Shire of Jerramungup

Bushfire Risk Management Plan

2024-2027

Office of Bushfire Risk Management Bushfire Risk Management (BRM Plan) endorsed XX Month 20XX

Local Government Council BRM Plan approval XX Month 20XX

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Document control

Document name	Bushfire Risk Management Plan	Current version	1.1
Document owner	CEO Shire of Jerramungup	Issue date	05/12/2024
Document location	Jerramungup	Next review date	DD/MM/YYYY

Document endorsements

This Bushfire Risk Management Plan has been endorsed by the Office of Bushfire Risk Management as consistent with the standards detailed in the *Guidelines for Preparing a Bushfire Risk Management Plan 2023*.

The approval of the Bushfire Risk Management Plan by the Shire of Jerramungup Council signifies support of the plan's implementation and commitment to working with risk owners to manage bushfire risk. Approval does not signify acceptance of responsibility for risk, treatments or outcomes on land that is not managed by the Shire of Jerramungup.

Local Government	Representative	Signature	Date
Shire of Jerramungup	Charmaine Solomon		

Publication information

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Chapter 1 Introduction

1.1. Background

This Bushfire Risk Management (BRM) Plan provides contextual information to inform a structured approach to identifying, assessing, prioritising, monitoring and treating bushfire risk. The BRM Plan has been prepared by Shire of Jerramungup encompasses all land within the Shire of Jerramungup and has been written on behalf of all stakeholders within that area. The BRM Plan is informed by consultation and communication with land and asset managers that has occurred throughout its development to ensure an informed and collaborative approach to managing bushfire risk.

The BRM Plan has been prepared with due consideration of the requirements stated in the *Guidelines for Preparing a Bushfire Risk Management Plan* (the Guidelines) published by the Office of Bushfire Risk Management (OBRM) including the principles described in *ISO 31000:2018 Risk Management*.

1.2. Objective of the Bushfire Risk Management Planning Program

The BRM planning program supports local governments to reduce the threat posed by bushfire. The Shire of Jerramungup BRM Plan will contribute to achieving the objective of the BRM program by:

- Guiding and coordinating a cross-tenure, multi-stakeholder approach to BRM planning.
- Facilitating the effective use of the financial and physical resources available for BRM activities.
- Supporting integration between risk owners, strategic objectives and tactical outcomes.
- Documenting processes used to monitor and review the implementation of treatments to ensure risk is managed to an acceptable level.

1.3. Legislation, policy and standards

Legislation, policy and standards that were applied in the development of this BRM Plan can be found in the *Bushfire Risk Management Planning Handbook – Appendix 1 – Summary of Related Legislation, Policy and Guidelines*.

1.3.1 Legislation

- *National Trust of Australia (WA) Act 1964*
- *Soil and Land Conservation Act 1945*

1.3.2. Policies, Guidelines and Standards

- State Planning Policy 3.4: Natural Hazards and Disasters
- 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 (2019)
- Shire of Jerramungup Local Planning Policy (LPP) No. 10 - Agroforestry and Plantations (2019)
- Shire of Jerramungup Local Planning Policy (LPP) No. 12 - Requirement for Fire Management Plans (2019)
- Shire of Jerramungup Local Planning Policy (LPP) No. 18 - Point Henry Fire Management (2019)
- Shire of Jerramungup Local Planning Policy (LPP) No. 19 - Bremer Bay Town Centre Design Guidelines (2019)
- 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 2006.

1.3.3 Other Related Documents

- National Strategy for Disaster Resilience
- National Statement of Capability for Fire and Emergency Services (AFAC 2017)
- Public Service Circular No. 88 Use of Herbicides in Water Catchment Areas (Dept. of Health 2007)
- Bushfire Risk Management Planning Handbook 2023
- Bushfire Risk Management System (BRMS) User Guide (DFES 2021)
- Shire of Jerramungup - Community Plan 2021-2031
- Shire of Jerramungup - Bremer Bay Structure Plan Report
- Shire of Jerramungup - Corporate Business Plan 2021-2025
- Shire of Jerramungup - Local Planning Strategy (2012)
- Shire of Jerramungup – Emergency Management Recovery Plan
- Shire of Jerramungup - Local Emergency Management Arrangements
- Shire of Jerramungup – Fire Control Information 2024/2025
- Shire of Jerramungup - Fire Zones Map
- Municipal inventory of Heritage places
- Shire of Jerramungup Bremer Bay Fire Break Plan
- Department of Water and Environmental Regulation Permit to clear

Chapter 2 The Risk Management Process

The BRM planning process is a cycle of understanding the context and assessing and treating risks (Figure 1). Each of these steps is informed by communication and consultation and supported by monitoring and review. The three products produced during the BRM planning process are the BRM Plan, Asset Risk Register and Treatment Schedule (Figure 1).

Further details on the guiding principles and process for the development of this plan can be found in Chapter 2 of the Guidelines.

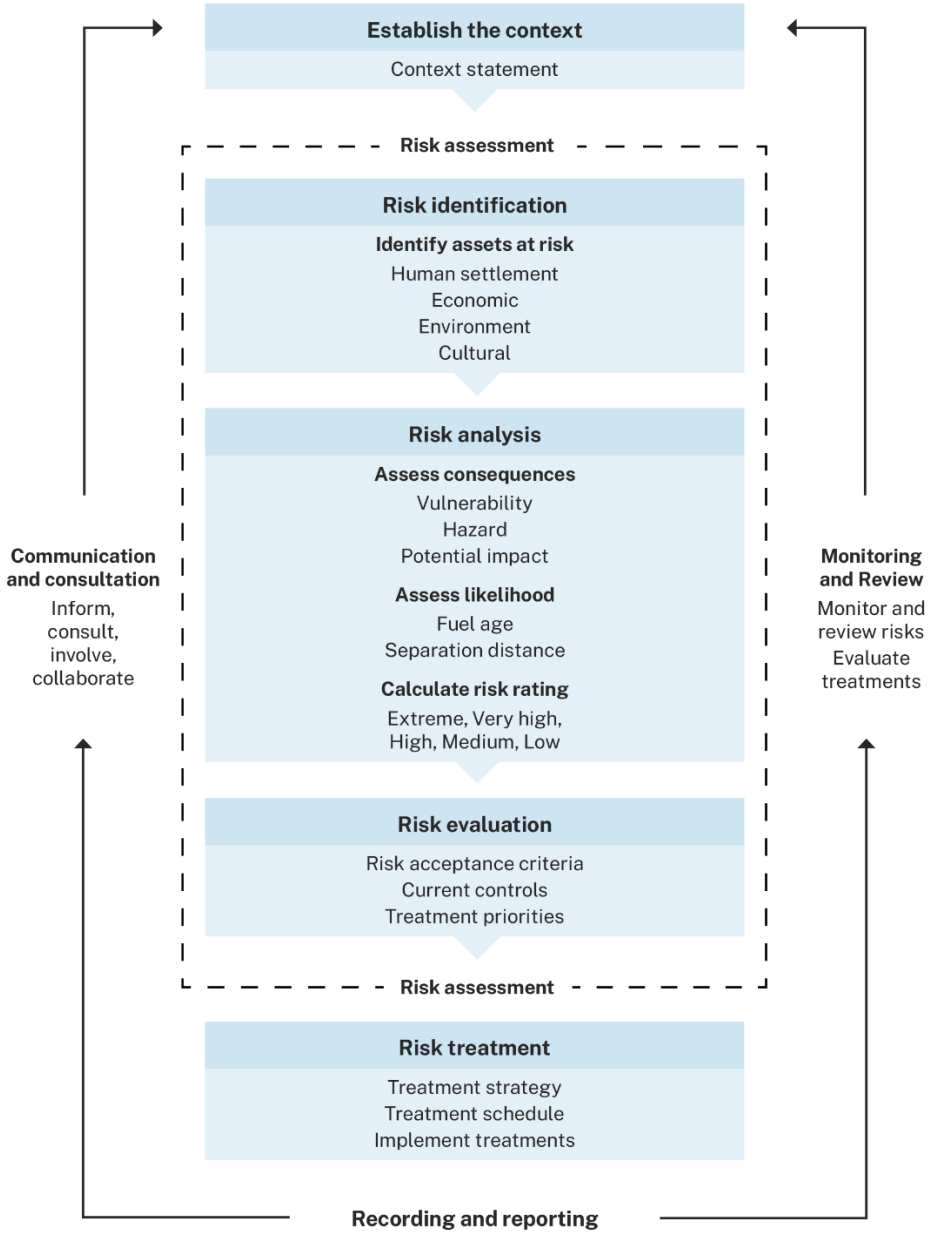


Figure 1: The Bushfire Risk Management planning process

2.1. Roles and Responsibilities

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

Table 1: Roles and responsibilities in the Bushfire Risk Management (BRM) planning process

Stakeholder*	Roles and responsibilities
Local Government	• Custodian of the BRM Plan. • Coordinate the development and ongoing review of the BRM Plan. • Undertake bushfire risk assessment of local government area. • Submit the draft BRM Plan to OBRM for review and endorsement. • Develop and implement a Treatment Schedule for local government managed land. • Encourage risk owners to treat identified risks.
DFES	• Contribute to the development and implementation of the BRM Plan. • Facilitate involvement of state and federal government agencies in the BRM planning process. • Undertake treatments on Unmanaged Reserves and Unallocated Crown Land within gazetted town sites. • By agreement, implement treatment strategies for other land managers. • Endorse BRM Plans as consistent with the Guidelines, BRM Program and dynamic risk environment. • Administer the Mitigation Activity Fund Grants Program.
Department of Biodiversity, Conservation and Attractions (DBCA)	• Contribute to the development of the BRM Plan. • Implement their treatment program on DBCA managed land. • Provide advice on environmental assets and appropriate treatment strategies for their protection.
Department of Parks and Wildlife (P&W)	• 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.

Stakeholder*	Roles and responsibilities
Department of Planning, Lands and Heritage	• Identify managed assets. • Provide advice on the management of Aboriginal Cultural Heritage.
Other State and Commonwealth Government agencies and public utilities	• Identify managed assets. • Provide advice on current risk treatment programs. • Contribute to the development of BRM Plans. • Undertake treatments on lands they manage.
Corporations and private landowners	• Identify managed assets. • Provide advice on current risk treatment programs. • Undertake treatments on lands they manage.
Other **Community members representatives**	• 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.

2.2. Communication and consultation

Communication and consultation are fundamental to the development, implementation and review of the BRM Plan. A Communication Plan describing communication with relevant stakeholders at each stage of the BRM planning process is at Appendix B. A record of engagement with stakeholders is maintained.

Chapter 3 Establishing the Context

The Shire of Jerramungup is vulnerable to bushfires due to fuel loads and the proximity of Shire reserves to residential properties and critical infrastructure. It has been identified as having a significant impact on the bushfire risk rating of properties located in the area. The remote location means the Shire must be fairly self-sufficient, and relies on grants and government funding to prepare and protect the Shire. Jerramungup includes 1.5 million hectares of conservation estate, State waters, farmland, and in the towns are the industrial and urban areas. Jerramungup is the western gateway to the Fitzgerald River National Park (FRNP), the Biosphere is listed by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) as a World Heritage Site.

There has been significant investment in the bushfire mitigation program by the Shire of Jerramungup, this has resulted in a substantial reduction of radiant heat impacts on key locations and enhanced the ability to arrest the development of bushfire within the townsites. Within this BRMP the risks and assets located within the Shire will be assessed including the townsites of Jerramungup and Bremer Bay and the districts of Needilup, Jacup, Gairdner, Boxwood Hill and Fitzgerald.

3.1 Strategic and Corporate Framework

The Shire of Jerramungup strategic and corporate framework is outlined in the Strategic Community Plan 2021-2031[1]. The Plan outlines the Shire's strategic direction and highlights priority areas for the Shire.

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 environment and human interaction with the landscape. Land use planning, land capability and natural resource management are addressed.

Aspiration 1.1 - Environmental Stewardship - Continue the delivery of fire mitigation strategies across the Shire. The Shire recognises the Department of Fire and Emergency Services (DFES) and the Department of Biodiversity, Conservation and Attractions (DBCA) with Parks and Wildlife Service (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. Maintain a high standard of emergency planning and preparedness, demonstrates the Shire's ongoing commitment to emergency management and in particular to continue the delivery of fire mitigation strategies across the Shire.

1 Shire of Jerramungup (2021) *Strategic Community Plan 2021-2031*
https://www.jerramungup.wa.gov.au/council/notices/strategic-direction.aspx

Further to this overarching strategic framework the Shire of Jerramungup, per Section 38 of the Emergency Management Act 2005, has established a Local Emergency Management Committee (LEMC). The LEMC has multi-agency 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. This BRM Plan will provide one of the treatments to address the risk of fire as highlighted within the LEMC emergency risk management process.

The Shire of Jerramungup Bush Fire Advisory Committee (BFAC) has played an integral role in the development of the initial 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 B – Communication Strategy.*

Once the BRMP is completed there are different stakeholders responsible for bushfire risk management from residents following the fire notice, to local government in preparing the town and providing facilities during a bushfire event. Within the Shire of Jerramungup Chief Executive Officer, has overall responsibility for ensuring the BRMP is implemented. While the Manager of Emergency Services has delegated responsibility for implementing the BRMP.

3.2 Land use and tenure

The Shire of Jerramungup is located in the Great Southern region of Western Australia, about 454 kilometres southeast of Perth[2]. The Shire covers an area of 107,200 hectares. The Jerramungup townsite is located on National Highway One, which links Albany and Esperance and lies at a road junction of the major Esperance-Perth route[3].

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 are the two main town sites, the others have not developed in any significant way. Fitzgerald is a small farming town with little infrastructure, Jacup has a CBH grain facility used in summer, Gairdner has a CBH grain facility, primary school and sports facilities, Boxwood Hill has sporting facilities, a petrol station and housing for 91 people, Needilup has a church and golf club with 99 residents.

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 61,700 hectares extending from the Wellstead Estuary in the north to Fishery Beach in the south. Bremer Bay is located on the coast with one main road entering the town. The town is surrounded by native vegetation along the coast and farming land along the main road that enters Bremer Bay townsite.

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

2 Shire of Jerramungup (2016) *Community Strategic Plan* *https://www.jerramungup.wa.gov.au/council/notices/strategic-direction.aspx*

3 Shire of Jerramungup (2018) Local Planning Strategy https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf

and has a dual function, servicing visitors requiring petrol and a stopover for refreshments. Recreational facilities are available at the golf course/country club[4].

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 a bulk grain terminal that receives grain during the early summer harvest period. Adjacent to this is a school, hall, oval, tennis courts, ambulance depot, and 2 houses.

One other settlement is at Millers Point on the Beaufort Inlet where there is a squatter's 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. It is the Council's objective for the Millers Point dwellings to be upgraded to meet the Residential Design Codes and building codes concerning bushfire requirements. In the meantime, Millers Point needs to be considered as a human settlement for risk management [5].

[4] Gray & Lewis (2010) Shire of Jerramungup Local Planning Strategy https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf

[5] Shire of Jerramungup (2015) *Local Planning Policy No 7. Kent Location 95 Dillon Bay and Kent Location 839 Millers Point* https://www.jerramungup.wa.gov.au/documents/158/lpp7-kent-location-94-dillon-bay

Figure 2: Shire of Jerramungup Regional Location[6]

6 Department of Fire and Emergency Services Regional location map

Table 2: Summary of land management responsibilities within the Shire of Jerramungup

Land Manager	Local Government Area (%)
Local Government	6.6
Private	69.2
Department of Biodiversity, Conservation and Attractions	21
Department of Planning, Lands and Heritage	3.2
Total	100

Source: Shire of Jerramungup

The region is recognised by Noongar people as Wagyl Kaip[7]. There are many cultural and significant sites vulnerable to fire 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 been registered and the Settlement formally commenced on 25 February 2021[8]. Permission from the Wagyl Kaip and Southern Noongar Aboriginal Corporation is required to enter significant sites and land managed by the corporation, this is discussed further in the heritage section.

The Shire of Jerramungup has established a good relationship with major landowners to reduce risks. DBCA, farmers and the Aboriginal community work with the Shire to protect assets within the Shire before and during a bushfire event. Through proactive measures, compliance with firebreaks, fire knowledge and manpower during fire events.

DBCA has participated in and contributed to the development of this plan and will continue to be involved in the ongoing implementation and review. DBCA uses prescribed burning and has a number of management plans to ensure the fire regime is not inappropriate for a particular taxon. Due to the different fire regime requirements of threatened species across the Region, fire management needs to consider the biological response of the species in particular areas[9].

The shire has large areas of bushland which requires ongoing management to reduce the impact of bushfires on these communities. Broad acre farmland creates a fire risk after cropping which leaves stubble in the paddocks which carries fire. Farms which are grazed with livestock have a much reduced risk of bushfire because they will burn slowly when compared to crop stubble. Some agricultural residents leave the area for the holiday period following the completion of harvest during peak fire season and tourist high season. This would mean less farm fire units are

[7]Kaartdijin Noongar – Noongar Knowledge (2024) About the Wagyl Kaip and Southern Noongar Region http://www.noongarculture.org.au/wagyl-kaip/

[8] Wagyl Kaip Southern Noongar Aboriginal Corporation n.d. The story of the South West Native Title Settlement https://wagylkaip.org.au/settlement

[9] DBCA (2009) Threatened Species & Ecological Communities Regional Strategic Management Plan https://southcoastnrm.com.au/wp-content/uploads/2021/07/SC_ThreatenedSpeciesRP.pdf

available, less volunteer fire-fighters are available, along with a further reduced population in the remote areas of the Shire to report ignitions.

The Shire has been working to protect vulnerable facilities by assessing vegetation in and around townsites to AS3959, with BAL contour plans used to mitigate the risks for the caravan park, school and health centre. Within Bremer Bay, there are more facilities vulnerable to bushfire with the church, school, aged care centre, health centre, fire shed and caravan park. This mitigation work will reduce the risk to the townsites along with the use of mitigation plans for reserves, enforcement of bushfire notices, community engagement and grant funding opportunities.

3.3 Community demographics and values

The most recent Australian Bureau of Statistics (ABS*)* data shows the population in the Shire of Jerramungup in 2021 was 1,162, of which 621 were male and 541 females, with a median age of 40[10]. The population has increased by 83 residents since 2016. Indigenous residents account for 3.4%, while 21.6% were born overseas with most immigrating from New Zealand[11]. Within the Shire of Jerramungup, most households speak English, while there are 5.4% who speak another language at home with the top language being Afrikaans. In Bremer Bay English speaking households are a little higher with 92.5% [12]. Bremer Bay has a population of 424 with a median age of 53.

According to the ABS in 2021 Bremer Bay town site had an Indigenous population of 1.9%[13]. Boxwood Hill and Needilup have not substantially developed with 91[14] people and 99[15] respectively, and they may be unlikely to alter significantly in the future[16]. Within these two towns there is limited infrastructure with sports facilities and a petrol station.

The Shire, in its Strategic Community Plan 2021-31 identified the following trends, characterising its local government area; stable population, increasing median age, retrofitting existing development with new, be a leader in emergency management, be well prepared for bushfires and increasing visitation rates[17]. The community also placed a high priority on bushfire prevention and mitigation.

[10] ABS (2021) Jerramungup Census Quick stats https://abs.gov.au/census/find-census-data/quickstats/2021/LGA54130
[11] ABS (2021) Jerramungup Census Quick stats https://abs.gov.au/census/find-census-data/quickstats/2021/LGA54130
[12] Shire of Jerramungup n.d. Strategic Community Plan 2021-2031 https://www.jerramungup.wa.gov.au/documents/71/strategic-community-plan-2021-2031
[13] ABS (2021) Bremer Bay Census Quick Stats https://abs.gov.au/census/find-census-data/quickstats/2021/SAL50177
[14] ABS (2021) Boxwood Hill Census Quick Stats https://abs.gov.au/census/find-census-data/quickstats/2021/SAL50167
[15] ABS (2021) Needilup Census Quick Stats https://abs.gov.au/census/find-census-data/quickstats/2021/SAL51099
[16] Gray & Lewis (2010) Shire of Jerramungup Local Planning Strategy https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf
[17] Shire of Jerramungup n.d. Strategic Community Plan 2021-2031 https://www.jerramungup.wa.gov.au/documents/71/strategic-community-plan-2021-2031

It is worth noting that population figures for Bremer Bay increase significantly during summer holidays to between 10,000 to 12,000 people[18]. Of these most notably is the pressure caused by service populations such as tourists and seasonal workforces. The population will create issues if evacuating the town, this group needs to be considered in planning as they will not be aware of the bushfire risk of the area and are unfamiliar with evacuation routes of the area. This group needs to be considered when releasing community information and in what forms. The BRM Plan seeks to address the risk presented by the increase in temporary population during the peak bushfire season, in particular the increase in risk from bushfire to the campsites within the FRNP and the general coastal areas.

