Shire of Esperance

BUSHFIRE RISK MANAGEMENT PLAN

2021 - 2026

Office of Bushfire Risk Management Bushfire Risk Management (BRM Plan) reviewed 17 September 2021

Local Government Council BRM Plan endorsement XX Month 20XX

Contents

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Document Endorsements

The Esperance Shire Council endorses that the Bushfire Risk Management Plan (BRM Plan) has been reviewed and assessed by the Office of Bushfire Risk Management as consistent with the standard for bushfire risk management planning in Western Australia, the Guidelines for Preparing a Bushfire Risk Management Plan. The Shire of Esperance is the owner of this document and has responsibility, as far as is reasonable, to manage the implementation of the BRM Plan and facilitate the implementation of bushfire risk management treatments by risk owners. The approval of the BRM Plan by Esperance Shire Council satisfies their endorsement obligations under State Hazard Plan Fire.

Local Government	Representative	Signature	Date
Shire of Esperance	Melissa Ammon Manager, Community Support		31/8/2021

Version	Date	Author	Section

Publication Information

1. Introduction

1.1. Background

Under the State Hazard Plan Fire an integrated Bushfire Risk Management (BRM) Plan is to be developed for local government areas with significant bushfire risk. This BRM Plan has been prepared for the Shire of Esperance in accordance with the requirements of the Guidelines for Preparing a Bushfire Risk Management Plan (the Guidelines) from the Office of Bushfire Risk Management (OBRM) within the Department of Fire and Emergency Services (DFES). The risk management processes used to develop this BRM Plan are aligned to the key principles of AS/NZ ISO 31000:2009 Risk management – Principles and Guidelines and those described in the National Emergency Risk Assessment Guidelines. This approach is consistent with State Emergency Management (SEM) Policy and SEM Prevention and Mitigation Procedure 1.

This BRM Plan is a strategic document that facilitates a coordinated approach towards the identification, assessment and treatment of assets exposed to bushfire risk. The Treatment Schedule sets out a broad program of coordinated multi-agency treatments to address risks identified in the BRM Plan. Government agencies and other land managers responsible for implementing treatments participate in developing the BRM Plan and

Treatment Schedule to ensure treatment strategies are collaborative and efficient, regardless of land tenure.

1.2. Aim and Objectives

The aim of a BRM Plan is to effectively manage bushfire risk in order to protect people, assets and other things of local value in Shire of Esperance. The objectives of this BRM Plan are to:

- guide and coordinate a tenure blind, multi-agency BRM program over a five-year period;
- document the process used to identify, analyse and evaluate risk, determine priorities and develop a plan to systematically treat risk;
- facilitate the effective use of the financial and physical resources available for BRM activities;
- integrate BRM into the business processes of local government, land owners and other agencies;
- ensure there is integration between land owners, BRM programs and activities; and
- document processes used to monitor and review the implementation of treatment plans to ensure they are adaptable and that risk is managed at an acceptable level.

1.3. Legislation, Policy and Standards

The following legislation, policy and standards were considered to be applicable in the development and implementation of the BRM Plan.

1.3.1 Legislation and Policy

- Aboriginal Heritage Act 1972
- Biodiversity Conservation Act 2016
- Building Act 2011
- Bush Fires Act 1954
- Conservation and Land Management Act 1984
- Country Areas Water Supply Act 1947
- Emergency Management Act 2005
- Environmental Protection Act 1986
- Environmental Protection and Biodiversity Conservation Act 1999 (Cth)
- Fire Brigades Act 1942
- Fire and Emergency Service Act 1998
- Bush Fires Regulations 1954
- Metropolitan Waters Authority Act 1982
- Water Agencies (Powers) Act 1984

- Emergency Management Regulations 2006
- Planning and Development (Local Planning Scheme) Regulations 2015
- SEM Plan (State Emergency Management Committee (SEMC) 2019)
- SEM Policy (SEMC 2019)
- SEM Prevention and Mitigation Procedure 1 (SEMC 2019)
- State Hazard Plan Fire (SEMC 2019)
- State Planning Policy 3.4: Natural Hazards and Disasters (Western Australian Planning Commission (WAPC) 2006)
- State Planning Policy 3.7: Planning in Bushfire Prone Areas (WAPC 2015, as amended)
- National Trust of Australia (WA) Act 1964
- Soil and Land Conservation Act 1945

1.3.2 Other Related Documents

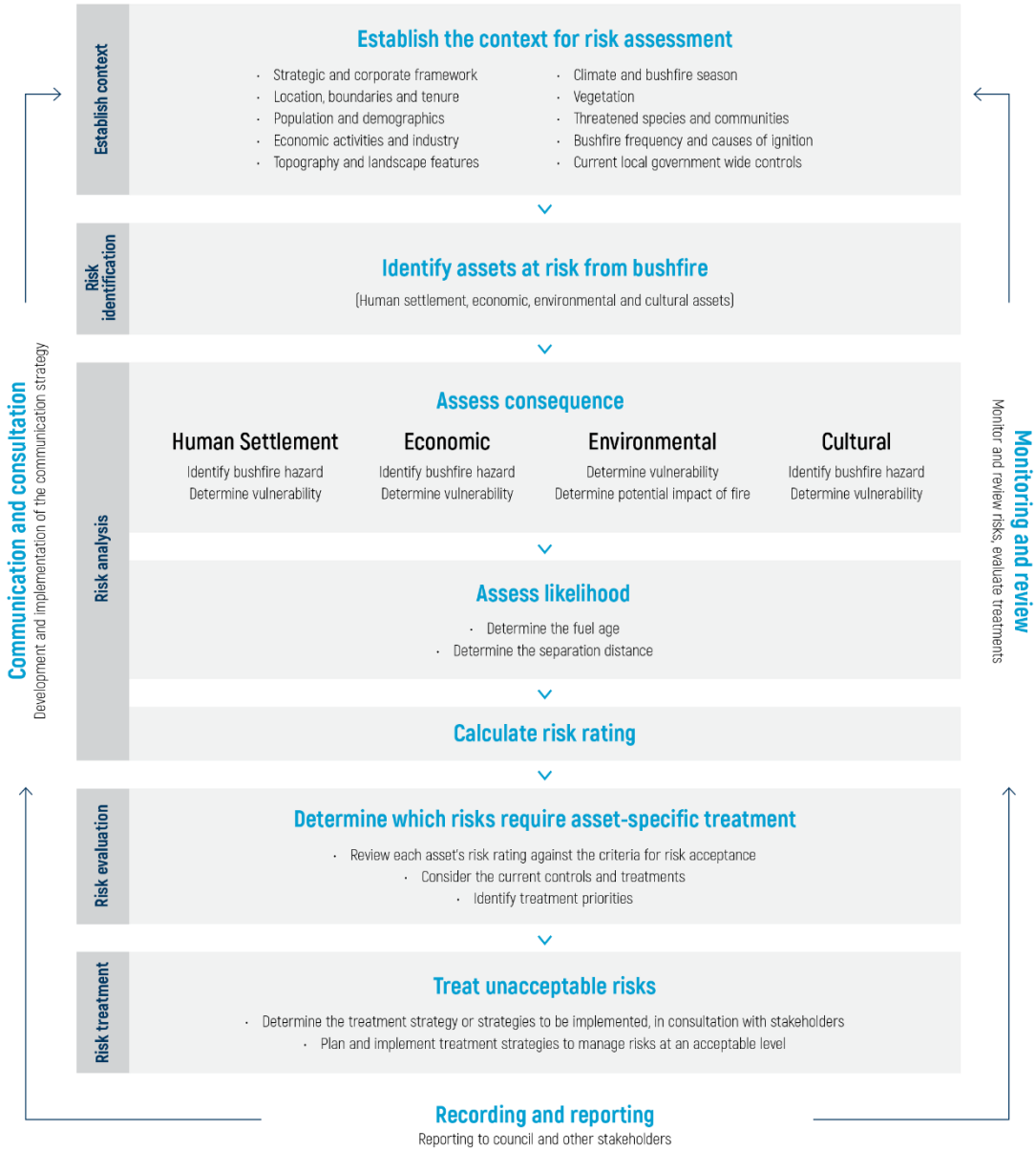
- A Capability Roadmap: Enhancing Emergency Management in Australia 2016 (Australasian Fire and Emergency Services Authorities Council 2016)
- A Guide to Constructing and Maintaining Fire-Breaks (DFES 2018)
- AS 3959:2009 Construction of Buildings in Bushfire–Prone Areas (Standards Australia 2009)
- AS/NZ ISO 31000:2009 Risk Management – Principles and Guidelines (Standards Australia 2009)
- Australian Disaster Resilience Handbook 10: National Emergency Risk Assessment Guidelines (Australian Institute for Disaster Resilience 2015)
- Guidelines for Preparing a Bushfire Risk Management Plan 2020 (DFES 2020)
- Bushfire Risk Management Planning Handbook (DFES 2018)
- Code of Practice for Timber Plantations in Western Australia (Forest Products Commission (FPC) 2006)
- Guidelines for Planning in Bushfire Prone Areas (WAPC 2017)
- Guidelines for Plantation Fire Protection (DFES 2011)
- National Disaster Risk Reduction Framework (Department of Home Affairs 2018)
- National Strategy for Disaster Resilience (Attorney-General's Department 2011)
- Public Service Circular No. 88 Use of Herbicides in Water Catchment Areas (Department of Health 2007)
- Western Australian Emergency Risk Management Guide (SEMC 2015)
- Shire of Esperance Strategic Community Plan 2017 – 2027
- Shire of Esperance Corporate Business Plan 2020/21-2023/24
- Shire of Esperance Coastal Management Plan 2014
- EXT 024: Bushfire Management Policy

- Shire of Esperance Local Emergency Management Arrangements April 2016
- Shire of Esperance Local Recovery Plan April 2016

2. The Risk Management Process

The risk management processes used to identify and address risk in this BRM Plan are aligned with the international standard for risk management, *AS/NZ ISO 31000:2009 Risk Management – Principles and Guidelines*. This process is outlined in Figure 1.

