



**Government
of South Australia**

STATE BUSHFIRE COORDINATION COMMITTEE

Bushfire Management Area Plan Handbook

Version 2

February 2018

TITLE: Bushfire Management Area Plan Handbook v2

DATE: February 2018

REVIEW DATE: February 2019

CUSTODIAN: CFS Bushfire Management Planning Unit

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1 INTRODUCTION

Under the *Fire and Emergency Services (FES) Act 2005*, South Australia has a two-tiered structure for bushfire management – a State Bushfire Coordination Committee (SBCC) and a Bushfire Management Committee (BMC) in each of the nine Bushfire Management Areas (BMAs).

The *FES Act* specifies the planning framework that the committees are to uphold. The SBCC must prepare and keep under review the State Bushfire Management Plan (SBMP) and the BMCs must prepare and keep under review a Bushfire Management Area Plan (BMAP) for each BMA.

The SBMP sets out the framework for bushfire management in the State. This handbook details the procedure involved for the preparation and implementation of BMAPs, including:

- Steps to identify assets at risk of bushfire
- Assessment of bushfire risk to those assets
- Options to treat the identified risks
- A framework to implement risk mitigation programs
- Expectations for monitoring and reporting risk treatments
- A process for assessment and review

By documenting the BMAP procedures and guidelines in this Handbook, BMC members and stakeholders can understand the process used to assess and treat bushfire risk across the South Australian landscape.

2 SCOPE

2.1 Purpose

The purpose of this BMAP Handbook is to articulate the steps required to produce a BMAP. It provides the strategic direction to ensure consistency in the bushfire risk management approach across the State.

2.2 Aim

The aim of this Handbook is to provide guidelines and procedures to ensure BMCs and other stakeholders understand the risk assessment process and what is expected of them in the development and maintenance of a BMAP. The SBMP provides the strategic framework for BMAPs and outlines the alignment with AS/NZS ISO 31000:2009 and National Emergency Risk Assessment Guidelines (NERAG). The BMAP process follows the framework of the AS/NZS ISO 31000:2009 risk management process (Figure 1). Related BMAP administrative guidelines and procedures, which provide additional information on more specific BMAP processes, are listed in the 'Related documents' section of this document.

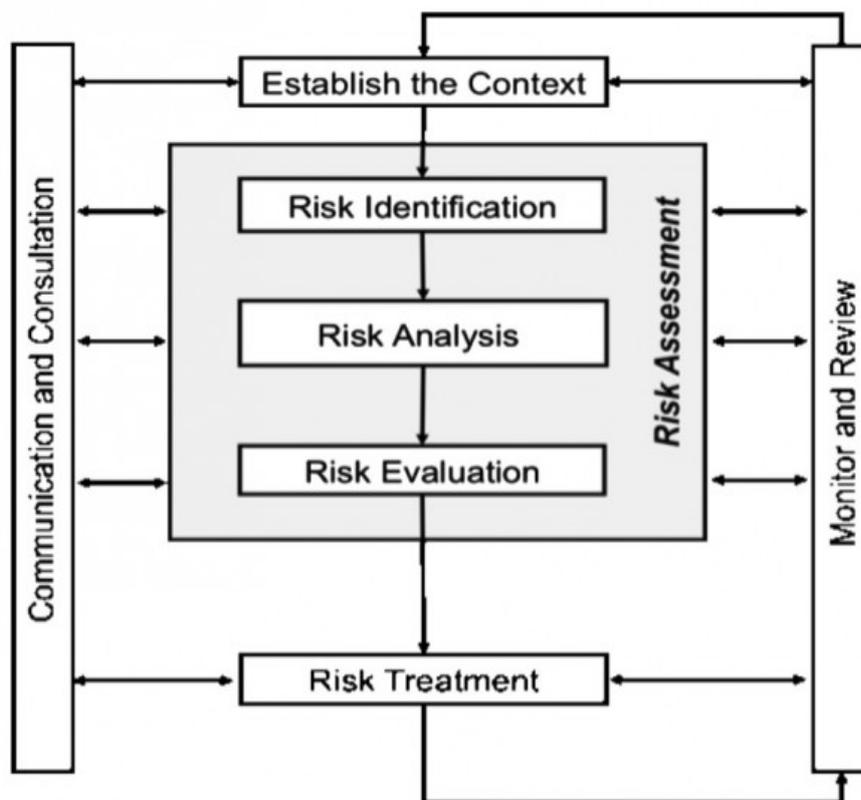


Figure 1 ISO 31000:2009 Process (pg. vi ISO 31000:2009)

2.3 Prevention, Preparedness, Response and Recovery Framework

The Australian Federal Government agency, Emergency Management Australia (EMA), recognises four types of activities that contribute to the reduction of hazards and to reducing the susceptibility of a community or environment subject to a hazard. The framework for activities is designed around the PPRR program – Prevention, Preparedness, Response and Recovery. The BMAPs are developed specifically to address bushfire prevention and preparedness. The risk assessment process for assets does not currently refer to the wider level of ongoing social, community, political, financial or business continuity consequences of losing the asset. BMAPs outline prevention/mitigation activities that aim to eliminate or reduce the impact of bushfire and reduce the susceptibility (while increasing the disaster resilience) of the community. Activities relating to bushfire response or recovery are not addressed in BMAPs, but are covered in the various regulations, programs, policies and procedures of government and non-government emergency and community service agencies.

2.4 Consideration of Risk Priority

The BMAPs identify and assess a variety of assets at risk of bushfire within the BMAs. The assets are separated into categories and sub-categories to aid prioritisation of risk reduction/elimination controls. The following considerations have been applied in the development of the BMAP:

- Protection and preservation of life
- Protection of critical infrastructure and community assets that support disaster resilience
- Protection of residential property
- Protection of assets supporting livelihoods, economic production and community financial sustainability
- Protection of cultural assets
- Protection of environmental assets at risk from bushfire
- Compliance with relevant Acts, Codes of Practice and Regulations

2.5 Assets of Aboriginal Significance

The BMAP process recognises the rights, interests and obligations of the traditional owners to speak and care for their traditional lands in accordance with their cultural beliefs and traditions. On the advice of the Department of the Premier and Cabinet – Aboriginal Affairs and Reconciliation Division (DPC - AARD): to prevent damage, disturbance or interference with any Aboriginal site or object, assets of Aboriginal cultural and spiritual significance will not be specifically identified in this iteration of BMAPs. Further consultation with relevant stakeholders will be undertaken on the methodology for including assets of Aboriginal significance in future iterations of BMAPs.

3 ROLES AND RESPONSIBILITIES

It is the responsibility of each BMC to develop and maintain a BMAP and to ensure treatment strategies are undertaken to reduce bushfire risk to life, property and the environment. The initial development of nine of the BMAPs was part of a project funded by the Natural Disaster Resilience Program (NDRP) in partnership with the Commonwealth and State Governments of South Australia. The CFS Bushfire Management Planning Unit (BMPU) facilitated the development of these BMAPs on behalf of the BMCs.

The continued development of the BMAP supporting processes, the provision of data to BMCs, and the collation of BMC reports to the State Bushfire Coordination committee (SBCC) will continue to be the responsibility of the BMPU. In addition, the 4-yearly review of BMAPs by each of the BMCs will be supported by the BMPU.

The Department for Environment and Water (DEW) will support BMCs by developing and facilitating the environmental risk assessment methodology, convening the Environmental Assets and Risk Assessment Panels to advise the BMCs (see **Chapter 9**) and providing data and expertise in the assessment of environmental assets.

BMAPs are prepared under specifications as determined by the SBCC and documented in the State Bushfire Management Plan (SBMP).

The SBMP is a strategic level document (required under Section 73 of the *FES Act 2005*) designed to provide policy and direction for the mitigation of bushfire risk in South Australia. It identifies major bushfire risks to life, property and the environment in the State and guides actions to mitigate those risks. The SBMP sets out the standards for preparation and implementation bushfire management planning at a regional level through the development of Bushfire Management Area Plans (BMAPs).

3.1 Minister for Emergency Services

The Minister for Emergency Services is responsible for approving the State Bushfire Management Plan (SBMP).

3.2 State Bushfire Coordination Committee (SBCC)

The SBCC provides strategic direction and coordinates decision making in bushfire management planning across the State. In addition to advising the Minister on bushfire prevention and preparedness issues, the SBCC is responsible for:

- The State-wide coordination, endorsement and promotion of policies, practices and strategies in relation to bushfire management planning
- Preparing and maintaining the State Bushfire Management Plan (SBMP)
- Ensuring strategic bushfire policies and practices are consistent with the SBMP
- Reviewing and approving Bushfire Management Area Plans (BMAPs)
- Reviewing the SBMP at least once in every 4 years and ensuring any relevant changes are reflected in the BMAPs

3.3 Bushfire Management Committees (BMCs)

Section 72B of the *FES Act*, directs the functions of BMCs and includes:

- Advising the SBCC on bushfire prevention in its area.
- Promoting the coordination of policies, practices and strategies relating to bushfire management activities within its area.
- Preparing and keeping a BMAP under review and ensuring it is consistent with the SBMP.
- Overseeing the implementation of its BMAP and reporting to the SBCC on any failure or delay in relation to the implementation of the plan.
- Preparing or initiating the development of other plans, policies, practices or strategies to promote effective bushfire management within its area.
- Convening local or regional forums to discuss issues associated with bushfire management within its area and to work with local communities to promote and improve effective bushfire management.
- Providing reports to the SBCC or Minister on any matter relevant to bushfire management within its area.

In the preparation and management of their BMAP, the BMC are responsible for:

- Determining and prioritising BMA wide bushfire risks and treatments.
- Reviewing and endorsing BMAP information and drafts.
- Determining methodologies and supporting activities for community and public consultation.
- Reporting to the SBCC on bushfire prevention and preparedness issues within their BMA.
- Reviewing their BMAP at least once in every 4 years or at the direction of the SBCC.

3.4 Local Government

Councils have a significant role in the BMAP process. They own and manage significant assets and lands, have responsibilities for planning and development approvals, and community engagement. Section 105B of the *FES Act* states 'any council that is in a rural area or contains within its area part or all of the designated urban bushfire risk area must appoint at least one person as a Fire Prevention Officer (FPO)'. Section 105C outlines the functions of a trained FPO, which includes:

- Assessing the extent of bushfire hazards within the relevant council area.
- Assisting the council in providing advice and information to the relevant BMC in preparation or review of the BMAP.
- Providing advice to owners of property in respect of bushfire prevention and management.
- Carrying out any other functions assigned to the FPO by the regulations.

In the BMAP process, councils are also responsible for:

- Providing key information on assets within their area
- Identifying and communicating bushfire risk treatments undertaken within their area
- Actively participating in BMAP public consultation activities
- Prioritising, applying and reporting on BMAP risk treatments

3.5 South Australian Country Fire Service (SACFS)

SACFS is the Hazard leader for rural fire and has responsibilities for the protection of life, property and the environment. This is undertaken through the following mechanisms:

- Legislation for the management of fuel loads and fire cause
- Operational response
- Public information and education
- Bushfire prevention activities
- Bushfire management planning

The role of Chair of the SBCC is filled by the SACFS Chief Officer and the Director of Preparedness Operations performs the role of Executive Officer for the SBCC. The agency also holds a membership position on the committee.

Similarly the BMCs are chaired by SACFS Regional Commanders with the Executive Officer roles being filled by the SACFS Regional Prevention Officer. The Executive Officer of the BMC also acts as a member of the Committee, with their role as Executive Officer being in addition to and separate from that of their responsibilities as a member. It is incumbent on Chairs and Executives of these committees to liaise with the relevant business units within SACFS.

SACFS Bushfire Management Planning Unit (BMPU)

The SACFS has established a Bushfire Management Planning Unit (BMPU) to develop, facilitate and assist each BMC with the preparation and management of its BMAP. The BMPU ensures the consistency of the risk assessment process and resultant BMAPs across the State and establishes assurance processes for the valid, reliable and repeatable collection of data. This includes the use of generic risk treatment strategies and reporting processes.

The BMPU's main functions are to:

- Develop and manage the bushfire risk framework used to create BMAPs
- Develop and manage risk assessment software, tools and website
- Facilitate the creation of standardised BMAPs across SA
- Undertake and manage stakeholder engagement
- Manage BMAP updates and processes
- Manage data exchanges and reporting
- Coordinate public consultation
- Support BMCs with BMAP implementation, monitoring and reviewing

3.6 Department for Environment and Water (DEW)

DEW is responsible for establishing and managing parks and reserves in South Australia. This protected area system includes all reserves proclaimed under the *National Parks and Wildlife Act 1972*, the *Wilderness Protection Act 1992*, and un-alienated Crown land and conservation reserves dedicated to the Minister for Sustainability, Environment and Conservation under the *Crown Land Management Act 2009*. DEW also administers the Heritage Agreement programme whereby conservation areas are established on private lands under the *Native Vegetation Act 1991*.

Under the *FES Act*, DEW has an obligation to manage the bushfire risk on the public lands it manages. DEW manages those risks in line with department policy and procedures through the development of Fire Management Plans, which identify fire management activities over a ten-year period for collections of parks and reserves around the state. A key strategy identified in these fire management plans is the identification of bushfire management zones for strategic fuel management.

DEW has a rolling programme of prescribed burning for fuel management, conducted in spring and autumn each year to reduce the likelihood of large bushfires developing on public lands and impacting on life, property and environmental assets. Commencing in 2016/17, DEW has increased the scope of its prescribed burning activities to include strategic locations on privately owned lands in order to further reduce the impact of bushfires on communities. Where appropriate, DEW also conducts ecological prescribed burns to enhance biodiversity (for example, regeneration of senescing vegetation) and for land management objectives such as weed management.