This includes people camping in the Unallocated Crown Land (UCL), Doubtful Island, Point Ann, Fitzgerald River National Park, Point Henry, Dillon Bay and general coastal areas. The Shire's LEMA has been sent to DEMC for review. It is understood the Shire will have difficulty getting information to the several thousand camping during the bushfire season. Previous campaigns have focused on advising visitors to listen to ABC radio for warnings[20].

At times the town cannot provide the necessary facilities and services for this number of visitors. Bremer Bay also has a high level of absentee owners who do not occupy houses for the full year, during the 2021 census 280 dwellings were unoccupied, while only 38% were occupied[21]. This transient population presents several challenges for bushfire risk management. The dwellings are likely less prepared for bushfire than full-time residents and maintenance will not be completed regularly during the year.

The town has a single road access and is constrained by the coast and estuary which makes evacuation of a large number of people difficult. It is understood many of the longer-term residents, especially retirees from the agriculture community, are aware of the risk of bushfire based on their experience of living in the area. However, newer and transient populations especially tourists and seasonal employees are generally less aware. This seems to be in part influenced by the character of the vegetation i.e. areas of low scrub or shrubland that people perceive as not posing a threat. Despite this perception, shrubland fires can be fast moving and intense even under moderate burning conditions[22].

The BRM Plan considers that while there is generally a high level of awareness of the bushfire risk there is concern as to whether this awareness has been transferred into tangible preparatory actions. Recently the Shire has been working on recommendations for bushfire mitigation to reduce the risk of bushfire across the whole Shire. A works program has been mapped over Jerramungup and Bremer Bay townsites to reduce the risk to assets like the school, caravan

[18] Wong-See T and Barr P ABC News (2021) Bremer Bay braces for annual population boom as tourists arrive for Christmas holidays. https://www.abc.net.au/news/2021-12-14/bremer-bay-braces-for-christmas-holiday-population-boom/100695440

[20] Shire of Jerramungup (2016) Local Emergency Management Arrangements https://www.jerramungup.wa.gov.au/documents/75/reviewed-local-emergency-management-arrangements-march-2016

[21] ABS (2021) Bremer Bay Census Quick Stats https://abs.gov.au/census/find-census-data/quickstats/2021/SAL50177

[22] 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 https://doi.org/10.1016/j.envsoft.2012.07.003

parks and other assets. This is to reduce bushfire risk using several strategies of mechanical works, weed management and prescribed burning.

The elderly residential population is largely made up of retirees from the surrounding agricultural area and have a high level of awareness and knowledge of the bushfire risk. This knowledge is of value to the local community and should be harnessed in any engagement strategies. Despite this, the elderly population, due to issues of mobility and self-reliance, are at risk from bushfire. The high number of elderly residents can create pressure on the emergency and support services, particularly if required to conduct an evacuation. Strategies to address this will include community engagement but also require collaboration and planning with the associated support services.

Figure 3: Bushfire in Jerramungup townsite 2022[23]

This age group could be vulnerable in a bushfire event and may need assistance during an evacuation or bushfire season preparation. They may have limited ability to navigate social media for warnings and updates. This group need to be considered when releasing community information and in what forms.

Farming activities affect the number of available volunteers with seeding from May to July, harvest from November to January, along with the number of people in the town from November to April. While these risk treatment strategies have reduced the risk to the community and residents in Jerramungup and Bremer Bay, visitors to Bremer Bay need to understand the ongoing and residual risk from bushfire. Planning and awareness-raising are required to ensure the community has adequate preparedness and understands the bushfire risk. They must also have realistic

[23] Croy L (2022) Albany Advertiser 11/2/2022 Fire alarm: Homes feared lost as lightning sparks bushfire emergencies across southern WA https://www.albanyadvertiser.com.au/news/albany-advertiser/bushfire-alert-lightning-sparks-flurry-of-fires-across-southern-wa-puts-jerramungup-hopetoun-under-alert-c-5662853

expectations of the local response capability. Bremer Bay has a volunteer brigade, with volunteer numbers declining due to an aging population and COVID-19. The shire is isolated and any backup will be delayed with travel time. The Shire must try to increase volunteers because of the remoteness. 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. The Shire has completed work to map the towns of Jerramungup and Bremer Bay to complete mitigation works and reduce the BAL contours; see the works programs in Figures 4 to 7 below.

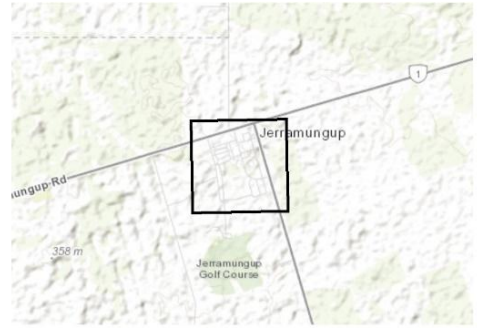
Albany Office:
29 Hercules Crescent
Albany, WA 6330
(08) 9842 1575

Denmark Office:
7/40 South Coast Highway
Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1382

BPAD Bushfire Planning & Design

BIO DIVERSE SOLUTIONS



Overview Map Scale 1:100,000

Legend

- 150m Assessment Boundary
- Cadastre
- MW_PC - Mechanical Works Parkland Clearing
- PB - Prescribed Burn (Nominal Cells)
- FCI - Fire Control Information to Apply
- Weed Management
- Assets and Vulnerable Land Use
- Vegetation/Plot Boundary

Vegetation

- Forest Type A
- Woodland Type B
- Scrub Type D
- Grassland Type G
- Excluded 2.2.3.2

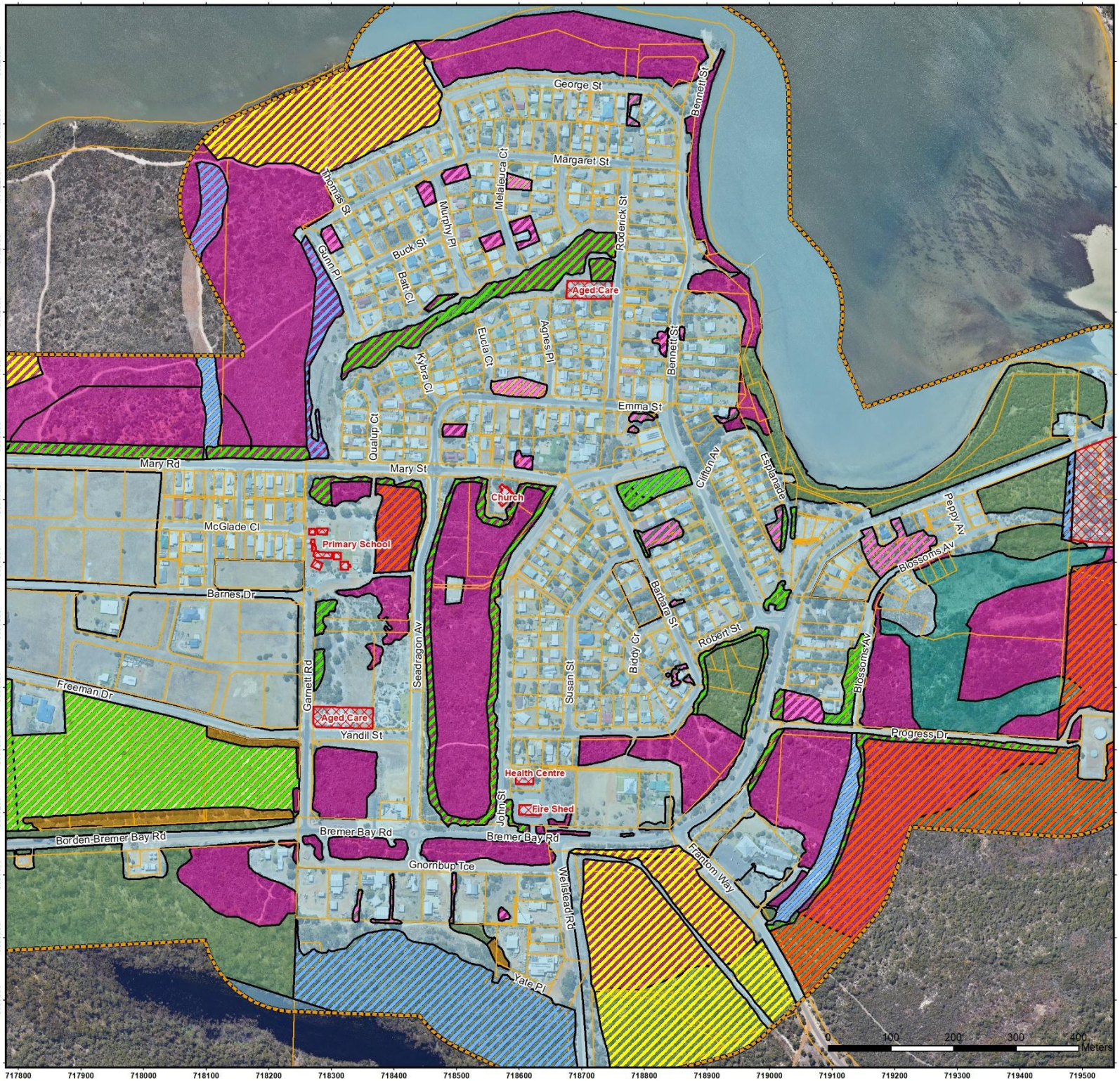
Scale
1:5,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Shire of Jerramungup
PO Box 92
Jerramungup, WA 6337

Figure 4: Jerramungup Works Program

BAL Assessor	*QA Check*	*Drawn by*
MEH & BRM	**JRB**	**BRM**
STATUS	*FILE*	*DATE*
FINAL	**JER005-007**	**29/04/2024**



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Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1382

BPAD Bushfire Planning & Design

BIO DIVERSE SOLUTIONS

Overview Map Scale 1:100,000

Legend

- 150m Assessment Boundary
- Cadastre
- MW_PC - Mechanical Works Parkland Clearing
- MW_SB - Mechanical Works Strategic Break
- PB - Prescribed Burn (Nominal Cells)
- FCI - Fire Control Information to Apply
- Weed Management
- Assets and Vulnerable Land Use
- Vegetation/Plot Boundary

Vegetation

- Forest Type A
- Woodland Type B
- Shrubland Type C
- Scrub Type D
- Grassland Type G
- Excluded 2.2.3.2

Scale
1:6,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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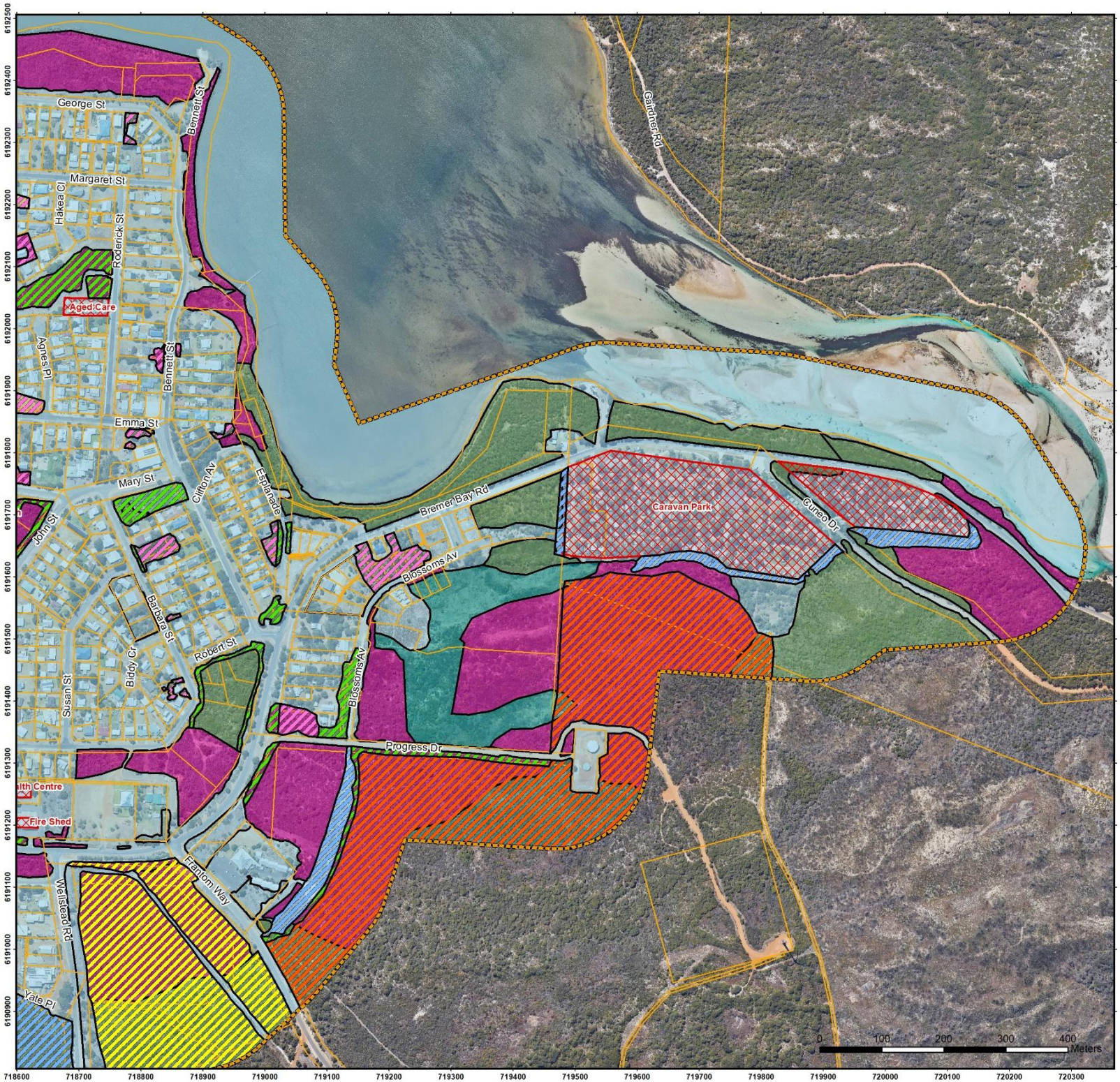
Figure 5: Bremer Bay Works Program Central

BAL Assessor	QA Check	Drawn by
MEH & BRM	JRB	BRM
STATUS	**FILE**	**DATE**
FINAL	JER005-007	29/04/2024



Albany Office:
29 Hercules Crescent
Albany, WA 6330
(08) 9842 1575

Denmark Office:
7/40 South Coast Highway
Denmark, WA 6333
(08) 9848 1309

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Esperance, WA 6450
(08) 9072 1382

BPAD Bushfire Planning & Design

BIO DIVERSE SOLUTIONS

Overview Map Scale 1:100,000

Legend

- 150m Assessment Boundary
- Cadastre
- MW_PC - Mechanical Works Parkland Clearing
- MW_SB - Mechanical Works Strategic Break
- PB - Prescribed Burn (Nominal Cells)
- FCI - Fire Control Information to Apply
- Weed Management
- Assets and Vulnerable Land Use
- Vegetation/Plot Boundary

Vegetation

- Forest Type A
- Woodland Type B
- Shrubland Type C
- Scrub Type D
- Grassland Type G
- Excluded 2.2.3.2

Scale
1:6,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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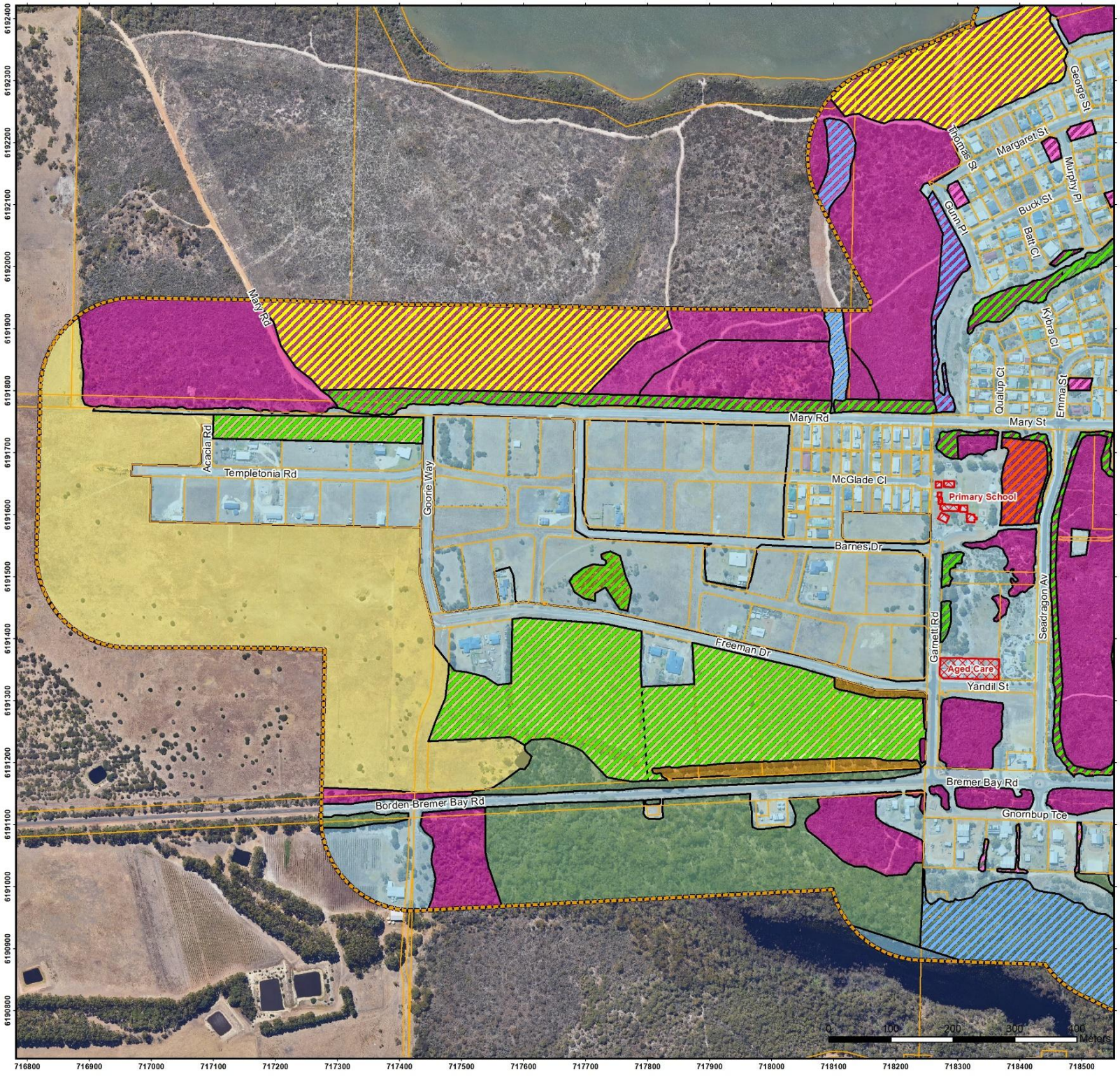
Figure 6: Bremer Bay Works Program East

BAL Assessor	*QA Check*	*Drawn by*
MEH & BRM	**JRB**	**BRM**
STATUS	*FILE*	*DATE*
FINAL	**JER005-007**	**29/04/2024**



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BPAD Bushfire Planning & Design

BIO DIVERSE SOLUTIONS

Overview Map Scale 1:100,000

Legend

- 150m Assessment Boundary
- Cadastre
- MW_APZ - Mechanical Works APZ Standards
- MW_SB - Mechanical Works Strategic Break
- PB - Prescribed Burn (Nominal Cells)
- FCI - Fire Control Information to Apply
- Weed Management
- Assets and Vulnerable Land Use
- Vegetation/Plot Boundary