Figure 1 – An overview of the risk management process[1]



[1] Adapted from: AS 3959:2009, with permission from SAI Global under licence number 1510-c081.

2.1. Roles and Responsibilities

The roles and responsibilities of the key stakeholders involved in the development of the BRM Plan are outlined in Table 1.

Table 1 – Roles and Responsibilities

Stakeholder Name*	Roles and Responsibilities
Local Government	• Custodian of the Bushfire Risk Management Plan (BRM Plan) • Coordinate the development and ongoing review of the integrated BRM Plan. • Negotiate a commitment from land owners to treat risks identified in the BRM Plan. • Undertake treatments on lands owned or managed by them. • Submit the draft BRM Plan to DFES's Office of Bushfire Risk Management (OBRM) for review and endorsement. • Submission of the OBRM endorsed BRM Plan to council for their approval and adoption.
Department of Fire and Emergency Services	• Participate in and contribute to the development and implementation of BRM Plans. • Support to local government through expert knowledge and advice in relation to the identification, prevention and treatment of bushfire risk. • Facilitate local government engagement with state and federal government agencies in the local planning process. • Undertake treatments on Unmanaged Reserves and Unallocated Crown Land within gazetted town site boundaries. • In accordance with Memorandums of Understanding and other agreements, implement treatment strategies for other land owners. • Review BRM Plans for consistency with the Guidelines prior to final approval by council. • Administer and coordinate the Mitigation Activity Fund Grants Program.
Department of Biodiversity, Conservation and Attractions	• Participate in and contribute to the development and implementation of BRM Plans. • Provide advice for the identification of environmental assets that are vulnerable to fire and planning appropriate treatment strategies for their protection. • Undertake treatments on department managed land, and Unmanaged Reserves and Unallocated Crown Land outside gazetted town site boundaries and land in which they have an agreement for.

Stakeholder Name*	Roles and Responsibilities
Department of Planning, Lands and Heritage	• Provide advice for the identification of their assets and infrastructure, specifically Aboriginal and European heritage.
Other State and Federal Government Agencies and Public Utilities	• Provide information about their assets and current risk treatment programs. • Participate in and contribute to the development and implementation of BRM Plans. • Undertake treatments on lands they manage.
Corporations and Private Land Owners	• Provide information about their assets and current risk treatment programs.

2.2. Communication and Consultation

Communication and consultation throughout the risk management process is fundamental to the development, implementation and review of the BRM Plan. To ensure appropriate and effective communication occurred with relevant stakeholders at each stage of the BRM planning process, a *Communication Strategy* was prepared (Appendix 1).

3. Establishing the Context

3.1 Description of the Local Government and Community Context

3.1.1 Strategic and Corporate Framework

The Shire of Esperance has adopted two Plans which have established a vision for the Shire and will provide a strategic direction on achieving this outcome for the community. The *"Strategic Community Plan 2017 – 2027"* and *"Corporate Business Plan 2020/21-2023/24"* highlights the priority areas for the Shire over the next 10 years.

To ensure the two Plans work together there are like themes within them. From a bushfire risk perspective the focus is building confidence and resilience within the community.

Within the Strategic Community Plan 2017 -2027, it is identified:

"Theme - Community Connection

C6 - Goal – A safe and secure community

C6 – Outcome – A feeling of safety and confidence within our neighbourhoods and a sense of security

C6 - Strategy – Develop and maintain a safe environment for the community

Theme – Leadership

L4 – Goal – Stronger Relationships

L4 – Outcome – Work together to enhance trust, participation and community pride

L4 – Strategy – Actively engage and communicate with the community to ensure informed decision making"

The *Corporate Business Plan 2021 - 2024,* provides further detail on this by assigning actions to the identified strategy by;

C6.1 – Increase community awareness and implement mitigation strategies for the prevention of emergency incidents,

C6.2 – Manage emergency recovery services

C6.3 – Manage emergency response

C6.4 – Provide emergency prevention services

C6.6 – Support volunteer fire brigades

C6.9 – Develop a fire mitigation plan for the district.

The BRM Plan and planning process helps promote community safety through the identification or risk and engagement with risk owners to ensure they are treated. The BRM plan can be used to help priories community engagement and mitigation work to best reduce Bushfire risk.

Additionally, within the Corporate Business Plan 2021-2024, there is a focus on preserving our natural environment, taking into account the pristine and biodiverse landscape of the Esperance area.

"Theme – Natural Environment

N1 – Goal – Protect the environment

N1 – Strategy – Raise awareness and increase education on environmental issues

Actions

N1.1 Develop partnerships with environmental stakeholders to deliver programs"

The BRM Plan will identify key environmental assets in the Shire and help identify areas where there are tensions between environmental values and bushfire risk. This will be helpful in selecting and planning treatments that are suitable based on the risks and values.

Further to the overarching strategic framework, the Shire of Esperance, has an active and well supported Bushfire network. The Shire has 17 Bushfire Brigades, including 3 Urban Rural Brigades and a designated Communications and Support Brigade. There is a well-established hierarchal structure with an experienced Chief Bush Fire Control Officer and Deputies, with a robust succession plan in place for the future leadership of this network.

The BRM Plan is a responsibility of the Shire CEO, however it has been developed by the Manager, Community Support. Moving forward Community Support team will be responsible for the management of the plan and administrations of BRMS data. Implementation will be supported by the Community Emergency Services Manager, local Brigades and local fire agencies.

As per the requirements within the *Bush Fire Act 1954*, Part V Section 67, there is a Bush Fire Advisory Committee (BFAC) in place who play an integral role in bushfire preparedness, prevention and response within the Shire. The BFAC meet twice a year (April and September) and is a Committee of Council.

The BFAC and the wider local Bushfire Brigade network have been involved in the development of the BRM Plan, in particular with input into existing controls, asset identification, risk assessment and treatment option considerations.

Additionally, in accordance with Section 38 of the *Emergency Management Act 2005,* the shire of Esperance has established a Local Emergency Management Committee (LEMC), chaired by and elected Council Member. The LEMC has multiagency membership and provides an important multiagency forum for the BRM Plan to be tabled and considered. To the BRM Plan process, the LEMC provides respective agency insight, strategic consideration and an unbiased review.

3.1.2 Location, Boundaries and Tenure

The Shire of Esperance encompasses over 44,000km² of land and is located on Western Australia's South east coast, 725km from Perth, 400km south of Kalgoorlie and 500km east of Albany. The Shire's boundaries extend from east of Munglinup through to Israelite Bay and north to Daniell Rail Siding.

Map of Shire of Esperance attached at Appendix 2

The Shire of Esperance is bordered by the Shires of Dundas to the north, Ravensthorpe to west and the Southern Ocean to the south. The Shire incorporates the towns of Esperance, Cascade, Coomalbidgup, Gibson, Scaddan, Grass Patch, Salmon Gums and Condingup.

Table 2 – Overview of Land Tenure and Management within the Shire of Esperance

Land Manager/Agency	Percent of Local Government Area
Local Government	1%
Private	36%
Department of Biodiversity, Conservation and Attractions	16%
Department of Planning, Lands and Heritage (UCL and UMR)	47%
Total	100%

Source: Shire of Esperance

The Shire of Esperance has 416 Shire managed reserves as well as one of the largest road networks in the State, at over 4,850km. There are a number of coastal campgrounds, which are popular over the summer period and the population in these isolated areas increases substantially during these times. This is a significant bushfire risk as camper can become isolated in a fire event and may inadvertently start a fire through poor campfire preparation. The Shire ensures signage at the campsites and encourages good community engagement to educate visitors on the risks and appropriate management.

