



Shire of Jerramungup

Bushfire Risk Management Plan

2017 – 2022

Office of Bushfire Risk Management (OBRM) Bushfire Risk Management (BRM) Plan reviewed

Local Government Council BRM Plan endorsement

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Document Control

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Document Endorsements

Shire of Jerramungup Council endorses that the Bushfire Risk Management Plan (BRM Plan) has been reviewed and assessed by the Office of Bushfire Risk Management as compliant with the standard for bushfire risk management planning in Western Australia, the *Guidelines for Preparing a Bushfire Risk Management Plan*. Shire of Jerramungup is the owner of this document and has responsibility, as far as is reasonable, to manage the implementation of the BRM Plan (subject to resource availability) and facilitate the implementation of bushfire risk management treatments by risk owners. The endorsement of the BRM Plan by Shire of Jerramungup Council satisfies their endorsement obligations under section 2.3.1 of the *State Hazard Plan for Fire (Westplan Fire)*.

Note: In approving the BRM Plan, the local government council is acknowledging the assets that have been identified and the risk ratings and treatment priorities assigned. Approval of the plan is a commitment by local government to work with land owners and managers to address unacceptable risk within their community. It is not the local government committing to a program of treatment works to be implemented by others or an acceptance of responsibility for risk occurring on land that is not owned or managed by the local government¹.

Local Government	Representative	Signature	Date
Shire of Jerramungup	Shire of Jerramungup CEO – Brent Bailey		

Amendment List

Version	Date	Author	Section
1.0	15 May 2017	Vivienne Gardiner Vince Hilder	Version 1.0 submitted to OBRM for review
2.0	9 June 2017	Vivienne Gardiner Melanie Haymont	Version 2.0 submitted to OBRM for review

¹ Government of Western Australia Office of Bushfire Risk Management (2015), *Guidelines for Preparing a Bushfire Risk Management Plan*, pp. 79

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1. Introduction

1.1 Background

Under the *State Hazard Plan for Fire (Westplan Fire)* an integrated Bushfire Risk Management Plan (BRM Plan) is to be developed for local government areas with significant bushfire risk. This BRM Plan has been prepared for the Shire of Jerramungup in accordance with the requirements of *Westplan Fire* and the *Guidelines for Preparing a Bushfire Risk Management Plan (Guidelines)*. The risk management processes used to develop this BRM Plan are aligned to the key principles of *AS/NZS ISO 31000:2009 Risk management – Principles and guidelines (AS/NZS ISO 31000:2009)*, as described in the Second Edition of the *National Emergency Risk Assessment Guidelines (NERAG 2015)*. This approach is consistent with the policies of the State Emergency Management Committee, specifically the *State Emergency Management Policy 3.2 – Emergency Risk Management Planning*.

This BRM Plan is a strategic document that identifies assets at risk from bushfire and their priority for treatment. 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 to ensure treatment strategies are collaborative and efficient, regardless of land tenure.

1.2 Aim and Objectives

The aim of the BRM Plan is to document a coordinated and efficient approach toward the identification, assessment and treatment of assets exposed to bushfire risk within the Shire of Jerramungup.

The objective of the BRM Plan is to effectively manage bushfire risk within the Shire of Jerramungup in order to protect people, assets and other things of local value. Specifically, the objectives of this BRM Plan are to:

- Guide and coordinate a tenure blind, multi-agency bushfire risk management 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 bushfire risk management activities;
- Integrate bushfire risk management into the business processes of local government, land owners and other agencies;
- Ensure there is integration between land owners and bushfire risk management programs and activities;
- Monitor and review the implementation of treatments to ensure treatment plans are adaptable and 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

- *Bush Fires Act 1954*
- *Emergency Management Act 2005*
- *Fire Brigades Act 1942*
- *Fire and Emergency Service Act 1998*
- *Conservation and Land Management Act 1984*
- *Environmental Protection Act 1986*
- *Environmental Protection and Biodiversity Conservation Act 1999*
- *Wildlife Conservation Act 1950*
- *Aboriginal Heritage Act 1972*
- *Metropolitan Water Supply, Sewerage and Drainage Act 1909*
- *Country Areas Water Supply Act 1947*
- *Building Act 2011*
- *Bush Fires Regulations 1954*
- *Emergency Management Regulations 2006*
- *Planning and Development (Local Planning Scheme) Regulations 2015*
- *National Trust of Australia (WA) Act 1964*
- *Soil and Land Conservation Act 1945*
- *Building Act 2011*

1.3.2 Policies, Guidelines and Standards

- National Emergency Risk Assessment Guidelines (NERAG) (Second Edition 2015)
- State Emergency Management Policy 2.5 - Emergency Management in Local Government Districts
- State Emergency Management Policy 3.2 – Emergency Risk Management Planning
- State Hazard Plan for Fire (Westplan Fire)
- State Planning Policy 3.7: Planning in Bushfire Prone Areas
- State Planning Policy 3.4: Natural Hazards and Disasters
- Guidelines for Planning in Bushfire Prone Areas (2015)
- Western Australian Emergency Risk Management Guidelines (Emergency Management WA 2005)
- A Guide to the Use of Pesticides in Western Australia (Dept. of Health 2010)
- Guidelines for Plantation Fire Protection (DFES 2011)
- Firebreak Location, Construction and Maintenance Guidelines (DFES)
- Bushfire Risk Management Planning – Guidelines for preparing a Bushfire Risk Management Plan (2015)
- AS/NZS ISO 31000:2009 - Risk management – Principles and guidelines
- AS 3959-2009 Construction of buildings in bushfire-prone areas
- Building Protection Zone Standards (DFES)
- Shire of Jerramungup Fire Control Policy 4. - Harvest Bans
- Shire of Jerramungup Fire Control Policy 2. – Bush Fires on Crown Land
- Shire of Jerramungup – Fire Control Information (Bush Fires Act 1954 – Section 33(1))
- Shire of Jerramungup Local Planning Policy (LPP) No. 3 Design Guidelines & detailed Area Plan ,Lot 231 Bremer Bay Rd 2015

- Shire of Jerramungup Local Planning Policy (LPP) No. 10 - Agroforestry and Plantations (2015)
- Shire of Jerramungup Local Planning Policy (LPP) No. 12 - Requirement for Fire Management Plans (2015)
- Shire of Jerramungup Local Planning Policy (LPP) No. 18 - Point Henry Fire Management (2015)
- Shire of Jerramungup Local Planning Policy (LPP) No. 19 - Bremer Bay Town Centre Design Guidelines (2015)
- Code of Practice for Timber Plantations in Western Australia – Forest Industries Federation (WA) inc. Australian Forest Growers (AFG) Forest Products Commission, The Government of Western Australia.

1.3.3 Other Related Documents

- National Strategy for Disaster Resilience
- National Statement of Capability for Fire and Emergency Services (AFAC 2015)
- Public Service Circular No. 88 Use of Herbicides in Water Catchment Areas (Dept. of Health 2007)
- Code of Practice for Timber Plantations in Western Australia (Forest Products Commission 2006)
- Bushfire Risk Management Planning Handbook
- Bushfire Risk Management System (BRMS) User Guide
- Shire of Jerramungup - Community Plan 2016-2026
- Shire of Jerramungup - Bremer Bay Structure Plan Report 2015-02-24
- Shire of Jerramungup - Corporate Business Plan 2014/15 to 2017/18
- Shire of Jerramungup - Local Planning Strategy (2012)
- Shire of Jerramungup – Emergency Management Recovery Plan
- Shire of Jerramungup - Local Emergency Management Arrangements
- Shire of Jerramungup Annual Fire Break Notice
- Shire of Jerramungup Fire Zones
- Municipal inventory of Heritage places
- Shire of Jerramungup Bremer Bay Fire Break Plan
- DER Permit to clear
- State Emergency Management Committee – Great Southern District Risk Assessment Summary Risk Results Report.
- Guidelines for Plantation Fire Protection – Fire and Emergency Services Authority

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/NZS ISO 31000:2009, as described in NERAG (2015). This process is outlined in Figure 1 below.

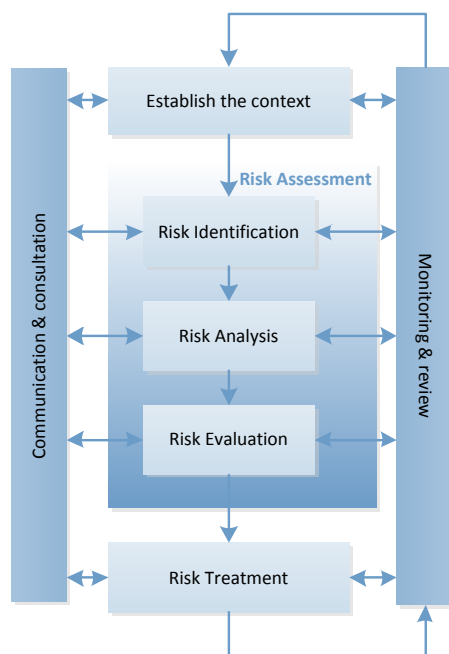


Figure 1 - An overview of the risk management process ²

2.1 Roles and Responsibilities

Table 1 – Roles and Responsibilities

Stakeholder Name	Roles and Responsibilities
Local Government	<ul style="list-style-type: none"> ▪ As custodian of the BRM Plan, coordination of the development and ongoing review of the integrated BRM Plan. ▪ Negotiation of commitment from land owners to treat risks identified in the BRM Plan. ▪ As treatment manager, implementation of treatment strategies. ▪ As part of the approval process, submission of the draft BRM Plan to the Office of Bushfire Risk Management (OBRM) to review it for consistency with the Guidelines. ▪ As part of the approval process, submission of the final BRM Plan to council for their endorsement and adoption.
Department of Fire and Emergency Services (DFES)	<ul style="list-style-type: none"> ▪ Participation in and contribution to the development and implementation of BRM Plans, as per their agency responsibilities as the Westplan Fire Hazard Management Agency. ▪ Support to local government through expert knowledge and advice in relation to the identification, prevention and treatment of bushfire risk. ▪ Facilitation of local government engagement with state and federal government agencies in the local planning process.

² Source: AS/NZS ISO 31000:2009, Figure 1, reproduced under SAI Global copyright Licence 1411-c083.

Stakeholder Name	Roles and Responsibilities
	<ul style="list-style-type: none"> ▪ Undertake treatment strategies, including prescribed burning on behalf of Department of Lands for Unmanaged Reserves and unallocated crown land within gazetted town site boundaries. ▪ In accordance with Memorandums of Understanding and other agreements, implementation of treatment strategies for other landholders.
Office of Bushfire Risk Management (OBRM)	<ul style="list-style-type: none"> ▪ Under the OBRM Charter, to ensure bushfire risk is managed in accordance with AS/NZS ISO 31000 and reporting on the state of bushfire risk across Western Australia. ▪ Review BRM Plans for consistency with the Guidelines prior to final endorsement by council.
Department of Parks and Wildlife (P&W)	<ul style="list-style-type: none"> ▪ Participation in and contribution to the development and implementation of BRM Plans. ▪ Providing advice for the identification of environmental assets that are vulnerable to fire and planning appropriate treatment strategies for their protection. ▪ As treatment manager, implementation of treatment strategies on department managed land and for Unmanaged Reserves and unallocated crown land outside gazetted town site boundaries. ▪ In accordance with Memorandums of Understanding and other agreements, implementation of treatment strategies for other landholders.
Other State and Federal Government Agencies	<ul style="list-style-type: none"> ▪ Assist the local government by providing information about their assets and current risk treatment programs. ▪ Participation in and contribution to the development and implementation of BRM Plans. ▪ As treatment manager, implementation of treatment strategies.
Public Utilities	<ul style="list-style-type: none"> ▪ Assist the local government by providing information about their assets and current risk treatment programs. ▪ Participation in and contribution to the development and implementation of BRM Plans. ▪ As treatment manager, implementation of treatment strategies.
Corporations and Private Land Owners	<ul style="list-style-type: none"> ▪ As treatment manager, implementation of treatment strategies.
Others <ul style="list-style-type: none"> • Chief Bushfire Control Officer • Bushfire Advisory Committee • District Operations Advisory Committee • Local Emergency Management 	<ul style="list-style-type: none"> ▪ Participation in and contribution to the development and implementation of BRM Plans and treatment schedules. ▪ Providing advice for the identification of assets that are vulnerable to fire ▪ Providing advice on appropriate treatment strategies for asset protection.

Stakeholder Name	Roles and Responsibilities
Committee • Bushfire Brigades and other Emergency Services	

2.2 Communication & Consultation

As indicated in **Figure 1**, communication and consultation throughout the risk management process is fundamental to the preparation of an effective BRM Plan. To ensure appropriate and effective communication occurred with relevant stakeholders in the development of the BRM Plan, a *Communication Strategy* was prepared. The strategy is provided at **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 Jerramungup's strategic and corporate framework is outlined in the recently adopted *Community Strategic Plan 2016-2026*³. The *Plan* outlines the Shire's strategic direction and highlights priority areas for the next 10 years.

The plan establishes a vision for the local government's future and its aspirations and service expectations. It drives the development of local government area, place, regional and resourcing plans such as workforce plans, asset management plans and other informing strategies.

The following aspirations and objectives are taken from this plan as they relate specifically to bushfire risk management:

Environment: The key aspirations within this area reflect the Shire's location and proximity to the Fitzgerald River National Park (FRNP). The Shire's location is recognized internationally for its biodiversity, pristine coastal environmental and human interaction with the landscape. Land use planning, land capability and natural resource management are addressed in this area.

Aspiration 1.1 - Environmental Stewardship - To be an industry leader in implementing new technology and initiatives which deliver environmental benefits to the region, includes *Objective 1.1.2 – Continue the delivery of fire mitigation strategies across the Shire*. The Shire recognises the Department of Fire and Emergency Services and the Department of Parks and Wildlife (P&W) as key agency partners in achieving this objective.

Aspiration 2.4 - Emergency Management and Climate Change - To ensure that the Shire of Jerramungup is well prepared and resourced to mitigate the impacts of natural disasters and climate change. Within which is *Objective 2.4.1: Maintain a high standard of emergency planning and preparedness*, demonstrates the Shires ongoing commitment to emergency management and in particular objective 2.4.4 - *Continue the delivery of fire mitigation strategies across the Shire*.