DEW is a SACFS Brigade under the *FES Act* and assist SACFS in bushfire response across the state (regardless of tenure), and also contribute significant resources to emergency response in the roles of incident management, aerial operations, fire behaviour analysis and mapping support across all hazards.

A cooperative approach to managing fire on public land has been developed by the Heads of Agency Agreement between DEW, the SACFS, ForestrySA and SA Water.

3.7 SA Water Corporation

SA Water is owned by the South Australian Government and manages water services in South Australia. A large proportion of land comprises water catchment areas surrounded by natural vegetation resulting in their ownership of areas of bushfire hazard. SA Water, in conjunction with DEW and ForestrySA through the Heads of Agency Agreement, annually conduct strategic fuel reduction prescribed burns to reduce the establishment and spread of bushfire from their property to neighbouring communities. Water storage and supply infrastructure exists across the South Australian landscape along with wastewater infrastructure closer to townships and settlements. SA Water is a key stakeholder in the prevention and preparedness activities identified within all BMAPs and in their ownership and management of infrastructure state-wide.

3.8 Forestry

There is a mix of government (ForestrySA) and private enterprise involved in managing forest plantations in South Australia. These agencies work in cooperation with SACFS, other land managers and neighbouring landholders to manage the threat and response to bushfire. Maintenance of annual prescribed burning programmes across the forest reserves form part of their management practices.

3.9 Additional Key Stakeholders

In addition to the committees and organisations listed above, additional key stakeholders in the BMAP process may include infrastructure agencies, industry, business organisations, conservation groups, service agencies and community. These stakeholders may be members or non-members of one or more BMCs and may have assets in one, multiple or all BMAs. The BMPU and relevant BMC engage with these stakeholders to obtain information on their assets and validate relevant information for inclusion into the BMAP.

4 BMAP BUSHFIRE RISK MANAGEMENT FRAMEWORK

The overarching Bushfire Risk Management Framework used to produce each of the BMAPs complies with the framework outlined in ISO 31000:2009 and is illustrated earlier in **Figure 1**. This ensures that information about the risk of bushfire impacting an area or identified asset follows the international standard for risk management. The BMAP framework, processes and strategies are also monitored and reviewed to identify areas of continuous improvement and for the continued updates of the BMAPs.

4.1 Bushfire Risk Information Management System (BRIMS)

The Bushfire Risk Information Management System (BRIMS) is an Information Management System (IMS) developed by the SACFS to capture the information required for a BMAP. BRIMS is an ArcGIS driven database system embedded with especially designed functions to geospatially record risk identification, risk analysis and risk treatment information for identified assets at risk from bushfire. The ArcGIS based mapping system that is used to capture the information recorded in BRIMS is known as BRIMap.

The BRIMS database enables local councils, government agencies, non-government organisations, land managers and other stakeholders to record bushfire risk treatments and develop works programmes to reduce the overall risk from bushfire to life, property and the environment. BRIMS considers the needs of all stakeholders while delivering a practical and flexible database of bushfire risk, assessment and treatment.

The BRIMS database is managed by the SACFS BMPU and the online information is hosted on the SACFS website. The SACFS BMPU update information in BRIMS and on the website as information is provided by BMCs.

5 BMAP DEVELOPMENT PROCESS

The major stages in the development of a BMAP fit into the Risk Management Framework set out by ISO 31000, and include the following steps, which are addressed in the sub-sections or chapters to follow:



Figure 2 BMAP Development Process

5.1 BMAP Initialisation

The first step in the development of a BMAP is the capture and review of existing information. Existing interim plans and other datasets are interrogated and information that may still be current and relevant is imported into BRIMS. This preliminary data is reviewed and added to during the development of the draft BMAP. This first step is primarily undertaken by BMPU; however DEW provide the relevant information for environmental assets.

5.2 Stakeholder Engagement

Throughout the development of a BMAP, the BMC members provide information regarding their assets at risk from bushfire for inclusion into the BMAP. The BMPU also engages with major stakeholders in a Bushfire Management Area (BMA) who are not represented on the BMC (e.g. commercial businesses and infrastructure owners and managers) to determine their key assets for inclusion in the BMAP for risk assessment. Information is exchanged with stakeholders either through workshops and/or data and is provided from existing GIS datasets, spreadsheets or databases.

Throughout the development of a BMAP the BMPU will consult with BMC members and other stakeholders to gather information and data. This data is refined and maps created to enable BMCs to review risk ratings and risk treatment strategies. In some instances Working Groups may need to be established to undertake this work and to provide recommendations to rest of the BMC for consideration.

Training and/or guidance in all stages of the process will be provided by the BMPU to support the continuous improvement of bushfire risk assessments and treatment strategies.

5.3 Risk and Treatment Workshops

The major workshops held during the development of a BMAP include:

5.3.1 Risk Identification and Treatment Allocation Workshops

Risk identification and treatment allocation workshops are a key activity in the capture and assessment of bushfire risk information in relation to assets. These workshops are generally hosted by local councils and attended by council staff, BMC members, stakeholders and community members. The workshop attendees assist in identifying assets, conducting risk assessments, allocating risk treatments and providing local knowledge of communities and assets.

These workshops enable the capture and review of a considerable amount of the necessary data for a BMAP; however, these workshops should not be the sole option for the collection of information required for a BMAP. Additional workshops or meetings may also be conducted with stakeholders who have information relevant to a BMAP as well as selective ground-truthing to determine the validity and reliability of assessments.

5.3.2 Risk Analysis, Evaluation and Treatment Validation

The BMPU consolidates the information captured during earlier workshops and provides the subsequent information to BMC members in formats that allow the information to be reviewed (e.g. hard copy and online maps, risk registers, treatment lists). Draft BMAP information may be distributed electronically for review but is also provided at a BMC meeting so that members can discuss any amendments as a committee. Decisions may be made as a committee (or working group of the BMC) around allocating consistent treatments to specific asset types or dependant on risk rating. These workshops may also identify areas of potential hazards and risks requiring further investigation and may recommend landscape risk reduction strategies for consideration by the BMC.

5.3.3 Area-wide Bushfire Risk Assessment Workshops

Area-wide Bushfire Risk Assessment workshops are conducted with the whole BMC, co-facilitated by BMPU, Exec Officer and Chair and use the National Emergency Risk Assessment Guidelines (NERAG) process to look at the 5 consequence categories and the risk within the BMA against those categories. See **Chapter 10** for more information.

5.4 Review, Evaluation and Recommendations

Throughout the preparation of a BMAP, government agencies involved in bushfire prevention and land management are consulted and Draft BMAP information shared for comment and validation at various stages in development. These consultation processes and the workshops outlined in Section 5.3 may identify issues and result in recommendations that require the consideration of the BMC. These issues and recommendations are collated and provided to the BMC for determination.

See **Chapter 11** for more information regarding Risk Evaluation.

6 BUSHFIRE RISK IDENTIFICATION

Assets to be included in a BMAP are those that are valued by the community and are at risk from bushfire. People with appropriate local knowledge are involved in identifying the assets. Relevant and current background data can also be recorded to assist with BMC decision making. The objective is to generate a comprehensive list of assets at risk that can also be viewed spatially. Risk analysis will assist in setting treatment options and priorities.

For information regarding the risk assessment methodology for environmental assets refer to **Chapter 9**.

6.1 Bushfire Safer Places (BSPs) and Last Resort Refuges (LRR)

Bushfire Safer Places (BSPs) have been established throughout the State and generally incorporate the central areas of townships and settlements. Assets that exist within these areas are generally not at risk from the direct bushfire impact and need not be included in assessments. However, any assets that are on or just in the outer boundary of a BSP are considered to be at risk of bushfire impact and should be considered for inclusion and be risk assessed. The BMAP process may identify potential changes to the boundaries of BSPs. BMCs can also request a reassessment of a BSP boundary should there be a new residential development or other change in land use.

Last Resort Refuges (LRRs) are generally spaces (i.e. ovals) or buildings that are intended to provide a place of relative safety during a bushfire. There is a minimum level of protection to those sheltering at these sites from the immediate life threatening effects of radiant heat and direct flame contact in a bushfire. Signage management and the process for assessing new LRRs or reassessment of potentially unsuitable LRRs is undertaken by CFS Preparedness Operations. LRRs are identified in BMAPs as Human Settlement assets in the Asset Category of Special Fire Protection. Treatments are allocated to these sites to ensure they are maintained during the FDS and any compliance issues are reported to the BMC.

6.2 Inclusion of Assets into BRIMS

Assets identified to be at risk from bushfire, together with all relevant information relating to the risks and existing and proposed treatment strategies, can be captured within BRIMS. This allows for a single repository for all current and future assessments to be managed and maintained centrally. BRIMS allows for assets at risk from bushfire to be spatially identified by a point, line or polygon within a BMA.

Where possible, assets of the same type, category and ownership can be grouped rather than identified on an individual basis, though this can only be done where assets have the same risk characteristics and treatments. For example, a street of dwellings abutting a forested area all face the same risk of impact from fire and the treatment will most likely be the same for all houses and the street. Wherever the risk inputs differ then a new asset assessment is undertaken.

Asset Types, Categories and Sub-Categories

Assets are divided into four asset types: Human Settlement, Economic, Cultural Heritage and Environmental. Each of these asset types is further divided into Categories as shown in **Table 1**. Where an asset can be described by more than one asset type, it can be assessed separately under each asset type as the assessment criteria are different.

Asset Type	Asset Category
Human Settlement	<ul style="list-style-type: none"> • Residential • Special Fire Protection
Economic	<ul style="list-style-type: none"> • Infrastructure • Commercial or Industrial
Cultural Heritage	<ul style="list-style-type: none"> • Indigenous • Non-indigenous
Environmental	Refer Chapter 9 for more info regarding sub-categories and risk assessment methodology

Table 1 Asset Categories and Sub-Categories used in the BMAP

6.2.1 Human Settlement Assets

Human Settlement assets are those assets which are likely to be occupied or used by people; therefore, there is the potential for loss of human life. **Table 2** outlines the two Human Settlement asset categories with sub-category examples.

Human Settlement Category	Sub-Category Examples
Residential	<ul style="list-style-type: none"> • Urban areas, a street or group of streets along a bushland interface
Special Fire Protection	<ul style="list-style-type: none"> • Schools, Kindergartens or Childcare centres • Hospitals, Aged care facilities and retirement villages • Hotels, motels and other tourist accommodation, including campgrounds and caravan parks • Tourism and recreational facilities • Commercial and/or industrial • Highways or Major Roads

Table 2 Human Settlement Sub-Categories and Examples

Residential assets are represented spatially as polygons and Special Fire Protection assets as points. Roads can be considered a Human Settlement asset because of their potential to be used for public relocation or evacuation during bushfire. Roads are drawn spatially as a line.

Residential assets may be mapped at a range of spatial scales, depending on the number of properties and the vegetation type near the asset. Where an area is bound by different vegetation types then the area should be split into a number of polygons. Where a dispersed cluster of assets with common characteristics, risk factors and treatments are located in a known and identifiable locality (such as a cluster of semi-rural residences), it may not be possible or practical to display these spatially with multiple individual points or as a polygon (i.e. these asset clusters are too dispersed to use the distinct boundary of a polygon). These areas can be identified in BRIMap by selecting the ‘represents wider area’ field. This allows for these dispersed asset clusters to be displayed spatially using alternative symbology such as a large symbol (usually a diamond shape) located in the central area of the locality. The title of asset cluster will always contain the word ‘Locality’, as in ‘Longwood Locality’.

As it is unfeasible to risk assess every household or parcel of land, BMC members and other workshop attendees guide the decision making regarding which assets are to be risk assessed.

6.2.2 Economic Assets

Economic assets are those assets of significance to the local community, region, State or Nation. **Table 3** outlines the three Economic asset categories and sub-category examples.

Economic Category	Sub-Category Examples
Commercial or Industrial	<ul style="list-style-type: none"> • Major industries • Sawmills • Plantations • Commercial Native Forests
Infrastructure	<ul style="list-style-type: none"> • Large Power Lines • Gas and Oil Pipelines • Railways Lines • Electrical Sub-stations • Communication Facilities • Waste Treatment Plants • Water Supply and Storage

Table 3 Economic Sub-Categories and Examples

Economic assets are represented spatially as a point unless the BMC deem a polygon necessary for display purposes, such as in the case of representing forestry plantations and industrial areas on the outskirts of townships.

6.2.3 Cultural Heritage Assets

Cultural Heritage assets currently include non-indigenous historical and heritage areas, places and buildings which are of community value. **Table 4** below outlines the Cultural Heritage asset categories and some sub-category examples.

Cultural Heritage Category	Sub-Category Examples
Non-indigenous	<p>Assets of local community value.</p> <ul style="list-style-type: none"> • Community Halls • Churches • Sports Clubs • Recreational Facilities • Historic Sites, Ruins and Heritage Buildings
Indigenous	To be included in future iterations of BMAPs following further consultation and guidance from indigenous communities

Table 4 Cultural Heritage Asset Categories and Examples

Cultural Heritage assets are represented spatially as a point. Information from heritage registers is presented to workshop participants and each item discussed for inclusion taking into consideration the importance of that asset to the community or if it has historical significance. This information is also provided to local council for verification by staff, elected members or people with local historical knowledge, and additional information is gathered through public consultation processes.

6.2.4 Environmental Assets

Below is summary table (**Table 5**) of the categories under which environmental assets at risk from bushfire are identified. Further detail regarding the risk identification and risk assessment methodology for environmental assets is covered **Chapter 9**.