Vegetation

- Forest Type A
- Woodland Type B
- Shrubland Type C
- Scrub Type D
- Grassland Type G
- Excluded 2.2.3.2

Scale
1:6,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Figure 7: Bremer Bay Works Program West

BAL Assessor	*QA Check*	*Drawn by*
MEH & BRM	**JRB**	**BRM**
STATUS	*FILE*	*DATE*
FINAL	**JER005-007**	**29/04/2024**

3.4 Cultural heritage

The Shire has prepared a local Municipal Inventory, which identifies areas of cultural heritage significance, a number are also on the State Heritage Council listing:

1. Original Wellstead Home - Bremer Bay 1857- state significance

2. Wellstead Homestead - Bremer Bay - state significance 1857

3. Bremer Bay Telegraph Station 1875

4. First House - Bremer Bay townsite

5. Bark Hut - Bremer Bay

6. Qualup Homestead - state significance 1885

7. Hassell Homestead and barn- Jerramungup 1906

8. Jerramungup School 1958

9. Shire of Jerramungup Council Offices

10. Jerramungup Town Hall 1958

11. C. Cameron's office - now Fitzgerald Biosphere Group office

12. Jerramungup Powerhouse 1962

13. Second Jerramungup Homestead

14. Reid Homestead

15. Fitzgerald Rivier National Park

16. Doubtful Island Shacks

17. Jerramungup Police Station

18. Rabbit Proof Fence no 2 and no 3

19. Jerramungup Homestead and Barn

20. Jerramungup War Memorial

21. Manse

Department of Planning, Lands and Heritage

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Register

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ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
643	WANGUP ROAD BURIALS	No	No	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	S02893
647	STOCK ROAD BURIALS	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	S02897
649	CALYERUP.	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure; Other	*Registered Knowledge Holder names available from DPLH	S02899
1009	FISHERY BEACH 3	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S02859
4418	GRAYS'/THE SALEYARDS.	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial; Camp; Traditional Structure; Modified Tree; Plant Resource	*Registered Knowledge Holder names available from DPLH	S02791
4442	CARLWILGIEUP ROCKHOLE.	No	Yes	No	No Gender / Initiation Restrictions	Register	Camp; Ritual / Ceremonial; Water Source	*Registered Knowledge Holder names available from DPLH	S02740
4463	HOUSE BEACH	No	Yes	No	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	S02777
4472	JANACOOLACK	No	Yes	No	No Gender / Initiation Restrictions	Register	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	S02697
4474	YONGER-PERTIN-GIRUP.	No	No	No	No Gender / Initiation Restrictions	Register	Camp; Ritual / Ceremonial; Creation / Dreaming Narrative; Meeting Place	*Registered Knowledge Holder names available from DPLH	S02705
4546	REYNOLDS HILL PEAK	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Traditional Structure	*Registered Knowledge Holder names available from DPLH	S02521
4611	CARDIMINUP 4.	No	No	No	No Gender / Initiation Restrictions	Register	Sub surface cultural material; Artefacts / Scatter; Camp; Midden; Other	*Registered Knowledge Holder names available from DPLH	S02463
4629	BREMER BAY BURIAL	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	S02364
4931	CHITTOWURUP CREEK 2	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01699
4947	BREMER BAY 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Quarry	*Registered Knowledge Holder names available from DPLH	S01651
4956	HUNTER RIVER 3	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01670
4957	KEEN'S	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01671
4980	WELLSTEAD ESTUARY	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01630

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
4985	CARVER'S RUN	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01635
4987	GORDON INLET 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01637
4994	PEPPERMINT BEACH 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01644
4998	STOTLY SOAK	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01648
4999	DOUBTFUL ISLAND BAY	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01649
5009	YARRENGETUP	No	No	No	No Gender / Initiation Restrictions	Register	Quarry	*Registered Knowledge Holder names available from DPLH	S01604
5010	DEVIL CREEK 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01605
5017	MINARUP 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01612
5019	TWERTUP	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	S01614
5021	MARANDIUP 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01616
5026	STREAM BEACH	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01621
5030	NEEDILUP RIVER 07	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01569
5077	NYERILUP CREEK	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01561
5082	NEEDILUP RIVER 04	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01566
5083	NEEDILUP RIVER 05	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01567
5152	HUNTER RIVER 2	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01489
5156	CARDIMINUP 1	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S01493

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	Place Type	Knowledge Holders	Legacy ID
5157	PARSONS STONE ARRANGEMENT	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	S01494
5192	WEST RIVER STONE ARR.	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	S01384
5340	HUNTER RIVER EAST	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S00944
5342	GNIANUP JUNCTION	Yes	No	Yes	No Gender / Initiation Restrictions	Register	Burial; Traditional Structure	*Registered Knowledge Holder names available from DPLH	S00946
5345	BAKELUP POOLS	No	No	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	S00949
5448	QUAALUP HOMESTEAD	No	No	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	S00830
5751	NEEDILUP	No	No	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	S00405
5752	REYNOLDS HILL.	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial; Hunting Place; Traditional Structure	*Registered Knowledge Holder names available from DPLH	S00406
5753	JERRAMUNGUP	No	Yes	No	No Gender / Initiation Restrictions	Register	Traditional Structure	*Registered Knowledge Holder names available from DPLH	S00407
22705	Bremer Bay Lizard Traps	No	Yes	No	No Gender / Initiation Restrictions	Register	Hunting Place; Traditional Structure	*Registered Knowledge Holder names available from DPLH	
22706	Bremer Bay Artefact Scatter 1	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
22708	Bremer Bay Artefact Scatter 2	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter; Traditional Structure	*Registered Knowledge Holder names available from DPLH	
22709	Bremer Bay Artefact Scatter 3	No	Yes	No	No Gender / Initiation Restrictions	Register	Artefacts / Scatter	*Registered Knowledge Holder names available from DPLH	
35876	Bremer Bay Reburial Site	No	Yes	No	No Gender / Initiation Restrictions	Register	Burial	*Registered Knowledge Holder names available from DPLH	

Table 3: Aboriginal Cultural Heritage list[30]

[25] Department of Planning lands and heritage n.d. Aboriginal Cultural Heritage Inquiry System https://espatial.dplh.wa.gov.au/Geocortex/Essentials/GCX4142/REST/TempFiles/Search%20Results%20Report.pdf?guid=7646b8c7-8d5a-4d66-936b-a0791bea6271&contentType=application%2Fpdf

Regarding heritage places, the Department of Planning, Lands and Heritage (DPLH) has 48 registered sites in the Aboriginal Cultural Heritage Inquiry System over the Shire. Areas near water, wetlands and river systems are likely to have Aboriginal association or significance. The DPLH prefers that development plans be modified to avoid damaging or altering any Aboriginal Cultural Heritage site.

The Shire of Jerramungup is on land within the following Indigenous Land Use Agreement(s) (ILUAs): Ballardong People Indigenous Land Use Agreement, Wagyl Kaip & Southern Noongar Indigenous Land Use Agreement.

The ILUAs bind the parties (including all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended an 'Activity Notice' be issued under the NSHA, if there is a risk that an activity will 'impact' (i.e. by excavating, damaging, destroying, or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines provide guidance on how to assess the potential risk to Aboriginal heritage.

Consultation is occurring with DPLH Aboriginal cultural heritage officers during the preparation and implementation of this plan.

During the 2019 Esperance fires DFES sent their Aboriginal Advancement unit with the Incident Management Team to consult with local Aboriginal Elders. By being ‘on the ground’, they were able to facilitate communication between the Elders and response teams so all parties were represented in planning meetings. The meetings provided vital information from the Elders of sites the Traditional Owners wanted left undisturbed, this helped ensure culturally significant and sacred sites were protected when firefighting machinery was deployed. The sites were identified and mapped, because of the sensitivity of the area’s maps were only given to operational staff in the area. Rangers were sent to guide machinery in creating fire tracks ensuring the culturally significant sites were protected[26].

All the heritage places within the Local Municipal Inventory, Aboriginal Cultural Heritage and State heritage lists are at risk from bushfire and all have measures taken to reduce the risk with burning programs, mechanical works around the sites, low fuel zones, mulch breaks to reduce the flame length and spraying to reduce regrowth in mechanical works area, such treatments are prioritised on need and length of time the work was last completed.

3.5 Economic activities and industry

Agriculture is the main economic activity of the district, with grain and livestock production with sheep, beef, and pigs the main industries[27]. Which contributes $326.2 million[28] to the economy, the local economy is continuing to diversify with the recent additions of seed potatoes, wildflowers, viticulture and silviculture. With a growing tourism market and developing aquaculture industry, especially in Bremer Bay. Tourism has recently been boosted by the discovery of the Bremer Bay Canyon and associated wildlife. Both the peak tourism and harvest periods occur in the summer bushfire risk period.

[26] DFES (2018) Annual Report 2018/2019 Esperance fires and Engaging the community https://www.dfes.wa.gov.au/annualreport2019/assets/Uploads/1819EsperanceFires.pdf
[27] SoJ n.d. Strategic Community Plan 2021-2031 https://www.jerramungup.wa.gov.au/documents/71/strategic-community-plan-2021-2031
[28] ABS n.d. Region summary: Jerramungup https://dbr.abs.gov.au/region.html?lyr=lga&rgn=54130

Bremer Bay is a key tourism hub for the area attracting 15,000-20,000 people to the area over the Christmas and Easter holiday periods[29]. The town relies on the tourism trade through summer to make a living for those not involved in agriculture, if the town were to be affected by fire the loss of the tourism income may see some businesses not reopen. Jerramungup townsite is characterised by the range of activities of a type normally found in a small rural centre. Many of the services relate to the activities of government, including Police, Australia Post, Telstra, Western Power, Department of Agriculture and Food WA (DAFWA), and public schools[30]. These assets are protected during a fire as the service must not be lost to the town. Police, Western Power, Telstra and the schools are a high priority, work is done before each summer to mulch breaks, complete prescribed burns and create low fuel zones around the assets.

Since the original settlement of Bremer Bay, the emphasis of its economic base is heavily weighted towards tourism and services to the agriculture sector. Even though it is seasonal, tourism provides a year-round livelihood for commercial activities in Bremer Bay. Fishing and Agriculture and service industries continue to be important, and an aquaculture venture has been established at Back Beach.

There are several businesses within the Point Henry area, notably the Bremer Bay Beaches Resort Tourist 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; 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. Point Henry has several important assets that need to be protected during a bushfire, prescribed burning and mechanical works are undertaken mainly along the coastal area for asset protection.

The caravan parks within Jerramungup and Bremer Bay have had mitigation work completed recently as see in the works programs, (see Figures 4 – 7). This is to reduce the risk of bushfire to these assets and to protect the tourism industry from significant impact. Bremer Bay has delivered information packs to tourists camping in the national parks and remote areas advising them to listen to the radio for any bushfire updates. The Shire of Jerramungup has a visitor safety aid booklet that is provided to businesses for distribution with all relevant community safety information. VMBs are also used to show the fire danger rating.

The local economy is continuing to diversify with a growing tourism market and developing aquaculture industry[31]. While there are 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. Grange Resources completed a pre-feasibility study in February 2022 and is in the final stages of gaining environmental approvals for the Definitive Feasibility Study[32].

[29] SoJ n.d. Strategic Community Plan 2021-2031 https://www.jerramungup.wa.gov.au/documents/71/strategic-community-plan-2021-2031

[30] Gray & Lewis (2012) Shire Jerramungup *Local Planning Strategy* *https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf*

[31] Shire of Jerramungup n.d. Strategic Community Plan 2021-2031 https://www.jerramungup.wa.gov.au/documents/71/strategic-community-plan-2021-2031

[32] Grange Resources (2024) Southdown https://www.grangeresources.com.au/operations/southdown

The Southdown mine near Wellstead is anticipated to bring population growth to Bremer Bay in particular, both during the construction phase and during full-time operations afterwards. If the Southdown Mine proposal proceeds it is estimated up to 2000 workers during the construction phase and a permanent workforce of 650. Therefore the 'high end' estimates for additional population in Bremer Bay are an increase of up to 300 families in the medium term[33].

As Bremer Bay and Jerramungup are largely constrained, there is an increasing need to forward plans for longer term expansion. Bremer Bay is surrounded by reserves to the northwest, east and south, while to the north and northeast is Bremer Bay and the coast. There has been a slow increase in the retiree population with <10 people retiring each year, while fewer people are retiring in Jerramungup[34] further adding to the pressure on Bremer Bay during the high tourist period and bushfire season. This means there would be a transfer of skills from Jerramungup to Bremer Bay as the farmers retire to the coast taking their knowledge and experience with them.

A large number of tourists are drawn to the area to visit the FRNP which is a UNESCO World Heritage Site[35] 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 bushfire[36].

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 concerning the biodiversity values of the area.

The number of farms in the Shire has changed over the years with a decline of 9% between 1986 and 1993. The total agricultural land holding than increased from 327,876ha in 1999 to nearly 400,000ha in 2006. In the 2021 census, the total area of agricultural land decreased back to 331, 015ha[37].

Bushfire risk increases during the crop harvesting period generally from November to 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 fire[38]. Crop fires tend to have a very rapid rate of spread.

[33] Gray & Lewis (2010) Shire of Jerramungup Local Planning Strategy https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf
[34] ABS (2021) Jerramungup Census Quick stats https://abs.gov.au/census/find-census-data/quickstats/2021/LGA54130
[35] UNESCO n.d. Fitzgerald https://www.unesco.org/en/mab/fitzgerald
[36] Shire of Jerramungup n.d. Community Plan – 2016-2026 https://www.jerramungup.wa.gov.au/Profiles/jerramungup/Assets/ClientData/Documents/Strategic_Direction/Community_Plan_2016.pdf
[37] ABS n.d. Region summary: Jerramungup https://dbr.abs.gov.au/region.html?lyr=lga&rgn=54130
[38] DFES n.d. Crop fire safety https://www.dfes.wa.gov.au/hazard-information/bushfire/rural-and-farm-fire#your-responsibilities

The Shire produces approximately 187,196 ha[39] of cereal crops each year. The Shire has controls in place under the *Bush Fires Act 1954*, to reduce the risk of crop related bushfires[40]. They include harvest movement bans and total fire bans to reduce the risk of machinery starting crop fires. The risk is further reduced once harvest is completed and the paddocks open to grazing. It is worth noting that in 2023/2024 over 155,400 tonnes[41] of canola crop was grown within the Albany region which includes Jerramungup, 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 windrows[42].

Bushfires cause large economic losses to the food system; they create increases in food prices and job losses for communities. Farmers only received around 20% of the recovery grants and insurance payouts were not enough to cover the total costs.[43] Climate change is increasing the severity and intensity of extreme weather events in Australia. By 2090, wheat yields on the 4,200 family farms in WA that produce half of Australia's wheat are projected to fall by 41-49%[44].

Fire can affect soil, weeds, insects and diseases in different ways. Awareness of these changes will assist with targeted crop management and crop monitoring[45]. Hot fires change the plant composition and reduce growth and carrying capacity in the following season[46]. After a fire farmers try to limit erosion and stabilize the paddock. Future planting is affected by the fire intensity, while cool burns have no effect other than erosion, Cereals are better planted after fire as they will tolerate sandblasting and pastures will recover the following year[47].

Whereas a very hot burn will sterilize the surface layers of the soil, all plant material, seeds and sub-clover seed is burnt or sterilized. Organic carbon is reduced and soil organisms are killed[48]. Fire reduces the amount of nitrogen available and can cause short term reductions in microbial biomass and fungi decline. The pasture will need to be resown to increase seed set and seed reserves for the following season. The pasture should not be used for hay or heavy grazing[49] and should recover by the second growing season.

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[39] CBH Group (2023) Harvest Report – 30 October https://www.cbh.com.au/news/2023/10/harvest-report-30-october

[40] Shire of Jerramungup Fire Control Information 2023/24 https://www.jerramungup.wa.gov.au/Profiles/jerramungup/Assets/ClientData/Fire_Control_Brochure_2023-2024.pdf

[41] CBH Group (2021) Harvest Report https://www.cbh.com.au/news/2022/11/welcome-to-our-first-harvest-report-for-the-2022-23-season

[42] FESA *Stay Ahead of Crop Fires* (2010)

[43] Bishop J, Bell T, Huang C et al (2020) Fire on the farm: Assessing the impacts of the 2019-2020 bushfires on food and agricultures in Australia source world wide fund of nature https://www.preventionweb.net/publication/fire-farm-assessing-impacts-2019-2020-bushfires-food-and-agricultures-australia

[44] Steffen W, Mallon K, Kompas T, Dean A and Rice M (2019) Climate Council COMPOUND COSTS: HOW CLIMATE CHANGE IS DAMAGING AUSTRALIA'S ECONOMY https://www.climatecouncil.org.au/wp-content/uploads/2019/05/Costs-of-climate-change-report.pdf

[45] Department of Primary Industries and regional Development (2022) Cropping after paddock fires https://www.agric.wa.gov.au/grains/cropping-after-paddock-fires

[46] Department of Primary Industries and regional Development (2022) Pasture recovery after fire https://www.agric.wa.gov.au/fire/pasture-recovery-after-fire

[47] Department of Primary Industries and regional Development (2022) Pasture recovery after fire https://www.agric.wa.gov.au/fire/pasture-recovery-after-fire

[48] Department of Primary Industries and regional Development (2022) Cropping after paddock fires https://www.agric.wa.gov.au/grains/cropping-after-paddock-fires

[49] Department of Primary Industries and regional Development (2022) Pasture recovery after fire https://www.agric.wa.gov.au/fire/pasture-recovery-after-fire

Fires will contaminate water sources from the fire retardants, ash and soil from burnt paddocks causing pollution, bacteria and algae in the water. Contamination can lead to blue-green algae and livestock should be removed[50]. Fire also will create a feed shortage for livestock requiring feed to be brought in which in turn creates a biosecurity risk. Animals may need to be destroyed or will require veterinary help. One fire in 2022 killed 10,000 sheep in the area[51] costing farmers substantial losses. The cost of replacing fencing, farm buildings, equipment and animal numbers can prove costly and have long term effects for farmers including farmland values[52]. In some cases, assets might not be replaced because of insufficient insurance coverage[53].

Over the long-term drought and significantly less rainfall will affect crops and require water to be brought and stored. In addition, livestock that have declined over recent years will need to be rebuilt to supply demand. Extreme weather will be challenging for many regions, seasonal variations in rainfall and temperatures are trending towards drier conditions in Western Australia. An increase in extreme fire conditions and length of the fire season is predicted in the long term[54].

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 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 proposal[55]. Plantations in WA are also generally managed under the *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 following accepted principles for good plantation management. Section 4.7.6 Fire Prevention and Suppression of the Code outlines Fire Prevention and Suppression Guidelines[56].

Another emerging plantation industry is the establishment of carbon plantations to create carbon offsets which are traded to reduce greenhouse gas emissions[57]. These plantations are located generally on cleared farmland and the trees are not harvested, there are environmental benefits to improving biodiversity, creating habitat linkages and improving soil

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[50] Department of Primary Industries and Regional Development (2022) Contaminated farm dams https://www.agric.wa.gov.au/water-management/contaminated-farm-dams-%E2%80%93-western-australia

[51] Kagi J & Shepard B (2022) At least three homes lost in Jerramungup and Hopetoun blazes in WA's Great Southern region https://www.abc.net.au/news/2022-02-12/homes-lost-in-hopetoun-and-jerramungup-blazes/100825118

[52] World Wildlife Fund (2021) Horror Bushfire Season Cost Aussie Farmers up to $5 Billion https://wwf.org.au/news/2021/horror-bushfire-season-cost-aussie-farmers-up-to-5-billion/

[53] Reserve Bank of Australia (2020) Macroeconomic Effects of the Drought and Bushfires https://www.rba.gov.au/publications/smp/2020/feb/box-b-macroeconomic-effects-of-the-drought-and-bushfires.html

[54] Reserve Bank of Australia (2020) Macroeconomic Effects of the Drought and Bushfires https://www.rba.gov.au/publications/smp/2020/feb/box-b-macroeconomic-effects-of-the-drought-and-bushfires.html

[55] Shire of Jerramungup (2010) *Local Planning Policy No. 10 – Agroforestry and Plantations* https://www.jerramungup.wa.gov.au/documents/140/lpp10-agroforestry

[56] Forest Industries Federation WA (2014) *Code of Practice for Timber Plantations in Western Australia,* 2 Edition https://faolex.fao.org/docs/pdf/wa210107.pdf

[57] Gray & Lewis (2012) Shire Jerramungup *Local Planning Strategy* *https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf*

conservation. There is also the fact that they provide no income for the community the land is lost from food production and population drift will occur[58]. A BMP is required for a plantation and the land owner is required to have a stand-by fire unit on site.