Further to this overarching strategic framework the Shire of Jerramungup, in accordance with Section 38 of the Emergency Management Act 2005, has established a Local Emergency Management Committee (LEMC). The LEMC has multiagency membership and provides an important multiagency forum for the BRM Plan to consult. The LEMC provides support within the respective agencies, strategic oversight and review for the project.

The Shire of Jerramungup Bush Fire Advisory Committee (BFAC) has played an integral role in the development of the BRM Plan, in particular review and input, existing controls and the identification of assets, assessment of risk and the development of treatment options.

The LEMC and the BFAC will continue to have involvement in the implementation and review of the BRM Plan as outlined in *Appendix 1 – Communication Strategy*.

³ Shire of Jerramungup (20015), *Community Strategic Plan* downloaded on 3 May 2016 from www.jerramungup.wa.gov.au

3.1.2 Location, Boundaries and Tenure

The Shire of Jerramungup was established on 1 July 1982. It is located in the Great Southern region of Western Australia, about 180 kilometres northeast of Albany and about 440 kilometres southeast of Perth⁴. The Shire covers an area of 6,507 square kilometres.



Figure 2 – Shire of Jerramungup Regional Location⁵

The Shire of Jerramungup is bordered by the Shires of Gnowangerup to the west, Kent to the north, Ravensthorpe to the east, Lake Grace on the north-east corner, the City of Albany to the south-west and the Southern Ocean to the south. The Shire incorporates the towns of Jerramungup and Bremer Bay and the districts of Needilup, Jacup, Gairdner, Boxwood Hill and Fitzgerald. Jerramungup and Bremer Bay and the two main town sites the others have not developed in any significant way.

⁴ Shire of Jerramungup (2015), *Community Strategic Plan* downloaded on 3 May 2016 from www.jerramungup.wa.gov.au

⁵ Source: Department of Fire and Emergency Services

Table 2 – Overview of Land Tenure and Management within the BRM Plan Area

Land Manager/Agency*	% of Plan Area
Local Government	6.6%
Private	69.2%
Department of Parks and Wildlife	21%
Department of Lands	3.2%
Total	100%

Source: DFES and Shire of Jerramungup

The Jerramungup town site is located on National Highway One, which links Albany and Esperance, and lies at a road junction of the major Esperance-Perth route. It is the administrative centre for the area.

Bremer Bay is the other significant town site in the district. The town is approximately 100 kilometres southeast of Jerramungup on the coast and encompasses 1,200 hectares extending from the Wellstead Estuary in the north to Fishery Beach in the south. Bremer Bay is best known for fishing, tourism and agriculture.

The region is recognised by Noongar people as Wagyl Kaip⁶. There are many cultural and significant sites in the Wagyl Kaip and Southern Noongar region, many of which are in the Shire of Jerramungup. The Wagyl Kaip and Southern Noongar claim for Native Title was made in September 2006. Indigenous Land Use Agreements have commenced operation since, however the Southwest Native Title Settlement will not commence until after registration of the ILUAs by the Native Title Registrar and the resolution of any court proceedings⁷.

3.1.3 Population and Demographics

The most recent Australian Bureau of Statistics (ABS) data shows the population in the Shire of Jerramungup in 2014 as 1,077, of which 575 were male and 502 female with a median age of 39.9. The population density is 0.2 people per square kilometre.⁸

The Shire of Jerramungup is characterised by a large land area and a small population clustered into two main centers, Jerramungup and Bremer Bay. According to the ABS 2011 the, Jerramungup town site had a population of 269, and Bremer Bay 209⁹.

The remainder of the Shire is sparsely populated with a significant proportion of the land area in Crown Reserves outside the management and responsibility of the Shire of Jerramungup.

⁶ <http://www.noongarculture.org.au/wagyl-kaip/>

⁷ <http://www.noongar.org.au/new-page-17/>

⁸ Australian Bureau of Statistics, Regional Summary Jerramungup LGA downloaded 6 April 2017 from <http://stat.abs.gov.au>

⁹ Australian Bureau of Statistics, Regional Summary Jerramungup LGA downloaded 6 April 2017 from <http://stat.abs.gov.au> ⁹ Shire of Jerramungup Strategic Community Plan 2012-24 downloaded 8 June 2017 from <http://jerramungup.wa.gov.au/community/>

The Shire, in its *Strategic Community Plan 2012-25* identified the following as some of the trends characterising its local government area; decreasing population, increasing median age, increasing median personal and family income, decreasing rates of volunteerism and increasing visitation rates¹⁰.

It is worth noting however that the Western Australian Planning Commission (WAPC) and ABS in the *Shire Jerramungup Local Planning Strategy, 2012* recognised several local variations not reflected in the population figures. Of these most notably is the pressure caused by service populations such as tourists and seasonal workforces. It is estimated the population of Bremer Bay includes approximately 6,000 tourists annually. Bremer Bay also has a high level of absentee owners who do not occupy houses for the full year.¹¹ This transient population presents a number of challenges for bushfire risk management as discussed later in this plan.

The ABS has estimated a static population for the Shire of Jerramungup for the period extending to 2021. This may change as a result of new or emerging industries. While there are currently no immediate prospects for new or emerging industries there is a mining lease near Wellstead that has the potential to be developed and attract a labour workforce of several hundred people to Bremer Bay.

The increase in the retiree population is expected to be slow for at least the next 5 to 10 years. However as much of the agricultural land within the Shire and neighbouring local governments was taken up in the 1960s and 1970s by people in their 30s and 40s, this population is expected to relocate to the coast within the next 5 - 15 years.¹²

There has been development pressure on the Shire to create new residential and rural residential areas. A review of the Local Planning Strategy will assist in identifying appropriate areas for future development and expansion. The existing rural residential area at Point Henry has been largely developed, does not cater for aged population needs, and is mainly limited to bush lots. This subdivision is recognised as being a significant risk of bushfire. Following a serious bushfire in 2012 the Shire of Jerramungup developed *Local Planning Policy (LPP) No. 18 - Point Henry Fire Management (2015)*.

The town of Jerramungup is the main administration centre for the surrounding agricultural area¹³. It is surrounded on two sides by uncleared reserves. The reserves provide an important visual barrier, however the bushfire risk needs to be balanced against the need for visual amenity.

Bremer Bay has a reasonably constrained townsite with a rural subdivision set in an area of high bushfire risk to the south on Point Henry Peninsula. The town itself is located on the Wellstead Estuary and is surrounded by large areas of uncleared vegetation to the north and east. The extensive area of uncleared vegetation surrounding the community is located within unallocated crown land (UCL) and the FRNP. As it poses a significant bushfire risk to the community the risk needs to be managed.

¹⁰ Shire of Jerramungup Strategic Community Plan 2012-24 downloaded 8 June 2017 from <http://jerramungup.wa.gov.au/community/>

¹¹ Shire Jerramungup (2012), *Local Planning Strategy*, downloaded 5 May 2016 from <https://www.planning.wa.gov.au>

¹² Shire Jerramungup (2012), *Local Planning Strategy*, downloaded 5 May 2016 from <https://www.planning.wa.gov.au>

¹³ Shire Jerramungup (2012), *Local Planning Strategy*, downloaded 5 May 2016 from <https://www.planning.wa.gov.au>

The town is at its most vulnerable to bushfire in summer during the peak tourist season when the transient populations swells. The town has a single road access and is constrained by the coast and Estuary. In early December 2012 the entire town was evacuated when a bushfire threatened the community from the west. The entire rural subdivision of Point Henry was burnt in 2002 by a fast moving fire that reached the edge of the main town site¹⁴.



Figure 3 – Bushfire in the UCL adjacent to the Bremer Bay townsite 2012¹⁵

The existing residential areas of the town are well established and there are some limited areas available for expansion. Currently there are no larger lifestyle lots in the town. The existing commercial centre comprises a range of services including rural agencies, machinery dealership, depot, and hardware store¹⁶.

Bremer Bay has approximately 270 dwellings in the town, with about one third currently occupied on a permanent basis, and the rest on a seasonal or semi-permanent basis. The maximum residential population is approximately 650, based on the existing number of dwellings. Forty seven building licences were issued by the Shire between 2007 and 2009 resulting in an average increase of 15 dwellings per year in Bremer Bay¹⁴.

Bremer has a rural residential area on Point Henry Peninsula that has a significant bushfire risk. There are an estimated 207 freehold properties with approximately 80 of these developed¹⁷.

¹⁴ Shire Jerramungup (2012), *Local Planning Strategy*, downloaded 5 May 2016 from <https://www.planning.wa.gov.au>

¹⁵ ABC <http://www.abc.net.au/news/2012-12-04>

¹⁶ Shire Jerramungup (2012), *Local Planning Strategy*, downloaded 5 May 2016 from <https://www.planning.wa.gov.au>

¹⁷ Shire of Jerramungup (2015), *Local Planning Policy No 18 - Point Henry Fire Management*



Figure 4 – Visitors, New Year’s day, Blossoms Beach, Point Henry Peninsula Bremer Bay¹⁸

During the summer months it is estimated the population of the town increases significantly. This includes people camping in the UCL, Doubtful Island, Point Ann in the Fitzgerald National Park, Point Henry, Dillon Bay and general coastal areas. The transient tourist population in Doubtful Island UCL is considered a significant enough risk that the Local Emergency Management Committee has developed a specific evacuation plan for this area. The Shires Local Emergency Management Arrangements gives special consideration to this transient population¹⁹.

Boxwood Hill is a largely undeveloped town site however has some community and recreational facilities. The combined convenience store/service station provides for local convenience needs and has a dual function as it services visitors requiring petrol and a stopover for refreshments. Recreational facilities are available at the golf course/country club²⁰.

Needilup town site includes a small group of residential lots with a church site, town hall, golf course, and a small park. This area remains largely undeveloped.

At Gairdner, there is most significantly a bulk grain terminal which receives grain during the early summer harvest period. Adjacent to this is a school, hall, oval, tennis courts, ambulance depot, and 2 houses.

¹⁸ Source: Shire of Jerramungup, Melanie Haymont, 1 January 2017

¹⁹ Shire Jerramungup (2012), *Local Planning Strategy*, downloaded 5 May 2016 from <https://www.planning.wa.gov.au>

²⁰ Shire Jerramungup (2012), *Local Planning Strategy*, downloaded 5 May 2016 from <https://www.planning.wa.gov.au>

One other settlement is at Millers Point on the Beaufort Inlet where there is a squatters settlement with about a dozen holiday houses of a reasonable quality that have been erected by local residents over the years. The Millers Point Settlement is a squatter's settlement on Location 839 owned by the Shire, but to date Council has not taken any action to evict the squatters. It is Councils objective for Millers Point to be retained for holiday accommodation and recreation use (limiting permanent development to those existing structures)²¹. In the meantime Millers Point needs to be considered as a human settlement for the purposes of risk management.

The Shire of Jerramungup, in particular the community of Bremer Bay has experienced two significant fires. The 2002 Point Henry fire was fast moving and burnt the entire peninsula with a few hours. The more recent fire in 2012 threatened the town of Bremer Bay and the community were evacuated. It was during this fire that the OIC of the local Volunteer Emergency Services pronounced the Point Henry Peninsula 'indefensible'. As mentioned earlier this fire led to the development of *LPP No. 18 - Point Henry Fire Management (2015.)*

The community of Bremer Bay has a reasonably high level of awareness of bushfire risk, particularly following the recent fires. Further to this DFES has facilitated a localised community engagement program in the area with Bremer Bay being a nominated 'area of community engagement focus' over the past 4-5 years. The Point Henry residents have formed a Bushfire Ready Group which continues to function. Most of the residents of the Point Henry area are retirees, some of whom are retired farmers who bring a wealth of bushfire knowledge and experience, however many are also from other backgrounds with a varied knowledge.

Absentee landowners make up a large proportion of the property owners both in the town site and in the Point Henry Rural subdivision. The absentee landowners have also been targeted as part of the DFES community engagement program.

Shire of Jerramungup *LPP No. 18 - Point Henry Fire Management (2015)* requires that existing dwellings: *should have an appropriate water supply; should have an appropriate driveway and vehicle turn around area; should have a 20m building protection zone unless otherwise approved by Council; and should upgrade the construction standard of buildings to comply with AS3959 where practicable.* These requirements are being progressively phased in through the Fire Break Notice issued in accordance with the *Bush Fires Act 1954*. The introduction of this policy has to date led to significant improvements to the risk profile of the area. This has been reinforced by strategic improvements by the Shire of Jerramungup such as; improvements to the strategic firebreak network; fuel management on the roadsides as access and egress is limited to a single route and the installation of strategic emergency water supply.

While these risk treatment strategies have reduced the risk to the community the residents and visitors to Bremer Bay need to understand the ongoing and residual risk from bushfire. Bremer Bay has a significant aging population and planning and awareness-raising is required to ensure the community has an adequate level of preparedness and understand the bushfire risk. They must also have realistic expectations of the local response capability. Bremer Bay has a volunteer brigade and is isolated, so

²¹ Shire of Jerramungup (2015), *Local Planning Policy No 7. Kent Location 95 Dillon Bay and Kent Location 839 Millers Point*

back up can be delayed. Jerramungup is also at risk of bushfire and while the population profile is different the residents will still benefit from engagement around the risk of bushfire.

3.1.4 Economic Activities and Industry

Agriculture is the main economic activity of the district but there is a growing tourism industry, especially in Bremer Bay. Tourism has recently been boosted with the discovery of the Bremer Bay Canyon and associated wildlife. Both the peak tourism and harvest periods occur in the summer bushfire risk period.

Jerramungup is the administrative and commercial centre for the surrounding agricultural area²². Bremer Bay is a key tourism hub for the area attracting over 6,000 people to the area over the Christmas and Easter holiday periods²³. Jerramungup townsite is characterised by the range of activities of a type normally found in a small rural centre. As well as serving as a residential centre, the town services the local farming community. Many of the services relate to the activities of government, including Police services, post, Telstra, Western Power, Department of Agriculture and Food WA (DAFWA), and schools²⁴.

Since the original settlement of Bremer Bay, the emphasis of its economic base has shifted from the fishing industry to tourism. Even though it is seasonal, tourism provides a year-round livelihood for commercial activities in Bremer Bay. Fishing continues to be important, and an aquaculture venture has established at Back Beach. Agriculture continues to provide an important economic base for Bremer Bay as well.