Environmental Asset Categories	
<ul style="list-style-type: none"> • Threatened ecological community • Significant Habitat 	<ul style="list-style-type: none"> • Reserve System • Flora • Fauna

Table 5 Environmental Asset Categories

7 THE NATURE AND TYPES OF CAUSES OF BUSHFIRE

In South Australia, even though the threat of a bushfire is present throughout every Fire Danger Season, the severity and intensity of the bushfire threat may fluctuate in each bushfire event. The severity and intensity of a bushfire is dependent on three main factors:

- Vegetation
- Topography
- Weather

The vegetation and topography for an area is measurable and forms part of the risk assessment. However, weather is always variable both locally and across the State. Therefore, when a bushfire risk assessment is undertaken, the weather conditions are defined as those the local area would experience on a day with a Fire Danger Rating (FDR) of Extreme.

A FDR of Extreme means that a bushfire, once it takes hold, would be unpredictable, fast moving and difficult to bring under control. Spot fires will start and move quickly and embers may come from many directions.

It is under these fire weather conditions that risk assessment workshop attendees and other stakeholders determine which of the assets would be at risk from bushfire. The local knowledge of fire weather and fire behaviour experienced in the past is an invaluable input into the BMAP process as it aids in the determination of likelihood and impact of bushfire.

8 BUSHFIRE RISK ASSESSMENT

The risk assessments process analyses the likelihood and consequence of an event occurring to determine the susceptibility (or level of preparedness) that an asset has to fire. These factors combine to give an overall appreciation of the level of risk.

A number of risk criteria are used to determine the likelihood and consequence of a bushfire risk in this process. These criteria are assessed and form the basis to determine bushfire risk levels for each asset identified within a BMAP.

The process for determining consequence, likelihood and overall risk for Human Settlement, Cultural Heritage and Economic assets are outlined in **Chapter 8**. **Chapter 11** outlines the risk evaluation process. The methodology for determining risk to Environmental Assets is outlined in **Chapter 9**.

8.1 Bushfire Risk Criteria

Bushfire risk criteria concerns the elements of likelihood and consequence, relevant to bushfire, which are assessed during the risk assessment process. When defining bushfire risk criteria, the principal factors (as outlined in AS/NZS ISO 31000:2009) to be considered include:

- The nature and types of causes of the risk
- How **likelihood** will be defined
- What **consequences** can occur and how they will be measured
- How the **overall level** of risk will be determined
- How the **acceptable or tolerable level** of risk will be determined

8.2 Likelihood

Likelihood in the BMAP risk assessment framework is based on the level of influence of the following factors:

- Fire History
- Ignition potential – type (land use driven) and frequency
- Vegetation - type and composition
- Fire Breaks and Access Tracks – interruption of spread of fire

When all elements are considered as a whole, they provide the risk criteria for assessing the potential for a bushfire to ignite, establish, spread across the landscape, intensify and impact on an asset. Local knowledge of these elements can improve the accuracy of the likelihood rating.

There are four categories of likelihood outcomes that can occur as a result of the risk assessment process, as outlined in **Table 6**.

Unlikely	<ul style="list-style-type: none"> ▪ Very few potential ignition sources ▪ Low probability of ignitions establishing ▪ Very sparse or low combustion vegetation to enable fire to spread ▪ Significant bushfire risk treatments in place
Possible	<ul style="list-style-type: none"> ▪ Some history of ignitions and fire ▪ Low fuel loads ▪ Bushfire may establish and spread in the right conditions ▪ Some treatments may be in place to inhibit fire spread
Likely	<ul style="list-style-type: none"> ▪ History of ignitions and fire ▪ Continuous or corridors or areas of moderate to heavy vegetation ▪ Bushfire will establish and spread in the right conditions ▪ Treatments to inhibit the spread of fire may be limited or not possible
Almost Certain	<ul style="list-style-type: none"> ▪ Significant history of ignitions and fires ▪ Land use contributes to frequent ignitions ▪ Fires are likely to establish and spread ▪ Very high to extreme fuel loads with contiguous vegetation ▪ Treatments are not possible, have not been implemented comprehensively or only partially effective

Table 6 Likelihood Rating Scale

8.3 Consequence

Consequence, as applied to BMAPs, refers to the consequence to the asset itself from being impacted by bushfire. For example, whether or not it will burn down, cease to function, or if people will be injured. It does not refer to the wider level of ongoing social, community, political, financial or business continuity consequences of losing the asset. These broader consequences are to be considered using the *National Emergency Risk Assessment Guidelines (NERAG)*. Refer **Chapter 10**

The criteria used to calculate the consequence of a bushfire impacting on an asset are the *Bushfire Attack Level (BAL)* and *Susceptibility*. Note that the susceptibility of Human Settlement assets is assessed differently to that of Economic and Cultural Heritage Assets.

Consequence ratings explained:

Very Minor	<ul style="list-style-type: none"> ▪ No fatalities ▪ Minor injuries possible ▪ Inconsequential to no damage to asset with minor to no disruption to use, function or operation
Minor	<ul style="list-style-type: none"> ▪ No fatalities ▪ Minor injuries to people generally treatable by on-site first aid that may require only short term additional treatment ▪ Localised damage to assets requiring minor repairs and limited or short disruption to use, function or operation
Moderate	<ul style="list-style-type: none"> ▪ Injuries requiring medical intervention by ambulance or hospitalisation ▪ Damage to assets requiring major repairs ▪ Short to medium disruption to its use, function or operation
Major	<ul style="list-style-type: none"> ▪ Significant level of injuries with possible fatalities ▪ Significant damage to assets and infrastructure that may be beyond repair or require significant time and resources to repair ▪ Medium to long term disruption to asset/infrastructure use, function or operation
Catastrophic	<ul style="list-style-type: none"> ▪ Multiple fatalities, large numbers requiring hospitalisation possible ▪ Significant damage/destruction to multiple assets and infrastructure

Table 7 Consequence Rating Scale

8.4 Bushfire Attack Level (BAL) – Radiant Heat Threat

Determining the bushfire attack level (BAL) involves estimating the radiant heat that is likely to be generated from a bushfire impacting an asset. The estimation is based on the Australian Standard 3959-2009 – Construction of buildings in bushfire-prone areas. A BAL assessment takes into consideration the type of vegetation, the separation distance of the asset from the vegetation and the effective slope of the vegetation in relation to the asset. The BAL is determined through consultation with specific tables in AS 3959-2009 using a Fire Danger Index (FDI) of 100.

8.5 Susceptibility of Human Settlement Assets

This refers to the susceptibility of the people associated with an asset or group or assets.

This assessment is based on the combination of three elements of inherent community factors. They include the attributes of the people who live in the area, the preparedness level/construction standard of the assets and environmental factors (**Table 8**).

Community Factors	Attribute
<p>People</p> <p>The social and physical capacity of people to prepare and respond to bushfire</p>	<ul style="list-style-type: none"> • Physical ability and decision making capacity • Residential status • Bushfire awareness • Experience with past bushfires
<p>Asset Preparedness</p> <p>The level of preparedness of an asset and the presence of defendable space around the asset.</p>	<ul style="list-style-type: none"> • Construction material of the asset • General condition of the asset • Availability of water and equipment to defend property • Residents able and willing to defend their own property • Defendable space around the asset • Access and egress for residents and firefighters
<p>Environmental Preparedness</p>	<ul style="list-style-type: none"> • Topography

Table 8 Susceptibility of Human Settlement Assets

The following decision trees, **Figure 3** and **Figure 4**, are used to determine susceptibility for Human Settlement asset categories.

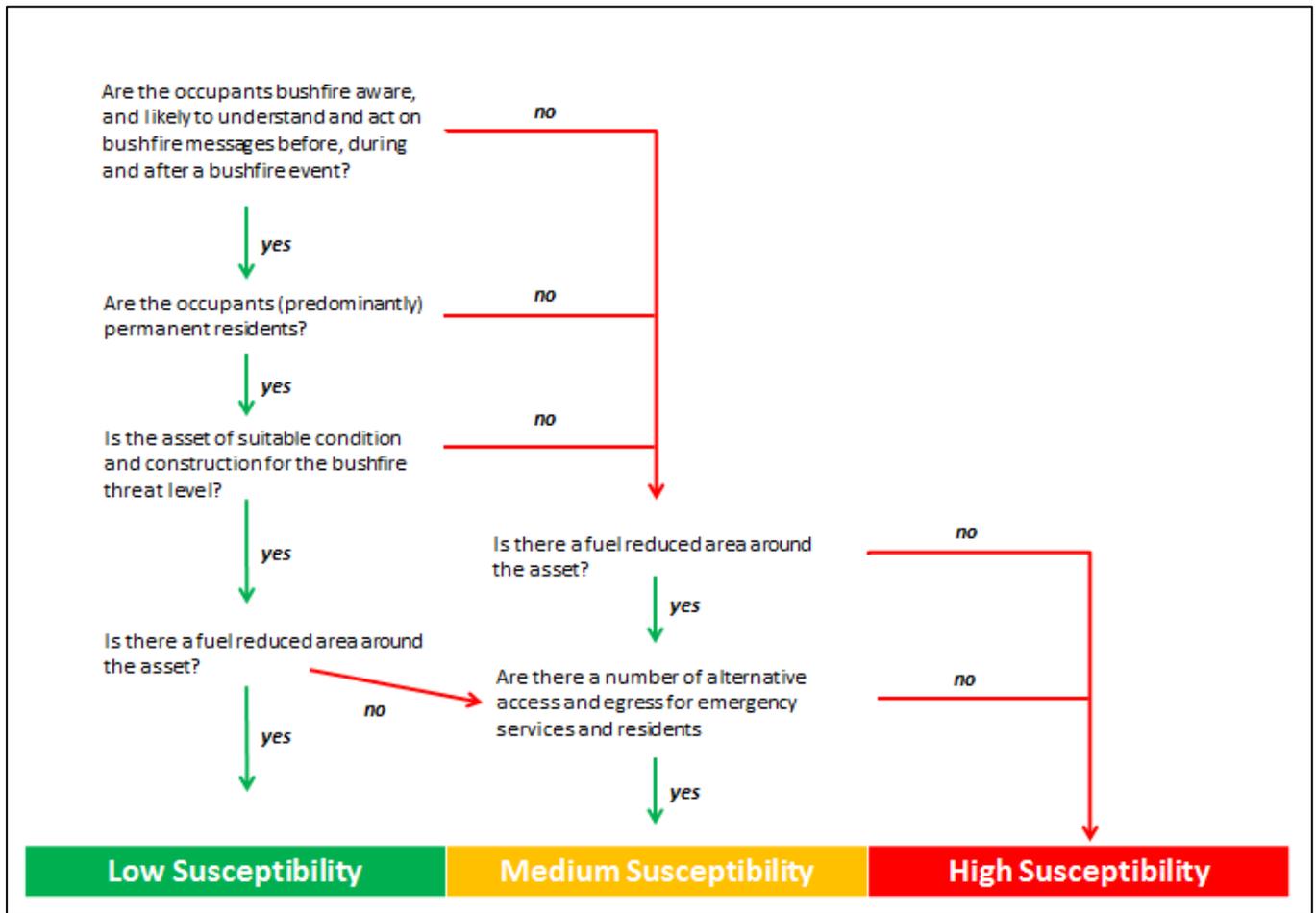


Figure 3 Human Susceptibility – Residential Assets

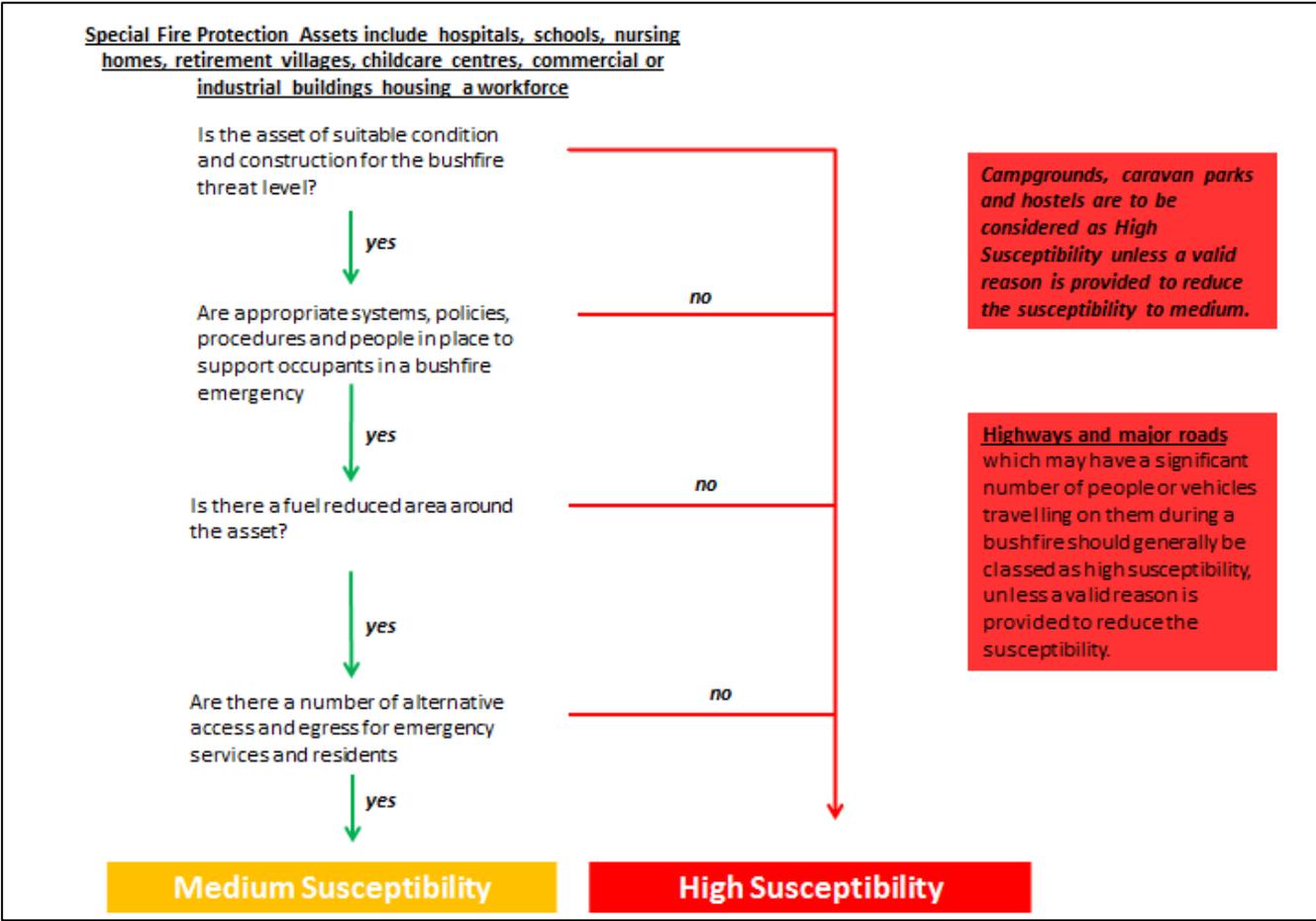


Figure 4 Human Susceptibility – Special Fire Protection Assets

8.6 Susceptibility of Economic and Cultural Heritage Assets (Built Structures)

The susceptibility of a built structure being adversely impacted by bushfire is dependent on how the asset was constructed and to what standard (Australian Standard 3959 or not), the material used to construct it, as well as its age and general condition. This is represented as Structural Types (1 to 5) in **Table 9**.