3.6 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 farmland. The coastal area has sandy beaches near Bremer Bay, 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, which are managed to preserve natural barriers that aid community protection and biosecurity barriers[59].

The Pallinup, Fitzgerald, Sussetta, Gardiner and Bremer Rivers are major river and valley systems within the Shire of Jerramungup with several smaller creeks feeding into the rivers. These rivers are surrounded by undulating/steep terrain with significant vegetation corridors and are vested as crown reserves. There are some wetlands located within the FRNP that are largely undisturbed by human activity[60]. There are three major groups of wetlands in the region Bremer Bay Wetland, Gairdner River Wetland and the Mallee Road Wetland.

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 FRNP along with sandy beaches, steep granite outcrops and dune systems means access is a serious challenge for both risk management activities and suppression.

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. 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 Subdivision has a Local Planning Policy to manage the bushfire risk of the area given it has limestone ridges, steep topography, a high level of absentee landowners, a single access road and high conservation value with the FRNP and Kwongkan Shrubland.

Strategic bushfire risk management is also important as the townsites are surrounded by large areas of vegetation. Bushfires that can access such large areas of fuel with limited

[58] Gray & Lewis (2012) Shire Jerramungup *Local Planning Strategy* https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf

[59] State Emergency Management Committee (2023) Western Australian Emergency Management Capability Framework https://www.wa.gov.au/system/files/2023-10/semc_capability_framework.pdf

[60] Gray & Lewis (2012) Shire Jerramungup *Local Planning Strategy* https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf

suppression have a better opportunity to develop into bigger fires that generate their own energy and pose a greater risk to the community.

Jerramungup is surrounded mainly by cleared agricultural land with small pockets of vegetation. The townsite is set against a reserve that is linked to vegetation and runs for 12km's down to the south. The land is elevated to 390m at the highest point with an average of 180m. There is the potential for fast moving fires uphill. The town is located along a high point, within the Shire the elevation is reduced along the coastline.

The Bremer River and Lizzie Creek flow into the Wellstead Estuary to the north of Bremer Bay where the town is located. The ocean is to the northeast down to the southeast and around to the southwest. The extensive area of uncleared vegetation surrounding the community is located within UCL and the FRNP. As it poses a significant bushfire risk to the community, the risk needs to be managed through mitigation treatments.

Jacup, Boxwood Hill, Needilup and Gairdner are surrounded by cleared agricultural land with patches of vegetation, they are located within valleys or along waterways. The pockets of vegetation have the potential to either bring fire to farmland pasture or pasture fires can extend into native vegetation areas and spread further.

The South Coast Highway runs through the Jerramungup and has a strip of vegetation on either side of the highway. To the northeast and east is the Fitzgerald River which leads into the National Park and the heavy forested vegetation. The road could become blocked during a bushfire and is a major road train route, there are limited options for other routes. There has been work along the roadside to reduce ignition and stop a bushfire from entering the FRNP.

3.7 Climate and weather

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 April and August, with the heaviest falls during the winter months from May to June. Some large rainfalls have occurred in 2021 with 132mm and in August 2022 102mm, wet weather in winter will increase the summer fuel load.

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 6 degrees in August to 28 degrees in January with February this year reaching 31.5 degrees. As a result, the fire weather can vary significantly across the Shire. The Shire can simultaneously be experiencing a 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 southwest coast[61].

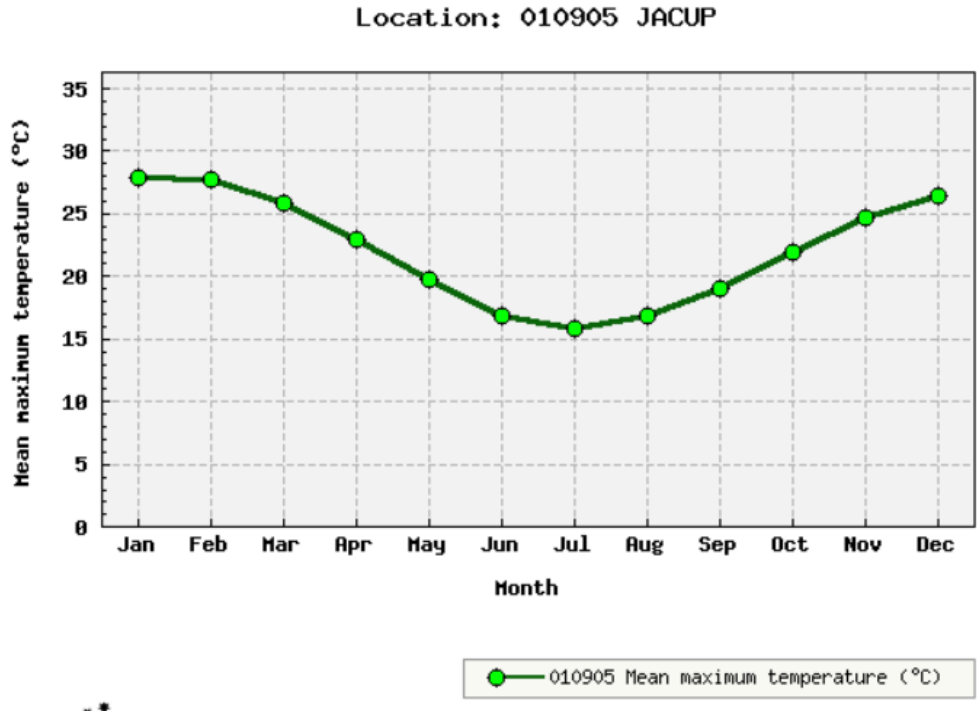

Figure 8: Summary of Climatic Variables for the Shire of Jerramungup [62]

The average annual rainfall distribution in the Shire is shown in Figure 9 below.

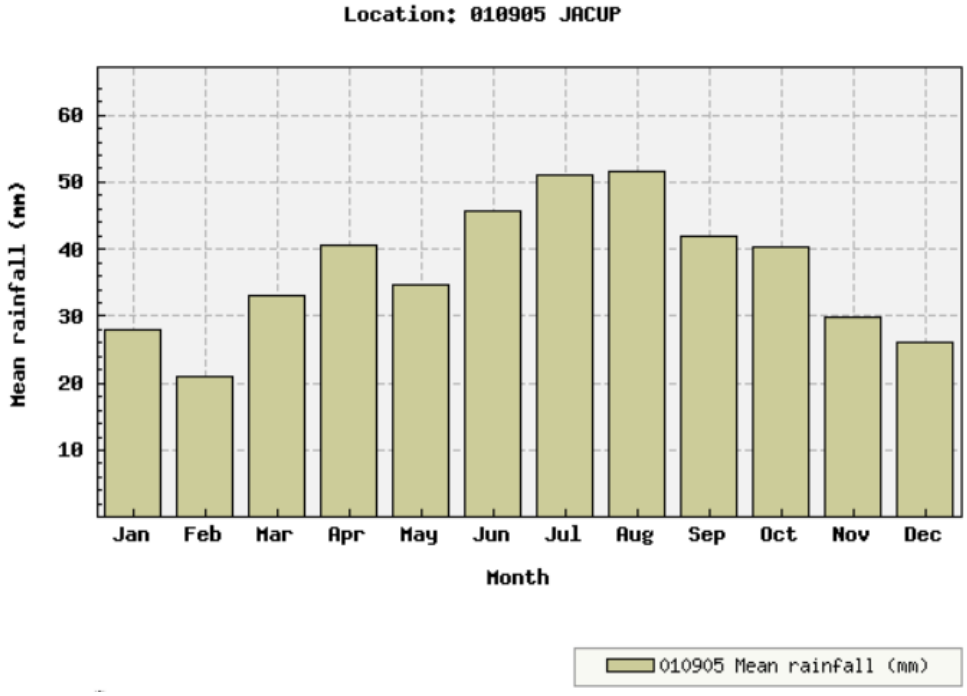

Figure 9: Average Annual Rainfall contour map Shire of Jerramungup[63]

[61] Gray & Lewis (2012) Shire Jerramungup *Local Planning Strategy* https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf

[62] BoM n.d. Climate statistics for Australian Locations Jacup http://www.bom.gov.au/climate/averages/tables/cw_010905.shtml

[63] BoM n.d. Climate statistics for Australian Locations Jacup http://www.bom.gov.au/climate/averages/tables/cw_010905.shtml

The annual temp for Jacup is 22 degrees[64], the coldest time is May to August while the hottest time is Dec to March. Jerramungup BoM has closed however we can see that in the years from 2018 to 2020[65] the rainfall was below average.

Prevailing winds are from the northwest and southeast which can prove challenging during suppression because they are generally strong, hot and dry (refer to Figure 11). 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 January and March[66].

Bremer Bay at times has no rain from December to March, in 2022 the wettest months recorded were June and August. Last year rainfall was 30mm less than the previous year which adds to the drying climate. Which can increase dry fuel loads increasing the risk of a high intensity fire. Gairdner receives the most rain from May to June in the winter period, however, in 2023, only June received rain while May and July received <13mm which is below average. Last year Gairdner had 1/3 of the average rainfall for the year around 400mm less[67].

[64] BoM n.d. Monthly Mean Maximum temperatures Jacup
http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=36&p_display_type=dataFile&p_stn_num=010905

[65] BoM n.d. Jerramungup Monthly Rainfall
http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_stn_num=010707

[66] BoM n.d. Climate statistics for Australian Locations Jacup
http://www.bom.gov.au/climate/averages/tables/cw_010905.shtml

[67] BoM n.d. Monthly rainfall Gairdner
http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_startYear=&p_c=&p_stn_num=010792

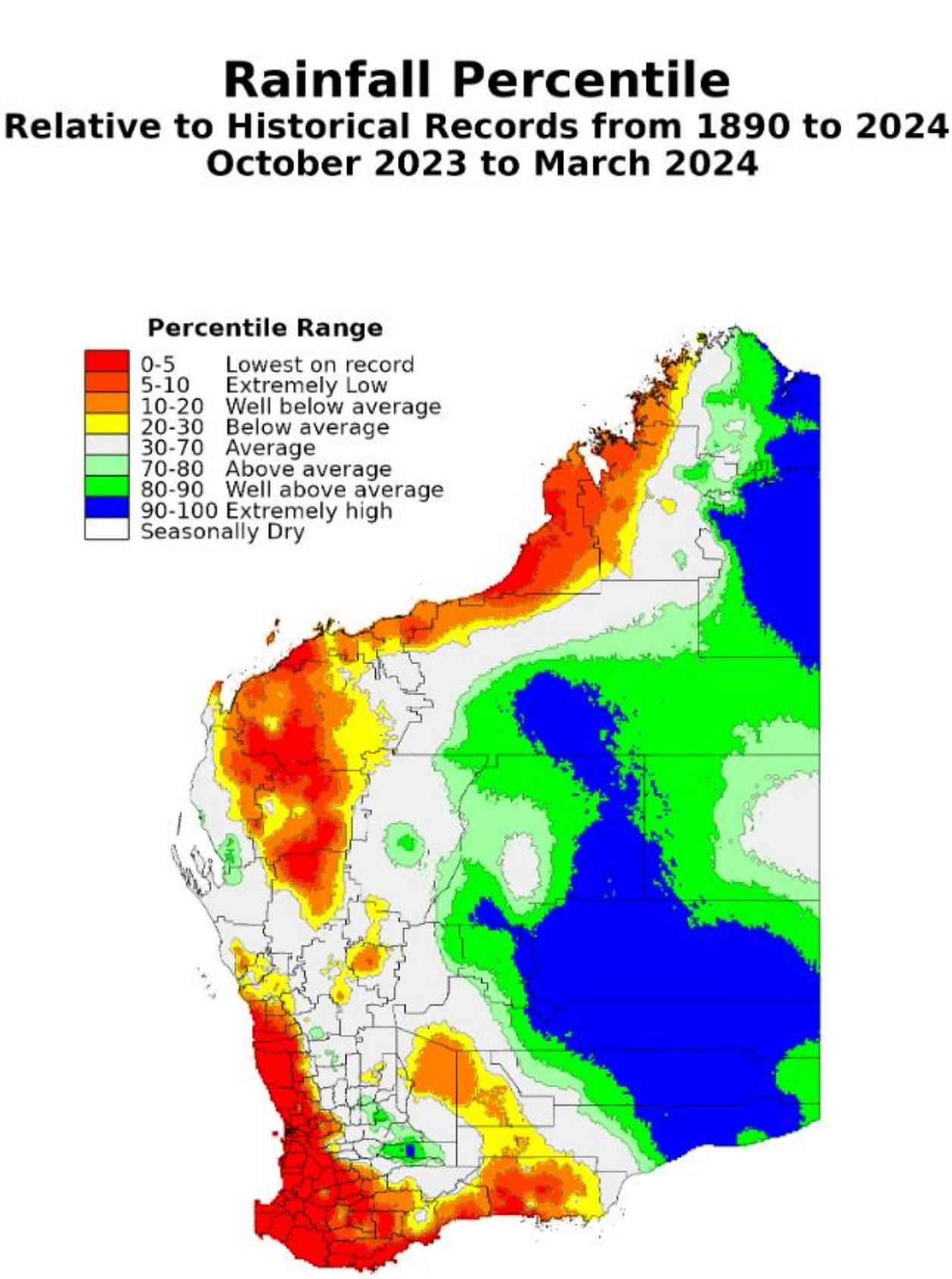

Figure 10: Decline in rainfall[68]

[68] Department of Primary Industries and Regional Development n.d. WA Rainfall Deciles https://www.agric.wa.gov.au/sites/gateway/files/WA%20Rainfall%20Deciles%20Oct23-Mar24_0.pdf

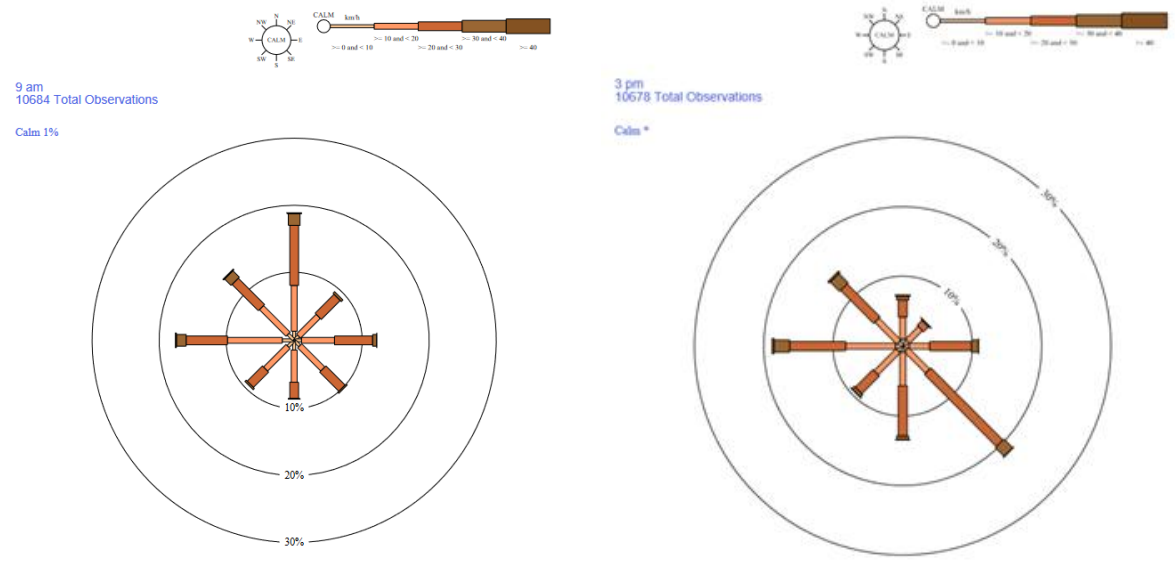

Figure 11: Jerramungup Wind direction versus Wind Speed in Km/h[69] 9 am and 3 pm[70]

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 agricultural areas. The Shire also experiences fewer hot dry winds, and increased cloud cover[71].

The average temperatures in summer for the region range from a maximum of 27-30*°c* down to a minimum of 13*°c*. Winter average temperatures are 16*°c* down to 5*°c* maximum and minimum.

The extreme fire danger period occurs between December to February (inclusive) due to higher temperatures and low relative humidity. This year saw the prohibited burning period extended to May. 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 and, at times strong easterly winds in the October/November period.

The climate affects 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. Treatment strategies must be well coordinated to minimise the cost impacts of mobilisation. Historically the bushfire stakeholders in the area have worked well together to coordinate the implementation of treatment strategies.

[69] BoM (2023) Rose of Wind direction
http://www.bom.gov.au/clim_data/cdio/tables/pdf/windrose/IDCJCM0021.010905.9am.pdf
[70] BoM (2023) Rose of Wind direction
http://www.bom.gov.au/clim_data/cdio/tables/pdf/windrose/IDCJCM0021.010905.3pm.pdf
[71] Gray & Lewis (2010), Local Planning Strategy Shire of Jerramungup
https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf

3.8 Vegetation and fuel

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 of the largest and most botanically significant national parks in Australia. Nearly 20 percent of Western Australia's flora species are found within the National Park, many of which occur only within its boundaries[72].

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 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 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 region[73].

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 areas[74].

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 extinguishment of certain species[75].

There are bare sand dune blowouts located along the coast to the northeast, south and southwest. Most of the clear agricultural land is to the west of the town. There are 6 vegetation systems defined by Beard (1976) in the Shire, aligned approximately parallel to the coast.

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[72] Read V (2009) *Managing External Dieback Threats to the Fitzgerald River National Park,* South Coast NRM https://library.dbca.wa.gov.au/static/FullTextFiles/628544.pdf

[73] Wikipedia (2023) Esperance Plains https://en.wikipedia.org/wiki/Esperance_Plains

[74] Wikipedia (2023) Esperance Plains https://en.wikipedia.org/wiki/Esperance_Plains

[75] 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* https://www.sciencedirect.com/science/article/abs/pii/S1364815212002009

They are: Hyden, Bremer, Qualup, Jerramungup, Chidnup, and Barren Ranges. This alignment reflects the influence of climate, geology, topography, and soil types[76]. The vegetation systems are shown in Figure 12.

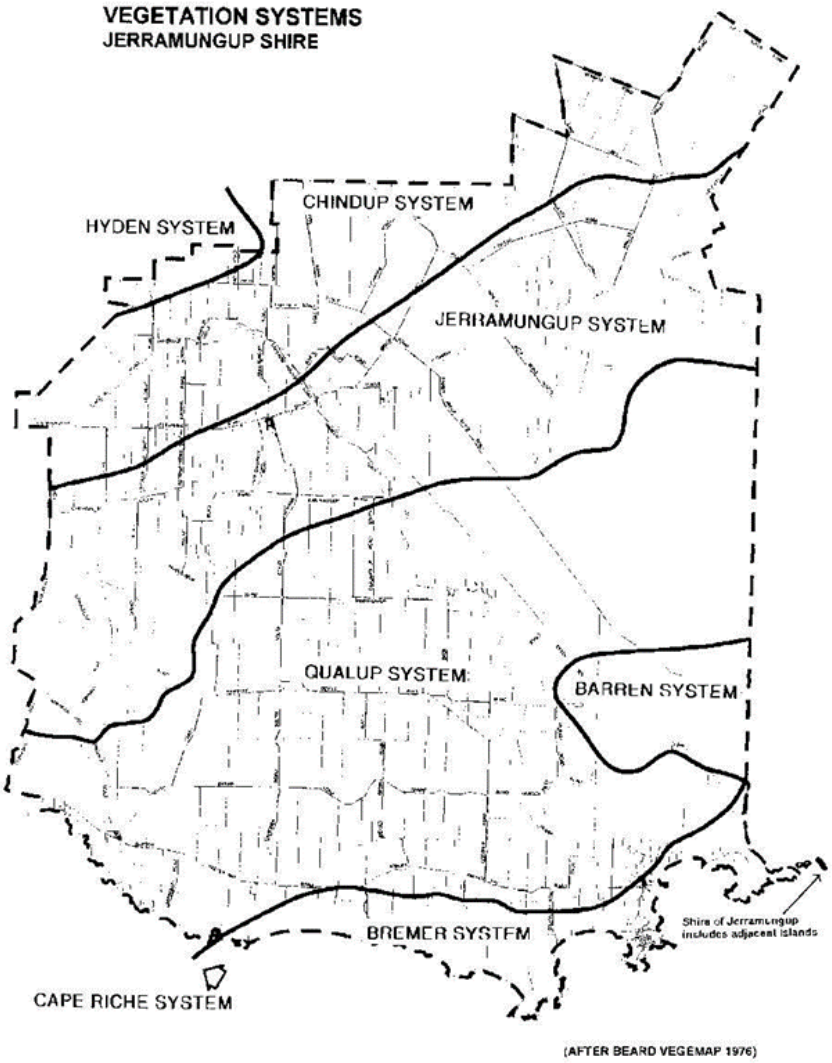


Figure 12: Vegetation Systems Shire of Jerramungup[77]

Detailed vegetation data helps plan risk treatment and suppression strategies as the different vegetation types have adapted differently to fire and require appropriate treatments. There is also different fire behaviour in the various vegetation systems.