There are a number of businesses within the Point Henry area notably the Bremer Bay Beaches Resort and Caravan Park; and the Wellstead Museum and Café. Major infrastructure includes; the Fishery Beach Marina; abalone farm; Tooreburrup Hill communication tower and base equipment; Bremer Bay cemetery; and water pipelines etc. The public beaches are important assets and the use of these is greatest during the peak summer holiday period when there is a dramatic increase in the local population.

A large number of tourists are drawn to the area to visit the FRNP which is a United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Site,²⁵ registered Biodiversity hotspot. The Park has an area of 2,972 km² which comprises mostly of wilderness. This area is a major asset to the community but also poses the largest threat from bush fire²⁶. P&W has established a Fire Working Group for the FRNP and specific fire management strategies for the wilderness zones of the FRNP²⁷.

²² Shire Jerramungup (2012), *Local Planning Strategy*, downloaded 5 May 2016 from <https://www.planning.wa.gov.au>

²³ Shire of Jerramungup (2015), *Community Strategic Plan* downloaded on 3 May 2016 from www.jerramungup.wa.gov.au

²⁴ Shire Jerramungup (2012), *Local Planning Strategy*, downloaded 5 May 2016 from <https://www.planning.wa.gov.au>

²⁵ <http://www.unesco.org> downloaded 28 April 2017

²⁶ Shire of Jerramungup Community Plan – 2016-2016 <http://www.jerramungup.wa.gov.au/council>

²⁷ Department of Parks and Wildlife (1999) *Fire Management Strategy for the Wilderness Zones of the Fitzgerald River National Park (1999-2001)*

The region is well regarded for its biodiversity both for tourism and conservation reasons. The BRM Plan recognises that any mitigation strategies must be developed with respect to the biodiversity values of the area. The BRM Plan references the publication '*Identification and Conservation of Fire Sensitive Ecosystems and Species of the South Coast Natural Resource Management Region*' published by South Coast Natural Resource Management with P&W.

The area is recognised for its grain and livestock production with sheep, beef, cattle and grain farming the main industry. The number of farms in the Shire declined by nearly 9% between 1986 and 1993 as the average farm size increased by about 50ha in the five years 1990 to 1994. The total agricultural land holding increased from 327,876 ha in 1999 to nearly 400,000 ha in 2006.

Bushfire risk increases during the crop harvesting period generally from mid to late October through to late December early January. Modern harvesters have many potential ignition sources which need to be carefully managed. Bearings, hot exhausts, turbochargers, electrical circuits and belts combined with dry straw, dust, chaff, oil and leaking distillate provide the perfect environment for fire. The movement of these vehicles through cured grain paddocks means this is the most likely time for a farm fire²⁸. Crop fires tend to have a very rapid rate of spread.

The Shire of Jerramungup has approximately 400,000 ha of cereal crop each year. The Shire has controls in place pursuant to the *Bush Fires Regulations 1954*, to reduce the risk of crop related bushfires²⁹. The risk is further reduced once harvest is completed and the paddocks opened to grazing. It is worth noting that in 2005/06 over 37,000 hectares of canola crop was grown, canola or rapeseed burns at a higher temperature than grass or other crops. Canola crops can be harder to extinguish and mop up and special care must be taken when burning canola windrows³⁰.

Agroforestry and Plantations occur in the Shire, however the Shire has established *Local Planning Policy No. 10 – Agroforestry and Plantations* to ensure traditional agricultural activities such as cropping, grazing and food production remain the predominant land use with agroforestry or plantations as an ancillary and complimentary use. The Shire of Jerramungup recognises it has limited resources when dealing with strategic fire management, therefore a Fire Management Plan is required as part of any new Agroforestry or plantation proposal³¹. Plantation's in WA are also generally managed in accordance with *Code of Practice for Timber Plantations in Western Australia*. The purpose of this Code is to provide goals and guidelines to plantation managers so that plantation operations in Western Australia are conducted in a manner that is in accordance with accepted principles for good plantation management. Section 4.7.6 *Fire Prevention and Suppression* of the Code outlines Fire Prevention and Suppression Guidelines³².

²⁸ <https://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/pages/ruralandfarmfire.aspx#cropfiresafety>

²⁹ Shire of Jerramungup Fire Control Information 2016/17

³⁰ FESA *Stay Ahead of Crop Fires* (2010)

³¹ Shire of Jerramungup (2010) *Local Planning Policy No. 10 – Agroforestry and Plantations*

³² Forest Industries Federation WA (2014) *Code of Practice for Timber Plantations in Western Australia*, 2nd Edition

3.2 Description of the Environment and Bushfire Context

3.2.1 Topography and Landscape Features

The landscape character of the Shire is dominated by two main landscape types; vast wilderness and cleared broad acre farmland.

The eastern part of the Shire is dominated by the FRNP. Approximately 140,000ha of the Park sits within the Shire of Jerramungup. The remaining 190,000ha forms the western part of the Shire of Ravensthorpe.

In addition to the large wilderness area of the National Park there are also large areas of UCL and reserves. The topography in the central areas of the Shire of Jerramungup is mostly undulating farm land. The coastal area has sandy beaches, extensive and high dune systems reaching 200m in elevation and steep granite outcrops. The *SEMC State Capability Framework* recognises the importance of the topography and landscape features in *4.2 The ecosystem is effectively managed to preserve natural barriers that aid community protection and biosecurity barriers*³³.

The Palinup, Gardiner and Bremer Rivers are the only major river and valley systems within the Shire of Jerramungup. These rivers are surrounded by significant vegetation corridors and are vested as crown reserves.

The expansive areas of vegetation within the Shire of Jerramungup present an obvious bushfire risk, this risk is further exacerbated by access challenges. The presence of dieback in areas of the park along with sandy beaches, steep granite outcrops and dune systems means access is a serious challenge for both risk management activities and suppression. Vehicle access in coastal and heavily wooded areas is limited.

The Shire of Jerramungup has a history of people camping informally along remote beaches and throughout the UCL. Access within these areas is restricted due to the topography, landscape features and lack of formal access. This restricts the ability of responders to effectively manage and suppress fires. It is also a challenge for the safe evacuation of people. Evacuation planning has been undertaken by the LEMC and bushfire evacuation plans have been developed for the areas of coastal UCL around Bremer Bay.

Suppression capability is an important consideration for this region as resources are limited and back up is often delayed due to the vast distances between human settlements. Strategic risk management, especially asset protection needs to give suppression capability due consideration. A significant issue for suppression is the availability of emergency water. For example emergency water supply in the rural residential area of Point Henry is limited to a single 20,000 litre tank (approximately 5 loads of a 4.4 Fire Appliance). The rural residential area is approximately 10 km from the town where the next available water supply is located. It is estimated the turn-around time for a fire appliance to refill is 40 minutes under the current scenario.

The spread of *Dieback* requires serious consideration when determining bushfire risk management and suppression strategies as the biodiversity and social values of the *FRNP* are threatened by

³³ State Emergency Management Committee – Capability Framework retrieved on 4 August 2016 from <http://www.semc.wa.gov.au>

Phytophthora cinnamomi. The soil-borne pathogen, *Phytophthora* and other related pathogens infest native plant communities causing death of susceptible species³⁴. P&W have developed specific fire management strategies for the wilderness zones of the FRNP³⁵.

Strategic bushfire risk management in the area is undertaken to reduce risk but also to facilitate suppression. Strategic breaks are often designed to enable back burning during response. In many cases suppression of wildfires involves 'dry' suppression i.e. burning large blocks of vegetation to achieve containment. Lack of access tracks, inaccessible terrain, extreme fire behaviours, emergency water supply, cost and resource availability and the risk of introducing *Phytophthora* dieback or disturbance of environmentally sensitive areas limits the opportunity to implement direct-attack strategies (building a fireline using earth moving machinery directly on the fire edge).

Strategic bushfire risk management is also important as the town sites are surrounded by large areas of vegetation. Bushfires that are able to access such large areas of fuel with limited suppression have a better opportunity to develop into bigger fires that generate their own energy and pose a greater risk to the community.

3.2.2 Climate and Bushfire Season

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

The Southern Oceans moderate the effect of temperature in the coastal areas of the Shire providing smaller diurnal and seasonal variations and a milder climate than inland areas. Mean daily temperatures vary from around 10 degrees in August to 26 degrees in February. As a result the fire weather can vary significantly across the Shire. The Shire can simultaneously be experiencing *Total Fire Ban* in the inland region while the coastal areas are experiencing mild weather.

Summers are very dry, with December to February receiving a monthly average of less than 25mm of rain. Summers are typically very warm and cloudless although cooling afternoon sea breezes are common. The hot dry summers and seasonal strong winds create an environment where there is always a significant risk of bush fire, therefore a high degree of caution is required by residents and visitors at all times.

The nearest weather station is Jacup and a climatic summary for the weather station is provided below showing the climatic variables for the typical Southern fire season (December to March). The average annual rainfall for the region varies from 360 mm in the north increasing to over 600 mm near the south west coast.

³⁴ *Managing External Dieback Threats to the Fitzgerald River National Park*, South Coast NRM, December 2009.

³⁵ Department of Parks and Wildlife (1991) *Fitzgerald National Park Management Plan Management Plan No. 15, 1991-2001*

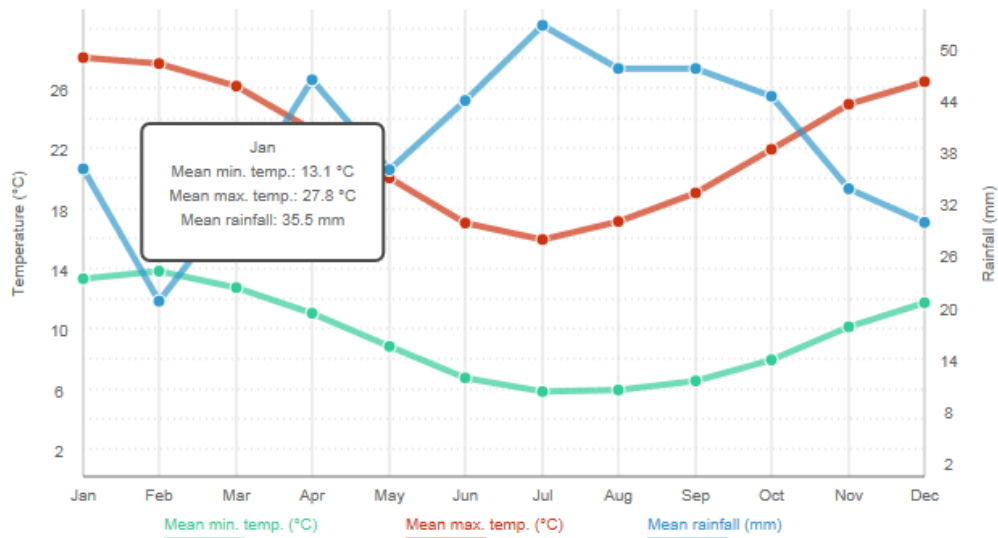


Figure 5 – Summary of Climatic Variables for the Shire of Jerramungup³⁶

The average annual rainfall distribution in the Shire is shown on Figure 6 below.

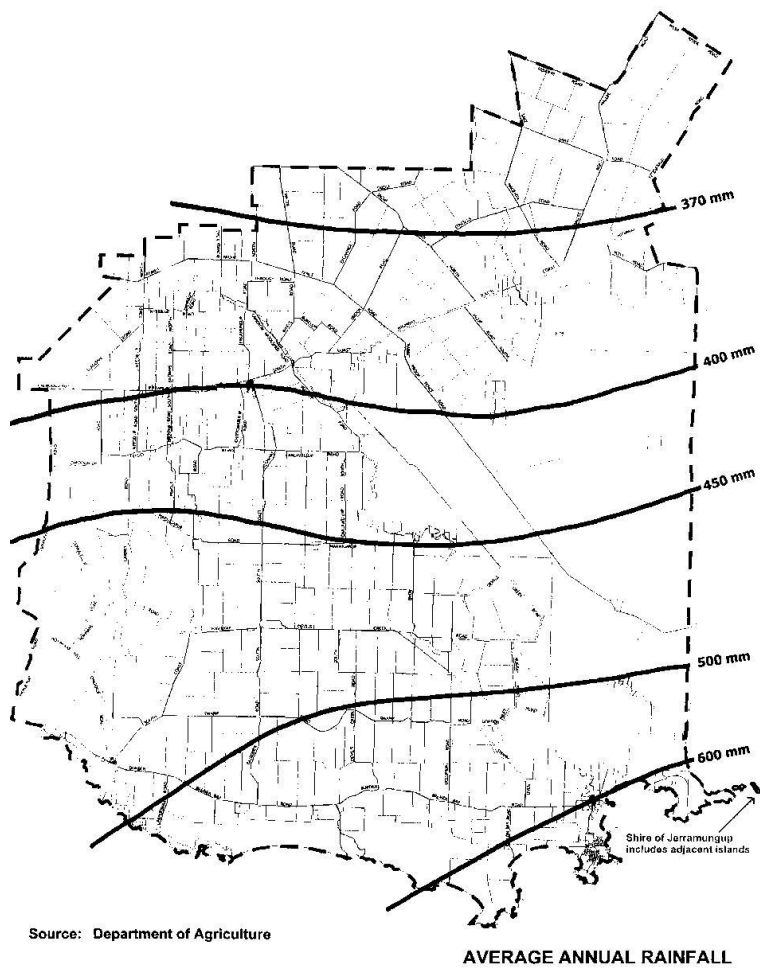


Figure 6 – Average Annual Rainfall contour map Shire of Jerramungup Source: Department of Agriculture

³⁶ Meat and Livestock Australia (2017) downloaded 6 February 2017 from <http://weather.mla.com.au/climate-history/wa/jerramungup>

Prevailing winds are from the north-west and south-east which can prove challenging during suppression because they are generally strong, hot and dry (refer Figure 7 below). The NW wind prevails between January and March which is the peak bushfire period. The mean number of days over 30 degrees in this same period is 28. As a consequence the area experiences a fire danger rating (FDR) of ‘Very High’ or above for approximately 28 days between Jan-March³⁷.