Economic and Cultural Heritage Structural Types	
Type 1	<p>Extreme susceptibility to direct flame, radiant heat, sparks and embers</p> <ul style="list-style-type: none"> • Timber building or structure • Open hay shed, store or work area • Indigenous structure or modified tree • Tarpaulin grain bunkers • Caravans & transportable buildings • Vegetation or organic materials
Type 2	<p>High susceptibility to direct flame, radiant heat, sparks and embers</p> <p>Stone, brick, concrete or steel building or structure (not built to AS3959:2009) with exposed timber components or additions; vents, grills and openings around or into the interior of the building</p> <ul style="list-style-type: none"> • Mud brick or daub building • Historic homestead • Stone, brick, concrete or steel building traditionally constructed (not built to AS3959:2009)
Type 3	<p>High susceptibility to direct flame, moderate susceptibility to radiant heat, low susceptibility to sparks and embers</p> <p>Buildings built to AS3959:2009 or other steel or stone structures built with minimal exposure of interior combustible materials (timber, insulation etc.) to heat, sparks and embers</p> <ul style="list-style-type: none"> • Post 2009, offices, commercial buildings
Type 4	<p>Moderate susceptibility to direct flame, low susceptibility to radiant heat, sparks and embers</p> <p>Concrete or steel building or structure generally containing interior or exterior components of low combustibility and susceptible only to direct flame or extreme radiant heat</p> <ul style="list-style-type: none"> • Telecommunication exchanges & towers • Electrical sub-stations • Pumping or treatment plants • Silos & wind farm towers • Rubbish transfer station infrastructure • Railway lines with timber sleepers
Type 5	<p>Low susceptibility to direct flame, radiant heat, sparks and embers</p> <p>Concrete or steel building or structure generally containing interior or exterior components of low combustibility and susceptible only to direct flame or extreme radiant heat</p> <ul style="list-style-type: none"> • Cemeteries • Stone ruins • Concrete or steel pipelines, bridges or water tanks

Table 9 Economic and Cultural Heritage Asset Susceptibility Rating

8.7 Consequence matrix – Human Settlement Assets

When the BAL and susceptibility assessment are complete, the matrix (**Figure 5**) is used to determine the consequence rating to a Human Settlement asset.

		BUSHFIRE ATTACK LEVEL (BAL)				
		No Radiant Heat Threat (>100m)	Low (BAL <12.5)	Medium (BAL 19)	High (BAL 29)	Very High (BAL 40)
SUSCEPTIBILITY (Human Settlement)	High					
	Medium					
	Low					

Very Minor
 Minor
 Moderate
 Major
 Catastrophic

Figure 5 Consequence Matrix – Human Settlement Assets

8.8 Consequence Matrix – Economic and Cultural Heritage Assets

The matrix below is used to assess the consequence rating for Economic and Cultural Heritage assets (Figure 6).

		BUSHFIRE ATTACK LEVEL (BAL)				
		No Radiant Heat Threat (>100m)	Low (BAL <12.5)	Medium (BAL 19)	High (BAL 29)	Very High (BAL 40)
SUSCEPTIBILITY (Economic & Cultural Heritage)	Type 1	Minor	Major	Major	Catastrophic	Catastrophic
	Type 2	Minor	Minor	Moderate	Major	Catastrophic
	Type 3	Negligible	Minor	Minor	Moderate	Major
	Type 4	Negligible	Minor	Minor	Moderate	Major
	Type 5	Negligible	Negligible	Negligible	Negligible	Minor

Negligible
 Minor
 Moderate
 Major
 Catastrophic

Figure 6 Consequence Matrix – Economic and Cultural Heritage Assets

8.9 Overall Risk Matrices

The methodology for determining likelihood and consequence is dependent on the asset type (Human Settlement, Cultural Heritage, Economic or Environmental). The figures below show the risk matrices used by BRIMS to determine the overall risk rating for Human Settlement assets (Figure 7) and for Economic and Cultural Heritage assets (Figure 8).

		CONSEQUENCE (Human Settlement)				
		Very Minor	Minor	Moderate	Major	Catastrophic
LIKELIHOOD	Almost Certain	Medium	High	Very High	Extreme	Extreme
	Likely	Low	Medium	High	Very High	Extreme
	Possible	Low	Low	Medium	High	Very High
	Unlikely	Low	Low	Low	Medium	High

Low
 Medium
 High
 Very High
 Extreme

Figure 7 Overall Risk Rating Matrix – Human Settlement Assets

		CONSEQUENCE (Cultural Heritage & Economic)				
		Negligible	Minor	Moderate	Major	Catastrophic
LIKELIHOOD	Almost Certain					
	Likely					
	Possible					
	Unlikely					

Negligible
 Low
 Medium
 High
 Very High
 Extreme

Figure 8 Overall Risk Rating Matrix – Economic and Cultural Heritage Assets

9 RISK ASSESSMENT METHODOLOGY FOR ENVIRONMENTAL ASSETS

A [standard for the identification and risk assessment of South Australian environmental assets from bushfire](#) has been developed by the Ecological Technical Reference Group and supported by the State Bushfire Coordination Committee. **Figure 9** outlines the steps involved in the methodology.

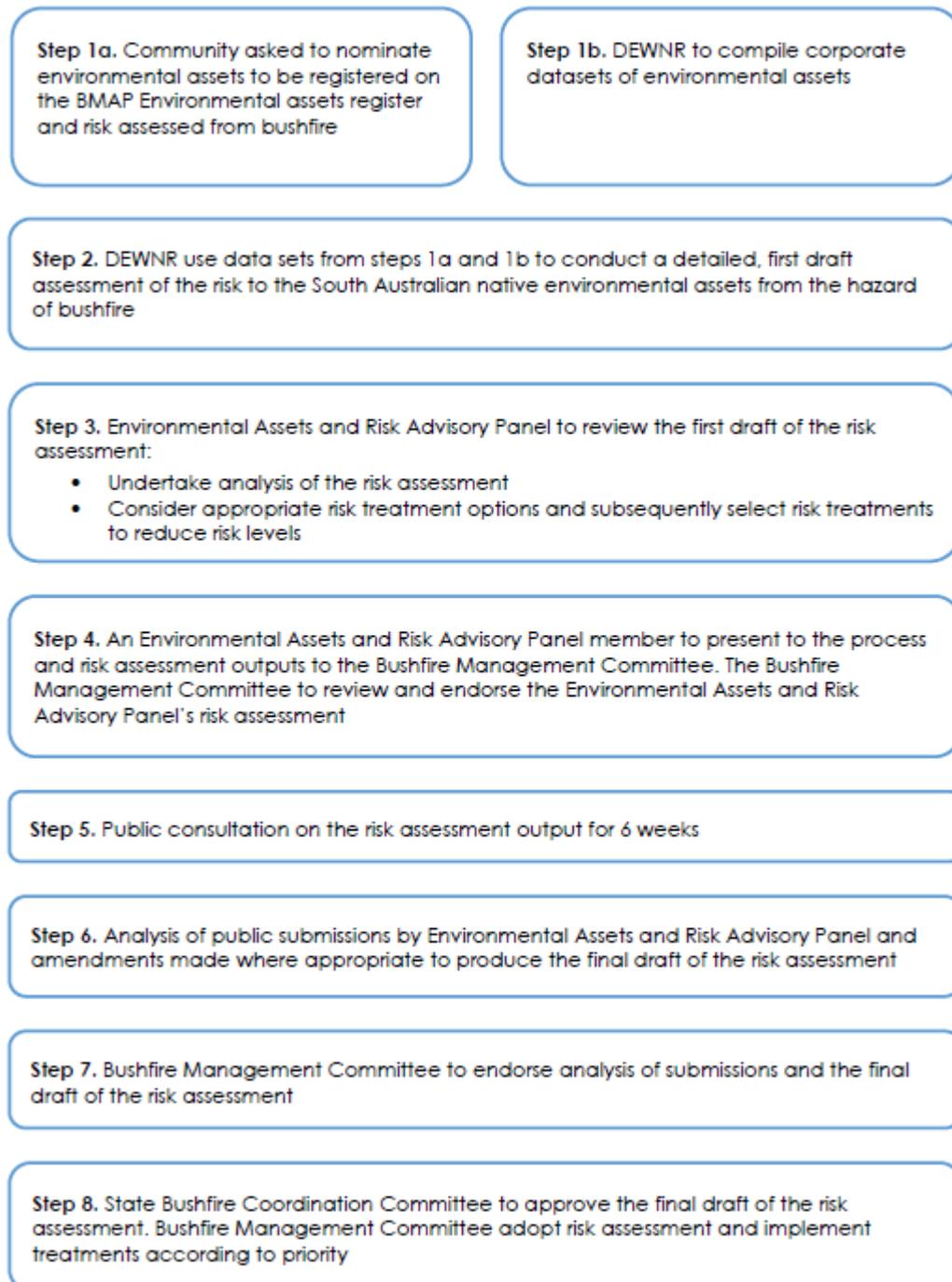


Figure 9 An overview of the steps taken to assess risk to environmental assets from bushfire in South Australia

The Standard allows BMCs to conduct detailed assessment of the risk to environmental assets in their BMA which may be negatively impacted by bushfire, whilst using a methodology which is consistently applied in all BMAs across the state. **Figure 10** below lists the categories of assets to be identified and assessed.

Environmental Asset Category	Environmental asset category description
Community nominated environmental assets	Threatened ecological community Flora Fauna Significant habitat Reserve System
Threatened ecological community	EPBC threatened ecological community listed as threatened under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> State threatened ecological community listed under the <i>South Australian Provisional List of Threatened Ecosystems of South Australia</i> (DEH, in progress)
Flora Fauna	Migratory species protected under international agreements and the listed as threatened under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> EPBC native flora or fauna species listed as threatened under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> State native flora or fauna species listed as threatened under the <i>South Australian National Parks and Wildlife Act 1972</i>
Significant habitat	Key species habitat High quality habitat
Reserve system (native vegetation contained in South Australian terrestrial reserve systems)	Wetlands of international importance listed under the Ramsar Convention and the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> Wetlands of national importance listed under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> Natural world heritage properties listed under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> Natural national heritage places listed under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> Wilderness protection areas declared under the <i>South Australian Wilderness Protection Act 1992</i> Heritage agreements declared under the <i>South Australian Native Vegetation Act 1991</i> Reserves declared under the <i>South Australian National Parks and Wildlife Act 1972</i> Native forest reserves declared under the <i>South Australian Forestry Act 1950</i>

	<p>Forest conservation areas declared under the South Australian <i>Forestry Act 1950</i></p> <p>Reservoir reserves under the care and control of SA Water</p> <p>Groundwater basins under the care and control of SA Water</p> <p>Roadside reserves identified under the Roadside Marker Scheme in accordance with the Native Vegetation Council's <i>Guidelines for Management of Roadside Vegetation</i></p>
<p>Environmental Assets and Risk Advisory Panel</p>	<p>Threatened ecological community</p> <p>Flora</p> <p>Fauna</p> <p>Significant habitat</p> <p>Reserve system</p>

Figure 10 Environmental asset categories and sub categories types

The outputs of the risk assessment are included into BMAPs and allow for priority to be assigned to the identified risks. Risk treatment options for highest priority assets are identified and prioritised to reduce risk.

As with the other categories of assets (Human Settlement, Cultural Heritage and Economic) the above set of steps are repeated every four years, or earlier, if required by the BMC or SBCC.

For further detail regarding this process refer to the [Standard for the identification and risk assessment of South Australian environmental assets from bushfire 2017](#).

10 PROPOSED METHODOLOGY FOR THE ASSESSMENT OF BMA-WIDE BUSHFIRE RISKS

The asset based risk assessment process utilised in BRIMS enables land managers, councils, and agencies responsible for vulnerable or vital community infrastructure to identify and plan bushfire risk reduction works pertinent to specific assets.

However, in order to define priority works to reduce the risk of bushfire across broad sections or a whole Bushfire Management Area (BMA), an area wide risk assessment is required. The following methodology is proposed for such an assessment to be undertaken by the Bushfire Management Committee.

The BMA-wide risk assessment process is based on the National Emergency Risk Assessment Guidelines (NERAG2). This ensures the process is consistent with current emergency service sector risk assessment methodologies in South Australia. NERAG2 provides an all hazards state emergency-related risk assessment methodology consistent with the Australian Standard International standard AS/NZS ISO 31000:2009 risk management – principles and guidelines framework. NERAG2 defines a scalable process to reflect local particulars for five defined consequence categories:

- People
- Economy
- Environment
- Social setting
- Public administration

Each of the BMAs is analysed using the scales within each of the consequence categories to determine the level of bushfire risk across the Bushfire Management Area. Changes or re-assessment of risk levels within the Bushfire Management Area in each of the consequence categories should be considered as part of the 4-yearly review of the plan or as directed by the SBCC.