Privately owned land is predominately broadacre farming used for cropping and/or grazing. The practices of grazing livestock has reduced in recent years due to climatic conditions and impacts to the live export trade. Suppression capability is an important consideration for farmers. Resources are limited and back up crews can often be up to 50km away. The onus is on broad acre farmers to have their own fire fighting capability and not to rely solely on the volunteer bush fire network.

Changes to farming practices have seen an increase in cropping. Since the November 2015 fires, some farmers did not replace fencing allowing for further uninterrupted cropping runs.

A significant fire risk to farmland comes from fire in the UCL in the north burning onto farms under a north, north west or north easterly wind. There is over 530km of UCL and private property interface. This risk is managed by fuel modification completed along the entirety of the interface, however, as demonstrated in November 2015, under catastrophic fire weather conditions, this is not sufficient to keep fire out of the farmland.

The northern section of the Shire is dominated by Unallocated (UCL) and Unmanaged (UMR) Crown Land, representing nearly half of the Shires landmass. Much of this area is recognised within the Greater Western Woodlands, regarded as the largest remaining area of intact Mediterranean climate woodland left on earth.

The UCL and UMR land is managed by Parks and Wildlife (DBCA), however budget and resourcing constraints limits the amount of works undertaken through this area. The devastating fires of November 2015 were started by lightning strikes in the UCL north of Cascade. Difficulties were experienced accessing the area prior to fire reaching the farmland under catastrophic fire conditions.

For many years there has been a group working on the approval to have a State Barrier Fence erected along the UCL / private property interface. It is the intention for the fence to keep wild dogs, kangaroos, camels etc. out of farmland as they cause major damage to

stock and crops. The fence will stand approximately 2 meters tall, and run the length of the interface. Gates will be placed at intervals to allow access into UCL from the farmland and vice versa.

The funding for the fence has been secured and building has commenced to the west, between the Ravensthorpe and Esperance. To date progress has been slow due to issues with Native Title, however this fence will become a consideration for fire fighting activities in the future.

One of the greatest assets for Esperance is the National Parks. Dept of Biodiversity, Conservation and Attractions – Parks and Wildlife Service (PaW), manage the Cape Le Grand, Cape Arid, Stokes Inlet and Peak Charles National Parks in the Shire area.

Within the Shire there are many cultural and significant heritage sites recognised by the local Tjaltjraak people. The Esperance Tjaltjraak Native Title Aboriginal Corporation (ETNTAC) is a newly incorporated organisation registered under the *Corporations (Aboriginal and Torres Strait Islander) Act 2006.* ETNTAC is the registered Native Title body corporate in the Esperance Region, representing the Esperance Nyungar People.

The Shire will continue to develop our partnership with and support for all the Traditional Owner group as they explore their role in bushfire management and the role of cultural fire in the landscape.

Historically, the East-West Telegraph Line ran through this area. There are a number of historical homesteads within the UCL which are popular with tourists and weekend campers. Israelite Bay Telegraph Station has been restored by the National Trust, with homesteads also located at Ballbinya and Deralinya.

3.1.3 Population and Demographics

The most recent Australian Bureau of Statistics (ABS) data, via the 2016 Census shows the population of the Shire of Esperance is 14,236 people, of which 7,165 (50.3%) were male and 7,070 (49.7%) were female. The median age is 40 years old with 27.7% of the population being under 18 and 16.2% being over 65 years of age. The population density is 0.3 people per square kilometre.

The high portion of children under 18 is a unique consideration for the local government. This group are particularly vulnerable in bushfire events as they are reliant on adults for decision making, evaluation and care. This means that additional planning is required to ensure that they are planned for in pre-planning and recovery.

Additionally, elderly community members can be more fragile, more likely to have limited mobility, suffer from health conditions and/or require the care of others. The elderly population often have specific needs or requirements during evacuation to address these limitations. Elderly residents living independently may over estimate their abilities and/or have limited scope to undertake property preparations and responded to bushfires appropriately.

The additional needs for theses members of our community have been considered and plans for their protection and welfare outlined in the Shire of Esperance Local Emergency Management Arrangements.

6.1% of the population have listed their occupation as grain grower, being the most significant employment group in the 2016 Census.

The Esperance town site accommodates the greatest concentration of population in the Shire. Approximately 10,000 people live in the Esperance town site. Within Esperance there are five primary schools, 2 high schools, a district hospital, a residential aged care facility and a number of aged care villages, majority of these assets are in the urban landscape and of lower bushfire risk. The high school is on the north west edge of Esperance in the interface area which makes it of higher risk, the Shire will continue to work with DoE and DFES to ensure that bushfire management is a consideration for this school and the adjoining areas.

Surrounding the Esperance town site is an urban rural fringe, comprising of a number of subdivisions, providing larger, semi rural, lifestyle blocks. This type of living is appealing to families. On average, the three Urban Rural areas, encompassing the Pink Lake, Six Mile Hill and Quarry Road Brigade areas, have a population density of 4.9 people per square kilometre. These areas, especially Pink Lake, have expanded significantly over recent years, and will continue to do so with further land releases/stages available within the existing subdivisions.

People living in these areas are mostly longer term Shire residents who are moving into more urban environments from farms. This means that unlikely most areas with new residents these people, for the most part, are aware of the increased fire risks that exist. This awareness is further supported by the Bush Fire Brigades being proactive in providing information around preparedness and bush fire safety to residents within their areas. A number of Bushfire Ready presentations are held annually, prior to the fire season, by Shire and DFES staff to raise awareness and promote bush fire preparedness. Shire Rangers undertake regular fire break inspections and work with residents to ensure fire break compliance.

There are a number of smaller town sites throughout the Shire to service the farming community. The larger town site of Gibson (pop 198), Salmon Gums (pop 63) to the north and Condingup (pop 127) to the east, provide services such as fuel, stores and recreation/accommodation. The smaller townships of Cascade (pop 9), Grass Patch (pop 21), Scaddan (pop 6) and Coomalbidgup (pop 17) provide less services however are significant for the position of a CBH Grain Bin, a school or a recreational facility i.e. Country Club etc.

Population in the farming community has dropped in recent years. 20 years ago, farming in the area was equal cropping and grazing practices. Grazing is still popular along the coastline, however changing climatic conditions and improved farming practices have seen farmers move away from grazing and focus more on their cropping programs. With less livestock on the land, farmers are now selling to their neighbours resulting in increased landholdings by fewer individuals.

It is important to note that at several times during the year the population increases substantially. During harvest (October – December) a large envoy of seasonal workers come to the area to assist with farming operations. Additionally, the grain receival bins located at Beaumont, Grass Patch, Salmon Gums and Cascade, attract a large workforce during harvest.

Wildflower season (September – October), Christmas and summer holidays, as well as Easter see a large number of tourists descend on the town. At these times, occupancy rates at the coastal campgrounds, caravan parks and National Parks increase dramatically.

The shire acknowledges that these people can be at high risk during fire events due to lack of knowledge of local area, access to transport and language barriers. This is something the Shire will consider in the LEMA.

3.1.4 Economic Activities and Industry

Esperance is the administrative and commercial centre for the Shire area. Esperance town site is characterised by a range of activities of a type ordinarily found in a rural centre. As well as a residential centre, the town services the local farming community, has a rail depot, Port and a growing tourism industry. Many of the services in town relate to the activities of Government including Police, Australia Post, Centrelink, Telstra, Horizon Power, schools, hospital, aged care etc.

Agriculture is the predominate industry in Esperance. With over 1.5 million hectare of agricultural land, over 2 million tonne of grain is produced each year. Wheat, barley, canola and peas are the main crops produced.

Bushfire risk increases during the crop harvesting period, generally from mid to late October through to late December, early January. Fully cured crops provide a volatile fuel source and harvesting machinery have many potential ignition sources which need to be carefully managed. Bearings, hot exhausts, turbochargers, electrical circuits and belts combined dry straw, dust, chaff, oil and leaking distillate provide a perfect environment for fire.

While crops are generally planted in April, they do not pose a great fire risk until ready for harvest. The risk, while severe, is in place for a limited timeframe. The Shire of Esperance has controls in place pursuant to the *Bush Fires Regulations 1954*, to reduce the risk of crop related fires, including Harvest, Machinery and Vehicle Movement Bans when weather conditions warrant it and minimum water supplies available in paddocks while harvesting.

Farming practices have changed in Esperance over the past 15 – 20 years with a move away from grazing livestock. Previously, grazed paddocks would provide a good natural fire break with reduced fuel loads between crop laden paddocks. This no longer occurs and larger tracts of crop exist providing a greater run for fire.

During the 1980's and 1990's Blue Gum tree plantations were introduced across the Shire. Management practices were adopted in accordance with *"Guidelines for Plantation Fire Protection" (DFES 2011*) and were managed by plantation companies. By the mid 2010's it was found these plantations were not conducive to the Esperance environment and the plantation companies sold the land back to farmers who are now removing trees and returning the land the cropping or grazing country. This in time is changing the profile of bushfire risk in the shire.