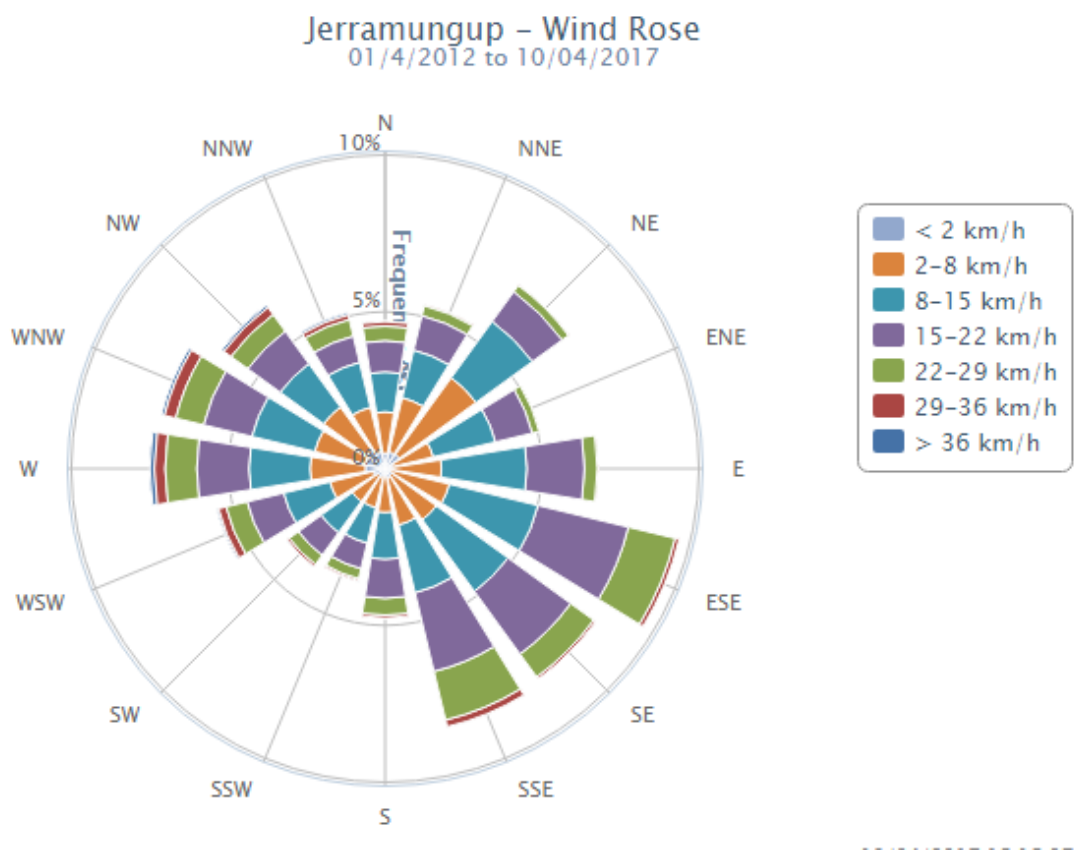


Figure 7 – Wind Rose ³⁸

Even though two-thirds of the annual rain falls in the six months between May and October, rainfall has a relatively even distribution compared to other agriculture areas. The Shire also experiences fewer hot dry winds, and increased cloud cover.

The average annual Class A pan evaporation varies from 1,600mm near the coast to about 2,000mm in the north of the Shire. Pan evaporation is a measurement that combines or integrates the effects of several climate elements: temperature, humidity, rain fall, drought dispersion, solar radiation, and wind. The length of the growing season drops from 8 months on the coast to 5.5 months inland.³⁹

The average temperatures in summer for the region range from maximum of 27-30°C down to minimum of 16°C. Winter average temperatures are 14°C down to 7°C maximum and minimum.

³⁷ <http://www.bom.gov.au/climate/averages/tables> sourced on 28 April 2017.

³⁸ Department of Agriculture and Food, Ravensthorpe Windrose, retrieved 10 April 2017 from <https://www.agric.wa.gov.au/climate-land-water/climate-weather>

³⁹ Shire of Jerramungup (2012), Local Planning Strategy downloaded 6 June 2016 from www.planning.wa.gov.au

The Shire of Jerramungup under sections 17 and 18 of the *Bush Fires Act 1954* has declared the following restricted and prohibited burning times:⁴⁰

Zones 1, 2, 3, & 4, Shire of Jerramungup

- 1st October to 31st October - Permits required, Restricted Burning Time (RBT)
- 1st November to 5th February - BURNING PROHIBITED (PBT)
- 6th February to 18th April - Permits required, Restricted Burning Time (RBT)

Zone 5 – Point Henry Peninsula, Shire of Jerramungup

- 1st September to 31st October - Permits required, Restricted Burning Time (RBT)
- 1st November to 5th February - BURNING PROHIBITED (PBT)
- 6th February to 31st May - Permits required, Restricted Burning Time (RBT)

Burning on Sundays during the restricted and prohibited burning times is banned. These dates are subject to variation by agreement from time to time according to seasonal conditions.

The extreme fire danger period occurs between December to February (inclusive) due to higher temperatures and low relative humidity. The Great Southern fire season is heavily influenced in January through to March by frequent lightning events triggered by the confluence of the cool moist air from the southern ocean and the warm inland dry air.

This period is shouldered by a moderate fire danger period, of October/November and March influenced by warmer temperatures, at times strong easterly winds in the October/November period.

The climate has an effect on the use of prescribed burning as a treatment strategy as often there are limited windows to safely conduct burns. Typically autumn is the preferred period for burning due to a higher soil moisture content reducing the impact of fire intensity on susceptible species. Burning is used extensively as a treatment method, it is used in balance with mechanical treatments such as parkland clearing, mulching and scrub rolling. It is important that treatment strategies are well coordinated to minimise the cost impacts of mobilisation etc. Historically the bushfire stakeholders in the area have worked well together to coordinate the implementation of treatment strategies.

3.2.3 Vegetation

The vegetation in the Shire of Jerramungup is recognised as significant both for the threat it poses in terms of bushfire and also for its biodiversity and conservation value. The BRM Plan considers vegetation both as a source of risk and as an asset integral to balancing the environmental and conservation values of the region.

The FRNP is one the largest and most botanically significant national parks in Australia. Nearly 20 per cent of Western Australia's flora species are found within the National Park, many of which occur only within its boundaries⁴¹.

The Shire of Jerramungup along with P&W and other natural resource management stakeholders i.e. The Gondwana Link, Friends of Fitzgerald River National Park, The Fitzgerald Biosphere Project, Bush

⁴⁰ Shire of Jerramungup (2016), Fire Information, downloaded 4 October 2016
<http://www.jerramungup.wa.gov.au>

⁴¹ *Managing External Dieback Threats to the Fitzgerald River National Park*, South Coast NRM, December 2009.

Heritage Australia and the South Coast Natural Resource Management all recognise the importance of the regions biodiversity and are working towards its protection and preservation.

The vegetation in the Shire of Jerramungup is broadly referred to as the '*Esperance Bioregion*', an area that extends approximately 40 kilometers inland from the coast between Albany and Point Culver on the south coast of Western Australia. It is bounded to the north by the Mallee region and to the west by the Jarrah Forest region⁴².

The main vegetation formation of the Esperance Plains region is mallee-heath; this covers about 58% of the region. Other significant vegetation forms include mallee (17%), scrub-heath (13%) and coastal dune scrub (4%). There is very little woodland; the only woodland communities are some *Eucalyptus loxophleba* (York Gum) and *E. occidentalis* (Flat-topped Yate) woodland in low-lying areas⁴³.

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 Department of Environment and Conservation's Declared Rare and Priority Flora List⁴⁴.

A study into fire behaviour modelling in semi-arid mallee-heath shrublands recognised that ecosystems in fire-prone climates, such as the kwongan and mallee characteristic of the project region, are renowned for their flammability. Shrubland fires can be fast-moving and intense even under moderate burning conditions. They have the potential to burn extensive areas under extreme conditions leading to severe impacts on human populations, water catchments and a broad range of environmental values. It also found that extensive fires, typically greater than 10,000ha but surpassing 100,000ha when spreading under extreme burning conditions have the potential to burn a high proportion of remnant vegetation in these landscapes and cause the local extirpation of certain species.⁴⁵

According to the *Threatened Species and Ecological Communities Regional Strategic Management Plan (June 2009)*, there are 57 threatened fauna species, and 6 threatened ecological communities in the South Coast Region. The region covers 9.7 million hectares of which the Shire of Jerramungup forms part of. The plan recognises 8 significant impacts on threatened species in the area. One of which is *inappropriate fire regime*. No fire regime is optimal for all species, but large-scale, intense fires present the greatest threat to species in the region due to the fragmentation of the landscape.

Despite the flora and fauna of the region having adapted to particular fire regimes, some are threatened if the fire regime is inappropriate⁴⁶. Many threatened fauna species are restricted to, and appear to require areas of long unburnt vegetation. The Management Plan recognises that for many of

⁴² Esperance Plains retrieved 10 October 2017 from https://en.wikipedia.org/wiki/Esperance_Plains

⁴³ Esperance Plains retrieved 10 October 2017 from https://en.wikipedia.org/wiki/Esperance_Plains

⁴⁴ Esperance Plains retrieved 10 October 2017 from https://en.wikipedia.org/wiki/Esperance_Plains

⁴⁵ Cruz M.G., McCaw W.L., Anderson W.R. and Gould J.S. (2013) *Fire Behaviour Modelling in semi-arid-heath shrublands of southern Australia*, Environmental Modelling & Software, Vol 40

⁴⁶ Department of Parks and Wildlife & South Coast NRM (2009) *Threatened Species and Ecological Communities Regional Strategic Management Plan*

the threatened species the most suitable post-fire age of the vegetation required to support them is not known⁴⁷.

More detailed vegetation data is available for the region. According to Beard there are 6 vegetation systems in the Shire, aligned approximately parallel to the coast⁴⁸. They are: Hyden, Bremer, Qualup, Jerramungup, Chidnup, and Barren Ranges. This alignment reflects the influence of climate, geology, topography, and soil types. The vegetation systems are shown on Figure 8.

Detailed vegetation data is helpful for planning risk treatment and suppression strategies as the different vegetation types have adapted differently to fire and require appropriate treatments.

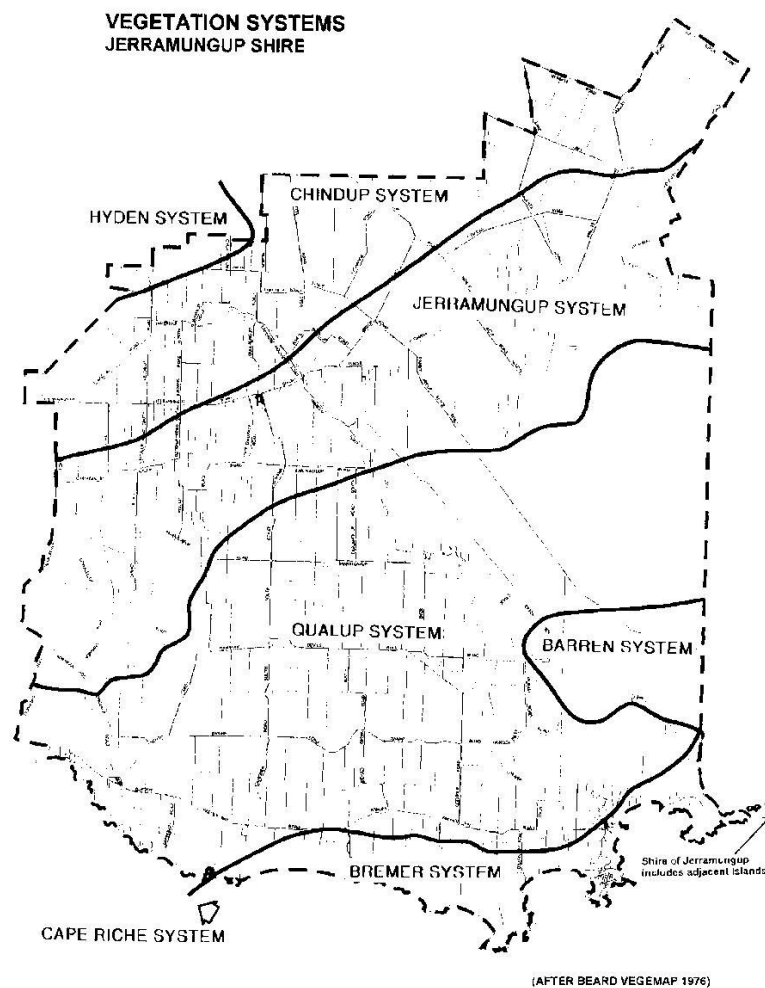


Figure 8 –Vegetation Systems Shire of Jerramungup⁴⁹

The coastal vegetation consists of two of these systems, Cape Riche and Bremer, which have an intricate mosaic of mallee-heath, coastal dune scrub on drift sand, and low scrub on granite-gneiss outcrop. North of the coastal vegetation, much of Bremer Bay is cleared for agriculture, except for the

⁴⁷ Department of Parks and Wildlife & South Coast NRM (2009) *Threatened Species and Ecological Communities Regional Strategic Management Plan*

⁴⁸ Beard, J.S (1979) *The Vegetation Survey of Western Australia*: Nedlands, UWA Press

⁴⁹ Beard, J.S (1979) *The Vegetation Survey of Western Australia*: Nedlands, UWA Press

area bounded by the FRNP. Native vegetation survives in nature reserves, road reserves, around isolated swamps, and in small private remnant vegetation areas.

The three vegetation systems inland of the coastal vegetation are divided roughly by geologic and topographic boundaries. The Qualup system extends inland from the coastal vegetation system to the edge of sand plain and consists essentially of mallee and mallee-heath shrub lands and sporadic mallee and yate woodland.

The many swamps and small depressions of the sand plain support either yate woodland or paperbark scrub.

The Jerramungup system covers the coastal sloping hills of the granite-gneiss rock and consists of mallee and mallee-heath and patches of yate woodland in valleys.

The Chidnup system occurs on the edge of the wheatbelt plateau, where the average elevation is 300m AHD and the topography is flat to gently undulating. This system consists of mallee with some valleys of eucalypt woodland and mallee on the watershed between the south-draining rivers of Bremer Bay. The northward-draining Hyden system touches the north western corner of the Shire. In this system the surface sands are yellow, the lakes saline, and the vegetation has more inland characteristics.