10.1 Methodology for Identifying Bushfire Risks in the BMA

An assessment is to be undertaken for each of the Consequence Categories for a number of bushfire scenarios to determine which are of the highest risk to the BMA. This assessment will be undertaken considering the following bushfire scenarios.

- **Ngarkat/Bangor/Pastoral** – A campaign fire in a remote location. Burning for many days, exceeding local firefighting resources and disrupting local services and transport. Few built assets threatened. May be in inaccessible or difficult terrain. Tends to have relatively slow moving fire front.
- **Sampson Flat** – An intense fire close to populated areas. Community members may be unaware and unprepared. Many road closures. Smoke impact and ember attack in the outer suburbs. Poorly prepared properties.
- **Ash Wednesday/Black Saturday** – Multiple significant fires across the state, burning under catastrophic conditions. Local brigades and IMT quickly overwhelmed requiring supplementation

from interstate/overseas. At this scale, human life and economic loss is inevitable. Conditions will lead to a cascade of events and failures of systems.

- **Dry lightning causing multiple fire starts across a broad landscape** – A large number of small fires that quickly overwhelm capacity.
- **Pinery/Wangary** – A large, fast moving fire, principally burning in grassland or cropland. May be difficult to suppress. May be burning under catastrophic conditions.

The BMA-wide risk assessment methodology will identify potential consequences should the above scenarios occur and the likelihood of these occurring. This will provide an overall risk rating for potential outcomes across a BMA. BMCs will then need to assign treatment options to address these risks. The outcomes of this process will assist in guiding the priorities for prevention programmes that target larger areas and populations.

11 BUSHFIRE RISK EVALUATION

Risk evaluation is undertaken to assist in decision making around what needs treatment and the treatment priority. Decision making should take into account the wider context of the risk and risk tolerance. Decisions need to take into account any legal and regulatory requirements. Decisions are made around the following questions:

- a) Is the level of risk acceptable?
- b) Is additional analysis of the risk required to further understand the true risk?
- c) Do the risks need additional treatments?
- d) Are the existing treatments appropriate or do they need to be modified or removed? and
- e) Are there any priorities for treatment?

Workshops are conducted by BMPU with the BMC and other stakeholder groups to review and validate risk ratings to all identified assets in the BMAP prior to a public consultation period.

11.1 Risk Analysis Outcomes

The overall risk ratings are derived through assessing the specific risk criteria to determine the likelihood of a bushfire threatening an asset and the level of impact on an asset. The results for each risk criteria are divided into the risk rating scales listed below.

The bushfire risk rating results provide a scale by which risk between assets in each separate asset type and category can be compared to one another. The susceptibility of Human Settlement assets is assessed under different criteria to Economic and Cultural Heritage assets and therefore direct comparisons in risk ratings across asset categories is not appropriate or legitimate.

The risk ratings assist in determining the risk treatment strategies that need to be implemented to ensure that targeted treatments are applied to reduce the overall bushfire risk. These scales also provide the basis for determining the priority for which assets are to be treated.

Risk Ratings explained:

 **Negligible (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 defensible from the potential impacts from a bushfire. Surrounding vegetation is either likely to be a significant distance away or of low levels.

 **Medium**

Properties and assets are likely to be defensible 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 separation distance or firefighting amenities. Assets are susceptible to the impacts of bushfire as fire intensity and behaviour is driven by surrounding vegetation and topography.



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 areas that offer sufficient access to defend a property from the effects of a bushfire due to continuous or dense vegetation or challenging topography.

11.2 Tolerable Bushfire Risk Level

When evaluating bushfire risk the BMC needs to determine whether the risk level for the identified assets is tolerable. This may be determined for each asset or for an entire asset type or category. This can be expressed in terms of accepting the overall risk level so as to secure certain benefits i.e. living, working or recreating in a bush or rural environment. A tolerable level of risk may be defined by the fact that in some circumstances it may not be possible to reduce the overall risk rating due to the nature of the asset. This may be due to the physical location or construction materials of the asset or the attitude of residents to risk. Further to this, it may not be possible to reduce the risk further under current treatment strategies without expenditure of costs that are disproportionate to the benefit gained or where the solution is impractical to implement.

Therefore to determine the acceptable level of risk there may be a trade-off between risk treatments and risk exposures with consideration of what can be reasonably practical to achieve. To determine a tolerable level of bushfire risk for each asset the evaluation process needs to take into account:

- a) The likelihood risk criteria – potential for ignition, establish and spread
- b) The consequence risk criteria – radiant heat threat, susceptibility
- c) The availability and suitability of ways to mitigate or eliminate the risk
- d) The cost associated with eliminating or minimising the risk
- e) The communities willingness to accept the risk level to maintain an assets benefits

On an ongoing basis accepted risk levels should be reviewed. A level of bushfire risk that may have been tolerable in the past may become unacceptable due to changes in circumstances, risk criteria, or in social, political, legislative or regulatory environments.

11.3 Prioritising Bushfire Risk Treatments

The Overall Risk Rating matrix does not adequately prioritise risks as it does not consider the asset type (Human Settlement, Economic, Cultural Heritage or Environmental) and it is limited by the representation of only two dimensions of bushfire risk - likelihood and consequence. Therefore, the overall risk ratings cannot be the only element used to determine the level of urgency for allocating and implementing treatment strategies.

When prioritising treatments for assets contained within the BMAP, consideration must be given to:

- The type of asset at risk from bushfire
- The level for a specific risk that is acceptable (tolerable)
- Whether the desired risk level is achievable through current or proposed treatment strategies

Not all assets with an extreme risk rating will require treatments to reduce the risk as the level of risk may have been deemed tolerable. Guidance on treatment priorities may also be derived from outcomes from BMA wide workshops (**Chapter 10**).

The variation in structures, services, budgets and resources of the numerous agencies involved in and responsible for bushfire risk mitigation make a standard prioritisation process too restrictive given the many factors that can and should be considered in the selection and implementation of risk treatments.

BMC members and stakeholders are provided with Risk Registers to review assets that fall under their responsibility. They will need to prioritise risk treatments based on the above criteria and their knowledge around factors such as: business continuity, replacement costs, and community resilience factors. Risk Registers can be sorted based on the risk criteria that a treatment may be attempting to address. An agency may choose to prioritise based on risk rating and then further prioritise based on a risk driver such as radiant heat or susceptibility.

12 RISK TREATMENT STRATEGIES

Bushfires cannot be eliminated from the landscape; however, a combination of risk treatment strategies can be applied to help protect people, assets and the environment from the impacts of bushfire. Treatment options include reducing either the likelihood and/or impact of bushfire, improving the capacity of people to prepare and respond to bushfire, enhancing the ability of firefighting agencies to access and suppress bushfires and limiting the spread of bushfire.

Risk treatments are activities used to modify the characteristics of a hazard to reduce either the likelihood and/or consequence of bushfire to an asset.

Risk treatment is a cyclical process of:

- Assessing a risk treatment
- Deciding whether resultant risk levels are tolerable
- If not tolerable, finding an alternative treatment
- Assessing the effectiveness of the treatment

Selecting the most appropriate risk treatment option involves balancing the effectiveness, effort, impact and cost of the treatment against the benefits derived from undertaking the treatment. Many aspects need to be considered in the selection and implementation of a treatment such as:

- Does it comply with legislation?
- Is it socially responsible?
- What is the impact on the natural environment?
- Does the amount of reduction in the risk justify the cost and resources required?

Consideration also needs to be given to how the implementation of any treatments will be perceived by stakeholders and the community and if there is a potential for unintended consequences.

Treatment information is captured during risk identification and treatment allocation workshops and further reviewed by individual stakeholders responsible for risk treatment implementation. The BMC then reviews allocated risk treatments to assess consistency, omissions and other factors.

Risk treatment strategies address the risk to assets and may also address risks that impact across large sections or an entire BMA.

Risk Treatment Strategies are classified into a number of overarching categories:

- Land and Property Management
- Legislative, Development Control and Administrative
- Community Engagement, Education and Information

These strategies are then further divided into potential actions (see **Table 10**) which may be need to be adjusted by the treatment agency dependent on practicalities, resourcing, equipment requirements, environmental considerations etc.

Treatment Strategy	Example Treatment Actions
Land and Property Management	<ul style="list-style-type: none"> • Property Preparedness • Fuel reduction • Asset Protection Zone • Bushfire Buffer Zone • Fire breaks and fire access tracks
Legislative and Administrative	<ul style="list-style-type: none"> • Policy and procedures • Bushfire Prevention Activities by council FPO • Council Planning and Development Policy and Standards
Community Engagement, Education and Information	<ul style="list-style-type: none"> • State-wide awareness campaign • Information provision • Education programmes • Community development programmes

Table 10 Risk Treatment Strategies and example Risk Treatment Actions

12.1 Asset Specific Risk Treatment Strategies and Actions

Risk treatment strategies and actions are allocated to individual assets within the Asset Risk and Treatment Register and are designed to mitigate specific elements of the risk i.e. the radiant heat, susceptibility of the asset to spark, ember, fire brand, the intensity of the bushfire and/or the potential of a bushfire starting and establishing. The agency (or agencies) that may be responsible for implementing a treatment is documented in BRIMS.

Asset risk treatment strategies are further developed by the asset owners and/or land managers in their specific implementation or works plans, which will detail actions and timeframes. Actions may be determined at the implementation planning stage by the treatment agency. Where the treatment aims to mitigate a social risk rather than a physical risk, it is important to note that risk treatments will need to be implemented for a population (e.g. demographic or wider geographic community area) rather than against an individual asset.

BRIMS allows for the collection of the following fields and these form the final Risk and Treatment Register:

- Treatment Strategy
- Treatment Action
- Risk driver
- Financial year (year 1, 2, 3, 4)
- Treatment agencies (these fields are for any party that may be involved in decision making around actions, and are likely to, though may not necessarily, be responsible for implementing on ground works. Where multiple agencies are identified they are not listed in order of priority.

- Status (existing or proposed)
- Notes

Some of these fields are not displayed as part of the publically available Risk and Treatment Register as they may contain confidential information.

12.2 Land and Property Management

Treatment actions that fall under this risk treatment strategy include, but may not be limited to:

12.2.1 Property Preparedness

Property preparedness relates to action taken by landholders or occupiers 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 adjacent to assets to reduce the risk of structures being damaged or ignited by direct flame contact or radiant heat. It will also reduce the risk from wind-blown sparks and embers that are generated by bushfires. Property preparedness activities should include:

- Managing vegetation and removing fine vegetation fuels (long grass, dried leaves, shrubs etc.)
- Undertaking structural modifications and maintenance activities
- Establishing water supply and reticulation

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

12.2.2 Asset Protection Zones (A-Zones)

An Asset Protection Zone (A-Zone) surrounds or is adjacent to an asset. Asset Protection Zones 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 already have low fuels. .

An Asset Protection Zone 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.

For current information on A-Zones please refer to the [Bushfire Management Zone Standard and Guidance for Use](#)

12.2.3 Bushfire Buffer Zones (B-Zones)

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

B-Zones 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
- the potential for a bushfire to burn into vegetated land from surrounding land

For current information on B-Zones please refer to the [Bushfire Management Zone Standard and Guidance for Use](#).

12.2.4 Firebreaks and Fire Access Tracks

Firebreaks and fire access tracks are strategic fire management measures which are implemented to assist with 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 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. It is important to understand that firebreaks cannot be expected to prevent the forward movement of moderate to high intensity fires, particularly where spotting is likely to occur.

A fire access track is designed, constructed and maintained for the safe passage of firefighting vehicles undertaking fire suppression activities. There are three classifications of fire access tracks, each with their own predetermined standards. See the [GAFMWG](#) Standard document for further information on firebreaks, fire access tracks and sign standards.

12.2.5 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 agencies of DEW, SA Water and ForestrySA collaborate to undertake prescribed burning at a landscape scale across the public lands they manage. This is guided by the Code of Practice for Fire Management on Public Land in South Australia, which specifies a consistent, cooperative year-round prevention and suppression effort in order to reduce the size, frequency and impact of bushfires from public land on communities, infrastructure and the environment.

While this fuel reduction work has significantly reduced the risks posed by bushfires within and surrounding the public land estate, it is recognised that for the greatest risk reduction to be realised, prescribed burn programmes must be applied at a landscape scale across both publically and privately owned land. The State Government has recently directed SACFS and DEW to increase the scope of its prescribed burning activities to include strategic locations on privately owned lands. This work is underway, with a pilot programme of prescribed burning on private lands being conducted initially in the AMLR BMA, with other areas of the state to follow.

Private landholders interested in prescribed burning should be mindful of the approval processes for such works (e.g. from the SACFS) and the sometimes complex operational requirements to reduce fuels through prescribed burning in a safe way.

Information on prescribed burns can be found on the following link: [DEW Prescribed Burns](#)

12.3 Legislative, Development Control and Administrative

Treatment actions that fall under this risk treatment strategy include, but may not be limited to:

12.3.1 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.

12.3.2 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 activities undertaken on private and public lands generally during the Fire Danger Season (FDS). They provide a framework for the safe and effective management of potential ignition sources and fire on private and public land in South Australia both during and outside of FDS. Examples include Codes of Practice on Pile Burning, Harvesting and Use of Wood Ovens, and policies requiring permits for fire activities.

This strategy may also include emergency management policies that individual organisations such as schools, health and community services and utilities require to mitigate bushfire risk to their assets and people. Examples may include facility closure or restricted staff travel through high risk areas on catastrophic fire danger forecasts.