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

[76] Gray & Lewis (2012) Shire Jerramungup *Local Planning Strategy* https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf
[77] Beard, J.S (1979) *The Vegetation Survey of Western Australia:* Nedlands, UWA Press https://library.dbca.wa.gov.au/FullTextFiles/919760.pdf

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 the sand plain and consists essentially of mallee and mallee-heath shrublands 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 northwestern corner of the Shire. In this system the surface sands are yellow, the lakes are saline, and the vegetation has more inland characteristics.

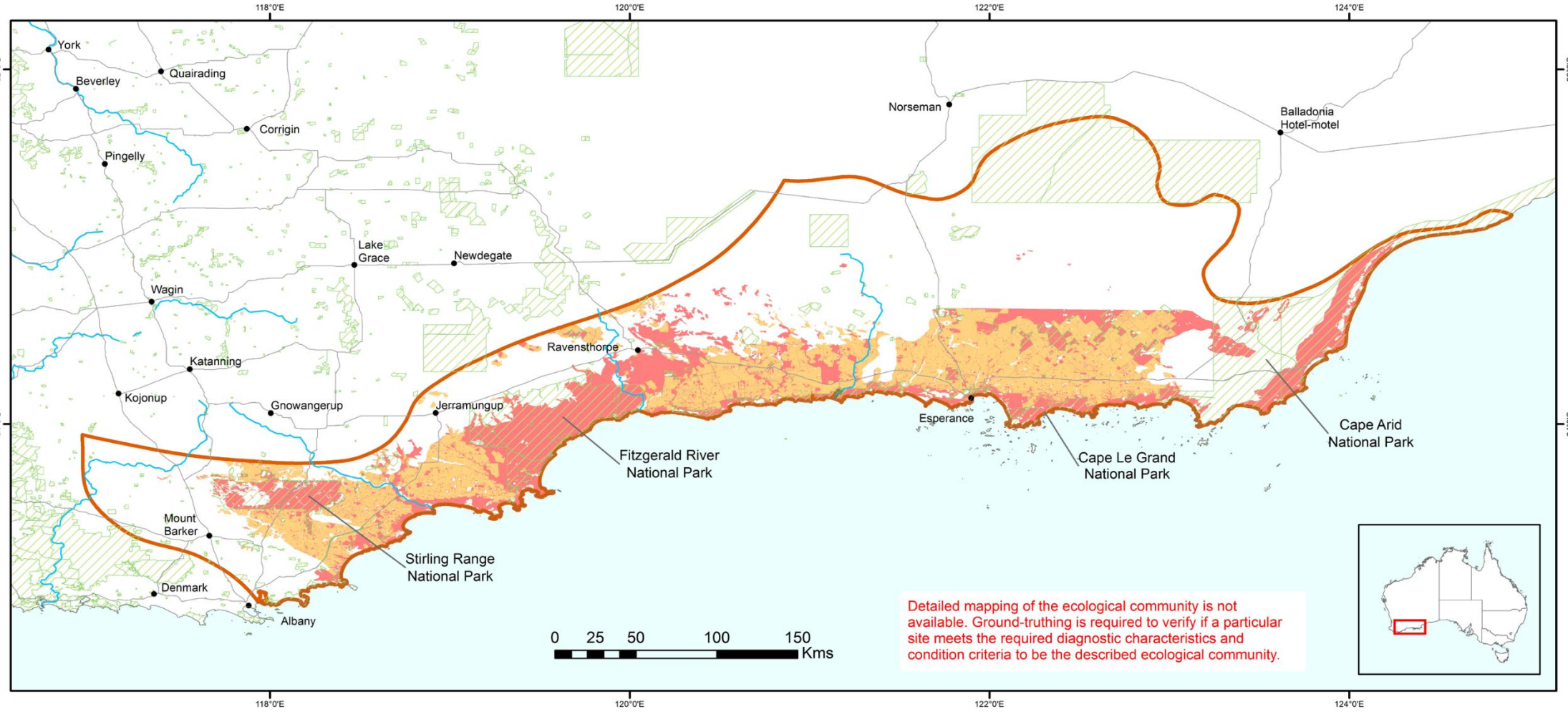
The FRNP consists of the Qualup system of mallee and mallee-heath and the unique Barren Ranges system, which harbours several endemic eucalyptus species within mallee-heath, mallee, and coastal scrub.

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. 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.

Much of the vegetation in the Shire is protected. For example, the Kwongkan Shrubland a *Proteaceae* dominated vegetation community is found throughout the Shire, see Figure 13. Kwongkan Shrubland is an endangered ecological community of national environmental significance as listed under the *Environmental Protection and Biodiversity Act 1999.*

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 Water and Environmental Regulation (DWER). 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 to get the necessary approval.



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

Legend

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

Figure 13: Map of Kwongkan Threatened Ecological Community

Projection: Geographic
Datum: GDA 94
1:2,500,000

N

Australian Government
Department of the Environment

Source:
Botanical Floristic Provinces © WA Department of Parks and Wildlife, 2013.
National Vegetation Information System (NVIS) Version 4.1© 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.

Caveat:
The information presented in this map has been provided by a range of groups and agencies. While every effort has been made to ensure accuracy and completeness, no guarantee is given, nor responsibility taken by the Commonwealth for errors or omissions, and the Commonwealth does not accept responsibility in respect of any information or advice given in relation to, or as a consequence of,anything containing herein. The map has been collated from a range of sources, with data at various resolutions. Data used are assumed to be correct as received from the data suppliers.

Produced by:
ERIN (Environmental Resources Information Network)
Department of the Environment
Australian Government,
January 2014
© Commonwealth of Australia, 2014.

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

Figure 14: Point Henry rural subdivision following the 2002 bushfire.

Figure 15: Point Henry rural subdivision 2016 - foreground slashed APZ around telecommunications tower, background residential properties set amongst regenerated coastal heath.

3.9 Important species and communities

The FRNP dominates the eastern part of the Shire. The FRNP is the core area of the Fitzgerald Biosphere first recognised by the UNESCO *Man and Biosphere Program*.

The UNESCO site, Fitzgerald River National Park has 41 species recognised as being threatened with 33 species also listed by the Commonwealth[78]. While there are some 253 species not protected under the legislation, however, are identified as a priority for survey and research[79]. There are 433 threatened flora species occurring in the biosphere, there are 75 endemic plant species found nowhere else[80]. For the species list see Appendix C.

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 form's part. The plan recognises 8 significant impacts on threatened species in the area. One of which is an *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 inappropriate[81]. Many threatened fauna species are restricted to, and appear to require areas of long unburnt vegetation. The *Threatened Species and Ecological Communities Regional Strategic Management Plan* recognises that for many of the threatened species, the most suitable post-fire age of the vegetation required to support them is not known[82].

For the Critically Endangered Western Ground Parrot, Endangered Carnaby's Black-Cockatoo, Western Bristlebird, Dibbler, Red-tailed Phascogale and the Numbat the inappropriate fire regimes with intense and high frequency fires are the greatest risk to the species[83]. However, recently it was shown that the Ground Parrot can re-establish in areas burnt as recently as 6-7 years ago and may not necessarily require vegetation unburnt for at least 15 years. Fuel modification by slashing or scrub rolling, are an alternative to burning,

[78] Ravensthorpe Wildflower Show Fitzgerald Biosphere Launch (2018) https://wildflowersravensthorpe.org.au/fitzgerald-biosphere-launch/

[79] Department of Environment and Conservation, (2012). Fitzgerald Biosphere Recovery Plan: A Landscape Approach to Threatened Species and Ecological Communities Recovery and Biodiversity Conservation https://www.dcceew.gov.au/sites/default/files/documents/fitzgerald-biosphere-recovery-plan.pdf

[80] Balaam K (2023) Fitzgerald River National Park fire: Possible threat to lives and homes as bushfires burn out-of-control https://thewest.com.au/news/bushfire-warning/fitzgerald-river-national-park-fire-possible-threat-to-lives-and-homes-as-bushfires-burn-out-of-control-c-9669825

[81] Department of Environment, Water, Heritage and the Arts & South Coast NRM (2009) *Threatened Species and Ecological Communities Regional Strategic Management Plan* https://library.dbca.wa.gov.au/static/FullTextFiles/923605.pdf

[82] Department of Environment, Water, Heritage and the Arts & South Coast NRM (2009) *Threatened Species and Ecological Communities Regional Strategic Management Plan* https://library.dbca.wa.gov.au/static/FullTextFiles/923605.pdf

[83] Department of Climate Change, Energy, the Environment and Water (2012) FITZGERALD BIOSPHERE RECOVERY PLAN: A landscape approach to threatened species and ecological communities for recovery and biodiversity conservation. https://www.dcceew.gov.au/environment/biodiversity/threatened/recovery-plans/fitzgerald-biosphere-recovery-plan-2012

which may also lead to changes in habitat at a localised level. Therefore, a balance must be achieved to protect nature conservation values from the risk of wildfire[84].

Most threatened Flora is affected by fire in one of three ways. The following flora are affected by high frequency and/or intensity fires and are also endangered Oval-leaved Adenanthos, Mauve Coopernookia and the Mount Barren Featherflower. While the Critically Endangered *Kunzea similis subsp. Similis* will fail to thrive if there are insufficient intervals between fires to allow seed bank regeneration, this included the following species Long-sepalled Daviesia, Paddle-leaved Daviesia, Bremer or Red-flowered Moort and Crowded or Twertup Featherflower. Another inappropriate fire regime is a fire during the Spring growth period which affects the Hopetoun Beard Orchid which is Critically Endangered while the Dwarf Spider Orchid is Endangered[85].

Point Henry Peninsula includes areas of Kwongkan Shrubland which is a recognised threatened ecological community.

The Kwongkan ecological community is important because a large portion has already been lost and the 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 to Figure 16: *Map of Kwongkan Threatened Ecological Community.)*

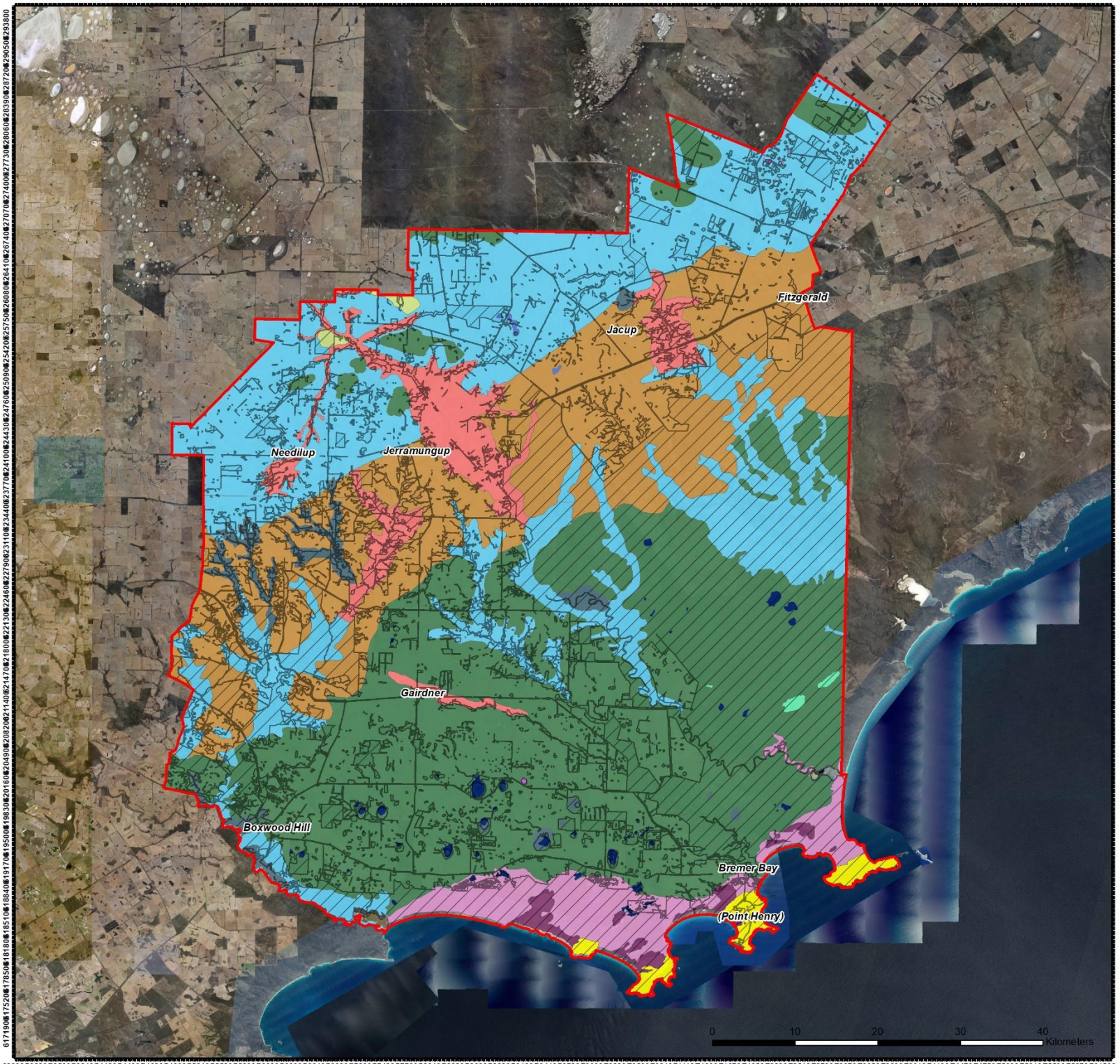
5 areas of habitat are Priority areas for threatened Flora and Fauna within the Biosphere[86]. For the Fitzgerald Biosphere, the most significant concern to threatened species and ecological communities is inappropriate fire regimes followed by Phytophthora cinnamomi and other plant diseases and Loss, fragmentation and degradation of habitat. In addition to these three factors have been identified as hampering the implementation of programs they include:

- insufficient resources,
- lack of appreciation of the values of the Biosphere amongst the community and
- remnant vegetation is currently mapped across the local government, see Figure 14-17.

[84] DBCA (2001) FIRE MANAGEMENT STRATEGY FOR THE WILDERNESS ZONE OF THE FITZGERALD RIVER NATIONAL PARK, 1999 - 2001

[85] Department of Environment and Conservation (2011) FITZGERALD BIOSPHERE RECOVERY PLAN A landscape approach to threatened species and ecological communities for recovery and biodiversity conservation. https://www.dcceew.gov.au/sites/default/files/documents/fitzgerald-biosphere-recovery-plan.pdf

[86] Department of Environment and Conservation, (2012). Fitzgerald Biosphere Recovery Plan: A Landscape Approach to Threatened Species and Ecological Communities Recovery and Biodiversity Conservation https://www.dcceew.gov.au/sites/default/files/documents/fitzgerald-biosphere-recovery-plan.pdf



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BPAD Bushfire Planning & Design

Bio Diverse Solutions

Overview Map Scale 1:10,000,000

Legend

- Shire of Jerramungup LGA Boundary
- Native Vegetation Extent (DPIRD-005)

Pre-European Vegetation (DPIRD-006)

Structure

- Dune sand
- Dwarf scrub or open low shrub
- Freshwater lake
- Mallee
- Mallee / Mallee-heath
- Mallee-heath
- Rock
- Salt lake, lagoon, clay pan
- Scrub, open scrub or sparse scrub
- Scrub-heath
- Thicket
- Woodland / Mallee
- Woodland other

Scale
1:450,000@ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Figure 16: Pre-European Vegetation

QA Check	Drawn by
KPK	BRM

STATUS	FILE	DATE
DRAFT	JER014	24/07/2024

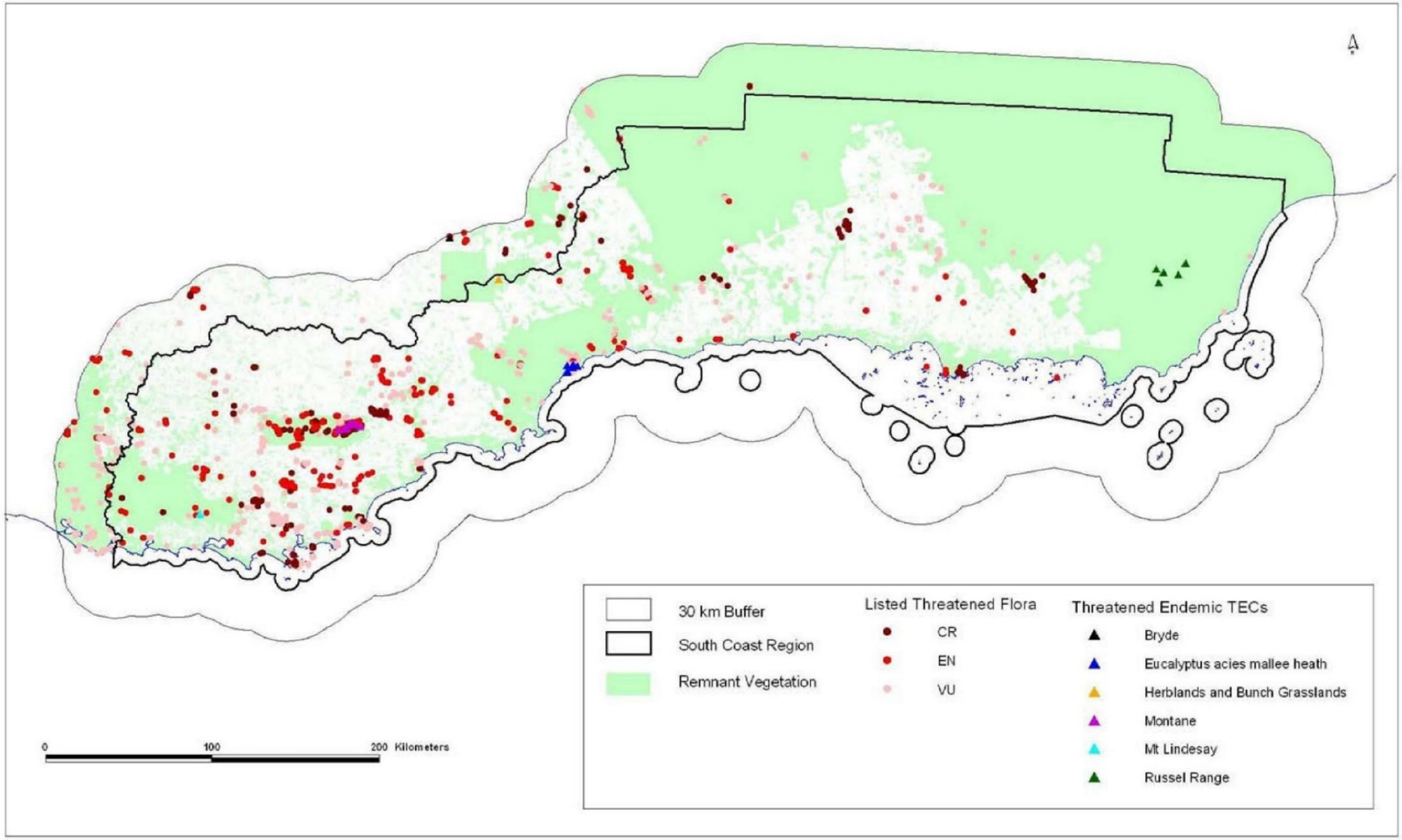


Figure 17: The location records of Threatened flora species (CR – Critically Endangered, EN - Endangered, VU – Vulnerable) and Threatened Ecological Communities (TECs) across the South Coast Region. This includes all available records from 1980 to 2006.