The FRNP consists of the Qualup system of mallee and mallee-heath and the unique Barren Ranges system, which harbours a number of endemic eucalyptus species within mallee-heath, mallee, and coastal scrub.

The *Bremer* vegetation system is located along the coastal strip between Beaufort Inlet and Gordon Inlet and includes the coastal chain of granite bosses and wind-blown sands between them. Plant communities are low scrub and coastal scrub.

As prescribed burning is not always an appropriate fuel reduction method the BRM Plan seeks to establish appropriate fuel management according to the respective vegetation community impacted.

Much of the vegetation in the Shire is protected. For example the Kwongkan Shrubland a *Proteaceae* dominated vegetation community is found throughout the Shire. Kwongkan Shrubland is an endangered ecological community of national environmental significance as listed under the *Environmental Protection and Biodiversity Act 1999*. The Kwongkan ecological community is important because a large portion has already been lost and remaining areas are vulnerable to the impacts of threats such as dieback due to *Phytophthora cinnamomi*, changing fire regimes, land clearing, invasive species, and climate change. The Kwongkan community occurs in patches throughout the Shire (refer *Appendix 4 – Map of Kwongkan Threatened Ecological Community*.)

Any vegetation management treatments proposed by the BRM Plan, including prescribed burning but particular mechanical clearing will need to carefully consider the impact on the vegetation from an ecological perspective. This is also a legislative requirement as per the requirement of the Commonwealth Department of Environmental Regulation (DER). Any fuel reduction treatments will require a thorough assessment of the vegetation and formal approval sought for clearing of the vegetation. In instances where the proposed work is new a flora survey may be required in order to get the necessary approval.

The BRM Plan has established a working relationship with P&W Regional office and the FRNP Fire Working Group both have been directly involved in the development of the BRM Plan. The available data and mapping on flora and fauna and the necessary vegetation assessment has been provided through P&W in their respective partners such as the South Coast Natural Resource Management.



Figure 9 –Point Henry rural subdivision following the 2002 bushfire



Figure 10 –Point Henry rural subdivision 2016 - foreground slashed APZ around telecommunications tower, background residential properties set amongst regenerated coastal heath.

3.2.4 Bushfire Frequency and Causes of Ignition

A report provided by the Operational Information Systems Branch of the Department of Fire and Emergency Services (DFES) reports a total of 53 landscape fires^[1] between 1 July 2010 and 2 February 2016 within the Shire of Jerramungup. The number of reported landscape fires varied from 5 in the 2012 financial year to 15 in the 2015 financial year. Out of the 53 fires reported one was recorded as suspicious and 11 were undetermined.

Table 3 –Bushfire Ignition Sources for the Shire of Jerramungup (2010-2016)

	2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015	2015/ 2016	Total
Total Number of Fires:	8	11	5	7	7	15	53
Burn off fires	0	1	0	2	0	2	5
Campfires/bonfires/outdoor cooking	1	0	0	0	0	0	1
Electrical distribution (excl. power lines)	1	0	0	0	0	0	1
Equipment - Operational deficiency	0	0	0	0	0	1	1
Human Error (Left on, knock over, unattended etc.)	2	0	0	0	0	1	3
Power lines	0	0	0	1	2	1	4
Suspicious/Deliberate	0	0	0	0	0	1	1
Undetermined	3	2	2	1	0	1	9
Unreported	0	0	0	0	1	1	2
Vehicles (incl. Farming Equipment/Activities)	1	3	0	0	1	4	9
Weather Conditions - Lightning	0	4	3	3	2	2	14
Weather Conditions (High winds, natural combustion etc. Excludes Lightning)	0	1	0	0	1	1	3

Table 4 –Bushfire Ignition Sources for the Shire of Jerramungup by Planning Area (2010-2016)

Planning area	Ignition cause								
	Lightning	Undetermined /unreported	Burn off	Equipment	Human error	Power lines	Natural	Deliberate	Electrical
Boxwood	2	2	2	1	0	0	0	0	
Jerramungup	9	5	3	8	3	2	2	0	1
Bremer Bay	3	4	5	1	1	2	1	1	
Total	14	11	5	10	4	4	3	1	1

^[1] The report only identifies landscape fires that are out of control, requiring emergency assistance.

The report from DFES also included data on the date, time and location of the fire. On further analysis of the data, the planning area of Jerramungup had the most reports of ignition i.e. 62%. The main cause of ignition in this planning area was lightning (27%) followed by vehicle/farming equipment (24%). Jerramungup planning area is dominated by agriculture land and these figures reflect the high use of farming equipment during critical bushfire period of October – January. Further education and training and the implementation of Harvest and Vehicle Movement bans could form part of future treatment strategies as part of this plan.

4. Asset Identification and Risk Assessment

4.1 Planning Areas

The Shire of Jerramungup has been divided into 3 areas; Jerramungup, Boxwood Hills, Bremer Bay. Attached at **Appendix 2** is a map showing the boundaries of the planning areas identified within the Shire of Jerramungup.

4.1.1 Priorities for Asset Identification and Assessment

The *Planning Area Assessment Tool* was applied to each planning area to determine the priorities for asset identification and assessment. Using the tool, each planning area was rated against six risk factors, with the highest scoring planning area being the first priority for asset identification and risk assessment.

Assets were identified and assessed in each planning area, based on the results of the planning area assessment outlined in the following table.

Table 5 – Planning Area Assessment Summary

Risk Factor	Jerramungup	Boxwood Hills	Bremer Bay
1. % of LG Population in Planning Area	20-50% 80	0-10% 20	20-50% 80
2. Fuel Structures	Some areas of mixed vegetation types, small pockets of vegetation and some low fuel areas 60	Mainly large areas of continuous vegetation with some areas of low fuels 80	Mainly large areas of continuous vegetation with some areas of low fuels 80
3. Assets	State assets in the area 100	State assets in the area 100	Only local assets in the area 20
4. Rural Urban Interface	Some areas of urban bush land interface, a moderate number of residential subdivisions with some being bush blocks 60	Some areas of urban bush land interface, a moderate number of residential subdivisions with some being bush blocks 60	Large areas of urban bushland interface, large number of rural residential subdivisions with many being bush blocks 100
5. Suppression response times	Medium response times with resources able to be at the incident with in 30-60 mins 60	Medium response times with resources able to be at the incident with in 30-60 mins 60	Medium response times with resources able to be at the incident with in 30-60 mins 60
6. Suppression strategies	Some restrictions on ability to employ all bushfire fighting strategies 60	Some restrictions on ability to employ all bushfire fighting strategies 60	Some restrictions on ability to employ all bushfire fighting strategies 60
TOTAL	420	500	520
PRIORITY	3	2	1

4.2 Asset Identification

Asset identification and risk assessment has been conducted at the local level using the methodology described in the Guidelines. Identified assets have been mapped, recorded and assessed in the Bushfire Risk Management System (BRMS). Identified assets are categorised into the following subcategories:

Table 6 – Asset Categories and Subcategories

Asset Category	Asset Subcategories
<p>Human Settlement</p>	<ul style="list-style-type: none"> • Residential areas Rural urban interface areas and rural properties. • Places of temporary occupation Commercial, mining and industrial areas located away from towns and population centres (that is, not adjoining residential areas). • Special risk and critical facilities Hospitals, nursing homes, schools and childcare facilities, tourist accommodation and facilities, prison and detention centres, government administration centres and depots, incident control centres, designated evacuation centres, police, fire and emergency services.
<p>Economic</p>	<ul style="list-style-type: none"> • Agricultural Pasture, grazing, livestock, crops, viticulture, horticulture and other farming infrastructure. • Commercial and industrial Major industry, waste treatment plants, mines, mills and processing and manufacturing facilities and cottage industry. • Critical infrastructure Power lines and substations, water and gas pipelines, telecommunications infrastructure, railways, bridges, port facilities and waste water treatments plants. • Tourist and recreational Tourist attractions and recreational sites that generate significant tourism and/or employment within the local area. • Commercial forests and plantations • Drinking water catchments
<p>Environmental</p>	<ul style="list-style-type: none"> • Protected Rare and threatened flora and fauna, ecological communities and wetlands. • Priority Fire sensitive species and ecological communities. • Locally important Nature conservation and research sites, habitats, species and communities, areas of visual amenity.
<p>Cultural</p>	<ul style="list-style-type: none"> • Aboriginal heritage Places of indigenous significance. • Recognised 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 community. • Other Other assets of cultural value, for example community centres 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 percentage of assets within the local government in each asset category at the time of BRM Plan endorsement is shown in the following table.

Table 7 – Asset Category Proportions

Asset category	Proportion of identified assets
Human Settlement	70%
Economic	27%
Environmental	0.5%
Cultural	2.5%

4.3.1 Likelihood Assessment

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

There are four possible likelihood ratings: almost certain, likely, possible, and unlikely.

Table 8 – Likelihood Ratings

Likelihood Rating	Description
Almost Certain (Sure to Happen)	<ul style="list-style-type: none"> Is expected to occur in most circumstances; High level of recorded incidents and/or strong anecdotal evidence; and/or Strong likelihood the event will recur; and/or Great opportunity, reason or means to occur; May occur more than once in 5 years.
Likely (Probable)	<ul style="list-style-type: none"> Regular recorded incidents and strong anecdotal evidence; and /or Considerable opportunity, reason or means to occur; May occur at least once in 5 years.
Possible (feasible but < probable)	<ul style="list-style-type: none"> Should occur at some stage; and/or Few, infrequent, random recorded incidents or little anecdotal evidence; and/or Some opportunity, reason or means to occur.
Unlikely (Improbable, not likely)	<ul style="list-style-type: none"> Would only occur under exceptional circumstances.

4.3.2 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.

There are four possible consequence ratings: minor, moderate, major and catastrophic.

Table 9 – Consequence Ratings

Consequence Rating	Descriptions
Minor	<ul style="list-style-type: none"> • No fatalities. • Near misses or minor injuries with first aid treatment possibly required. • No persons are displaced. • Little or no personal support (physical, mental, emotional) required. • Inconsequential or no damage to an asset, with little or no specific recovery efforts required beyond the immediate clean-up. • Inconsequential or no disruption to community. • Inconsequential short-term failure of infrastructure or service delivery. (Repairs occur within 1 week, service outages last less than 24 hours.) • Inconsequential or no financial loss. Government sector losses managed within standard financial provisions. Inconsequential business disruptions.
Moderate	<ul style="list-style-type: none"> • Isolated cases of serious injuries, but no fatalities. Some hospitalisation required, managed within normal operating capacity of health services. • Isolated cases of displaced persons who return within 24 hours. • Personal support satisfied through local arrangements. • Localised damage to assets that is rectified by routine arrangements. • Community functioning as normal with some inconvenience. • Isolated cases of short to mid-term failure of infrastructure and disruption to service delivery. (Repairs occur within 1 week to 2 months, service outages last less than 1 week.) • Local economy impacted with additional financial support required to recover. Government sector losses require activation of reserves to cover loss. Disruptions to businesses lead to isolated cases of loss of employment or business failure. • Isolated cases of damage to environmental or cultural assets, one-off recovery efforts required, but with no long term effects to asset.
Major	<ul style="list-style-type: none"> • Isolated cases of fatalities. • Multiple cases of serious injuries. Significant hospitalisation required, leading to health services being overstretched. • Large number of persons displaced (more than 24 hours duration). • Significant resources required for personal support. • Significant damage to assets, with ongoing recovery efforts and external resources required. • Community only partially functioning. Widespread inconvenience, with some services unavailable. • Mid to long-term failure of significant infrastructure and service delivery affecting large parts of the community. Initial external support required. (Repairs occur within 2 to 6 months, service outages last less than a month.)

Consequence Rating	Descriptions
	<ul style="list-style-type: none"> • Local or regional economy impacted for a significant period of time with significant financial assistance required. Significant disruptions across industry sectors leading to multiple business failures or loss of employment. • Significant damage to environmental or cultural assets that require major rehabilitation or recovery efforts. • Localised extinction of native species. This may range from loss of a single population to loss of all of the species within the BRM Plan area (for a species which occupies a greater range than just the BRM Plan area).
Catastrophic	<ul style="list-style-type: none"> • Multiple cases of fatalities. • Extensive number of severe injuries. • Extended and large number requiring hospitalisation, leading to health services being unable to cope. • Extensive displacement of persons for extended duration. • Extensive resources required for personal support. • Extensive damage to assets that will require significant ongoing recovery efforts and extensive external resources. • Community unable to function without significant support. • Long-term failure of significant infrastructure and service delivery affecting all parts of the community. Ongoing external support required. (Repairs will take longer than 6 months, service outages last more than 1 month.) • Regional or State economy impacted for an extended period of time with significant financial assistance required. Significant disruptions across industry sectors leading to widespread business failures or loss of employment. • Permanent damage to environmental or cultural assets. • Extinction of a native species in nature. This category is most relevant to species that are restricted to the BRM Plan area, or also occur in adjoining areas and are likely to be impacted upon by the same fire event. 'In nature' means wild specimens and does not include flora or fauna bred or kept in captivity.

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

- **Consequence Rating - Human Settlement Assets**

The outcome or impact of a bushfire event on the asset, or a group of assets, measured by the threat posed by the hazard vegetation and the vulnerability of the asset.

- **Consequence Rating - Economic Assets**

The outcome or impact of a bushfire event on the asset, or a group of assets, measured by the level of economic impact and the recovery costs.

- **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.

- **Consequence Rating - Cultural Assets**

The outcome or impact of a bushfire event on the asset, or a group of assets, measured by the threat posed by the hazard vegetation and the vulnerability of the asset.

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 the summary table below. This table shows the proportion of assets at risk from bushfire in each risk category at the time the BRM Plan was endorsed.

Table 10 – Local Government Asset Risk Summary

Risk Rating	Low	Medium	High	Very High	Extreme
Asset Category					
Human Settlement	2%	3%	23%	20%	23%
Economic	0.6%	3%	3%	12%	1%
Environmental				1%	7%
Cultural			0.3%	0.3%	0.8%

5. Risk Evaluation

5.1 Evaluating Bushfire risk

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

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

5.2 Treatment Priorities

The treatment priority for each asset has been automatically assigned by BRMS, based on the asset's risk rating. Table 10 shows how likelihood and consequence combine to give the risk rating and subsequent treatment priority for an asset.