12.3.3 Bushfire Prevention Activities Conducted by a Council FPO

Councils and 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 Officer 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.

Further information can be found in the document [SACFS & LGA SA Sec 105 Fire Prevention Officer Policy](#)

12.4 Community Engagement, Education and Information

Community engagement and education include a variety of risk treatments ranging from passive information dissemination to active community development programs. These activities can be, and are, undertaken by many stakeholders (SACFS, MFS, local government, SAPOL, Primary Producers SA, other government agencies, private sector, Red Cross, community groups etc.).

Activities and programs can be designed to meet a variety of objectives ranging from awareness-raising to genuine behavioural change and need to be appropriate to the audience and their level of risk. Engagement programs may be resource intensive with outcomes dependent on the quality and the success of implementation and uptake. These activities are a social rather than physical risk treatment strategy and, as such, need to be developed and implemented for a target population, rather than for a physical asset. Therefore, these activities will not be quantifiable against an individual asset like other risk treatment strategies, but may be able to be evaluated for a nominated population.

BMA-wide engagement and information-based strategies (see Section 12.6) may be used to target the state-wide community, communities of interest and specific target populations (e.g. online community, industry sectors, tourists etc.). To ensure the best outcome and effective use of resources, any local treatments should coordinate with community, region and state-wide approaches of organisations and community. With regards to prioritising strategies, it is critical to note that research has proven that community safety engagement treatments are more successful when a collaborative whole-of-community approach is supported and maintained and coordinated with other works.

Research has also shown that information provision on its own, whilst important, does not lead to a sufficient level of planning and preparation for bushfires. Although community engagement is an integral strategy in risk mitigation (with the potential to increase individual awareness, lead to behavioural change and enhance disaster resilience), it can be difficult to evaluate success due to the transience and diversity of communities. Nonetheless, community engagement activities have the potential to achieve positive outcomes at both the individual (resident, household, etc.) and community level, provided they are co-ordinated, planned, well implemented and resourced appropriately.

In the BMAP process, specific risk treatment actions are determined by the identified treatment agencies during the implementation planning phase.

12.5 Landscape Treatment Investigation Areas (LTIA's)

In order to comply with National and State requirements for the management of vegetation to reduce bushfire risk and reduce specific landscape risks within a BMA, the Bushfire Management Planning process includes a step to identify any Landscape Treatment Investigation Areas as examples of a fire management approach for bushfire mitigation at a broader landscape scale.

Landscape Treatment Investigation Areas are identified as areas of strategic importance for bushfire suppression or for the protection of a cluster of assets. These areas require further assessment and consultation with stakeholders during the life of the BMAP to determine the most effective, acceptable and achievable fuel management strategies to provide strategic opportunities across the landscape. They may involve the mechanical removal of vegetation, use of prescribed burning, or weed management depending on operational practicality, environmental factors and ecological impacts.

The investigation areas that may be selected by a BMC aim to complement current risk treatment activities, linking areas of existing lower fuel to enhance the effectiveness of these treatments. The areas to be treated may 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.

Any identified investigation areas do not represent a complete priority-based list of all potential landscape treatment investigation areas. Areas may be added, removed or amended following more detailed risk assessments and community consultation. Once an LTIA has been identified the site will be assessed by relevant experts (i.e. land managers, ecologists, fire planners) and recommendations provided to the BMC on proposed actions. The BMC will need to endorse these activities and a public consultation period undertaken with relevant stakeholders and the community.

Additional treatments may also be considered within and adjacent to these investigation areas such as community engagement or Operation Nomad activities.

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](#).

12.6 BMA-Wide Treatment Strategies

There are some risk treatment strategies that are applied across a BMA and the State. They are the overarching bushfire prevention and preparedness activities that occur annually within agencies, organisations and communities. They broadly address the bushfire risk to assets thereby reducing the overall level of bushfire risk to the BMA and State. Each of the treatment strategies will reduce either the likelihood element of the risk assessment process and/or the consequence element depending on the targeted outcome of the programme.

BMA-wide treatments are included in the BMAP text document and not entered into the risk register as they apply to large areas or an entire BMA rather than specific assets. They are strategies that address risk drivers such as causes of ignition, bushfire awareness and land use. Examples include Codes of Practice, Fire Danger Season restrictions and the annual bushfire awareness communications campaign.

12.7 Asset Specific Risk Treatment Allocation

Every asset recorded in the BRIMS database has a risk outcome that requires the allocation of treatment(s) to reduce the bushfire risk to the asset or justification for the acceptance of the risk. The overall bushfire risk level comprises four risk drivers, some or all of which can be treated to reduce the risk.

The four drivers include:

- Ignition Potential
- Fuel type and size to enable fire to establish and spread
- Separation distances and the impact of Radiant Heat
- Susceptibility due to asset type, inhabitants and fire resistant construction standards

The risk assessment process produces outcomes for each of these elements, which can indicate where and what should be treated to reduce the overall risk.

Many assets have existing treatments which are recorded in the Risk and Treatment Register. Additional proposed treatments can be allocated to assets with the aim of further reducing the bushfire risk. When adding proposed treatments for the reduction of bushfire risk, consideration is given to practicality, feasibility, environmental impact, and expense. The overall effectiveness of the treatment in reducing the risk is imperative in light of the overall outcome.

The BMPU collects treatment information at the workshops outlined in **Section 5.3**. Some Government Agencies and Organisations have consistent treatment strategies for their assets that exist across the State. These treatment(s) are allocated to the specific assets at the time of drafting the BMAPs. The treatments are reviewed by the local managers of the infrastructure to ensure the allocated treatment strategies are sufficient to address the risk. The gathering of this information may occur in localised meeting format with CFS BMPU and agency land managers rather than in workshops.

Assets with existing risk treatments in place, when assessed, can come out as a lower risk. If the risk treatments were abandoned due to the low risk outcome, the risk to the asset would increase over time, especially in the case of treatments that manage surrounding vegetation. To maintain the risk level outcome for such assets then these existing risk treatments should be maintained.

Workshops are held with the BMC or a Working Group of the BMC (**Section 5.3.2**) to review the risk levels and the treatments allocated to reduce the risk. At this point in the process, the BMC reviews the consistency of the treatment strategies and discusses whether or not the allocation of additional treatment(s) is required to appropriately reduce the risk.

Risk Treatment Strategies are selected based on the ability of the risk treatment to address one or more of the risk drivers.

13 DRAFT BMAP REVIEW AND PUBLIC CONSULTATION

A final draft BMAP consisting of a text document, an online map and a Risk & Treatment Register is provided to the BMC, who review the content of all three components with the aim of endorsing the draft BMAP for public consultation.

In most instances, the endorsement of a draft BMAP for public consultation requires a majority vote from a quorum of present and valid BMC members. The timing and methodologies utilised during the public consultation of the endorsed draft BMAP are discussed and negotiated prior to the voting and release for public comment.

13.1 Stakeholder and Public Comment Strategy

It is a statutory requirement for the purposes of the Fire & Emergency Services Act 2005 that, by public notice, the Draft Plan be made available for inspection for a stipulated six week period.

The BMC is to approve the external distribution of the draft and to ensure that significant stakeholders and parties that register their interest during the development of the BMAP are notified of the Draft Plan release.

The release of the Draft Plan for public comment will be advertised through relevant print and electronic media and will include information on how and where to obtain a copy, the closing date for submissions and contact details for further information.

A range of consultation strategy options are tabled with a BMC for their consideration.

These include but are not limited to:

- Media (print & radio)
- Social Media
- Posters
- Static displays
- Public meetings
- Guest speaker at existing meetings

The BMPU provides guidance for BMC decision making for this process and use of appropriate community engagement strategies.

Submissions and feedback are invited from interested parties to provide information to the BMC on any particular issues in relation to the Draft BMAP for further consideration by the committee.

13.2 Draft BMAP Submissions

Submissions on a draft BMAP can be made verbally or in writing. A template form is made available for community members wishing to make a submission. This is made available in hard or downloadable copy and as an electronic web form.

The Executive Officer of a BMC ensures that all submissions are provided to the BMC for consideration. Where a comment or submission is received and the public consultation period has concluded then it is at the committee's discretion if the comment is considered. Submissions become part of the public record and available to anyone who requests a copy unless the submitter specifically requests otherwise.

A BMC should consider making amendments to the Plan when a comment:

- Provides additional information of direct relevance and/or strategies to promote the bushfire management activities across the State.
- Indicates or clarifies a change in government legislation, management commitment or management policy.
- Improves the ability to promote effective bushfire management planning across the State.
- Indicates omissions, inaccuracies or a lack of clarity in the plan.

A BMC should not consider making amendments to the plan when a comment:

- Addresses issues beyond the scope of either the SBMP or BMAP.
- Proposes amendments already in place in either the SBMP or BMAP.
- The proposed amendment does not promote the coordination of policies, practices and strategies relating to bushfire management activities within the relevant area.
- Is based on incorrect information.
- The proposed amendment is in direct conflict to the *Fire and Emergency Services Act 2005* and any other relevant plans and policies and Acts.
- A repetition of previous comment that was considered and dismissed.

The BMC will ensure appropriate feedback and responses are provided or publicly available to individuals and entities who have made a submission during the consultation process. This will include information regarding acceptance or rejection of a proposed amendment and reasoning for the decision.

BMPU assists with making any amendments to a BMAP that are agreed upon by a BMC and also assist by drafting submission response letters for BMC consideration. Draft response letters to submissions are reviewed by the relevant BMC prior to approval, signed by the BMC Chair and issued by the BMC Executive Officer.

14 BMAP APPROVAL PROCESS

Following the public consultation period and review of submissions a formal governance process is undertaken that enables a BMAP to advance from 'Draft' to 'Approved'. This process involves both the BMC and the SBCC. Should a BMC endorse a draft BMAP, it then advances to the SBCC for approval consideration. The steps which need to be undertaken are outlined in the sections below.

14.1 BMC Endorsement for Approval

The process for a BMC to endorse a BMAP for approval requires the following steps to be completed;

- BMC members are required to review all elements of the BMAP for accuracy
- BMC members are to review all submissions
- Any suggested changes or corrections will be made as per the information in **Section 14.2**
- BMC to provide written responses to submitters
- BMC to complete **Template: Seeking Approval of a Bushfire Management Area Plan** (Related document)

14.2 SBCC Approval Process

The SBCC undertake a governance role in approving a BMAP. The template for approval covers a quality assurance methodology that insures all aspects of legislation are met and that the SBCC are provided with all relevant information from which to make an informed decision.

The SBCC need to be satisfied that the following points have been undertaken and to an appropriate standard:

- The Plan has been drafted to the required standard
- All required consultation has been undertaken
- All submissions in relation to the plan have been considered
- The Chief Officer of the SACFS and the Chief Officer of the SAMFS have been consulted prior to seeking approval of the Plan.

A BMAP, and any amendments to a BMAP, have no force or effect until approved by the State Bushfire Coordination Committee. In considering the approval of a BMAP the *Fire and Emergency Services Act 2005* provides the following options for the SBCC:

- Approve the BMAP or amendment as presented to them; or
- Consult the relevant BMC about any amendment to a proposed BMAP or amendment that the SBCC considers necessary, and then approve the BMAP or suggest appropriate changes to the amendment.
- Refer the BMAP amendment back to the relevant BMC for further consideration

Approved BMAPs are publicly available and accessible through the SACFS website.

15 TREATMENT IMPLEMENTATION AND REPORTING

Once the BMAP has been approved by the SBCC, risk managers/owners work through how, and if, treatment strategies and their associated actions can, or will, be implemented over the 4 years of the BMAP.

The major stages in the implementation and reporting for an approved BMAP are displayed in **Figure 11**:

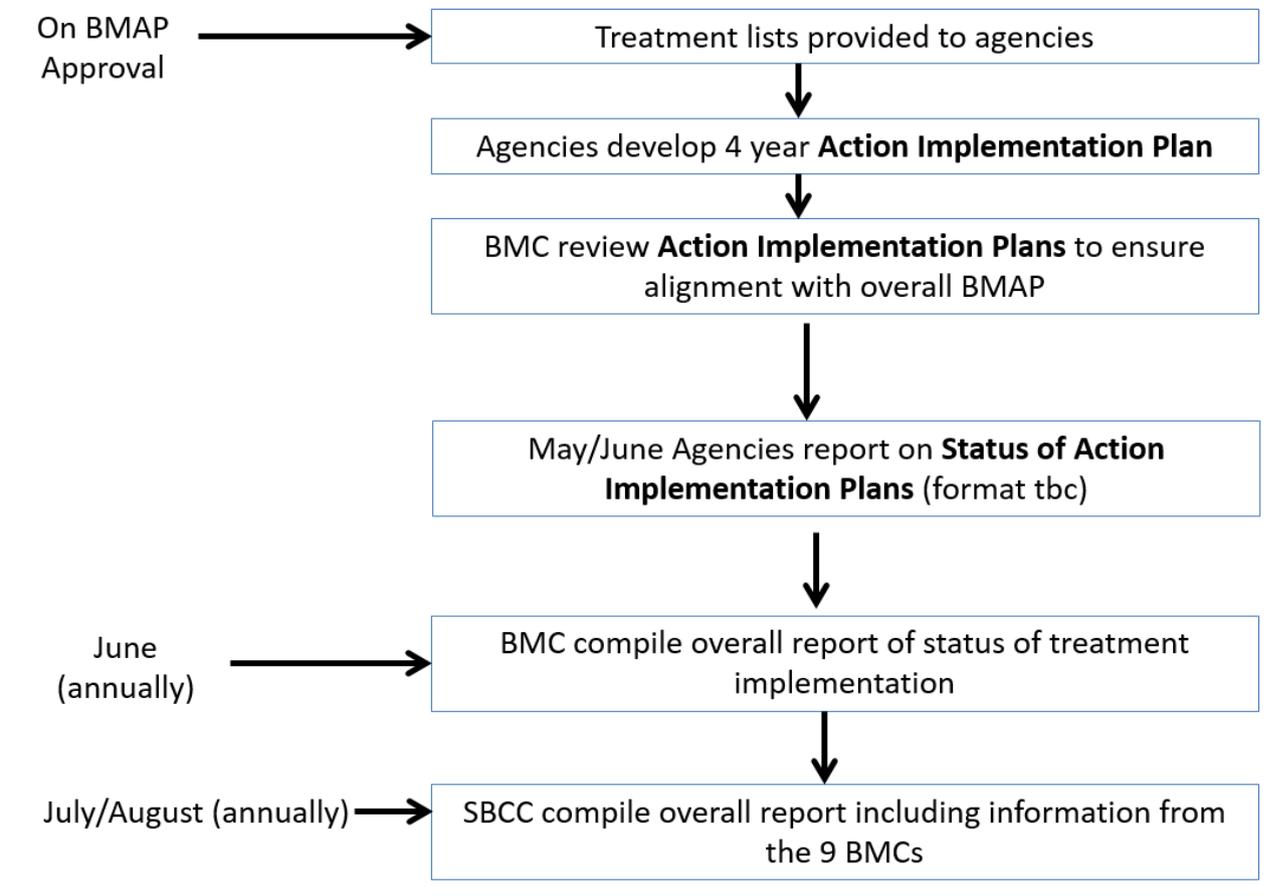


Figure 11 Treatment Implementation Processes

Agencies that have been identified as having a level of responsibility for undertaking risk treatments are provided with lists and/or maps displaying their identified risk treatments. These resources are used to develop Action Implementation Plans (AIPs).