[87] DBCA (2009) Threatened Species & Ecological Communities Regional Strategic Management Plan https://library.dbca.wa.gov.au/FullTextFiles/923605.pdf

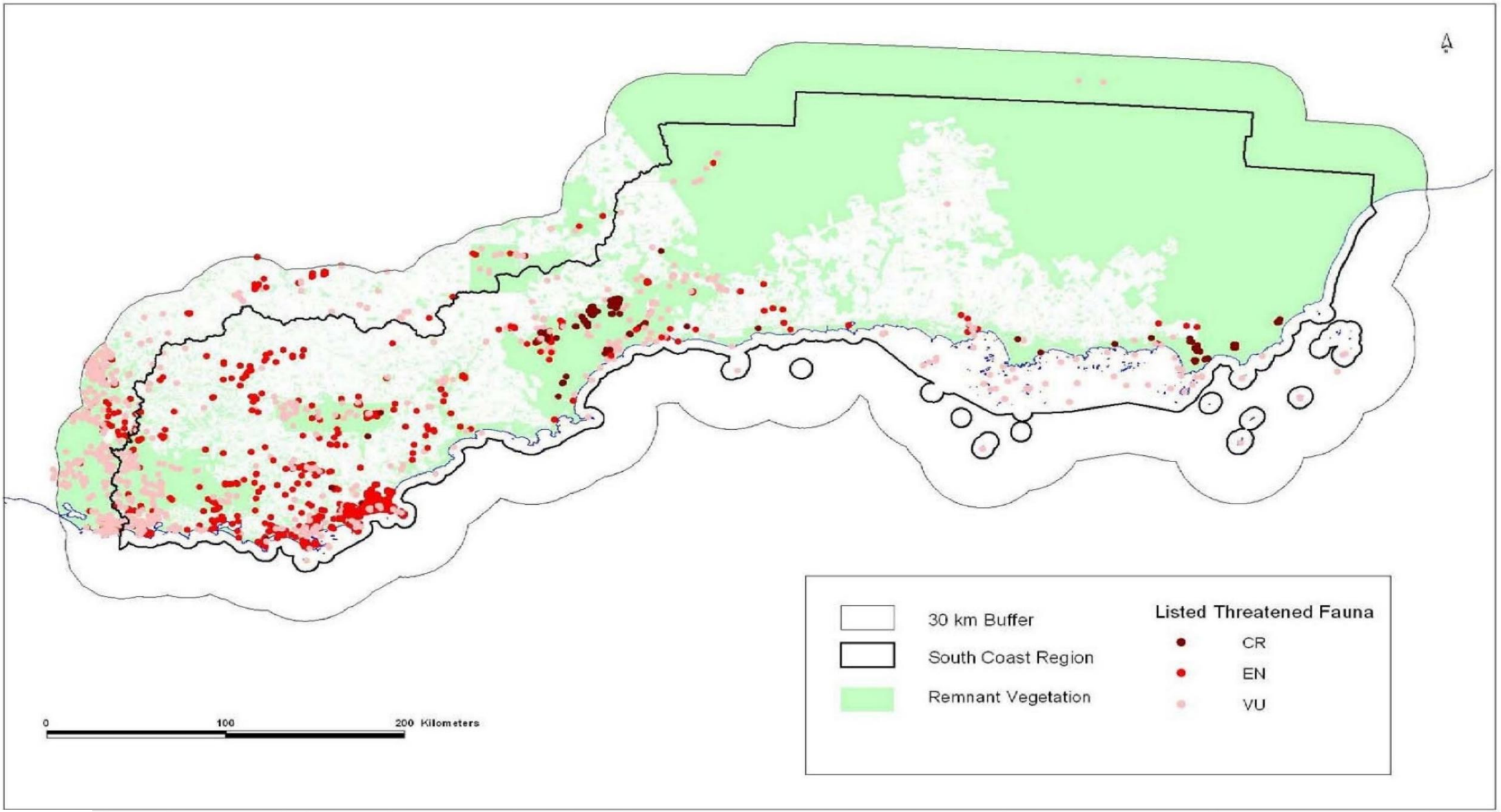


Figure 18: The location records of threatened fauna species (CR – Critically Endangered, EN - Endangered, VU – Vulnerable) across the South Coast Region. This includes all available records from 1980 to 2006.

[88] DBCA (2009) Threatened Species & Ecological Communities Regional Strategic Management Plan https://library.dbca.wa.gov.au/FullTextFiles/923605.pdf

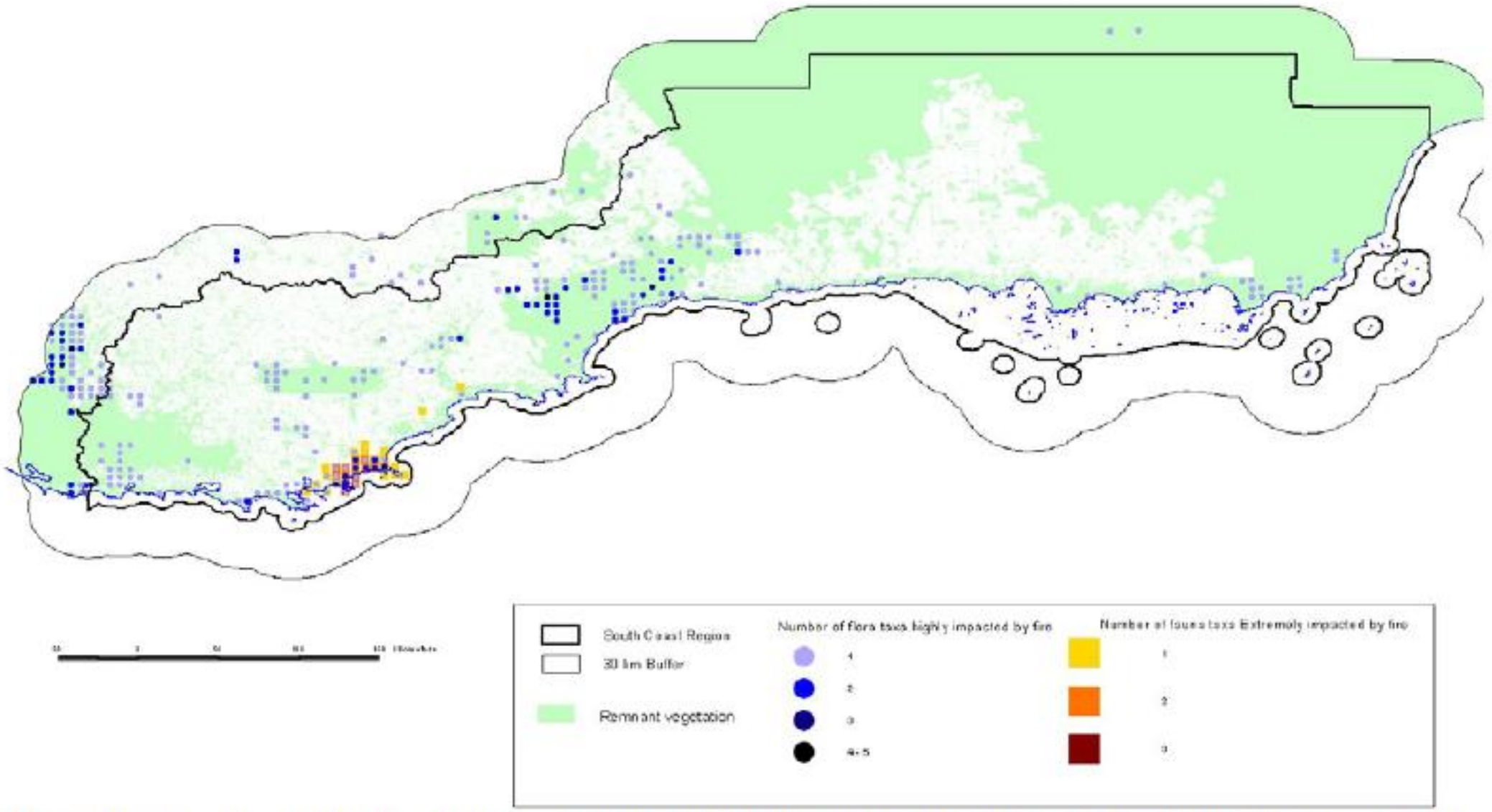


Figure 19: The Threat Impact tool for fire showing distribution of threatened species classified as Extreme or High vulnerability to fire in the South Coast Region.

[89] DBCA (2009) Threatened Species & Ecological Communities Regional Strategic Management Plan https://library.dbca.wa.gov.au/FullTextFiles/923605.pdf

3.10 Vegetation units near proposed treatments

Vegetation units surrounding our town sites, subdivisions and key recreation sites within the Shire of Jerramungup and recommended fire management guidelines

The vegetation community descriptions for this element of the BRMP relates directly to those that occur within and surrounding the townsites, subdivisions, and key recreation sites which are the focus of the bushfire risk mitigation program and is not intended to be a comprehensive list of those plant communities that occur across the entire Shire of Jerramungup.

Blue Mallee dominated scrub containing Proteaceae and Myrtaceae understorey

This vegetation community is the most extensive in occurrence within and around the town sites and subdivisions in the Shire of Jerramungup, being present around Boxwood Hills, North-west Bremer Bay, Gairdner, Needilup, Jerramungup town sites and in close proximity to Millers Point Recreation site.

The key characteristic of this plant community is the elevated occurrence of members from the Proteaceae family within the scrub understorey, which have particular needs in relation to exposure to fire to ensure the successful regeneration of all elements of the family. The extensive presence of this Family in this vegetation community dictates the optimum fire return interval periods for this plant community.

The plants in this family have canopy stored seed within their, often, woody fruit which is only generally released upon exposure to elevated temperature fire events. This survival and recruitment mechanism is a feature of their adaption to the high intensity nature of fire in this plant community. However, to ensure that there is sufficient canopy stored seed set before their next exposure to fire this plant community requires considerable time to achieve this optimum level of stored seed.

The plants within the Proteaceae family ideally require minimum fire return intervals of between 18 and 35 years post exposure across the rainfall gradients of the Shire to achieve this level of canopy stored seed.

On the coast in the 500mm rainfall zone these Proteaceae family members are capable of successfully regenerating at a fire return interval of at least 18 years and ideally out at 25 years post last exposure to fire.

Whereas up at the Jerramungup townsite in the 400mm rainfall zone, these Proteaceae family members require a minimum fire return interval of around 30 to 35 years post last exposure to fire to ensure successful regeneration.

These recommended minimum fire return intervals result in complex planning considerations to ensure that adjoining management cells around the townsites and subdivisions are burnt at precisely half of the minimum fire return interval. This approach ensures that available fuel levels from regenerating native vegetation do not create unnecessary wicks of opportunities for bushfires to enter into developed landscapes.

Delays in the implementation of prescribed burns in the adjoining cells can easily result in vegetation maturing past the 10-12 and 15-17 years for the two rainfall zones. By this stage of maturity, the native vegetation is more than capable of burning under bushfire weather conditions and will provide conduits for bushfire entry into the developed landscapes.

Mallett Woodlands

This plant community is confined in occurrence to the landscape around the Needilup town site and the Millers Point recreation reserve within the Shire of Jerramungup Bushfire risk management planning focus.

This plant community is entirely comprised of the obligate reseeding mallet species, *Eucalyptus spp* and grows upon the red cracking clay soils formed on either weathered dolerite dykes and or weathered Pallinup Siltstone or Spongolite such as at the Millers Point recreation reserve.

These mallet woodlands are typically all even aged stands of the Eucalypt having all regenerated following a single disturbance event and possessing little to no understorey element. These plants have very thin bark on their trunks and are extremely fire sensitive and are easily killed by the slightest exposure to elevated temperatures.

Any prescribed burning works undertaken in these woodlands requires considerable amounts of effort to remove all available fuel out from underneath the stands into openings suitable for subsequent burning of the accumulated debris.

These stands can and are successfully thinned using mechanical intervention where the suppressed and sub dominant plants are physically removed to achieve parkland cleanup.

Yate Woodlands

These woodlands of *Eucalyptus occidentalis, and E cornuta* are present within the town sites of Bremer Bay, Jerramungup Golf Course, and Needilup within the focus of the Shire of Jerramungup Bushfire Risk Management program.

These woodlands are all very mature and typical of all the large trees across the Shire they have consistent occurrences of dry sides and large openings into the core of the trees. Unfortunately, when exposed to fire these trees have consistent ingress of fire into them which results in considerable tree fall.

Raking of the debris around the trees using the “Advance mop up” technique is an important feature of managing tree fall when considering the planned use of fire in these woodlands. Again, the parkland cleanup technique as deployed within the Salmon Gum woodlands is strategic approach to deal with the once again elevated levels of accumulated debris in the understorey.

Observations with the rate of leaf and bark litter accumulation post the Parkland cleanup suggest that these woodlands can be re-exposed to fire at 3 to 5 year intervals in order to maintain them in low fuel states to minimise bushfire impacts.

Sheoak Groves

Though the stands of Sheoak are not located within the town sites in the Jerramungup Shire they are located on the Eastern side of Needilup townsite and south of Jerramungup and Gairdner townsites and will be part of the focus of addressing elevated hazards adjacent to these particular townsites.

Sheoak groves of *Allocasuarina huegliana* can colonise adjoining mallee and woodlands in the prolonged absence of fire.

The needle bed accumulation within these groves can be considerable and fortunately for this species of Sheoak, they are generally tolerant to moderate-intensity fire events.

Advance mop up in these groves is not that practical due to the nature of the rocky soils and actual rocks that the Sheoak favour.

Prescribed use of fire in this plant community should aim for moderate to low-intensity needle bed fire to ensure that the fire does not develop into crown fires. Observations suggest that these needle beds are capable of being exposed to the reintroduction of fire at around 3 to 5 year intervals.

Proteaceae and Myrtaceae low coastal heath

This plant community is confined in occurrence to the landscape on the extremity of the Point Henry Peninsular.

The key characteristic of this plant community is the elevated occurrence of members from the Proteaceae family within the scrub understorey, which have particular needs in relation to exposure to fire to ensure the successful regeneration of all elements of the family. The extensive presence of this family in this vegetation community dictates the optimum fire return interval periods for this plant community.

The plants in this family have canopy stored seed within their, often, woody fruit which is only generally released upon exposure to elevated temperature fire events. This survival and recruitment mechanism is a feature of their adaption to the high intensity nature of fire in this plant community. However, to ensure that there is sufficient canopy stored seed set before their next exposure to fire this plant community requires considerable time to achieve this optimum level of stored seed.

The plants within the Proteaceae family ideally require minimum fire return intervals of between 18 and 35 years post exposure across the rainfall gradients of the Shire to achieve this level of canopy stored seed.

On the coast in the 500mm rainfall zone these Proteaceae family members are capable of successfully regenerating at a fire return interval of at least 18 years and ideally out at 25 years post last exposure to fire.

These recommended minimum fire return intervals result in complex planning considerations to ensure that adjoining management cells around the townsites and subdivisions are burnt at precisely half of the minimum fire return interval. This approach ensures that available fuel levels from regenerating native vegetation do not create unnecessary wicks of opportunities for bushfires to enter developed landscapes.

Delays in the implementation of prescribed burns in the adjoining cells can easily result in vegetation maturing past the 10-12 and 15-17 years for the two rainfall zones. By this stage of maturity, the native vegetation is more than capable of burning under bushfire weather conditions and will provide conduits for bushfire entry into the developed landscapes.

Peppermint woodlands

The woodlands of *Agonis flexuosa* are present within the townsite of Bremer Bay and are within the focus of the Shire of Jerramungup Bushfire Risk Management program.

The key characteristic of this plant community is that the dominate trees are peppermint, coastal wattle and net bush. Depending on the density of the vegetation layer the bushfire hazard is high or above, especially in areas where peppermints form a large part of the canopy with a thick understory of net bush and wattle occur.

Peppermints respond vigorously to disturbance and will invade other adjacent vegetation communities following disturbance.

To achieve a taller community with sparse understory, manipulation of the understory is required. In high-impact areas such as road reserves and buffer surrounding human

settlement and public use areas mechanical intervention has been implemented and will continue to be maintained at that standard.

This work greatly reduces the flame length and radiant heat adjacent to road networks and key structural assets to minimise impacts on the community in the event of a bushfire.

At a large scale, this is simply not cost effective. Therefore, manipulation of these woodlands with the use of fire to remove net bush, coastal wattle and to thin out the suckering peppermints can occur. Fire intervals of 3-5 years post initial hazard reduction burn are proving beneficial to achieve this outcome.

It is reported peppermint communities in Bremer Bay were once open grassy woodlands with a low bushfire hazard. This type of woodland is the vegetation community that offers the most amenity value and low bush fire hazard.

3.11 Threatening processes

Fire is considered a risk for many species due to their small population size and they rely on specific habitats that are likely to be affected during a fire[90]. The Western Ground Parrot is the most at risk from fire due to the small population size, while Kunzea similis and Mt Barren Featherflower are highly vulnerable to fire[91]. Kunzea similis is also at threat from mining which has removed 6% of the population[92]. There are 4 landscape units where inappropriate fire will have a significant effect on the area, including Greenstone, Marine Plain, Quartzite Range and Yilgarn Block East. The landscape units are affected by fire with species that require long unburnt habitat and others that contain woodland, mallet, or moort vegetation.

Inappropriate fire regimes are a significant threat to all the threatened species and ecological communities of the Fitzgerald Biosphere, in particular those with restricted populations, low dispersal ability or require long-unburnt habitat. No fire regime is optimal for all species, but large scale, intense fires present the greatest threat[93].

Land clearance is listed as a key threatening process, smaller scale clearing still occurs for many purposes, primarily for mining and exploration activities, urban development, road and track maintenance and farming activities. The current fragmentation of the remnant vegetation in the Fitzgerald Biosphere is also a significant threat, as isolated populations of threatened species are vulnerable to edge effects and stochastic events (e.g. lightning, fire). Fragmentation and degradation of habitat is ranked as a high threat to the Carnaby's Black-

[90] Department of Environment and Conservation (2012) Fitzgerald Biosphere Recovery Plan: A Landscape Approach to Threatened Species and Ecological Communities Recovery and Biodiversity Conservation https://www.dcceew.gov.au/sites/default/files/documents/fitzgerald-biosphere-recovery-plan.pdf

[91] Department of Environment and Conservation (2012) Fitzgerald Biosphere Recovery Plan: A Landscape Approach to Threatened Species and Ecological Communities Recovery and Biodiversity Conservation https://www.dcceew.gov.au/sites/default/files/documents/fitzgerald-biosphere-recovery-plan.pdf

[92] Department of Environment and conservation (2011) FITZGERALD BIOSPHERE RECOVERY PLAN A landscape approach to threatened species and ecological communities for recovery and biodiversity conservation https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.dcceew.gov.au/sites/default/files/documents/fitzgerald-biosphere-species-profiles.doc&ved=2ahUKEwjynuf3vvWGAxWWSGwGHVSNDGE4FBAWegQIDRAB&usg=AOvVaw2jTKnMl9LaGDAXB0be6jbE

[93] Department of Environment and Conservation (2012) Fitzgerald Biosphere Recovery Plan: A Landscape Approach to Threatened Species and Ecological Communities Recovery and Biodiversity Conservation https://www.dcceew.gov.au/sites/default/files/documents/fitzgerald-biosphere-recovery-plan.pdf

Cockatoo and Malleefowl due to their wide distributions across the Biosphere. Loss and degradation of habitat is ranked as a high threat for Eucalyptus purpurata, Hibbertia abyssa, and Kunzea similis subsp. mediterranea as these threatened flora species are restricted to Bandalup Hill near Ravensthorpe Range, which is currently the site of a mine[94].