While some farmers are choosing to fell the trees and have them chipped, others are creating windrows of fallen trees and burning them. The Shire of Esperance, through a council policy, introduced a permit for Burning Blue Gum Plantations to provide guidance on maximum burn cell sizes and other requirements in order for the burn to be undertaken. The farmer must work with a Fire Control Officer (FCO) to seek approval for the burn to take place.

Mining is an area of current exploration and interest in the Esperance region. At present this involves a lot of exploration activities and feasibility studies which can involve isolated workers in remote areas without a local knowledge or awareness of the bushfire risk. The shire will continue to monitor the bushfire risk and work with mining companies to improve their processes to ensure this is considered. The neighbouring Shires of Ravensthorpe and Dundas have a well-developed mining industry, the Esperance region has remained relatively unexplored.

Recently there has been approval for a graphite mine to commence operation near Munglinup in the west of the Shire. There are a number of exploration sites identified within in the UCL in the north of the shire, however to date there are no operational mine sites in the region.

Esperance's significant role in the mining industry currently lies with the transport of iron ore, nickel concentrate, grain and fuel by train to the Esperance Port. Approximately 150km of rail runs through the Esperance Shire from Koolyanobbing and Kalgoorlie. Currently there are two to five rail movements a day, with a potential for this to increase as existing contracts expand and new operations commence. Additional product is bought to the Port by road.

Interruptions to the transport of these goods have major economic impacts on a worldwide level. Esperance is an international port, and delays in exporting shipments i.e. iron ore, grain etc. can cost into the millions of dollars per day.

The managers of the railway infrastructure have maintenance programmes for the rail line. The Shire is advised when maintenance works is being undertaken and have a robust risk mitigation plan when rail grinding or replacing tracks.

Tourism is a growing industry in Esperance. Esperance is becoming more renowned for its beautiful beaches and National Parks. From the beginning of wildflower season in September through to Easter, a large number of tourists are drawn to the area to visit, especially in caravans and off road campers. Additionally, from December through to February, 1,000's of day visitors arrive from cruise ships using Esperance as a day dock. While these visitors have little impact on the cause of a fire during their time in Esperance, in the event of one, consideration needs to be made for an additional large volume of people in the area.

Esperance offers nearly 500km of pristine coastline with a range of facilities available along its entirety. From formal caravan park and holiday accommodation in the Esperance town centre to nature based bush camping sites, during the summer period, population in these remote locations grows dramatically. Given the remoteness of many of these campsites, policing of fire restrictions i.e. campfires and response to fire situations can be limited or delayed.

3.2 Description of the Environment and Bushfire Context

3.2.1 Topography and Landscape Features

The landscape character of the Shire of Esperance is dominated by three distinct landscape types; coastal plains, broad acre farmland and vast wilderness. Each area, while very different, provides its own challenges in fire mitigation, suppression and recovery. The *SEMC State Capability Framework* recognises the importance of the topography and landscape features of an area by*; "4.2 the ecosystem is effectively managed to preserve natural barriers that aid community protection and biosecurity barriers."*

The coastal plain extends the length of the Shire from Munglinup Beach in the west to Israelite Bay to the east. It is 100mts – 50km wide in some parts and runs through National Parks, Shire Reserves and UCL/UMR. The area consists of sandy beaches, transient dune systems, reaching 200mt in elevation in some areas with steep granite and limestone outcrops, as well as an intricate lakes system fed by a number of creeks and rivers running through the agricultural land.

These areas are often inaccessible or difficult to traverse due to soft sand, steep, unstable inclines and declines of moving sand dunes and waterlogged areas with dense vegetation around water bodies. While travel along some beaches is possible, tidal conditions can cause deep washouts and access and egress off the beaches can change overnight. This can mean that fires have a chance to grow and establish before responders are able to reach them. Alternatively it can be deemed to dangerous to enter these areas due to the terrain, as such indirect firefighter strategies are used to avoid entering the area. Likewise, mitigation in these areas is challenging due to the unstable nature of the dunes and the environmental consideration required.

People often camp informally throughout these areas. This increases the risk of fire in highly volatile coastal heath vegetation through vehicle movement, campfire neglect or human error i.e. discarded cigarette butts etc. Many of the most popular areas are attractive to campers based on its remoteness and inaccessibility. This makes emergency response difficult to effectively manage and suppress fire in these areas. Emergency water supply also presents as an issue in these remote locations.

It is also challenging to establish a safe and coordinated approach to evacuation, given the distance required to travel by responders. Evacuation planning has been undertaken by the LEMC and within campsite management plans, however in informal camping situations, the onus is on the public to manage their own safety in emergency situations.

Within the coastal plains there are a large number of lakes systems and inlets, including Munglinup River mouth, Stokes Inlet, Barkers Inlet, Lake Gore, Lake Quallalup the Esperance Lakes Nature Reserves and the Thomas River mouth. The lake systems provide access issues for emergency services when responding to fire events, these areas have soft soils and vehicles can easily become stuck. The lakes have high fuel loads with heathy vegetation around them which carry hot fast moving fires which further add the challenges of fire fighters. The drier areas of the lake systems that have less flooding often have peat moss soils which are known to be very challenging for fire control. In these areas fires can appear to be out only to burn under ground the soil organic matter for months before resurfacing when the conditions are right. This can result in fires reigniting a long time later and often some distance away.

The agricultural area of the Shire comprises of approximately one third of the land area, abutting the coastal reserves to the south and providing an interface with the UCL in the north. This area is mostly cleared, undulating farming area. There are tracts of uncleared native vegetation dotted throughout the area, some on private property, some recognised as Shire Reserves.

There are a number of river systems running through the farmland to the sea. The main catchment areas include the Oldfield River, in the Shire of Ravensthorpe, joining the Munglinup River, to create the Shire boundary between Ravensthorpe and Esperance, running into the Lake Chaster catchment. The Young and Lort Rivers run into the Stokes Inlet, Coobige Creek, west Dalyup and Dalyup Rivers run into Lake Gore and the Bandy and Coromup systems into the Esperance Lakes. To the east, the Dailey and Thomas Rivers run through the Cape Arid National Park.

These rivers rarely flow during the summer period. While some water may be present, river crossings are trafficable during the dry months. The river corridors generally provide a small valley and significant vegetation. While the slopes don't significantly impact the fire behavior these corridors are recognised as providing a vegetated "wick" into the farmland and provide areas of higher intensity fires.

Lake systems and granite outcrops occur throughout the Greater Western Woodland. A project officer was appointed for a short time and access tracks were reinstated and some mitigation works undertaken. Accessibility, especially around lake systems remains limited.

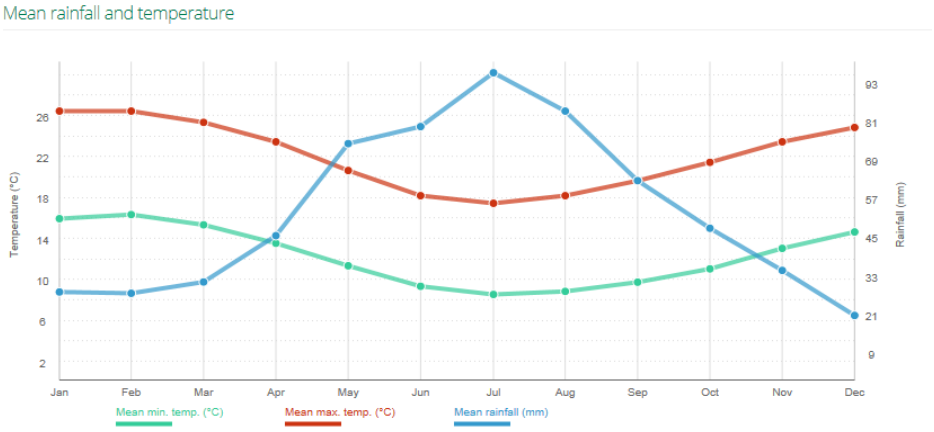
Main roads through the UCL remain unsealed and receive limited maintenance. In the west of the Shire of Esperance major access roads include the Cascade Rd, extending from Cascade to the Lake King Norseman Rd to Lake King, The Lake King Norseman Rd from Norseman to Lake King. In the east there is Dempster Rd up to Mt Ridley, Parmango Rd

heading north. The Balladonia Track starts at Fisheries Rd and extends through to Balladonia on the Eyre Highway, after meeting up with Parmango Road. Fisheries Road runs from Esperance through to Israelite Bay.

3.2.2 Climate and Bushfire Season

The climate of the Esperance region is typically Mediterranean, with warm to hot dry summers and mild, wetter winters. The majority of the rainfall occurs between May and September, with heaviest falls during the winter months from June to August.