Table 11 – Treatment Priorities

Consequence Likelihood	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)

5.3 Risk Acceptability

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 12 – Criteria for Acceptance of Risk and Course of Action

Risk Rating	Criteria for Acceptance of Risk	Course of Action
Extreme (Priorities 1A, 1B, 1C)	<i>Only acceptable with excellent controls. Urgent treatment plans to be explored and implemented where possible, managed by the highest level of Authority.</i>	<i>Routine controls are not enough to adequately manage the risk. Immediate attention required as a priority. Specific action is required in first year of BRM Plan with an annual review prior to each bushfire season.</i>
Very High (Priorities 2A, 2B, 2C)	<i>Only acceptable with excellent controls. Treatment action is required. Senior Shire Officers and Council notified.</i>	<i>Routine controls are not enough to adequately manage the risk. Specific action will be required during the period covered by the BRM Plan. Specific action is required in the first year of BRM Plan with monitoring.</i>
High (Priorities 3A, 3B, 3C, 3D)	<i>Only acceptable with adequate controls, managed by senior management/executive.</i>	<i>Specific action may be required. Risk may be managed with routine controls and/or specific procedures and is subject to biennial monitoring.</i>
Medium (Priorities 4A, 4B, 4C)	<i>Acceptable with adequate controls. Treatment action is not required but risk must be monitored regularly.</i>	<i>Specific action may not be required. Risk may be managed with routine controls and is subject to biennial monitoring.</i>
Low (Priorities 5A, 5B, 5C)	<i>Acceptable with adequate controls. Treatment action is not required but risk must be monitored.</i>	<i>Need for specific action is unlikely. Risk will be managed with routine controls and monitored as required.</i>

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 reduce the overall bushfire risk within the Shire of Jerramungup. These types of treatments 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. The following controls are currently in place across the Shire of Jerramungup:

- *Bush Fires Act 1954* Section 33 notices, including applicable fuel management requirements, firebreak standards and annual enforcement program/s;
- Declaration of Prohibited Burn Times, Restricted Burn Times and Total Fire Bans for the local government;
- Public education campaigns and the use of P&W and DFES state-wide programs, tailored to suit local needs;
- State-wide arson prevention programs developed in conjunction with WA Police and DFES;
- State planning framework and local planning schemes, implementation of appropriate land subdivision and building standards in line with DFES, Planning Commission (WAPC) and Building Commission policies and standards; and
- BRMP performance monitoring and reporting annually to the local government council and Office of Bushfire Risk Management (OBRM).
- Other practices and programs undertaken by local government or state agencies that contribute to bushfire risk management within the local government, including controls in place under state government policies, agreements or memorandums of understanding.
- Department of Parks and Wildlife Master Burn Planning Programme.
- Shire of Jerramungup LPP No. 18 - Point Henry Fire Management Plan
- Shire of Jerramungup LPP No. 10 – Agroforestry and Plantations S (10.6)
- Plantation Managers Fire Agreement Forest Industry Federation (WA)

A multi-agency work plan has been developed and is attached at **Appendix 3**. The plan details work to be undertaken as a part of normal business, to improve current controls or to implement new controls to better manage bushfire risk across the local government.

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 six asset specific treatment strategies:

- **Fuel management** - Treatment reduces or modifies the bushfire fuel through manual, chemical and prescribed 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.
- **Other** - Local government-wide controls, such as community education campaigns and planning policies, will be used to manage the risk. Asset-specific treatment is not required or not possible in these circumstances.

6.3 Determining the Treatment Schedule

Efforts will be made to finalise the Treatment Schedule within six months of this BRM Plan being endorsed by council. The Treatment Schedule will be developed in broad consultation with land owners and other stakeholders.

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 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 endorsement. Significant circumstances that may warrant an earlier review of the BRM Plan include:

- Changes to the BRM Plan area, organisational responsibilities or legislation;
- Changes to the bushfire risk profile of the area; 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 Jerramungup will submit an annual report to OBRM each year summarising progress made towards implementation of the BRM Plan.

New assets will be added to the *Asset Risk Register* when they are identified.

The Shire of Jerramungup has determined that:

- Assets rated 'Extreme' will be re-evaluated annually, prior to the bushfire season
- Assets rated 'Very High' will be re-evaluated every second year (as a minimum)

The review process will be managed by the Bushfire Risk Planning Coordinator (BRPC) however if the BRPC project role ceases, the CEO will delegate responsibility subject to resource availability.

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 used to record the details of assets identified in the Bushfire Risk Management Plan.
Asset Risk Register	A report produced within the Bushfire Risk Management System that details the consequence, likelihood, risk rating and treatment priority for each asset identified in the Bushfire Risk Management Plan.
Bushfire	Unplanned vegetation fire. A generic term which includes grass fires, forest fires and scrub fires both with and without a suppression objective. ⁵⁰
Bushfire Management Plan	A document that sets out short, medium and long term bushfire risk management strategies for the life of a development. ⁵¹
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 Threat	The threat posed by the hazard vegetation, based on the vegetation category, slope and separation distance.
Consequence	The outcome or impact of a bushfire event.
Draft Bushfire Risk Management Plan	The finalised draft Bushfire Risk Management Plan (BRM Plan) is submitted to the 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 endorsement.

⁵⁰ Australasian Fire and Emergency Service Authorities Council 2012, *AFAC Bushfire Glossary*, AFAC Limited, East Melbourne.

⁵¹ Western Australian Planning Commission 2015, *State Planning Policy 3.7: Planning in Bushfire Prone Areas*, WAPC, Perth.

Emergency Risk Management Plan	A document (developed under <i>State Emergency Management Policy 3.2 – Emergency Risk Management Planning</i>) that describes how an organisation(s) intends to undertake the activities of emergency risk management based on minimising risk. These plans help inform the ongoing development of Local Emergency Management Arrangements (LEMA) and Westplans.
Geographic Information System (GIS)	A data base technology, linking any aspect of land-related information to its precise geographic location. ⁵²
Geographic Information System (GIS) Map	The mapping component of the Bushfire Risk Management System. Assets, treatments and other associated information is spatially identified, displayed and recorded within the GIS Map.
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, the chance of a bushfire igniting, spreading and reaching the asset.
Locality	The officially recognised boundaries of suburbs (in cities and larger towns) and localities (outside cities and larger towns).
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.
Recovery Cost	The capacity of an asset to recover from the impacts of a bushfire.
Responsible Person	The person responsible for planning, coordinating, implementing, evaluating and reporting on a risk treatment.
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.

⁵² Landgate 2015, *Glossary of terms*, Landgate, Perth

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 Manager	The organisation or individual responsible for managing a risk identified in the Bushfire Risk Management Plan; including review, monitoring and reporting.
Risk Register	A component within the Bushfire Risk Management System used to record, review and monitor risk assessments and treatments associated with assets recorded in the Bushfire Risk Management 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. ⁵³
Rural Urban Interface (RUI)	The line or area where structures and other human development adjoin or overlap with undeveloped bushland. ⁵⁴
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 prescribed 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 Bushfire Risk Management Plan, including coordinating or undertaking work, monitoring, reviewing and

⁵³ Australasian Fire and Emergency Service Authorities Council 2012, *AFAC Bushfire Glossary*, AFAC Limited, East Melbourne

⁵⁴ Australasian Fire and Emergency Service Authorities Council 2012, *AFAC Bushfire Glossary*, AFAC Limited, East Melbourne

reporting.

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 Bushfire Risk Management System that details the treatment priority of each asset identified in the Bushfire Risk Management 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 prescribed burn.
Vulnerability	The susceptibility of an asset to the impacts of bushfire.

9. Common Abbreviations

APZ	Asset Protection Zone
BRMP	Bushfire Risk Management Planning
BRMS	Bushfire Risk Management System
CALD	Culturally and Linguistically Diverse
DEMC	District Emergency Management Committee
DFES	Department of Fire and Emergency Services
ERMP	Emergency Risk Management Plan
FFDI	Forest Fire Danger Index
FMP	Fire Management Plan
GFDI	Grassland Fire Danger Index
GIS	Geographic Information System
HSZ	Hazard Separation Zone
JAFFA	Juvenile and Family Fire Awareness
LEMA	Local Emergency Management Arrangements
LEMC	Local Emergency Management Committee
LG	Local Government
LMZ	Land Management Zone
OBRM	Office of Bushfire Risk Management
P&W	Parks and Wildlife (Department of)
SEMC	State Emergency Management Committee
SLIP	Shared Land Information Platform
WAPC	Western Australian Planning Commission

Appendices

- 1 Communication Strategy**
- 2 Planning Area Map**
- 3 Local Government-Wide Controls, Multi-Agency Treatment Work Plan**
- 4 Map of Kwongkan Threatened Ecological Community**

APPENDIX 1 – Communication Strategy



Shire of Jerramungup

Bushfire Risk Management Planning Communication Strategy

Document Control

Document Name	Bushfire Risk Management Plan - Communication Strategy	Current Version	1.0
Document Owner	Shire of Jerramungup CEO	Issue Date	
Document Location	Synergy Central Records – Bushfire Risk Management Planning	Next Review Date	

Related Documents

Title	Version	Date
Shire of Jerramungup Bushfire Risk Management Plan	1.0	

Amendment List

1 INTRODUCTION

A Bushfire Risk Management Plan (BRM Plan) is a strategic document that outlines the approach to the identification, assessment and treatment of assets exposed to bushfire risk within the Shire of Jerramungup. This Communication Strategy accompanies the BRM Plan for the Shire of Jerramungup. It documents the communication objectives for the BRM Plan, roles and responsibilities for communication, key stakeholders, target audiences and key messages at each project stage, communication risks and strategies for their management, and communication monitoring and evaluation procedures.

2 COMMUNICATIONS OVERVIEW

Communication Objectives

The communication objectives for the development, implementation and review of the BRM Plan for the Shire of Jerramungup are as follows:

1. Key stakeholders understand the purpose of the BRM Plan and their role in the bushfire risk management planning process.
2. Stakeholders who are essential to the bushfire risk management planning process, or can supply required information, are identified and engaged in a timely and effective manner.
3. Relevant stakeholders are involved in decisions regarding risk acceptability and treatment.
4. Key stakeholders engage in the review of the BRM Plan as per the schedule in place for the local government area.
5. The community and other stakeholders engage with the bushfire risk management planning process and as a result are better informed about bushfire risk and understand their responsibilities to address bushfire risk on their own land.
6. Strengthen Shire of Jerramungup Community Plan 2016-26 objectives i.e. *Aspiration 2.5 - Civic Leadership To provide strong civic leadership and governance systems that are open and transparent and ethical.*

Communication Roles and Responsibilities

Shire of Jerramungup is responsible for the development, implementation and review of the Communication Strategy. Key stakeholders support local government by participating in the development and implementation of the Communications Strategy as appropriate. An overview of communication roles and responsibilities follows:

- CEO, Shire of Jerramungup is responsible for endorsement of the BRM Plan Communications Strategy.
- CEO, Deputy CEO Shire of Jerramungup is responsible for external communication with the local government area

- Bushfire Risk Management Planning Coordinator, Shire of Jerramungup responsible for operational-level communication between the Shire and the Department of Fire and Emergency Services.

Key Stakeholders for Communication

The following table identifies key stakeholders in bushfire risk management planning. These are stakeholders that are identified as having a significant role or interest in the planning process or are likely to be significantly impacted by the outcomes.

Stakeholder	Role or interest	Level of impact of outcomes	Level of engagement
Local Bushfire Stakeholders: Local Government Department of Fire and Emergency Services Department of Fire and Emergency Services Bushfire Advisory Committee Fitzgerald River National Park Fire Working Group	Land Managers/Asset Owners Identify assets at risk. Identify risk and responsibility for it.	High	Inform, consult, collaborate
Advisory/Regulatory Stakeholders: Office of Bushfire Risk Management Department of Environment Regulation	Provide advice and guidance on process and regulations.	High	Inform and consult
Representative Committees: District Emergency Management Committee Local Emergency Management Committee District Operations Advisory Committee	Understanding BRMP & interface with respective resp. Identify assets at risk. Identify risk and responsibility for it.	High	Inform and consult
Cultural Stakeholders Southwest Land & Sea Council – Wagyl Kaip Native Title Claimant Group Heritage Council of WA Historical Society	Understanding BRMP & interface with respective values Identify assets at risk. Identify risk and responsibility for it.	Medium	Inform, consult, empower
Government Agencies: Department of Main Roads Department of Health Department of Education Forests Products Commission Department of Lands	Land Managers/Asset Owners Identify assets at risk. Identify risk and responsibility for it.	High	Inform, involve and consult

Department of Finance			
Interest groups: Friends of the Fitzgerald River National Park Gondwana Link	Understanding BRMP & interface with respective special interests Represent community interest & values Source of local knowledge Identify assets & values	Medium	Inform, consult, empower
Service Providers: Western Power Horizon Power Water Corporation	Critical infrastructure assets/risk/ Identify assets at risk Treatment Strategies	High	Inform, consult, collaborate
Landowners/residents	Human settlement at risk Represent community interest & values Source of risk Community education	Medium	Inform, consult, empower
Business Owners	Land/managers/asset owners Identify assets Negotiate/Treat risks	Medium	Inform, consult, empower

Communications Plan

Timing of Communication	Stakeholder (s)	Communication Objective(s)	Communication Method	Key Message or Purpose	Responsibility	Identified Risks to Communication	Strategy to Manage Risks	Monitoring and Evaluation Method
Development of the BRM Plan								
Life of the plan	Shire of Jerramungup CEO & Executive, CESM	All (1-6)	Regular emails, telephone calls, meetings (quarterly), Representation at bushfire stakeholder workshops	Inform & empower, strategic oversight, review and input, existing controls, identify assets, treatments	BRPC or Planner	Time constraints, stakeholder capacity (small executive), competing issues/projects	Forward planning, achievable timeframes, strategic consultation	Feedback, 'buy-in', outcomes met, response times.
Life of the plan	LEMC	All (1-6)	Presentation at each LEMC meetings	Understanding BRMP process, supports for project, inc. identified assets, treatments esp. priority.	BRPC, BRMO	Attendance of members at the scheduled meeting, Time constraints, lack of buy-in	Set clear objectives, prepare succinct clear presentations,	Feedback, sign off on strategic milestones.
Strategic milestone i.e. last quarter 2016	DEMC	1 & 2	One of presentation, as need arising issues. Follow-up individual stakeholders as required	Understanding BRMP process, strategic support within respective agencies	BRMO	Attendance of members at the scheduled meeting i.e. absence of key stakeholders Time constraints	Schedule follow-up with key agencies Set clear objectives, prepare succinct clear presentations, provide opportunities	Feedback, questions, response to follow-up meetings

