk treatments.
Bushfire Hazard	The vegetation that poses a level of threat to human life, economic and cultural assets or environmental assets. The potential severity of a bushfire threat is determined by fuel load, fuel arrangement and topography under a given climatic condition.
Bushfire Risk	The concept of bushfire risk has three elements: a) the likelihood of a bushfire igniting and spreading to the hazard adjacent to and threatening an asset; b) the observable event of the hazardous vegetation igniting and c) the impact to the asset from a bushfire event.
CFS	Country Fire Service (South Australia)
Consequence	The term "Consequence" for the purpose of this plan, means "what will happen to the asset if it is impacted by a bushfire?" For example will it burn down, will it cease to function, will people be injured etc.? The elements that contribute to the consequence of a bushfire are the Bushfire Attack Level (BAL) (measuring the radiant heat) and either the susceptibility of occupants in human settlement assets or susceptibility of built structures.
DEW	Department for Environment and Water
FBD	Fire Ban District
FDI	Fire Danger Index
FDR	Fire Danger Rating
FDS	Fire Danger Season
FES Act	Fire and Emergency Services Act 2005
FPO	Fire Prevention Officer
Fuel Hazard Guide	The Fuel Hazard Guide aims to assist with defining and identifying the different components of Fuel Hazard through the assessment of Fuel Hazard levels for Surface, Near-Surface, Elevated and Bark Fuel
GAFMWG	Government Agencies Fire Management Working Group
Impact	The loss, or damage, to an asset from a bushfire.
IPA	Indigenous Protection Area

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Land Manager	The person, organisation or agency responsible for the care or management of an asset or land. The responsibility may be defined by ownership, lease or contract. Also refer to the *Fire and Emergency Services Act* 2005 *Section 3* for additional clarification.
Likelihood	The chance of a bushfire igniting and spreading to the hazard adjacent to and threatening an asset.
Prescribed Burning	Prescribed burning is the planned application of fire under prescribed environmental conditions and within defined boundaries to achieve fuel hazard reduction management for bushfire risk mitigation and to achieve ecological, land management and research objectives.
RARB	Register of Recognised Aboriginal Representative Bodies
SAPOL	South Australia Police
SBCC	State Bushfire Coordination Committee
ZEMP	Zone Emergency Management Plan

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