Each of the BMC member agencies is expected to prepare an initial 4 year AIP to address the strategies defined in the BMAP for their area of responsibility.

Risk Treatment plans are presented to BMCs to consider the overall consistency of application of risk treatment strategies. Data collected from agencies during the annual treatment reporting process will provide information so that BMCs can assess the effectiveness of prevention activities and where amendments or additional input may be required. Annual review processes aim to identify any deficiencies in the BMAP.

Non-BMC member organisations with responsibility for significant bushfire management works may also be asked to prepare similar AIPs at the discretion of a BMC/SBCC. This process may also be triggered by outcomes from a BMA-wide risk assessment workshop.

15.1 Implementation Processes

Action Implementation Plans (AIPs) may be developed by the risk managers/owners to work through how, and if, treatment strategies and their associated actions can or will be implemented over the 4 years of the BMAP. AIPs should be integrated within budget cycles, works and maintenance schedules and management processes of the agency or organisation. AIPs should also consider any relevant approvals, assessments and permits to allow the agency to undertake the work. AIPs may be developed collaboratively by multiple agencies where treatment strategies cross different land tenures or require various agencies to collaborate on delivery. AIPs may also involve community consultation where appropriate in line with good practice.

AIPs, or relevant elements of AIPs such as treatments that are not able to be implemented, should be presented to the BMC for review of alignment with the BMAP. Where responsible agencies identify that they are unable to implement risk treatment strategies at the Implementation Planning stage, then the BMC should review these items from the perspective of the whole BMA and discuss alternative options for addressing the risk.

The majority of risk treatment strategies and actions identified within a BMAP are undertaken on an annual basis and this information is held in BRIMs. Therefore where treatment actions are undertaken annually, AIPs for the purposes of a BMC require no further information than that already contained within the Risk and Treatment Register unless any of these treatments cannot be carried out or need to be amended. When this is the case these items should be brought to the attention of the BMC to consider alternative strategies, funding sources etc. Any data entry errors identified during this time should be brought to the attention of the BMC Executive Officer who will provide these required corrections to BMPU. A summary of these corrections will also be provided to the BMC. Additional details such as the exact timing of an action, equipment required, etc. would be captured within an agency's works plans and is not required by the BMC. An online map that displays treatment strategy information can be made available to agencies so that this information can be easily reviewed and can also be provided to the BMC in a format that allows for BMC decision making.

Where risk treatment strategies are not undertaken annually, agencies may require additional time to develop AIPs, particularly those where multiple agencies have been identified as having a level of responsibility for either undertaking the risk treatment or having input on its delivery. Considerable collaboration between these agencies will be needed over the long term for a successful outcome.

Resources that display the relevant treatment information in a suitable format are provided to these agencies to enable decision making. A four year AIP of these treatments should be tabled with the relevant BMC that indicates which agency will be reporting on the implementation of the treatment, in most instances this will be the agency undertaking the majority of the on-ground works.

AIPs are reported on annually at the end of financial year as part of SBCC reporting requirements for BMCs.

Specific to implementation plans are the following responsibilities.

15.1.1 SBCC

The State Bushfire Coordination Committee is responsible for:

- Requesting reports from Bushfire Management Committees on the progress of the implementation of its plan
- Addressing reports from Bushfire Management Committees that indicate any failures or delays in relation to the implementation of a Bushfire Management Plan

15.1.2 BMC

The Bushfire Management Committee is responsible for:

- Overseeing the implementation of its Bushfire Management Area Plan
- Reporting to the State Bushfire Coordination Committee or the Minister any failure or delay in relation to the implementation of its plan
- Establishing an Implementation Sub-Committee where ongoing and specific attention to implementation issues cannot otherwise be effectively managed by the Bushfire Management Committee
- Developing a plan for implementation in conjunction with those responsible for undertaken the works,
- Advising land owners, land managers, organisations and agencies in regards to bushfire management plan implementation
- Collaborating with identified stakeholders to identify a lead agency where required to develop a plan for implementation.

A treatment agency retains their obligations for the implementation of Treatment Strategies when they engage or utilise a third party (by agreement, contract or other means). Action Implementation Plans are not required to be sanctioned by the Bushfire Management Committee to make them valid.

16 BMAP MONITORING AND REPORTING

Monitoring and review are integral parts of the risk assessment process. Reporting ensures transparency and accountability and allows the BMC to have oversight over activities within a BMA. Monitoring the implementation of risk treatments identified by a BMC in a BMAP will identify any amendments that need to be addressed as well as potentially identifying any emerging risks or changes to the risk environment.

Matters affecting bushfire management planning should be monitored to ensure changes are noted and the matters are reviewed to understand any potential effects. The results must be reported to ensure that appropriate actions are undertaken.

Reporting matters that should be monitored by BMC members include any changes in:

- Legislation, Standards, Policies, Codes of Practice, Standards, Enquiries and Reports
- Responsibilities and Functions of Committee
- Boundaries – BMA boundaries, Local Government boundaries, SA Government Boundaries, protection areas, development zones
- Bushfire Management Plans - Implementation success and failures, residual risk, review Intervals
- Land management practices
- Attributes of communities and assets that influence bushfire risk
- Local climatic or environmental conditions that influence bushfire risk.

16.1 BMAP Implementation Reporting

Under the FES Act, BMCs are required to report on any failures to implement an identified BMAP treatment. Circumstances that delay, prevent or inhibit the implementation of a treatment strategy should be reported to the BMC.

The reasons for failures to implement an identified BMAP treatment may include, but are not limited to:

- Lack of financial and human resources
- Inclement weather and/or climate
- Changes to risk criteria
- Changes to work specifications

When reporting a failure to complete treatment(s) the reasons for the failure and alternative strategies should be considered. Alternatives that should be considered may include:

- Support or assistance from another land owner, land manager, organisation or agency
- An alternative treatment strategy or action
- Additional funding (internal, external such as a grant)
- Reconsideration of the risk acceptance level

Where all alternatives to implement a treatment strategy have been exhausted then it shall be reported to the BMC and subsequently the SBCC.

Reporting on BMAP implementation will be a two-tiered process with the first report being the adoption of agency Action Implementation Plans by the BMC as soon as practicable after the approval of the BMAP. The subsequent reports will be compiled annually and focus on the status of the treatment actions.

BMC members should report by the end of June each year on the status of their works to the BMC. The BMC Executive Officer collates this information and provides a report about BMAP implementation to the SBCC by the end of July. An online reporting tool and checklist audit template to enable this to easily and efficiently occur is under development.

The SBCC should consider the strategic state wide ramifications of treatments that have not been implemented and assess if other state-based activities need to be undertaken.

The SBCC Annual report consists of a combination of SBCC and BMC activities and the BMAP implementation reports. This report is presented to both the SACFS Chief Officer and the Minister of Emergency Services.

17 BMAP UPDATES AND AMENDMENTS

Over a period of time there may be changes in matters that have an influence on Bushfire Management Planning. Where these matters are brought to the attention of a BMC, through monitoring or by a submission, then a review of the matters should be conducted.

A submission to amend a BMAP may be submitted by any person, agency or organisation at any time. The Executive Officer shall acknowledge in writing the receipt of a submission to amend the plan. The submission and a draft of the proposed changes should be tabled at the next BMC meeting and considered by the committee.

A BMAP may be amended under the following circumstances:

- At the Direction of the Minister or the SBCC
- The BMAP is no longer consistent with any plan, policy or strategy prepared or adopted under a State or Federal Act including the *Fire and Emergency Services Act 2005*
- Information within the BMAP has been superseded by more reliable or up to date information
- A significant change in the landscape or bushfire risk has occurred or is likely to occur
- Significant changes, inclusions or exclusion of assets considered in the BMAP have occurred or are likely to occur
- A variation in the boundary of the BMA has occurred
- A proposition to amend a BMAP has been received.
- The BMAP has been reviewed

Where an amendment is made to a BMAP the BMC may need to make reasonable steps to consult with:

- the SBCC,
- any SACFS organisation specified by the Chief Officer of SACFS,
- a public sector agency (within the meaning of the *Public Sector Act 2009*) designated by the Minister (i.e. members of the BMC),
- any council whose area is wholly or partly within the relevant BMA
- any regional NRM board whose region is wholly or partly within the relevant BMA, and
- any other person or body.

The BMC is to consent to the release for public comment the draft proposal to amend their BMAP. The consultation period should run for a period not less than 6 weeks as specified in the *Fire and Emergency Services Regulations 2005*.

Although the length of time for public consultation is prescriptive, the timing and style of public engagement strategies used is a decision for the BMC. It is imperative that sufficient media avenues and other consultation forums are used to capture interest from the BMA's broad public community and to ensure individuals and organisations have the opportunity to view the draft BMAP, ask questions and easily provide feedback.

BMCs are presented with two options for the timing of public consultation and the flow chart below (Figure 12) displays the decision making process for a BMC:

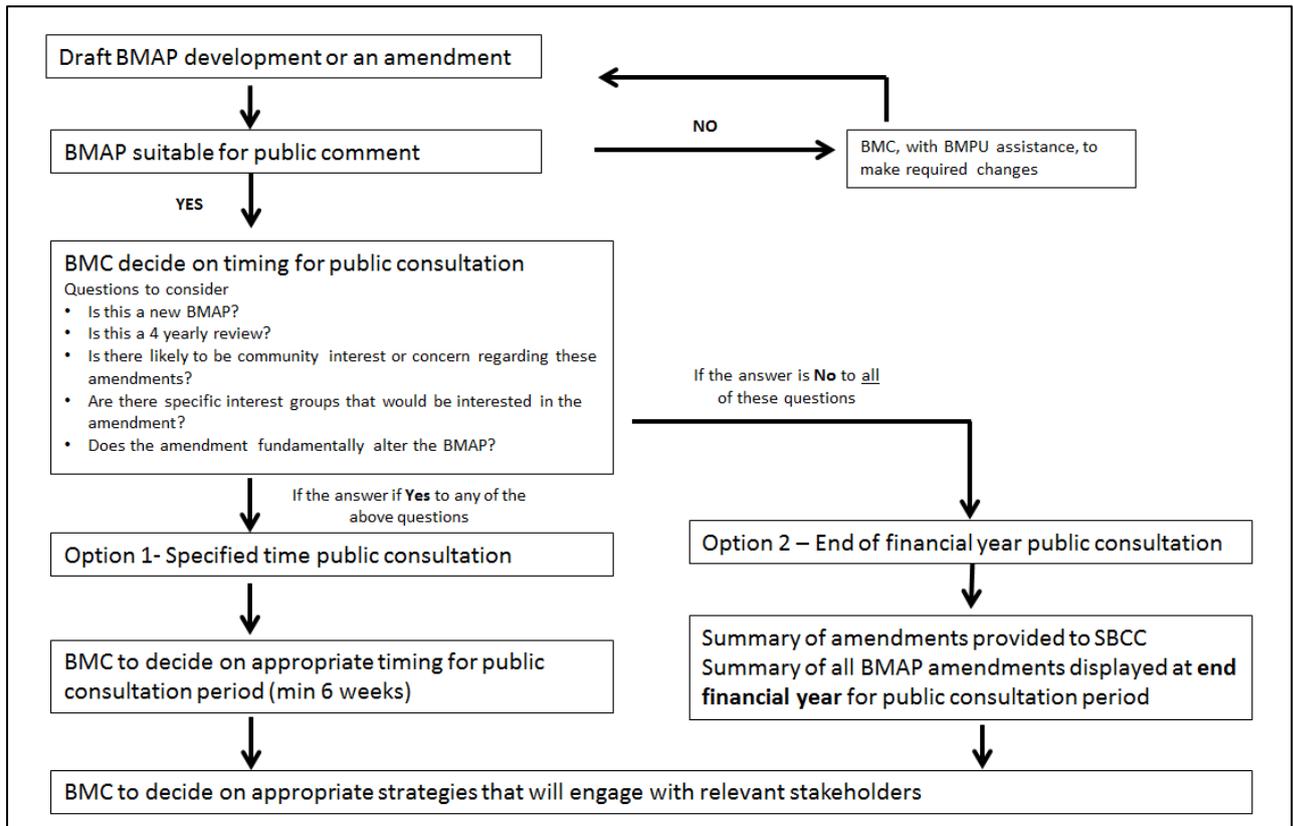


Figure 12 Major and Minor Amendment Flowchart

Option 1; **Major Amendment** - The six week public consultation period commences at a time deemed appropriate by the BMC with localised consultation options. This option is best suited to amendments that could generate community concern and/or interest.