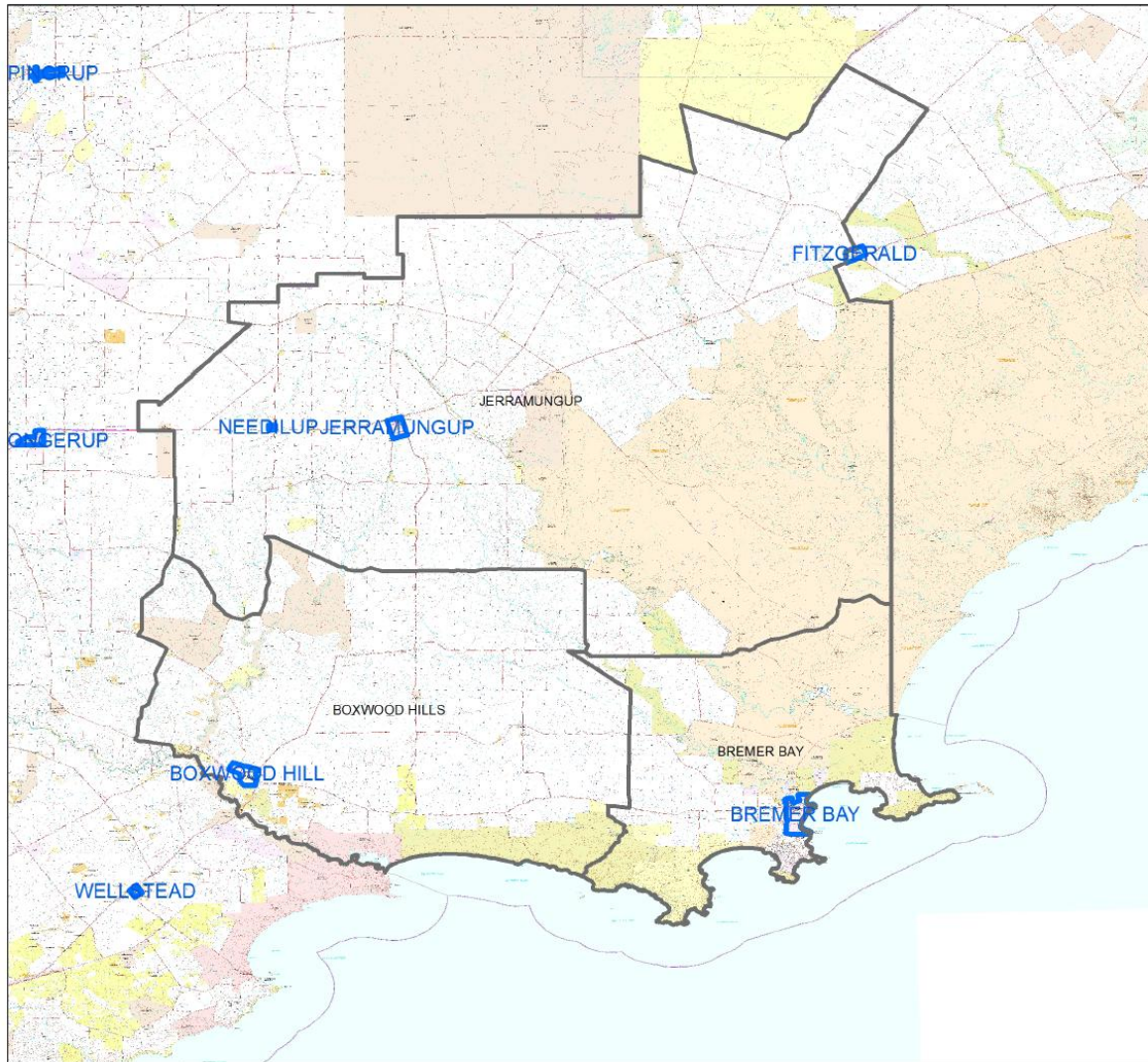
							for follow-up	
Life of the plan	DFES, Regional Superintendent, DO, AO, CESM	All (1-6)	Inform, consult and collaborate, Quarterly meetings with Superintendent, emails & telephone calls, Representation at bushfire stakeholder workshops	Understanding BRMP process, engagement in process i.e. identify assets, risk assessment & treatment. Accept responsibilities.	BRMO	Staff turn-over, Travel distances, Limited buy-in to project, Treatments not negotiated.	Adapt communication to staffing, document communication outcomes, foster ownership/empowerment in process.	Timely constructive feedback, support for/level of participation in process, negotiated treatments.
Life of the plan	Bushfire Stakeholders, CBFCO, BFB Captains, OIC VES, VFRS Captains	All (1-6)	Inform, consult and collaborate, Presentations at brigade meetings Representation at bushfire stakeholder workshops ie. CBFCO or OIC/Captain	Understanding BRMP process, engagement in process i.e. identifying assets, risk assessment & treatment.	BRPC & BRMO	Time constraints Availability of Volunteers Limited buy-in	Planning for scheduled meetings Effective communication i.e. clear objectives, appropriate level of information, ensure feedback incorporated	Feedback, 'buy-in'
Life of the plan	Department of Parks and Wildlife	All (1-6)	Inform, consult and collaborate, Regular emails, telephone calls, meetings, Representation at bushfire stakeholder workshops	Understanding BRMP process, engagement in process i.e. existing controls identify assets, risk assessment & negotiate treatments.	BRPC & BRMO & AO/DO Superintendent as required	Time constraints Limited buy-in to project, Treatments not negotiated.	Establish strategic buy-in, agree to appropriate line communication	Timely constructive feedback, support for/level of participation in process, negotiated treatments.
At strategic milestones	Govt/Critical infrastructure Service	All (1-6)	Inform, consult and collaborate, Regular emails, telephone	Understanding BRMP process, engagement in	BRPC & BRMO	Time constraints Limited buy-in	Establish strategic buy-in, agree to	Timely constructive feedback,

	Providers		calls, meetings, to identify assets, assess risk negotiate treatments	process i.e. existing controls identify assets, risk assessment & negotiate treatments..		to project, Treatments not negotiated.	appropriate line communication	support for/level of participation in process, negotiated treatments.
At strategic project milestones during development i.e. 01/02/2016 – 30/06/17	Business/ Industry	As relevant (1-6)	Inform, consult, and collaborate, Regular emails, telephone calls, meetings, to identify assets, assess risk negotiate treatments	Understanding BRMP process, engagement in process i.e. existing controls identify assets, risk assessment & negotiate treatments.	BRPC & BRMO	Time constraints Limited buy-in to project, Treatments not negotiated.	Establish strategic buy-in, agree to appropriate line communication	Timely constructive feedback, support for/level of participation in process, negotiated treatments.
At strategic project milestones during development i.e. 01/02/2016 – 30/06/17	Community Interest Groups	1,3, 2 & 6	Inform, consult, and collaborate, Regular emails, telephone calls, meetings, to identify assets, assess risk negotiate treatments	Understanding BRMP process, engagement in process i.e. expert knowledge, community values	BRPC & LG Exec as required BRMO & DO/AO as required	Time constraints Limited buy-in to project, Treatments not negotiated.	Establish strategic buy-in, agree to appropriate line communication	Timely constructive feedback, support for/level of participation in process, negotiated treatments.
At strategic project milestones during development i.e. 01/02/2016 – 30/06/17	Community/ Residents at risk	1,2 & 6	Inform, consult, empower. Letters, social media internet updates, presentations.	Understanding BRMP process, understand adjacent risk and acceptability of treatments, responsibility for own risks.	BRPC & BRMO	Time constraints Limited buy-in to project	Appropriate communication methods, opportunities for two-way communication , feedback.	Constructive feedback, support for/level of participation in project.
Implementation of the BRM Plan								
Life of the plan	Shire of Ravensthorpe, CEO &	All (1-6)	Emails, telephone calls, meetings (quarterly),	Report on progress, monitor & review against	BRPC & BRMO, Planner, Deputy CEO	Time constraints, stakeholder	Forward planning, achievable	Feedback, 'buy-in', outcomes met, response

	Executive, CESM			milestones/funding, bushfires, annual works plans of respective stakeholders		capacity (small executive), competing issues/project	timeframes, strategic consultation	times.
Life of Plan	Bushfire Stakeholder Group – CESM, DFES AO/DO, P&W, CBFCO/OIC/Capt ain	All (1-6)	Email updates Annual Mtg	Report on progress, monitor & review against milestones/funding, bushfires, annual works plans of respective stakeholders	BRPC & BRMO, Planner, Deputy CEO	LG capacity in absence of BRMO & BRPC	Forward planning, achievable timeframes, strategic consultation	Feedback, ‘buy-in’, outcomes met, response times.
Life of Plan	Essential Service Providers Working Group	All (1-6)	Email updates Annual Mtg	Report on progress, monitor & review against milestones/funding, bushfires, annual works plans of respective stakeholders	BRPC & BRMO, Planner, Deputy CEO	LG capacity in absence of BRMO & BRPC	Forward planning, achievable timeframes, strategic consultation	Feedback, ‘buy-in’, outcomes met, response times.
Review of the BRM Plan								
Yearly	Shire of Ravensthorpe, CEO & Executive, CESM	All (1-6)	Email Annual Meeting	Review monitoring reporting against milestones/funding, bushfires, annual works plans of respective stakeholders	BRPC & BRMO or, Planner, Deputy CEO	LG capacity in absence of BRMO & BRPC	Forward planning, achievable timeframes, strategic consultation	On-going support and positive feedback from Council
Yearly	LEMC	All (1-6)	Annual Meeting	Review monitoring reporting against milestones/funding, bushfires, annual works plans of respective stakeholders	BRPC & BRMO or planner, Deputy CEO	LG capacity in absence of BRMO & BRPC	Forward planning, achievable timeframes, strategic consultation	On-going support and positive feedback from Council

Yearly	Bushfire Stakeholders & key service providers i.e. Western Power, Watercorp etc.	All (1-6)		Review monitoring reporting against milestones/funding, bushfires, annual works plans of respective stakeholders	BRPC & BRMO or Planner, Deputy CEO	LG capacity in absence of BRMO & BRPC	Forward planning, achievable timeframes, strategic consultation	On-going support and positive feedback from Council
5 yearly	OBRM, DFES, Shire of Jerramungup	All (1-6)		Compliance to plan and acceptance of risk	BRPC & BRMO or Planner, Deputy CEO	LG capacity in absence of BRMO & BRPC	Forward planning, achievable timeframes, strategic consultation	On-going support and positive feedback from Council

APPENDIX 2 – Planning Area Map




**BUSHFIRE RISK
PLANNING AREAS**

**DFES GREAT
SOUTHERN
REGION**

**JERRAMUNGUP
SHIRE**

Legend

 Jerramungup_Planning_Areas



Produced by: Vince Hilder on behalf of DFES
Bushfire Risk Management Branch
December 3rd 2015

APPENDIX 3 – Local Government-Wide Controls, Multi-Agency Treatment Work Plan

ID	Control	Action/Activity Description	Lead Agency	Partners	Notes and Comments
01	Risk Analysis	BRMP extreme risks priority for treatment	LG/DFES	All	Treatments planned for all extreme risks and including in BRMP Treatment Schedule
02		Maintain and refine BRMP	All	All	Currently Planning treatments for all very high risks
03	Westplan - Fire	Performance monitoring and reporting of BRMP outcomes to the relevant local government Council and OBRM as required by Westplan - Fire	DFES	LG	The review periods are detailed in Table 12 – Criteria for Acceptance of Risk and Course of Action.
04	Shire of Jerramungup local fire break and hazard reduction laws <i>Bush Fires Act 1954 S(33)</i>	Fire Break Notice published and issued	LG		Published annually
05		Review of Annual Fire Break Notice	LG		Annual review to improve adequacy of control.
06		Annual inspection target reviewed	LG		Level of non-compliance to inform the BRMP context and vulnerability assessment (human settlement assets).
07	Shire of Jerramungup Prohibited Burn Times, Restricted Burn Times, Total Fire Bans and Harvest & Vehicle Movement Bans	Prohibited and Restricted burn periods are published in the annual firebreak notice. All bans will be communicated via Shires SMS system, Harvest Ban Hotline or ABC local Radio (558AM & 630AM) at 10.05am, 11.05am, 12.35pm and 2.05pm daily	LG/DFES		Prohibited and Restricted burning periods may be varied to seasonal changes. Any changes to be published in local newspaper and Shire's website.
08	<i>Bush Fires Act 1954 S(38)- Harvest Safety</i>	As per the Shire of Jerramungup Firebreak notice the FCO prohibits the use of a harvesting machine or header, other than a clover harvester, during the	LG		Harvest period coincides with the highest bushfire risk period.

		prohibited burning time unless a mobile fire-fighting unit as defined is in the paddock being harvested or adjacent to the entrance of the paddock being harvested; and on Christmas Day on any day in any year.			
09	<i>Shire of Jerramungup LPP No. 18 - Point Henry Fire Management Plan</i>	Existing landowners are required to comply over a phased 5 year period;	LG		Requirements are published in annual Firebreak notice i.e. Compliant access/driveway 31 st Oct 2016 Turnarounds for heavy firefighting vehicles 31 st Oct 2017 20,000L dedicated water supply; 31 st Oct 2018 20 metre BPZ 31 st Oct 2019 LG inspects annually for compliance.
10	<i>Shire of Jerramungup LPP No. 10 – Agroforestry and Plantations S (10.6)</i>	Fire Management Plans – In accordance with the <i>Timber Code of Practice</i> a Fire Management Plan (FMP) will be required for all agroforestry and plantation applications.	LG	FPC FIFWA AFG	The Policy is applied through the LG development approvals process. Policy requires the FMPs to be compiled by a qualified fire consultant.
11	<i>State Planning Policy 3.7 – Planning in Bushfire Prone Areas</i>	Shire declared <i>Bushfire Prone</i> . - Conducting hazard mapping throughout the Shire in order to formally recognise bush fire prone areas in the Shire; - Scheme Amendment to require all housing in a recognised bush fire prone areas to comply with AS3959;	LG	WAPC DFES	Bushfire prone mapping reviewed annually. Local government submits amendments through OBRM.
12	<i>Shire of Jerramungup LPP No. 22 – BAL Contours for existing town sites</i>	This policy seeks to aid applicants in preparing information for lodging development applications by providing a	LG	WAPC DFES OBRM	Applied through the LG’s development approvals processes. The majority of landowners and developers in the