Summers can be very hot and dry, with December to February receiving a monthly average rainfall of less than 25mm. Summers are typically warm and cloudless and cooling afternoon sea breezes are common. Maximum temperatures during the summer months range from 28-42 degrees, going down to 15-20 degrees overnight. Winter temperatures are much cooler ranging from 15-20 degrees during the day and 7-12 degrees at night time. Hot dry summers and seasonal strong winds from the north, can create an environment where there is a constant significant risk of bushfire.



Source:http://weather.mla.com.au/climate/history/wa/esperance

The Shire of Esperance covers a very large land area. The Southern Ocean moderates the effect of temperature in the coastal areas of the Shire providing smaller season variations and a milder climate than inland areas. Mean daily temperatures for Esperance, on the coast, and Salmon Gums, 100km inland, can vary during the summer months by as much as 15-20 degrees. As a result, fire weather can vary significantly across the Shire. The Shire simultaneously can be experiencing Total Fire Ban conditions inland and rain or milder conditions on the coast.

Within the Shire, Bureau of Meteorology (BoM) weather stations are located at Esperance, Esperance Airport and Salmon Gums. Information from these weather stations show,

during 2018, Salmon Gums received an annual rainfall of 255mm, while Esperance received 568.5mm. (*www.bom.gov.au/climate)*

The Esperance area is notoriously windy. Along the coast a sea breeze can be expected on a daily basis. These breezes have a cooling affect, and while any change in wind direction during an incident should be treated with caution, generally these breezes will assist fire fighting activities.

Prevailing winds are from the north, north west or north east. These winds are generally hot, dry and strong and can prove challenging during fire suppression. These winds occur from November through to February which is peak fire season. Northern aspect winds are dry in nature, reducing the moisture, or humidity, in the air.

Additionally, during the months of November through to February, the Esperance area is susceptible to thunderstorms. These storms can involve 100's, if not 1000's, of lightning strikes and may or may not be accompanied by rain. These storms generally come from the north and are triggered by the confluence of cool moist air from the Southern Ocean and warm inland dry air. Lightning is a common cause of bushfire.

The Shire of Esperance has, under sections 17 and 18 of the *Bush Fires Act 1954*, declared the following restricted and prohibited burning times;

19th September to 31st October - Restricted Burning, permits required to burn.
1st November to 31st January - Prohibited Burning, no fires permitted.
1st February to 15th March - Restricted Burning, permits required to burn.

These dates are published annually within the Government Gazette and distributed through the Shire's Fire Break Notice. The dates are subject to change if weather conditions warrant it, and the public is advised through the local newspaper and on the Shire's website.

During these times, which occur during the harvest season, the fire danger index (FDI) is monitored and if weather conditions require it, Harvesting, Machinery and Vehicle Movement Bans are put in place. This stops all movement of vehicles through paddocks in a bid to lower the risk of a fire starting in weather conditions that would make it more difficult to contain any fire. To do this, Fire Control Officers use a MacArthur Meter Mark 4, to establish the Grassland Fire Danger. Crop curing, temperature, wind speed and relative humidity are entered into the meter to establish a fire danger index. *Bush Fires Regulations 1954*, section 24C (2) states that a Harvesting, Machinery and Vehicle

Movement Ban must be imposed once the FDI reaches 35. Within the Shire of Esperance, this is imposed at FDI 32, as an added precaution.[2]

During the harvest season, fire weather is monitored daily. If the BOM forecast a day to be "Very High" fire danger or above, regular radio "scheds" take place throughout the day to keep a check on local conditions. On average, the Shire will experience 10 – 12 Very High or above fire danger days per year which result in 5 – 6 (approx.) Harvest, Machinery and Vehicle Movement Bans annually.

3.2.3 Vegetation

Esperance lies within two of the nationally recognised biogeographic areas of the country. The "Esperance Plains" runs along the coast from Albany to Point Culver, east of Esperance, and extends inland approximately 40km. The "Mallee" region runs north of Esperance Plains from Bruce Rock to Eyre.[3]

Within the Esperance Plains region the most notable vegetation is mallee-heath, covering approx. 58% of the land mass of the coastal region. The characteristics of heath vegetation is generally evergreen, low growing shrubs, small trees and woody vines found mainly on free draining, infertile acidic soil.

Other significant vegetation types in these areas include mallee, scrub heath and coastal dune scrub. There is very little woodland in these area, only small communities of Eucalyptus Ioxophleba (York Gum) and E. occidentalis (Flat topped Yates) which can be found in gullies and low lying area along the coast. Heath vegetation is made up varying vegetation heights and structures. As such the fuel structure is not uniform and in a fire situation can be unpredictable and discontinuous in its behaviour.

Within the Mallee region the vegetation is predominately Eucalyptus mallee over Myrtaceous and Protea heath. Over 50% of the area is vegetated entirely by mallee and a further 25% is mainly mallee with patches of woodland. This provides a more consistent vegetation type with a clear undergrowth and a higher canopy fuel load providing a more consistent fire behaviour.

Most of these species are killed by fire and regenerate for seed, suggesting they have evolved in an environment where fire is frequent.

[2] *Shire of Esperance Council Policy EXT 024 – Bushfire Management*

[3] *www.environment.gov.au/system/files*

A study into fire behaviour in semi-arid malleee-heath shrub land recognised that ecosystems in fire prone climates, such as the kwongan and mallee, are renowned for their flammability. Shrub land fires can be fast moving and intense even under moderate burning condition. They have potential to burn extensive areas under extreme conditions leading to severe impacts on human populations, water catchments, major transport routes and broad range of environmental values.[4]

An environmental concern that poses a threat to the landscape in coastal areas is Dieback and requires serious consideration when determining bushfire risk management and suppression strategies.

Phytophthora cinnamomi is a soil borne pathogen which kills susceptible plants, such as Banksia and grass trees, by attacking their root system. Dieback is a symptom of the Phytophthora infection causing the plant to die because it cannot take up the water and nutrients it needs. The fungus is spread through the movement of soil and mud, especially by vehicles and footwear. [5]

Dieback is present in the coastal plains of the Shire of Esperance with known infections within pockets along the entire coastline. Some areas outside of Esperance, such as the Fitzgerald River National Park in Jerramungup and Ravensthorpe, have a specific plan to combat the further spread of the disease to protect the recognised biodiversity of the area and have adopted fire fighting strategies accordingly.

When fighting fires in these areas, fire appliances and machinery are cleaned prior to entering a Dieback affected area and cleaned again before leaving. This requirement is well communicated among fire brigades servicing affected areas and machinery contractors.

3.2.4 Threatened Species and Communities

The “Lake Warden System”, located within the Esperance Lakes Nature Reserves, is one of nine wetland areas in WA recognised as Wetlands of International Importance under the RAMSAR Convention. The RAMSAR Convention is an intergovernmental treaty which provides a framework for international cooperation for the conservation of wetland habitats.

[4] *Cruz M G, McCaw W L, Anderson W R & Gould J S (2013) Fire Behaviour Modelling in semi-arid-heath shrub land of Western Australia, Environmental Modelling & Software, Vol 40*
[5] *www.dpaw.wa.gov.au.management/pests-diseases/pytothphera*

The RAMSAR wetland system comprises Lake Warden, Woody Lake and a portion of Mullet Lake Nature Reserves. The system is listed on the National Estate Register in recognition of its significance for water bird conservation.

As of 2007, the Esperance Plains is known to contain 3506 indigenous vascular plant species, and a further 294 naturalised alien species. The endangered flora of the Esperance Plains region consists of 72 species, with a further 433 species having been declared Priority Flora under the Dept of Environment and Conservation's Declared Rare and Priority Flora List.[6]

As of 2007, the Mallee region is known to contain 3443 indigenous vascular plant species, and a further 239 naturalised alien species. It exhibits high endemism, especially with respect to Eucalyptus and Acacia species. The endangered flora of the Mallee region consists of 55 species, with a further 325 species having been declared Priority Flora under the Dept of Environment and Conservation Declared Rare Flora and Priority Flora List.[7]

The shire will consider all threatened species and environmental issues when considering the bushfire management of an area, particularly when selecting, planning and carrying out treatments.

3.2.5 Bushfire Frequency and Causes of Ignition

The Shire of Esperance has recorded incidents that have required a response from bush fire brigades over the past 5 fire seasons, from July 2013 to June 2018. In this time 272 incidents have been attended, including the fires associated with the November 2015 event. The recorded events are incidents occurring on Shire land, private property or where the local bush fire network has response responsibilities. Town site incidents and fires on DBCA tenure are not included.