Option 2: **Minor Amendment** - A summary of amendments for each approved BMAP must be displayed for six weeks at the end of financial year on the SACFS website and/or other appropriate avenues. The public will become familiar with a regular update process to avoid consultation fatigue. This option is best suited for simple amendments which are unlikely to generate community concern and/or interest.

A template form (BMAP Amendment Details and Approvals Form) is to be utilised by the EO and BMPU to document suggested amendments and the decision making concerning a Minor or Major amendment.

The BMC will advise the SBCC via an executive summary of the outcome of any amendments and any public consultation arrangements.

18 AUDITING OF PLANNING PROCESS

Bushfire Management Planning aims to minimise the potential of bushfires occurring, and when they do occur, to reduce, control or mitigate its impacts. Bushfire Management committees have legislated duties, objectives and goals to achieve. This process is governed by the *South Australian Fire and Emergency Services Act, 2005*.

71A—Functions of State Bushfire Coordination Committee

- (1) *The State Bushfire Coordination Committee has the following functions:*
- (a) *to advise the Minister on bushfire prevention in the country and in designated urban bushfire risk areas;*
 - (b) *to advise the Minister on matters related to bushfire management;*
 - (c) *as far as is reasonably practicable—to promote the State-wide coordination and integration of policies, practices and strategies relating to bushfire management activities;*
 - (d) *to provide guidance, direction and advice to bushfire management committees and to resolve any issues that may arise between 2 or more bushfire management committees;*
 - (e) *to prepare, and to keep under review, the State Bushfire Management Plan and to keep under review the extent to which—*
 - (i) *Bushfire Management Area Plans; and*
 - (ii) *policies, practices and strategies adopted or applied by bushfire management committees,**are consistent with the State Bushfire Management Plan;*
 - (f) *to oversee the implementation of the State Bushfire Management Plan and to report to the Minister on any failure or delay in relation to the implementation of the plan;*
 - (g) *to prepare, or initiate the development of, other plans, policies, practices, codes of practice or strategies to promote effective bushfire management within the State;*
 - (h) *to convene forums to discuss bushfire management issues, and to promote public awareness of the need to ensure proper bushfire management within the State;*
 - (i) *at the request of the Minister, or on its own initiative, to provide a report on any matter relevant to bushfire management;*
 - (j) *to carry out any other function assigned to the State Bushfire Coordination Committee under this or any other Act or by the Minister.*

71E—Annual reports

The State Bushfire Coordination Committee must, on or before 31 August in each year, provide to SACFS a report on the activities of the State Bushfire Coordination Committee and each bushfire management committee during the preceding financial year (and need not provide a report under the Public Sector Act 2009).

Legislation establishes a relationship through this process where State and Regional committees manage risk and increase the likelihood that established objectives and goals to protect life, property and environment will be achieved. Like the State, the Regional committees have legislative responsibilities.

72B—Functions of bushfire management committees

- (1) *A bushfire management committee has the following functions:*
- (a) *to advise the State Bushfire Coordination Committee on bushfire prevention in its area;*
 - (b) *to promote the coordination of policies, practices and strategies relating to bushfire management activities within its area;*
 - (c) *to prepare, and to keep under review, a Bushfire Management Area Plan for its area, and to ensure that this plan is consistent with the State Bushfire Management Plan;*
 - (d) *to oversee the implementation of its Bushfire Management Area Plan and to report to the State Bushfire Coordination Committee or, if it thinks fit, to the Minister, on any failure or delay in relation to the implementation of the plan;*
 - (e) *to prepare, or initiate the development of, other plans, policies, practices or strategies to promote effective bushfire management within its area;*
 - (f) *to convene local or regional forums to discuss issues associated with bushfire management within its area, and to work with local communities to promote and improve effective bushfire management;*
 - (g) *at the request of the Minister or the State Bushfire Coordination Committee, or on its own initiative, to provide a report on any matter relevant to bushfire management within its area;*
 - (h) *to carry out any other function assigned to the bushfire management committee under this or any other Act, by the Minister or by the State Bushfire Coordination Committee.*

A Bushfire Management Area Plan (BMAP), organises, and directs the performance of sufficient actions to provide reasonable assurance that objectives and goals will be achieved. The legislation provides direction under **Division 71A-Bushfire Management Plans (FES Act 2005)**.

73—State Bushfire Management Plan

(1) *The State Bushfire Coordination Committee must prepare and maintain a plan to be called the State Bushfire Management Plan.*

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.

The State Bushfire Coordination Committee must review the plan at least once in every 4 years.

The plan, and any amendments to the plan, have no force or effect until approved by the Minister after consultation with the Chief Officer of SACFS and the Chief Officer of SAMFS.

73A—Bushfire Management Area Plans

(1) *Each bushfire management committee must prepare and maintain a Bushfire Management Area Plan for its area. The plan must set out a scheme for bushfire management within its area.*

A bushfire management committee must review its plan—

- (a) at least once in every 4 years; or*
- (b) at the direction of the State Bushfire Coordination Committee.*

There is a requirement to assure a level of confidence that the obligations indicated above are achieved while conforming to the planning process. The following should be provided by the BMC to the SBCC as a minimum to guarantee conformity to the legislative requirements;

- Confirmation of the membership of Bushfire Management Committees as specified in the FESA
- Confirmation of the frequency of meetings of the Bushfire Management committees
- Confirmation of the establishment of a Bushfire Management Area Plan for its area.
- The Plan has been reviewed annually, incorporating any new risks identified and existing actions that have been identified have been completed.

A checklist audit tool is being developed to report on the obligations of the legislation providing a level of confidence that objectives have been achieved within an acceptable level of risk or reasons to the contrary.

19 FORMAL FOUR YEARLY BMAP REVIEW PROCESS

Each BMAP is required by legislation to be formally reviewed every four years. As BMC's are required to monitor and report on the implementation of its BMAP on an ongoing basis the body of work to review a BMAP should not be as onerous as the development of the initial BMAP. The formal review process does however give the BMC the opportunity to scrutinise the information contained in their BMAP and identify opportunities for improvements.

The review process should begin prior to the end of the 4 year period allowing sufficient time to draft a new BMAP prior to the expiry of the current BMAP. The steps outlined in **Figure 13** below guide the BMC on the review process.

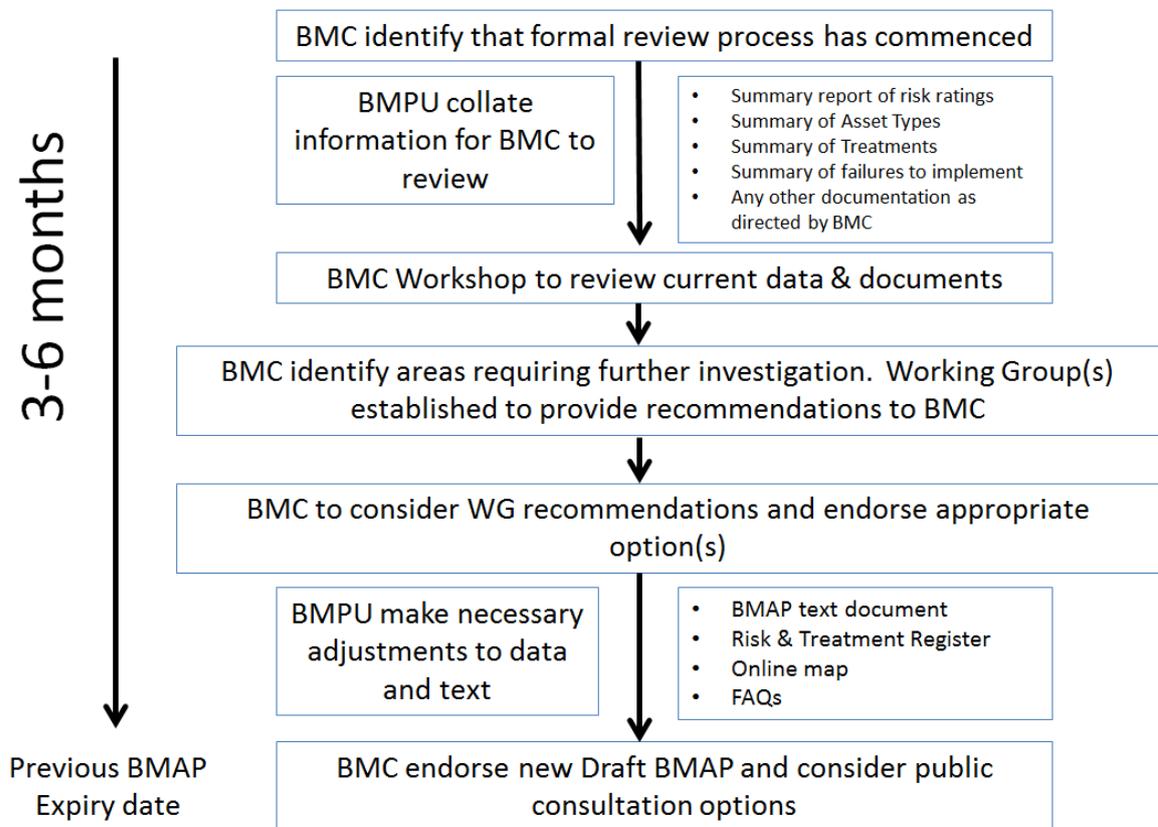


Figure 13 Formal BMAP Review Process

Related documents

Overview: 2018 SBCC BMC Guidelines, Terms of Reference and Templates

Policy: Bushfire Safer Places

Procedure: Public Consultation for Draft Bushfire Management Area Plans and amendments

Template: Public Consultation strategies options template

Template: Seeking Approval of a Bushfire Management Area Plan

Procedure: Amendment to an approved Bushfire Management Area Plan (2 documents)

Template: BMAP Amendment Details and Approvals Form

Template: BMAP Checklist Audit template

Guideline: Standard for the identification and risk assessment of South Australian environmental assets from bushfire

Glossary and Acronyms

Name	Description
Agencies	Refers to any State or Federal government entity or privately owned organisation that is the manager or owner of the land or asset.
AIRS	Australian Incident Reporting System
APZ	Asset Protection Zone
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 and/or Land Manager	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. Asset risk treatment strategies are allocated to mitigate individual risks within the BMAP Treatment Register and are designed to mitigate specific elements of the risk i.e. the radiant heat, susceptibility of the asset to spark and embers, the intensity of the bushfire and/or the potential of a bushfire starting and establishing. Asset risk treatment strategies are to be undertaken by asset owners and/or land managers and will be documented in an implementation plan which documents how the work will be undertaken.
BAL	Bushfire Attack Level
BBZ	Bushfire Buffer Zone
BMA	Bushfire Management Area as proclaimed by the Governor under Section 72 of the <i>Fire and Emergency Services Act 2005</i> . Bushfire Management Areas are typically defined by Council boundaries.
BMAP	Bushfire Management Area Plan as defined under S73A of the <i>Fire and Emergency Services Act 2005</i> .
BMC	Bushfire Management Committee as defined under the <i>Fire and Emergency Services Act 2005</i> 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 treatments, treatment owners and time frames for implementation, and provides a framework for continuous review and monitoring of the risks and their treatments.
Bushfire Hazard	The vegetation that poses a level of threat to human life, economic and cultural assets or ecological assets. The potential severity of a bushfire threat is determined by fuel load, fuel arrangement and topography under a given climatic condition.

Name	Description
Bushfire Risk	The concept of 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 consequences to the asset from a bushfire event.
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. The outcome or impact of damage to the asset from a bushfire event occurring.
DEW	Department for Environment and Water
FBD	Fire Ban District
FDI	Fire Danger Index
FDS	Fire Danger Season
FES Act	<i>Fire and Emergency Services Act 2005</i>
FMP	Fire Management Plan – The plans that are produced by the Department of Environment, Water and Natural Resources for the management of their reserves and Crown lands for bushfire risk reduction works and ecological management.
FPO	Fire Prevention Officer as defined in the FES Act.
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. 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 Service Act 2005. For BMAPs the term Asset Owner and/or Land Manager is used - this is to convey that it is the owner or the person managing the asset or land is responsible for certain actions.
Landscape Treatment Strategies	The overarching bushfire prevention and preparedness activities that are generally undertaken by agencies, organisations and communities. They broadly address the bushfire risk to assets and, thereby, reduce the overall level of bushfire risk to the Region and State. Each of the treatment strategies will reduce either the likelihood and/or the consequence of the bushfire depending on the targeted outcomes of the programme.
Likelihood	The chance or cause 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.
Risk Elements	The parts of the risk. The Risk comprises of the likelihood and the consequence of a bushfire impacting for each of the identified assets. ELEMENTS - Risk elements may be comprised of more than one element such as for likelihood there are two elements: (1) potential ignition sources and (2) ability to establish, spread and intensity. These may be referred to as elements.
Risk Register	The Risk Register is an element of the total BRIMS data base that is managed by the Bushfire Management Unit within SACFS. The risk register identifies the assets and their risk rating within a bushfire context.

Name	Description
Risk Treatment Strategies	A Risk Treatment Strategy – Provides direction in developing an appropriate plan to mitigate the likelihood and impact of bushfires on assets and the wider community.
SACFS	South Australian Country Fire Service
SAPOL	South Australian Police
SBCC	State Bushfire Coordination Committee as defined under the <i>Fire and Emergency Services Act 2005</i> , s71.
Treatment Implementation Plan	A plan that is developed by those responsible for undertaking the Treatment Strategies.