		BAL Contour Plan over the Bremer Bay and Jerramungup Townsites. Large areas of the townsites are required to prepare a BAL Assessment being identified as 'bushfire prone' by the recently released State-wide Bushfire Prone mapping.			Shire of Jerramungup are 'owner builders' or reasonably unfamiliar with the development process and requirements. Additionally, the townsites are remote to professional services; any service usually comes with considerable travel costs added.
13	Proposed LPP – Bushfire Management Plans	Proposed LPP – Bushfire Management Plans to outline requirements for BFMP	LG		The LPP is proposed to be adopted by Council in July 2017.
14	Plantation Managers Fire Agreement	Managers agree to commit their resources to assist each other in relevant Response Zones to suppress fire where it threatens their managed estate or adjoining neighbours. Jerramungup Shire is in Zone B.	Forest Industry Federation (WA)	FPC	Reviewed annually. Shire of Jerramungup is in Zone B. FPC is only Agreement member with plantations in SoJ. FPC enter contracts with individual landowners inc. expectation the owner will be the first responder.
15	Code of Practice for Timber Plantations in Western Australia	The purpose of this Code is to provide goals and guidelines to plantation managers so that plantation operations in Western Australia are conducted in a manner that is in accordance with accepted principles for good plantation management. <i>4.7.6 Fire Prevention and Suppression</i> of the Code outlines Fire Prevention and Suppression Guidelines ⁵⁵ .	FIFWA FPC	Private Plantations	A fire management plan should be available for each plantation. The size of plantation compartments and firebreak specifications should comply with the Bush Fires Act (1954), the Guidelines for Plantation Fire Protection (FESA) and local government firebreak notices. Softwood plantations should be pruned, Grazing should be considered, Prescribed burning should be considered at a regular interval in native forests adjacent to plantations.
16	State-wide arson prevention programs	Arson prevention programs combine a range of strategies with partners agencies. Includes community education,	WAPOL	DFES	Statewide – often targeted strategies in areas where suspicious fires have occurred.

⁵⁵ Code of Practice for Timber Plantations in Western Australia, Forest Industries Federation (WA) 2nd Edition 2014

		gathering of intelligence by community and stakeholders.			
17	Community preparedness education campaigns	Bushfire Ready Groups (preparedness, education and information)DFES Community Engagement Initiatives/programs (Bushfire Awareness workshops, Bushfire Information booths, Farm Safe workshops, DFES Monthly themes, Media releases and promotions, Bushfire Patrol at schools and more)	DFES	P&W	P&W & DFES state-wide programs tailored to suit local needs. Bushfire Ready Group exists in Point Henry. Other programs being planned as part of the treatment schedule.

CRITICAL INFRASTRUCTURE					
ID	Control	Action/Activity Description	Lead Agency	Partners	Notes and comments
18	WaterCorp Bushfire Mitigation Program	5 year Bushfire Risk Mitigation Program focused on reducing bushfire risk to offsite assets from fuel loads on its tenure. Watercorp owns or manages over 31,000 parcels of land across WA. This tenure has been spatially risk assessed at a pre-qualification level to identify the High, Very High and Extreme risk parcels that form the priority sites funded by this program. Extreme project sites are being addressed first.	Watercorp (State)	DFES	1 site in Jerramungup identified within 149 program sites statewide. Preliminary risk ranking of Very High. 034_GSR_Water Catchment_Jerramungup_LWA
19	Watercorp	Great Southern Region Annual Works Plan	Watercorp (Great Southern)		Watercorp assets are managed/maintained at the regional level. Each asset has an asset no. and a management plan referred to as an SAP. The SAPs only address very basic maintenance (inc. firebreaks as per Firebreak notice but not fuel load

					management etc.) however any treatments from BRMS would be put through the SAP to raise a works order.
20	Watercorp	Watercorp has an agreement with P&W for undertaking mitigation and land management activities on their estate.	Watercorp P&W		This process is reviewed annually.
21	MRWA State-wide bridge prioritisation	MRWA undertook and state-wide risk prioritisation project to identify key bridge assets at risk.	MRWA		3 Timber bridges on South Coast Highway. Rated low medium High respectively. Palinup River (Wellstead Crossing) rated high.
22	MRWA – Vegetation clearance envelope for bridges.	Applied to annual works plans on MRWA bridges	MRWA		The clearance envelope was developed and adopted in response to the Rec. 30 <i>Perth Hills Bushfire Inquiry 2011 (Keelty 1)</i> .
23	MRWA Great Southern Region – Annual Bridge assessment & maintenance works plan	Annual field assessment of individual bridges undertaken at to assess vegetation envelope maintained. Subsequent works program to ensure the stringent clearance envelopes are maintained.	MRWA		The regional MRWA undertakes an assessment and associated annual works to maintain the vegetation envelope.
24	Horizon Power - vegetation management, annual vegetation inspection & corrective cut/action.	Annual field assessment for vegetation management and pole base clearance.	Horizon Power	Contractor: Eastern Trees	HP vegetation management manual details annual vegetation inspection & corrective cut/action requirements. HP field instruction manual details pole base clearing requirements (FI 8.5) for chosen HV poles. Both of these are completed on a minimum 12 month cycle Note: 2016-17 due to the delayed winter & extended growing season,

					HP had to complete an additional round of Pole Base Clearing.
25	Western Power – Annual Works Plan	WP inspects every asset (poles, wires, plant [i.e., transformers] and vegetation that could grow into assets) on an annual basis, and does a full inspection of assets every 4 years.	Western Power	Contractor: Eastern Trees	WP also prioritises according to bushfire risk. In moderate (Jerramungup) and low bushfire risk areas all vegetation is cut on two – three year cycles respectively. Similarly, asset defects are rectified in EFR and HFR areas annually before November 30.
26	DFES – Bushfire Risk Mitigation Schools	All schools within areas declared bushfire prone are individually assessed. Risk treatment plan is developed and signed off and DoE appoints contractors to undertake agreed work.	Department of Education DFES		Schools are rated Zone 1 or 2. Need to have a BAL of 12 or BAL 19 is accepted with building modification.
27	School Principals Guide - Department of Education	All schools should include their bushfire plan as a part of their <i>Emergency and Critical Incident Management Plan</i> .	Department of Education	DFES	Zone 1 schools require standalone bushfire plans.

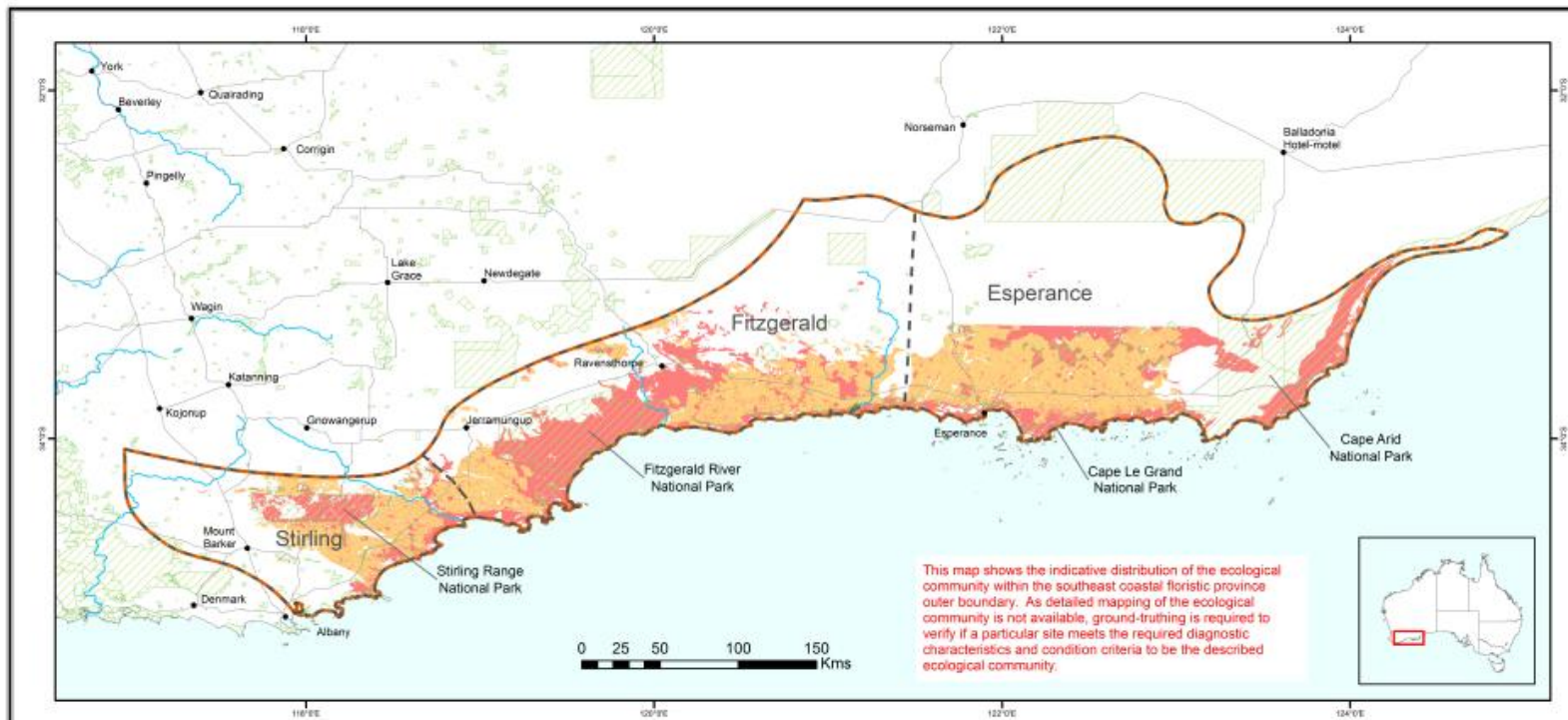
ENVIRONMENTAL					
ID	Control	Action/Activity Description	Lead Agency	Partners	Notes and comments
28	Fire Management Strategy for the Wilderness Zones of the Fitzgerald River National Park (1999-2001)	Provides strategic objectives for the management of fire and biodiversity in the park. Sits behind the annual works developed by the Fire Working Group.	P&W	DFES SoJ SoR CBFCO's	While some of the strategies are outdated the overall intent and objectives are still applied by P&W. The FRNP Advisory Committee and the Fire Working Group still function.

29	Fitzgerald River National Park Fire Working Group	P&W facilitate stakeholder working group: season debrief, plan burns and mitigation works	P&W	DFES SoJ SoR CBFCO's	Annual meeting. Agreed mitigation works are documented. Important for town protection as the FRNP abuts three main town sites. Large areas of UCL also surround the towns.
30	Fitzgerald River National Park Management Plan	The management plan outlines strategies for the management of the NP including bushfire risk and importantly dieback management.	P&W	SoJ SoR Southcoast NRM	FRNP is the largest conservation reserve in southwest Western Australia that is currently still relatively free of <i>Phytophthora cinnamomi</i> infestations. <i>Phytophthora</i> is one of the most significant threats to the biodiversity of the park and therefore preventing its introduction and further spread is one of the primary objectives for P&W in managing the park (CALM 1991) ⁵⁶ .
31	Bush Heritage - Fire Management Plans	Bush Heritage land is bought for is environmental and biodiversity value. The land is usually native vegetation that is managed or regenerated. They are required to meet the provisions of Shire of Jerramungup - LPP 10 Agroforestry and Plantations. Inc. an independent and self-sufficient fire management plan.	Bush Heritage Gondwann a Link Greening Australia	LG	Reviewed annually by LG for compliance. Bush Heritage manages five separate parcels of land.
32	Indicative Annual Prescribed Burn Program - 2016/17 South Coast Region, Albany District	P&W prepare an indicative burn plan for the South Coast Region Albany.	P&W	Community reference groups	Reviewed and implemented annually. The plans can be accessed via their website, by sharing shape files (GIS) and are communicated at Local BFAC, ROAC and other various meetings.
33	Preparedness, Mitigation and Response for	Risk management activities such as fuel	P&W	Brigades	P&W region liaise with DFES and BRM

⁵⁶ Fitzgerald River National Park Coastal Walk Trails; Dieback Plan, Department of Parks and Wildlife 2013

	Lands Managed by P&W and DoL estate managed by P&W through MoU	reduction are undertaken by DFES on UMR and UCL . Funding is provided by DoL.			Plan around the location of
34	Preparedness, Mitigation and Response for land within gazetted town boundaries owned by DoL and managed by DFES through MoU	Risk management activities such as fuel reduction are undertaken by DFES on UMR and UCL . Funding is provided by DoL.	DFES LG	Brigades	DFES is responsible for identifying risk on UCL/UMR on an annual basis. The BRM Plan will now be used to identify risk.

APPENDIX 4 – Map of Kwongkan Shrublands



This map shows the indicative distribution of the ecological community within the southeast coastal floristic province outer boundary. As detailed mapping of the ecological community is not available, ground-truthing is required to verify if a particular site meets the required diagnostic characteristics and condition criteria to be the described ecological community.

Proteaceae Dominated Kwongkan Shrublands of the southeast coastal floristic province of Western Australia Ecological Community

- Legend**
- Major Localities
 - Major Roads
 - Major Rivers
 - Floristic Districts
 - Conservation Reserves
 - Southeast coastal floristic province
 - Indicative current distribution
 - Indicative pre-European distribution



Population (2009)
 2009: 324,244
 1:2,000,000



Source
 Ecological Floristic Provinces © WA Department of Parks and Wildlife, 2013
 National Vegetation Information System (NVIS) Version 4.10 Commonwealth of Australia 2011
 Localities, 1:10,000,000 © Commonwealth of Australia, Geoscience Australia, 2002
 Roads, 1:10,000,000 © Commonwealth of Australia, Geoscience Australia, 2002
 Drainage, 1:10,000,000 © Commonwealth of Australia, Geoscience Australia, 2002
 Coastline and State Borders, 1:250,000 © Commonwealth of Australia, Geoscience Australia, 2006

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