Table 3 – Bushfire attendance and cause for Shire of Esperance from 2013- 2018

	2013/14	2014/15	2015/16	2016/17	2017/18	Total
Farming Operations Incl Harvesting, Slashing,	7	9	7	13	9	45
Vehicle Fires Incl Car Accidents, Vehicle issues	5	2	8	7	9	31
Weather Incl Lightning	21	4	47	5	25	102
Escapes Burns	4	3	11	2	13	33

[6] *"Esperance Plains" retrieved 14th December 2018 from https://en.wikipedia.org/wiki/Esperance_Plains*

[7] *"Mallee" retrieved 14th December 2018 from https://en.wikipedia.org/wiki/Mallee_(biogeographic_region)*

Incl Permit burns, Stubble burns						
Industrial Incl fires assoc with business operations, outside farming	1	0	1	0	4	6
Power Lines Incl pole top fires, birds strike	1	0	4	2	1	8
Human Error Incl camp fires, mishap	6	2	8	5	6	27
Deliberate incl arson	2	0	5	0	0	7
Unknown	1	2	4	3	3	13
	48	22	95	37	70	272

Lightning presents the greatest risk to the Shire with regard to fire ignition with 38% of the fires started in the past 5 years being attributed to this cause. From November through to February thunderstorms are a regular feature of local weather conditions. Generally these storms are accompanied by rain, however if they are not, it is not uncommon to have multiple fires running simultaneously due to lightning strike. The risk is magnified in November and December, as harvest is occurring. Fuel loads are increased with fully cured crops in paddocks, however the farming community is very attuned to the risk and response time and localised resource availability is excellent.

In November 2015, a fire, started by a lightning strike in the UCL north of Cascade. This thunderstorm was followed by catastrophic weather conditions, fanning the fire out of the UCL and into 100% cured, ready to harvest crops. This fire was deemed “unstoppable” and over a 5 day period, razed 140,000ha and claimed 4 lives.

Esperance is a farming community, therefore it is unsurprising that the second biggest risk for a fire starting, at 17%, lies with farming operations. This risk is currently managed by restricting farming activities on days of very high fire danger and above and farm equipment maintenance by farmers. Farmers are also required to have fire fighting equipment in the paddock being harvested to assist in a speedy response to the outbreak of fire, if required.

Escaped burns appears to be in increasing issue, as farmers are using fire more and more in their standard farming operations. Previously, rotating stock through harvested paddocks avoided the need to for farmers to burn windrows. With reduced stock level in the regions, fire is increasingly being introduced to clear paddocks after harvest. During the restricted burning season these risks can be addressed through additional conditions included on burning permits, however outside these times.

3.2.6 Current Bushfire Risk Management Activities

Map of Bushfire Prone Areas

The intent of the WA Government's Bushfire Prone Planning Policy is to implement effective risk based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure. The State Planning Policy 3.7 – Planning for Bushfire Prone Areas ensures bushfire risk is given due consideration in all future planning and development decisions. This policy does not apply retrospectively, however the BRM Plan can help address this risk for existing development and establishing an effective treatment plan to manage the broader landscape and any unacceptable community risks. The Shire of Esperance Bushfire Prone Area is attached at Appendix 3

Volunteer Fire Brigades

The Shire of Esperance supports 17 volunteer Bush Fire Brigades. There are three Brigades located in the Urban Rural fringe covering Pink Lake to the west of the Esperance town site, Six Mile Hill to the north and Quarry Rd to the east. Additionally, each of the outlying townsites have a Brigade including Gibson, Scaddan, Grass Patch, Salmon Gums, Cascade and Condingup. There are also a number of farmer response Brigades including Dalyup, Coomalbidgup, Merivale, Neridup, Beaumont and Howick.

There is also a designated communications and support Brigade, the Esperance Emergency Support Unit, which is based in Esperance and housed at the Quarry Rd Bush Fire Brigade in the Urban Rural area.

The Shire has a well established Bush Fire Network with a strong leadership group. The Chief Bush Fire Control Officer is a volunteer as is his two Deputies. The Shire area is broken in to 6 weather zones with each Zone having a Senior Fire Control Officer appointed. This leadership group provides feedback from across the shire with local conditions and required restrictions.

Each of the 17 Brigades have their own hierarchy and all Brigades participate in a Bush Fire Advisory Committee meeting on a six monthly basis to discuss and progress fire related issues within the Shire.

Esperance is very isolated and is required to be very self sufficient in an initial response to an emergency. Within Esperance there is a local, DFES and DBCA Office, with support from out of the region available if required. There is also additional volunteer agencies located

in Esperance available to assist, including Volunteer Fire and Rescue and the state emergency Service.

Additionally, the Shire has a Mutual Aide Agreement with the Southern Ports Authority Emergency Response Team (ERT), whereby the resources or crew can be made available on request.

Burning Restrictions

The Shire of Esperance has, under sections 17 and 18 of the *Bush Fires Act 1954*, declared the following restricted and prohibited burning times:

19th September to 31st October - Restricted Burning, permits required to burn
1st November to 31st January - Prohibited Burning, no fires permitted
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These dates are published annually within the Government Gazette and distributed through the Shire's Fire Break Notice. The dates are subject to change if weather conditions warrant it, and the public is advised through the local newspaper and on the Shire's website.

During these times, which co inside with the harvest season, the fire danger index (FDI) is monitored and if weather conditions require it, Harvesting, Machinery and Vehicle Movement Bans are put in place. This stops all movement of vehicles through paddocks in a bid to lower the risk of a fire starting in weather conditions that would make it more difficult to contain any fire. To do this, Fire Control Officers use a MacArthur Meter Mark 4, to establish the Grassland Fire Danger. Crop curing, temperature, wind speed and relative humidity are entered into the meter to establish a fire danger index. Bush Fires Regulations 1954, section 24C (2) states that a Harvesting, Machinery and Vehicle Movement Ban must be imposed once the FDI reaches 35. Within the Shire of Esperance, this is imposed at FDI 32, as an added precaution. [8]

During the harvest season, fire weather is monitored daily. If the BOM forecast a day to be "Very High" fire danger or above, regular radio "scheds" take place throughout the day to keep a check on local conditions. On average, the Shire will experience 10 – 12 Very High or above fire danger days per year which result in 5 – 6 (approx.) Harvest, Machinery and Vehicle Movement Bans annually.

[8] *Shire of Esperance Council Policy EXT 024 – Bushfire Management*

Bush Fires Act 1954 section 33 Fire Management Notices

The Shire issues a Fire Hazard reduction Notice with the Shire Rates annually. This Notice advises all property owners of their obligations with regard to fire management on their property.

Shire Rangers undertake annual fire break inspections and try to proactively work with the community to ensure compliance.

Community engagement activities

The Shire of Esperance undertakes a number of community education activities throughout the year.

The Shire uses Social Media platforms to communicate fire mitigation and safety messaging. An annual program for advertising on these platforms is devised annually and messaging is targeted to meet the needs of the time of year i.e. fire break dates, restricted burning etc.

Several community events are held annually in Esperance, and where possible fire safety messaging is included. The Esperance Show and Edge of the Bay event are two examples where this information is distributed. Every second year, our volunteer emergency response agencies hold and Emergency Services Fun Day, whereby each agency use the day to promote their services, spread their relevant safety messages and recruit additional volunteers. These days are always well attended and provide a useful vehicle to spread the fire safety messaging.

There are a number of informal groups within the Urban Rural areas of Esperance who hold fire safety information to residents in the lead up to fire break season. These groups use the format of Bush Fire Ready for these days. The Community Emergency Services Manager (CESM), provide guidance to these groups, however the onus is on the community to run with these programs.

Other Current Local Government Wide Controls

Local Government Wide Controls are activities that reduce the overall bushfire risk within the Shire of Esperance. These types of activities are not linked to specific assets and are applied across all or part of the local government as part of normal business or due to legislative requirements. Some notable controls currently in place in Shire of Esperance are:

- Annual Fire Break Program reviewed, implemented and funded by the Shire of Esperance
- Prescribed burning

4 Asset Identification and Risk Assessment

4.1 Planning Areas

The Shire of Esperance has a single planning area based on the Electoral Ward boundaries.

4.2 Asset Identification

Asset identification and risk assessment has been conducted at the local level using the methodology described in the Guidelines using BRMS. Identified assets are categorised into the following categories and subcategories provided in Table 4.