Stochastic events are generally unpredictable, and therefore cannot be managed pre-emptively. They can be of particular threat to species with restricted distributions and limited population size. For example, extremely hot weather in January 2010 was found to be the primary cause of an unusual mass mortality event in over 150 Carnaby's Black-Cockatoos in the Hopetoun area.

3.12 Historical bushfire occurrence

A report provided by the Operational Information Systems Branch of the Department of Fire and Emergency Services (DFES) reports a total of 107 fires between 1 July 2013 and 9 June 2024 within the Shire of Jerramungup. The number of reported fires varied from 16 in the 2015 financial year to 6 in the 2023 financial year. Out of the 53 fires reported one was recorded as suspicious and 11 were undetermined. Most fires are caused by lightning or burn off fires with 29 and 23 fires respectively. However, within 2023/2024 year there were no burn-off fires.

The Shire of Jerramungup under sections 17 and 18 of the *Bush Fires Act 1954* has declared the following restricted and prohibited burning times:[95]

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

- 1st October to 31st October 2024 - Permits required, Restricted Burning Time (RBT)
- 1st November to 7th February 2025 - BURNING PROHIBITED (PBT)
- 8th February to 30th April 2025 - Permits required, Restricted Burning Time (RBT)

Zone 5 – Point Henry Peninsula, Shire of Jerramungup

- 1st September to 31st October 2024 - Permits required, Restricted Burning Time (RBT)
- 1st November to 4th April 2025 - BURNING PROHIBITED (PBT)
- 5th April to 31st May 2025 - 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.

[94] Department of Environment and Conservation (2012) Fitzgerald Biosphere Recovery Plan: A Landscape Approach to Threatened Species and Ecological Communities Recovery and Biodiversity Conservation https://www.dcceew.gov.au/sites/default/files/documents/fitzgerald-biosphere-recovery-plan.pdf

[95] Shire of Jerramungup (2024), Fire Control Information https://www.jerramungup.wa.gov.au/services/fire-control.aspx

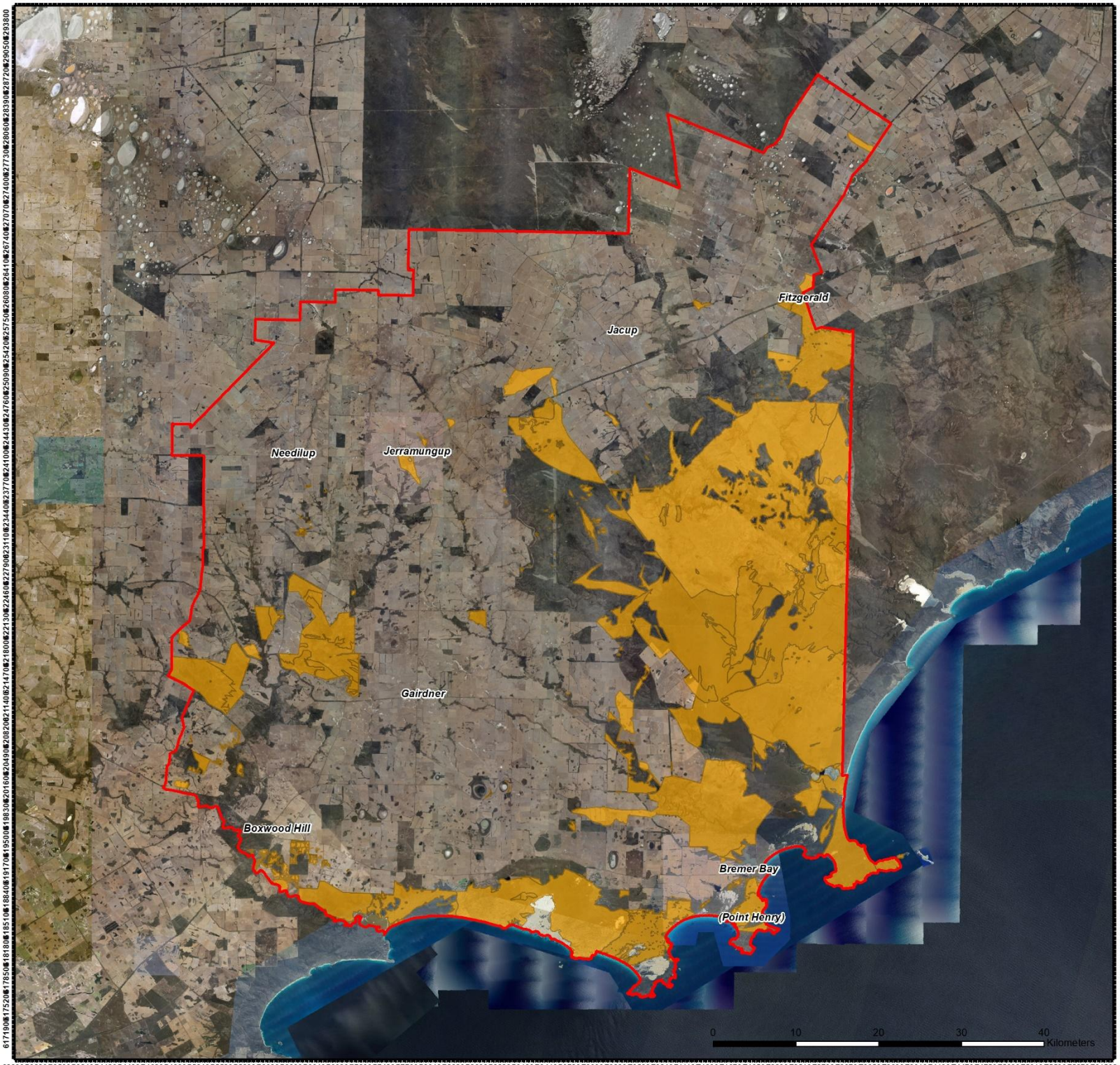
All Bushfires
LGA of JERRAMUNGUP (S)
from 01/07/2013 to 09/06/2024

A Bushfire is considered to be any vegetation fire (bush, grass, scrub crop, forest: of any size

Bushfires Summary of Ignition Report

Reported Cause / Total Number of Bushfires:	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	Total
Total Number of Bushfires:	**7**	**7**	**16**	**13**	**14**	**7**	**11**	**4**	**15**	**7**	**6**	**107**
Burn off fires	2	0	4	4	7	1	3	0	1	1	0	23
Campfires/bonfires/outdoor cooking	0	0	0	0	0	0	1	0	1	0	1	3
Cigarette	0	0	0	0	0	0	0	0	0	1	0	1
Electrical distribution (excl. power lines)	0	0	0	0	0	0	0	0	0	1	0	1
Equipment - Mechanical or electrical fault	0	0	0	0	1	0	0	0	0	0	0	1
Equipment - Operational deficiency	0	0	1	0	0	0	0	0	0	0	0	1
Heat from other hot objects or friction	0	0	0	0	0	0	0	0	0	1	0	1
Human Error (Left on, knock over, unattended etc.)	0	0	1	0	0	0	0	0	0	0	0	1
Improper Fuelling/Cleaning/Storage/Use of material ignited	0	0	0	0	0	0	0	1	0	0	0	1
Other open flames or fire	0	0	0	1	0	0	0	0	0	1	0	2
Power lines	1	2	1	1	1	0	0	0	0	0	0	6
Reignition of previous fire	0	0	0	0	0	2	0	0	0	0	0	2
Sleeping/Alcohol/Drugs/Physical-Mental impairment	0	0	0	0	1	0	0	0	0	0	0	1
Suspicious/Deliberate	0	0	0	1	0	0	0	0	0	0	0	1
Undetermined	1	0	1	1	0	0	0	0	0	0	0	3
Unreported	0	1	0	1	0	1	2	1	1	1	3	11
Vehicles (incl. Farming Equipment/Activities)	0	1	4	2	3	2	0	0	4	1	0	17
Weather Conditions - Lightning	3	2	3	2	1	1	5	2	8	0	2	29
Weather Conditions (High winds, natural combustion etc. Excludes Lightning)	0	1	1	0	0	0	0	0	0	0	0	2

Table 4: Bushfire Ignition Sources for the Shire of Jerramungup (2013-2024)



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BIO DIVERSE SOLUTIONS

Overview Map Scale 1:10,000,000

Legend

- Shire of Jerramungup LGA Boundary
- Shire of Jerramungup Fire History (2023)

Scale
1:450,000@ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Figure 20: Shire Fire History

QA Check	Drawn by
KPK	BRM

STATUS	FILE	DATE
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Overview Map Scale 1:10,000,000

Legend

- Shire of Jerramungup LGA Boundary
- Burn Plan (All Townsites and Districts)

Scale
1:450,000@ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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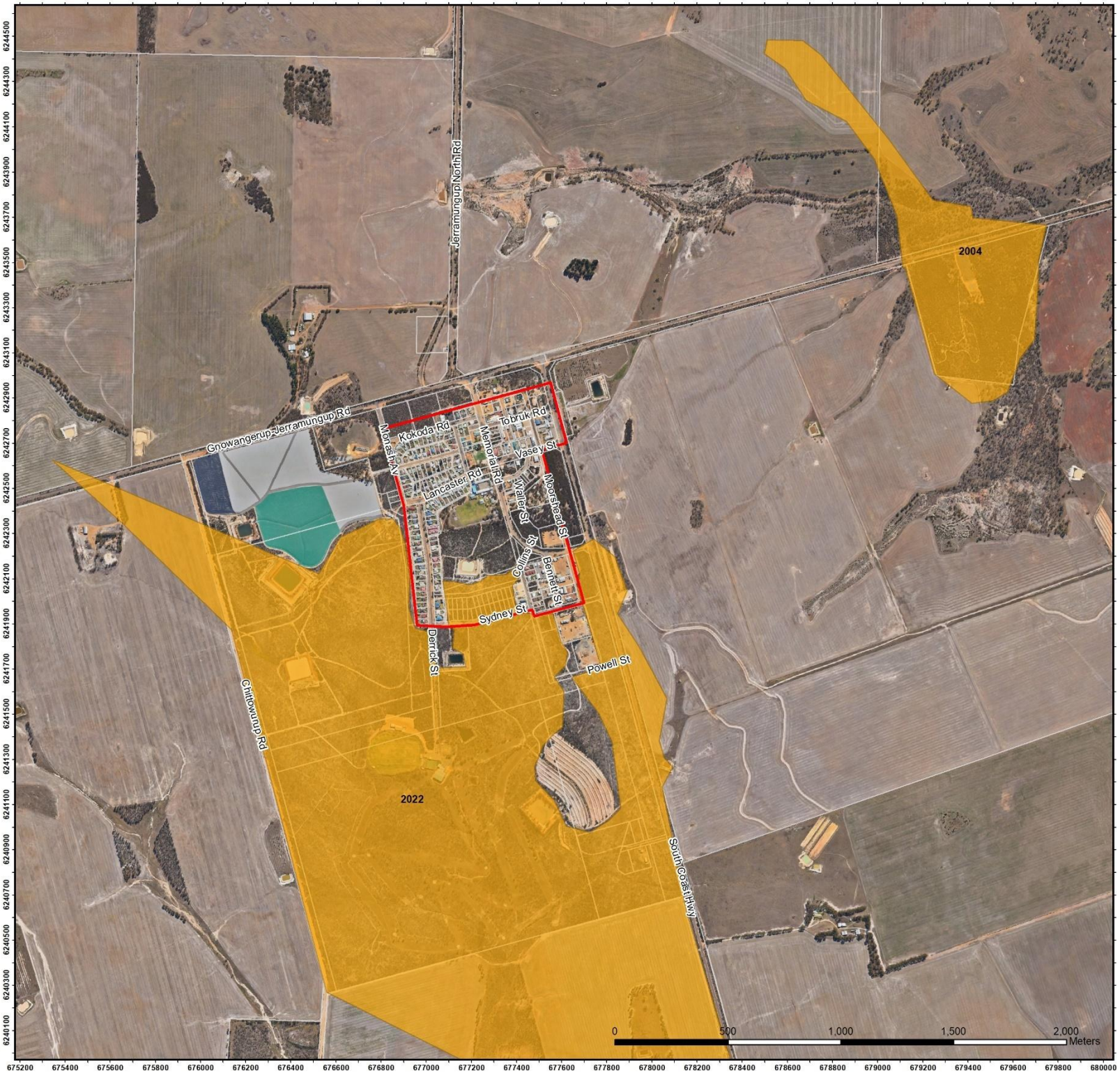
Figure 21: Shire Burn Plan

QA Check	Drawn by	
KPK	BRM	
STATUS: DRAFT	FILE: JER014	DATE: 24/07/2024



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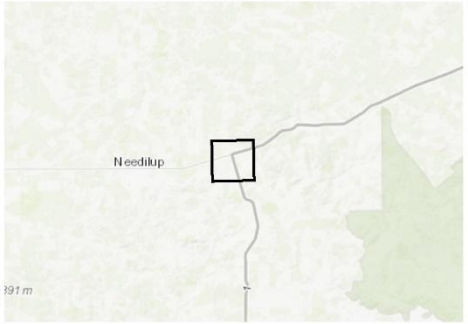

Overview Map Scale 1:750,000

Legend

- Jerramungup
- Cadastre
- Shire of Jerramungup Fire History (2023)

Scale
1:16,500 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Figure 22: Jerramungup Fire History

QA Check	Drawn by
KPK	BRM

STATUS	FILE	DATE
DRAFT	JER014	24/07/2024

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Esperance Office:
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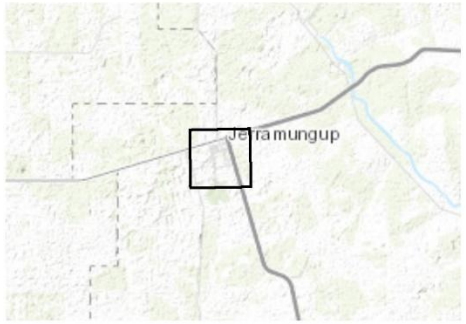
BIO DIVERSE SOLUTIONS



Overview Map Scale 1:250,000

Legend

- Jerramungup
- Cadastre
- Strategic Break / Low-Fuel Zone

Scale
1:8,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Figure 23: Jerramungup Strategic Breaks

QA Check	Drawn by
KPK	BRM

STATUS	FILE	DATE
DRAFT	JER014	24/07/2024

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BPAD Bushfire Planning & Design

BIO DIVERSE SOLUTIONS

Overview Map Scale 1:750,000

Legend

- Bremer Bay
- Cadastre
- Shire of Jerramungup Fire History (2023)

Scale
1:20,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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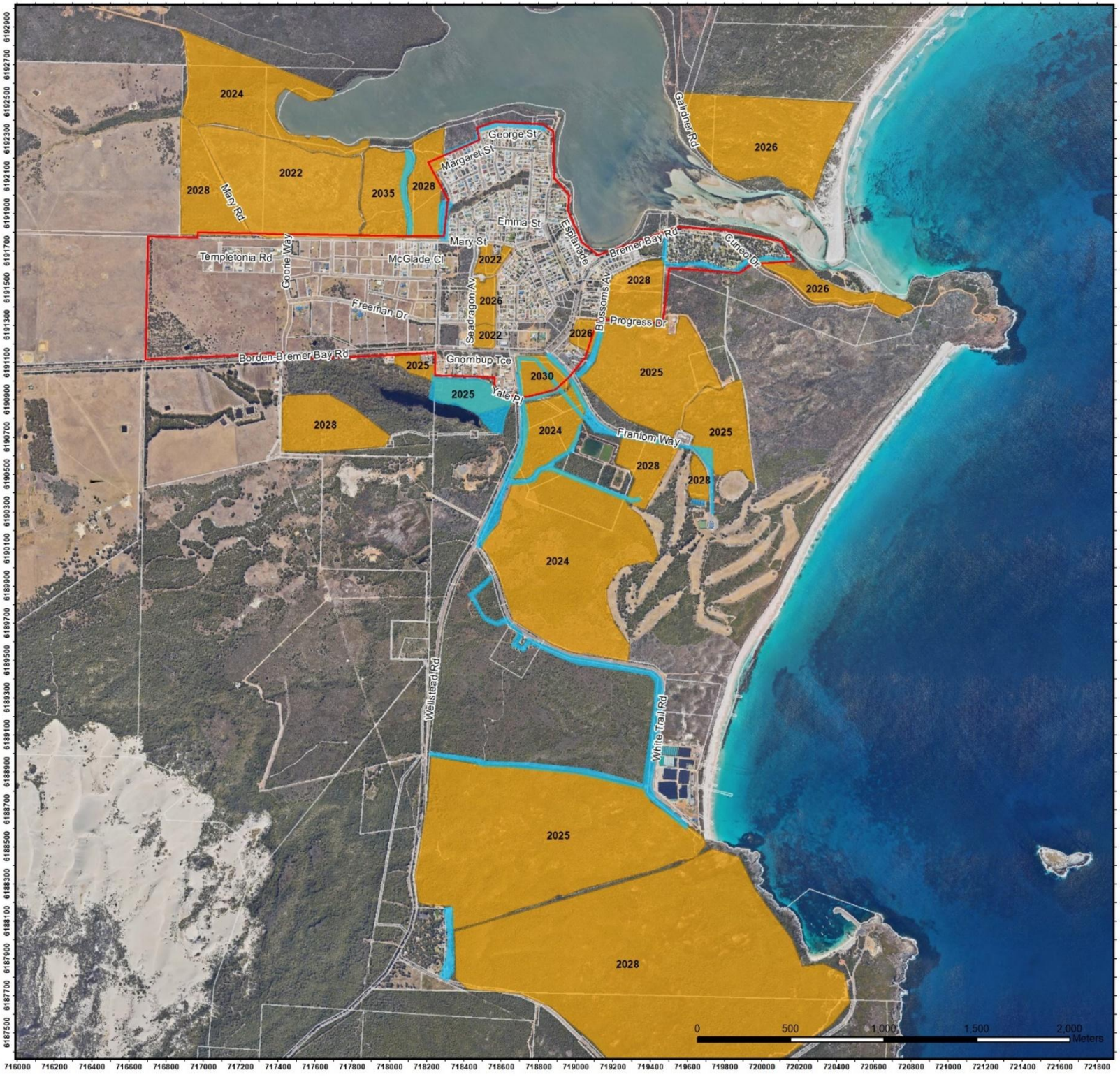
Figure 24: Bremer Bay Fire History

QA Check	Drawn by
KPK	BRM

STATUS	FILE	DATE
DRAFT	JER014	24/07/2024



Albany Office:
29 Hercules Crescent
Albany, WA 6330
(08) 9842 1575

Denmark Office:
7/40 South Coast Highway
Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1382

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BIO DIVERSE SOLUTIONS

Overview Map Scale 1:750,000

Legend

- Bremer Bay
- Cadastre
- Strategic Break / Low-Fuel Zone
- Burn Plan (Year Due)