Table 4 – Asset Categories and Subcategories

Asset Category	Asset Subcategories
Human Settlement	**Residential areas** Residential areas, including dwellings in rural areas and the rural-urban interface. **Places of temporary occupation** Commercial and industrial areas, mining sites or camps and other locations where people may work or gather. **Special risk and critical facilities** Locations and facilities where occupants may be especially vulnerable to bushfire for one or more of the following reasons: • Occupants may have limited knowledge about the impact of bushfires; • Occupants may have a reduced capacity to evaluate risk and respond adequately to bushfire event; • Occupants may be more vulnerable to stress and anxiety arising from a bushfire event or the effects of smoke; • There may be significant communication barriers with occupants; • Relocation and/or management of occupants may present unique challenges or difficulties, such as transportation, or providing alternative accommodation, healthcare or food supplies; or • Facilities that are critical to the community during a bushfire emergency.
Economic	**Agricultural** Areas under production, such as pasture, livestock, crops, viticulture, horticulture and associated infrastructure. **Commercial and industrial** Major industry, waste treatment plants, mines (economic interest), mills, processing

Asset Category	Asset Subcategories
	and manufacturing facilities and cottage industry. **Critical infrastructure** Power lines and substations, water pumping stations, tanks/bores and pipelines, gas pipelines, telecommunications infrastructure, railways, bridges, port facilities and waste water treatments plants. **Tourist and recreational** Tourist attractions, day-use areas and recreational sites that generate significant tourism and/or employment within the local area. These assets are different to tourist accommodation described as a Human Settlement Asset (see above). **Commercial forests and plantations** Plantations and production native forests. **Drinking water catchments** Land and infrastructure associated with drinking water catchments.
Environmental	**Protected** Flora, fauna and ecological communities that are listed as a: • Critically Endangered, Endangered or Vulnerable species under the Environmental Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act 1999) (including associated critical habitat); • Critically Endangered, Endangered or Vulnerable species under the Biodiversity Conservation Act 2016; • Critically Endangered, Endangered or Vulnerable ecological community under the EPBC Act 1999 (Cth); • Critically Endangered, Endangered or Vulnerable Threatened Ecological Community (TEC) endorsed by the Minister for Environment (WA); • Fauna protected under international conventions; and • Ramsar wetlands of international importance. **Priority** Flora, fauna and ecological communities that are a: • Priority species listed on the Priority Flora or Priority Fauna Lists held by DBCA (Priority 1-5). • Priority Ecological Community (PEC) (Priority 1-5); and • Wetlands of national or state importance. **Locally important** Species, populations, ecological communities or habitats that the local community or independent scientific experts consider important for the area and for which there is some scientific evidence that protection would be beneficial. Wetlands of local importance. Sites being used for scientific research.

Asset Category	Asset Subcategories
Cultural	**Aboriginal heritage** Places of indigenous significance identified by the DPLH or the local community. **European heritage** Non-Indigenous heritage assets afforded legislative protection through identification by the National Trust, State Heritage List or Local Planning Scheme Heritage List. **Local heritage** Assets identified in a Municipal Heritage Inventory or by the local community as being significant to local heritage. **Other** Other assets of cultural value to the local community, for example community halls, churches, clubs and recreation facilities.

4.3 Assessment of Bushfire Risk

Risk assessments have been undertaken for each asset or group of assets identified using the methodology described in the Guidelines

The *Asset Risk Register* will be maintained in BRMS. The percentage of assets within the local government in each asset category at the time of BRM Plan endorsement is shown in Table 5

Table 5 – Asset Category Proportions

Asset category	Proportion of identified assets
Human Settlement	65%
Economic	23%
Environmental	8%
Cultural	4%

4.3.1 Consequence Assessment

Consequence is described as the outcome or impact of a bushfire event. The approach used to determine the consequence rating is different for each asset category: Human Settlement; Economic; Environmental; and Cultural.

The methodology used to determine the consequence rating for each asset category is based on the following:

- **Consequence Rating – Human Settlement, Economic and Cultural Assets**
  The outcome or impact of a bushfire event on the asset, or a group of assets, measured by the hazard posed by the classified vegetation and the vulnerability of the asset.

- **Consequence Rating – Environmental Assets**
  The outcome or impact of a bushfire event on the asset, or a group of assets, measured by the vulnerability of the asset and the potential impact of a bushfire or fire regime.

4.3.2 Likelihood Assessment

Likelihood is described as the potential of a bushfire igniting, spreading and impacting an asset. The approach used to determine the likelihood rating is the same for each asset category: Human Settlement; Economic; Environmental; and Cultural.

4.3.3 Assessment of Environmental Assets

Using available biological information and fire history data, environmental assets with a known minimum fire threshold were assessed to determine if they were at risk from bushfire, within the five-year life of the BRM Plan. Environmental assets that would not be adversely impacted by bushfire within the five-year period have not been included and assessed in the BRM Plan. The negative impact of a fire on these assets (within the period of this BRM Plan) was determined to be minimal, and may even be of benefit to the asset and surrounding habitat.

4.3.4 Local Government Asset Risk Summary

A risk profile for the local government is provided in Table 7. This table shows the proportion of assets at risk from bushfire in each risk category at the time the BRM Plan was endorsed.

Table 6 – Local Government Asset Risk Summary

Asset	Risk Rating					
		Low	Medium	High	Very High	Extreme

	Human Settlement	13%	6%	26%	7%	11%
	Economic	4%	5%	4%	6%	4%
	Environmental			3%	1%	1%
	Cultural	2%	1%	2%	1%	3%

5 Risk Evaluation

5.1 Evaluating Bushfire Risk

The risk rating for each asset has been assessed against the consequence and likelihood descriptions to ensure:

- The rating for each asset reflects the relative seriousness of the bushfire risk to the asset;
- Consequence and likelihood ratings assigned to each asset are appropriate; and
- Local issues have been considered.

5.2 Risk Acceptability

It is not possible or practical to treat all bushfire risk. Some risk may be acceptable without the need for a specific treatment. Assets with a Low to Moderate risk rating are likely to be adequately managed through routine controls, so committing resources to further reduce the risk may not be justifiable. (Refer to section 4.2 of the Guidelines).

Risks below a certain level were not considered to require specific treatment during the life of this BRM Plan. They will be managed by routine local government wide controls and monitored for any significant change in risk.

In most circumstances risk acceptability and treatment will be determined by the land owner, in collaboration with local government and fire agencies. However, as a general rule, the following courses of action have been adopted for each risk rating.

Table 7 – Criteria for Acceptance of Risk and Course of Action

Risk Rating	Criteria for Acceptance of Risk	Course of Action
Extreme	Only acceptable with excellent controls. Urgent treatment action is required.	Routine controls are not enough to adequately manage the risk. Specific action is required in first two years of BRM Plan. Treatments will be approached by: • Priorities will be made for treatments that will have maximum benefit to multiple assets and critical infrastructure. • Treatments that benefit vulnerable communities will be given priority. • Identification of partnerships with other agencies for strategic mitigation. • Communication with asset owners in this class will be priorities and focus on increasing understanding of the risk facing these assets (see Communications plan). These assets and treatments are to be reviewed 2 year or prior to the start of each bushfire season for any significant changes.
Very High	Only acceptable with excellent controls. Treatment action is required.	Routine controls are not enough to adequately manage the risk. Specific action is required in first 3 years of BRM Plan Treatments will be approached by: • Priorities will be made for treatments that will have maximum benefit to multiple assets and critical infrastructure. • Treatments that benefit vulnerable communities will be given priority. • Identification of partnerships with other agencies for strategic mitigation. • Communication with asset owners will be as per the Communications Plan and focus on increasing understanding of the risk facing these assets. These assets and treatments are to be reviewed every 3 year/prior to the start of each bushfire season for any significant changes.
High	Only acceptable with adequate controls. Treatment action required.	Routine controls are not enough to adequately manage the risk. Specific action is required in the life of the BRM Plan. Treatments will be approached by: • Priorities will be made for treatments that will have maximum benefit to multiple assets and critical infrastructure. • Treatments that benefit vulnerable communities will be given priority. • Identification of partnerships with other agencies for strategic mitigation.

		• Communication with asset owners will be as per the Communications Plan and focus on increasing understanding of the risk facing these assets.
Medium	Acceptable with adequate controls. Treatment action is not required but risk must be monitored regularly.	Specific actions are not be required. Risk may be managed with routine controls and monitored periodically throughout the life of the BRM Plan.
Low	Acceptable with adequate controls. Treatment action is not required but risk must be monitored.	Specific actions are not required. Risk will be managed with routine controls and monitored as required.

5.3 Treatment Priorities

The treatment priority for each asset has been automatically assigned by BRMS and recorded in the *Treatment Schedule*, based on the asset's risk rating. Table 9 shows how consequence and likelihood combine to give the risk rating and subsequent treatment priority for an asset.

Table 8 – Treatment Priorities

Likelihood	Consequence				
		Minor	**Moderate**	**Major**	**Catastrophic**
	Almost Certain	3D (High)	2C (Very High)	1C (Extreme)	1A (Extreme)
	Likely	4C (Medium)	3A (High)	2A (Very High)	1B (Extreme)
	Possible	5A (Low)	4A (Medium)	3B (High)	2B (Very High)
	Unlikely	5C (Low)	5B (Low)	4B (Medium)	3C (High)

6 Risk Treatment

The purpose of risk treatment is to reduce the likelihood of a bushfire occurring and/or the potential impact of a bushfire on the community, economy and environment. This is achieved by implementing treatments that modify the characteristics of the hazard, the community or the environment. There are many strategies available to treat bushfire risk. The treatment strategy (or combination of treatment strategies) selected will depend on the level of risk and the type of asset being treated. Not all treatment strategies will be suitable in every circumstance.

6.1 Local Government Wide Controls

Local government wide controls are activities that are non-asset specific, rather they reduce the overall bushfire risk within the local government.

A local government wide controls, multi-agency work plan has been developed Appendix 4.

The plan details work to be undertaken as a part of normal business (see section 3.2.6 for detailed information on these), improvements to current controls and new controls to implemented to better manage bushfire risk across the local government area.

6.2 Asset Specific Treatment Strategies

Asset specific treatments are implemented to protect an individual asset or group of assets, identified and assessed in the BRM Plan as being at risk from bushfire. There are five asset specific treatment strategies:

- **Fuel management**

  Treatment reduces or modifies the bushfire fuel through manual, chemical and planned burning methods;

- **Ignition management**

  Treatment aims to reduce potential human and infrastructure sources of ignition in the landscape;

- **Preparedness**

  Treatments aim to improve access and water supply arrangements to assist firefighting operations;

- **Planning**

  Treatments focus on developing plans to improve the ability of firefighters and the community to respond to bushfire; and

- **Community Engagement**

  Treatments seek to build relationships, raise awareness and change the behaviour of people exposed to bushfire risk.

6.3 Development of the Treatment Schedule

The treatment schedule is a list of bushfire risk treatments recorded within BRMS. Shire of Esperance will be focusing on developing a program of works that covers activities to be undertaken within the first year after the approval of the BRM Plan. The treatment schedule will evolve and develop throughout the life of the BRM Plan.

The treatment schedule was developed in broad consultation with land owners and other stakeholders including DFES and DBCA.

Land owners are ultimately responsible for treatments implemented on their own land. This includes any costs associated with the treatment and obtaining the relevant approvals, permits or licences to undertake an activity. Where agreed, another agency may manage a treatment on behalf of a land owner. However, the onus is still on the land owner to ensure treatments detailed in this BRM Plan's *Treatment Schedule* are completed.

7 Monitoring and Review

Monitoring and review processes are in place to ensure that the BRM Plan remains current and valid. These processes are detailed below to ensure outcomes are achieved in accordance with the *Communication Strategy* and *Treatment Schedule*.

7.1 Review

A comprehensive review of this BRM Plan will be undertaken at least once every five years, from the date of council approval. Significant circumstances that may warrant an earlier review of the BRM Plan include:

- Changes to organisational responsibilities or legislation;
- Changes to the bushfire risk profile of the local government; or
- Following a major fire event.

7.2 Monitoring

BRMS will be used to monitor the risk ratings for each asset identified in the BRM Plan and record the treatments implemented. Risk ratings are reviewed on a regular basis. New assets will be added to the Asset Risk Register when they are identified.

7.3 Reporting

The Shire of Esperance Bush Fire Risk Management Plan document will remain active and actions undertaken will be reported through each Bush Fire Advisory Committee, which subsequently will provide information to Council.

The Shire of Esperance will be requested to contribute information relating to their fuel management activities to assist in the annual OBRM *Fuel Management Activity Report*.

8 Glossary

Asset	A term used to describe anything of value that may be adversely impacted by bushfire. This may include residential houses, infrastructure, commercial, agriculture, industry, environmental, cultural and heritage sites.
Asset Category	There are four categories that classify the type of asset – Human Settlement, Economic, Environmental and Cultural.
Asset Owner	The owner, occupier or custodian of the asset itself. Note: this may differ from the owner of the land the asset is located on, for example a communication tower located on leased land or private property.
Asset Register	A component within the Bushfire Risk Management System (BRMS) used to record the details of assets identified in the Bushfire Risk Management Plan (BRM Plan).
Asset Risk Register	A report produced within the BRMS that details the consequence, likelihood, risk rating and treatment priority for each asset identified in the BRM Plan.
Bushfire	Unplanned vegetation fire. A generic term which includes grass fires, forest fires and scrub fires both with and without a suppression objective.
Bushfire Hazard	The hazard posed by the classified vegetation, based on the vegetation category, slope and separation distance.
Bushfire Risk Management Plan	A development related document that sets out short, medium and long term bushfire risk management strategies for the life of a development.
Bushfire Risk	The chance of a bushfire igniting, spreading and causing damage to the community or the assets they value.
Bushfire Risk Management	A systematic process to coordinate, direct and control activities relating to bushfire risk with the aim of limiting the adverse effects of bushfire on the community.
Bushfire Risk	The chance of a bushfire igniting, spreading and causing damage to the community or the assets they value.
Consequence	The outcome or impact of a bushfire event.

Draft Bushfire Risk Management Plan	The finalised draft BRM Plan is submitted to the Office of Bushfire Risk Management (OBRM) for review. Once the OBRM review is complete, the BRM Plan is called the 'Final BRM Plan' and can be progressed to local government council for approval.
Geographic Information System (GIS)	A data base technology, linking any aspect of land-related information to its precise geographic location.
Land Owner	The owner of the land, as listed on the Certificate of Title; or leaser under a registered lease agreement; or other entity that has a vested responsibility to manage the land.
Likelihood	The chance of something occurring. In this instance, it is the potential of a bushfire igniting, spreading and impacting on an asset.
Locality	The officially recognised boundaries of suburbs (in cities and larger towns) and localities (outside cities and larger towns).
Map	The mapping component of the BRMS. Assets, treatments and other associated information is spatially identified, displayed and recorded within the Map.
Planning Area	A geographic area determine by the local government which is used to provide a suitable scale for risk assessment and stakeholder engagement.
Priority	See Treatment Priority.
Risk Acceptance	The informed decision to accept a risk, based on the knowledge gained during the risk assessment process.
Risk Analysis	The application of consequence and likelihood to an event in order to determine the level of risk.
Risk Assessment	The systematic process of identifying, analysing and evaluating risk.
Risk Evaluation	The process of comparing the outcomes of risk analysis to the risk criteria in order to determine whether a risk is acceptable or tolerable.
Risk Identification	The process of recognising, identifying and describing risks.
Risk Register	A component within the BRMS used to record, review and monitor risk assessmer and treatments associated with assets recorded in the BRM Plan.
Risk treatment	A process to select and implement appropriate measures undertaken to modify risk.

Rural	Any area where in residences and other developments are scattered and intermingled with forest, range, or farm land and native vegetation or cultivated crops.
Rural Urban Interface	The line or area where structures and other human development adjoin or overlap with undeveloped bushland.
Slope	The angle of the ground's surface measured from the horizontal.
Tenure Blind	An approach where multiple land parcels are consider as a whole, regardless of individual ownership or management arrangements.
Treatment	An activity undertaken to modify risk, for example a planned burn.
Treatment Objective	The specific aim to be achieved or action to be undertaken, in order to complete the treatment. Treatment objectives should be specific and measurable.
Treatment Manager	The organisation, or individual, responsible for all aspects of a treatment listed in the *Treatment Schedule* of the BRM Plan, including coordinating or undertaking work, monitoring, reviewing and reporting.
Treatment Planning Stage	The status or stage of a treatment as it progresses from proposal to implementation.
Treatment Priority	The order, importance or urgency for allocation of funding, resources and opportunity to treatments associated with a particular asset. The treatment priority is based on an asset's risk rating.
Treatment Schedule	A report produced within the BRMS that details the treatment priority of each asset identified in the BRM Plan and the treatments scheduled.
Treatment Strategy	The broad approach that will be used to modify risk, for example fuel management.
Treatment Type	The specific treatment activity that will be implemented to modify risk, for example a planned burn.
Vulnerability	The susceptibility of an asset to the impacts of bushfire.

9 Common Abbreviations

AFAC	Australasian Fire and Emergency Services Authorities Council

BFAC	Bush Fire Advisory Committee
BRM	Bushfire Risk Management
BRM Branch	Bushfire Risk Management Branch (DFES)
BRM Plan	Bushfire Risk Management Plan
BRMS	Bushfire Risk Management System
DBCA	Department of Biodiversity, Conservation and Attractions
DFES	Department of Fire and Emergency Services
DPLH	Department of Planning, Lands and Heritage
EPBC Act	Environmental Protection and Biodiversity Conservation Act
FPC	Forest Products Commission
GIS	Geographical Information System
LEMC	Local Emergency Management Committee
OBRM	Office of Bushfire Risk Management (DFES)
SEMC	State Emergency Management Committee
TEC	Threatened Ecological Community
UCL	Unallocated Crown Land
UMR	Unmanaged Reserve
WA	Western Australia
WAPC	Western Australian Planning Commission

10 Appendices

Appendix 1	Communication Strategy
Appendix 2	Shire of Esperance Map
Appendix 3	Shire of Esperance Map – Bush Fire Prone Areas
Appendix 4	Local Government Wide Controls Table