Scale
1:20,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Shire of Jerramungup
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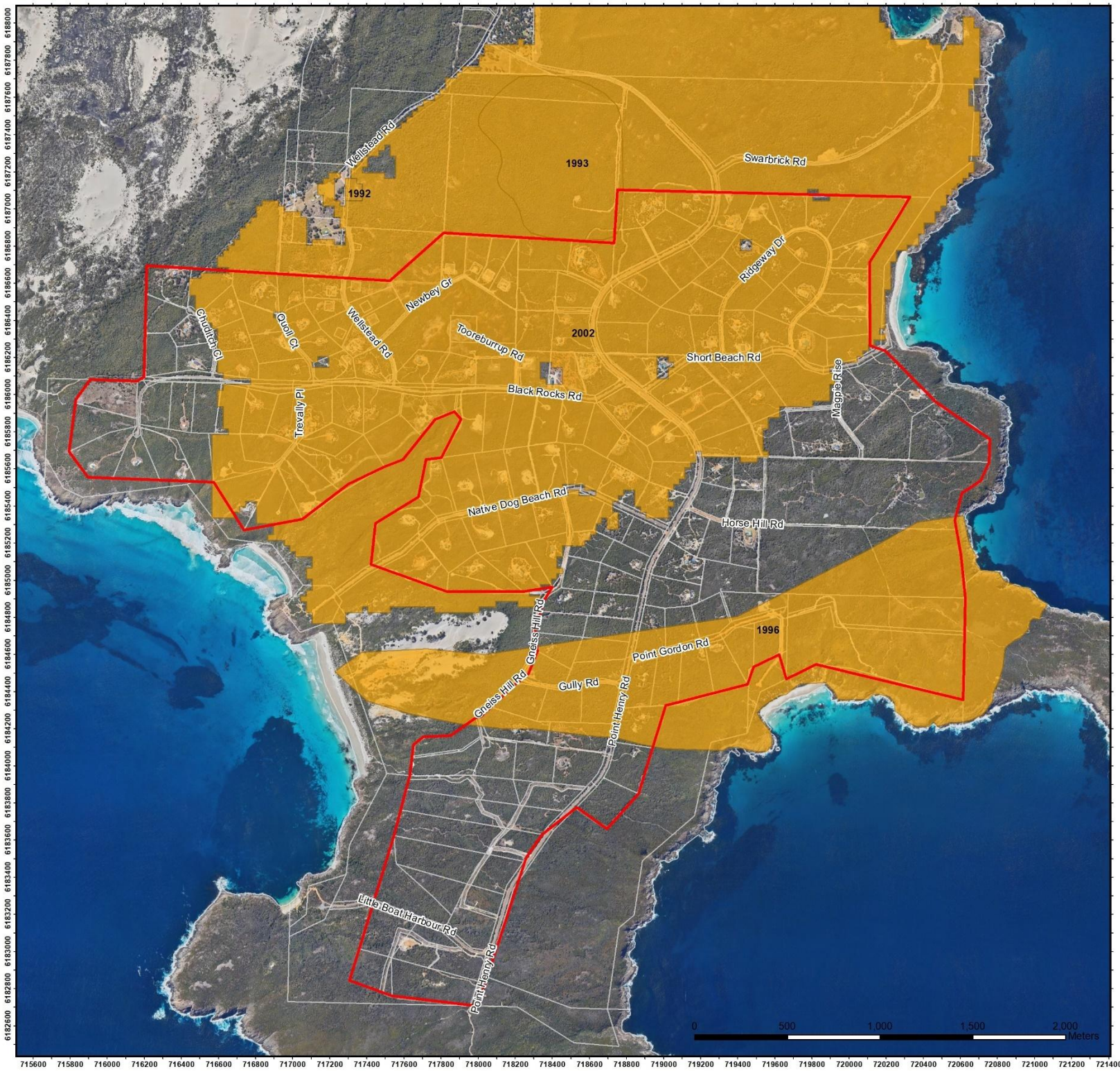
Figure 25: Bremer Bay Burn Plan

QA Check	Drawn by	
KPK	BRM	
STATUS	FILE	DATE
DRAFT	JER014	24/07/2024



Albany Office:
29 Hercules Crescent
Albany, WA 6330
(08) 9842 1575

Denmark Office:
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Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1362

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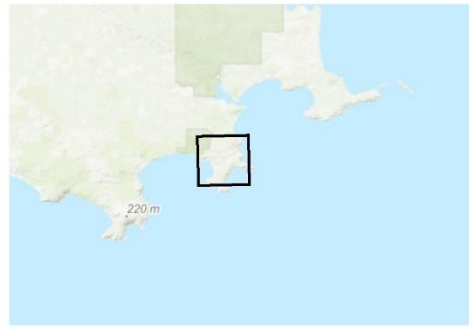

Overview Map Scale 1:750,000

Legend

- Point Henry
- Cadastre
- Shire of Jerramungup Fire History (2023)

Scale
1:20,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Shire of Jerramungup
PO Box 92
Jerramungup, WA 6338

Figure 26: Point Henry Fire History

QA Check	Drawn by
KPK	BRM

STATUS	FILE	DATE
DRAFT	JER014	24/07/2024

Albany Office:
29 Hercules Crescent
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(08) 9842 1575

Denmark Office:
7/40 South Coast Highway
Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
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(08) 9072 1382

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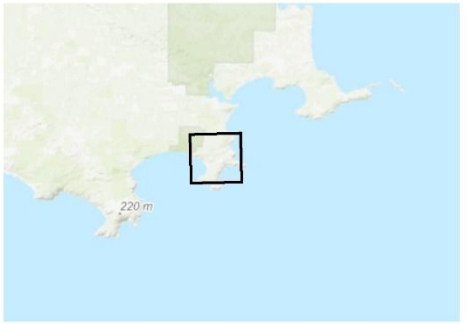
BIO DIVERSE SOLUTIONS



Overview Map Scale 1:750,000

Legend

- Point Henry
- Cadastre
- Point Henry Strategic Break / Low-Fuel Zone
- Road Reserve Mulching
- Burn Plan (Year Due)

Scale
1:20,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Shire of Jerramungup
PO Box 92
Jerramungup, WA 6338

Figure 27: Point Henry Burn Plan

QA Check	Drawn by
KPK	BRM

STATUS	FILE	DATE
DRAFT	JER014	24/07/2024

Albany Office:
29 Hercules Crescent
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(08) 9842 1575

Denmark Office:
7/40 South Coast Highway
Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1382

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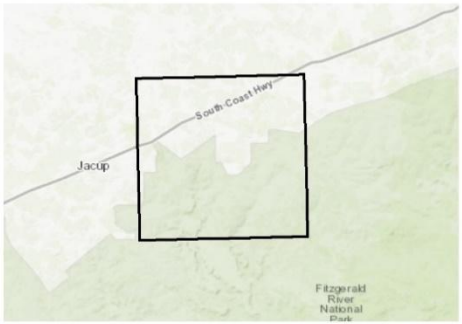
Bio Diverse Solutions



Overview Map Scale 1:750,000

Legend

- Fitzgerald
- Cadastre
- Shire of Jerramungup Fire History (2023)

Scale
1:67,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Shire of Jerramungup
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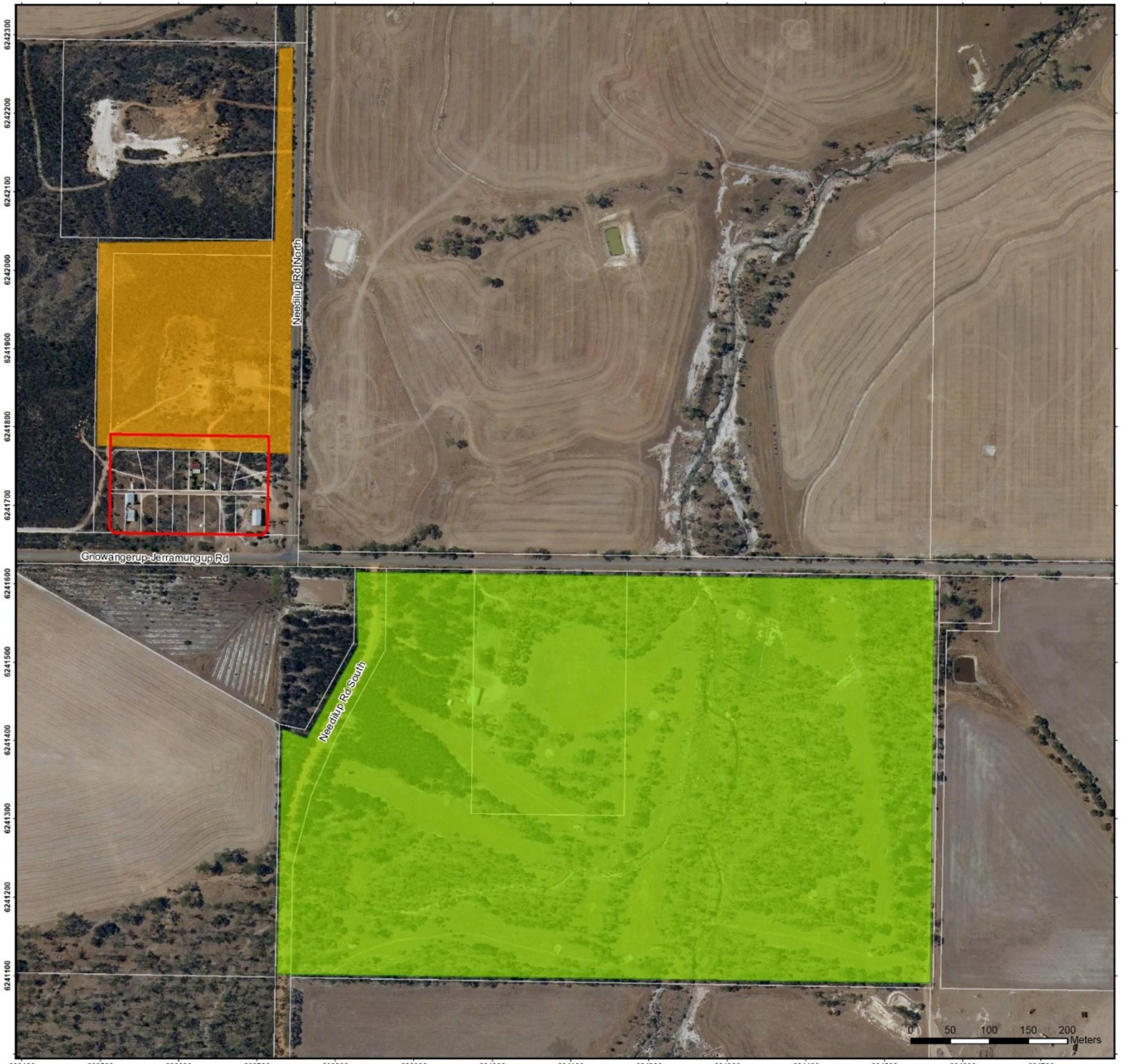
Figure 28: Fitzgerald Fire History

QA Check	Drawn by
KPK	BRM

STATUS	FILE	DATE
DRAFT	JER014	24/07/2024



Albany Office:
29 Hercules Crescent
Albany, WA 6330
(08) 9842 1575

Denmark Office:
7/40 South Coast Highway
Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1382

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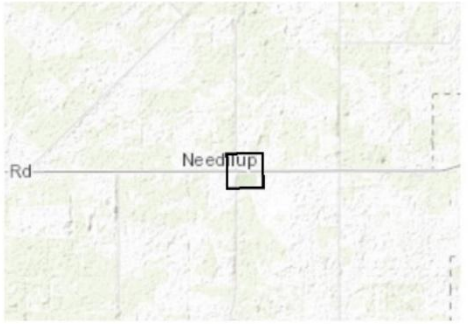
BIO DIVERSE SOLUTIONS



Overview Map Scale 1:250,000

Legend

- Needilup
- Cadastre
- Parkland Clearing
- Burn Plan

Scale
1:4,750 @ A3
GDA MGA 2020 Zone 50

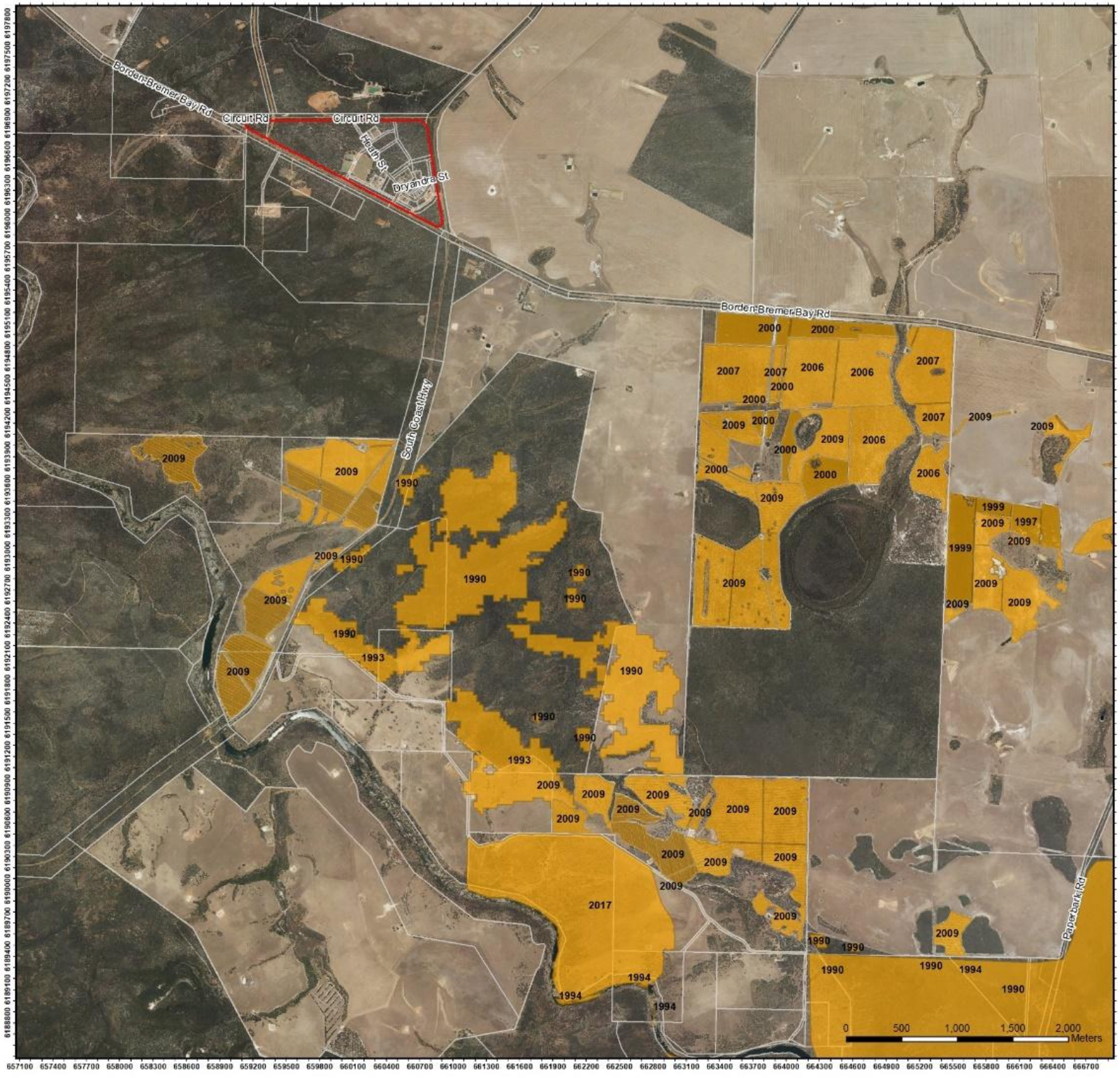
Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Shire of Jerramungup
PO Box 92
Jerramungup, WA 6338

Figure 29: Needilup Burn Plan

QA Check	Drawn by
KPK	BRM

STATUS	FILE	DATE
DRAFT	JER014	24/07/2024



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Denmark Office:
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Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1382

BPAD Bushfire Planning & Design

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Overview Map Scale 1:750,000

Legend

- Boxwood Hill
- Cadastre
- Shire of Jerramungup Fire History (2023)

Scale
1:33,500 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Shire of Jerramungup
PO Box 92
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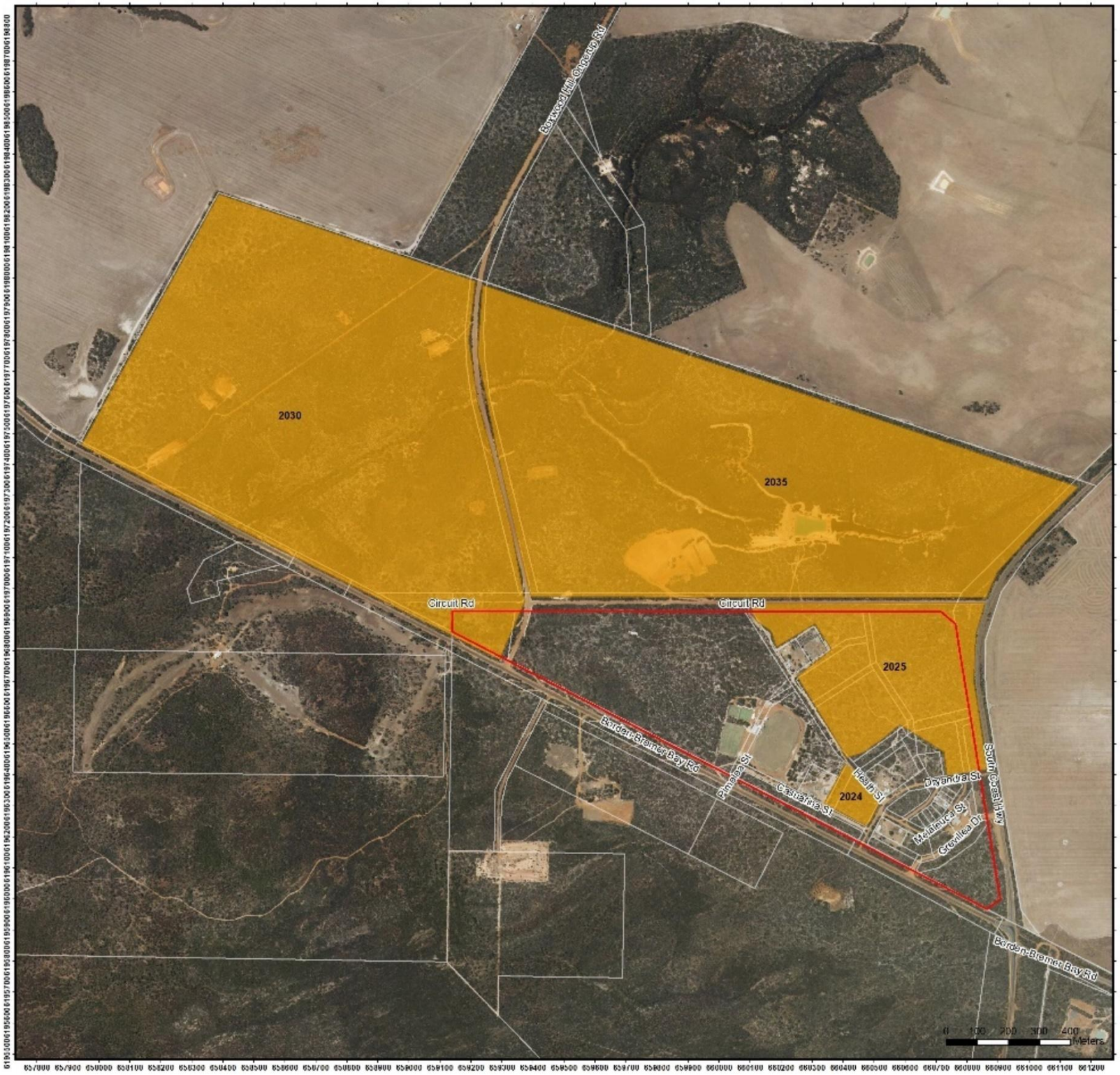
Figure 30: Boxwood Hill Fire History

QA Check	Drawn by
KPK	BRM

STATUS	FILE	DATE
DRAFT	JER014	24/07/2024



Albany Office:
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Albany, WA 6330
(08) 9842 1575

Denmark Office:
7/49 South Coast Highway
Denmark, WA 6333
(08) 9848 1308

Esperance Office:
24/113 Dempster Street
Esperance, WA 6450
(08) 9072 1302

BPAD Bushfire Planning & Design

BIO DIVERSE SOLUTIONS

Overview Map Scale 1:750,000

Legend

- Boxwood Hill
- Cadastre
- Burn Plan (Year Due)

Scale
1:12,000 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Shire of Jerramungup
PO Box 92
Jerramungup, WA 6338

Figure 31: Boxwood Burn Plan

QA Check	Drawn by	
KPK	BRM	
STATUS	FILE	DATE
DRAFT	JER014	24/07/2024

The main cause of ignition in the Shire of Jerramungup was lightning, then burn off followed by vehicle/farming equipment. 2022 saw the most incidents of lightning with 8 reports, with the effect of climate change will most likely boost the chance of more lightning strikes[96]. While the number of burn off fires has reduced since 2018 when the Shire had 7 fires, the number is now approximately 1 escaped burn off fire. Jerramungup is dominated by agricultural land and these figures reflect the high use of farming equipment during the critical bushfire period of October – January for the harvesting of crops. 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.

The potential threat to the town is demonstrated in the past fires, in February 2022[97] lightning sparked 15 fires near the CBH facility in Jerramungup, the fire reached the southern edge of the town where 1 house was lost and forced the closure of the FRNP. There were extensive stock losses up to 10,000 livestock had to be euthanised because of the injuries they sustained during the fire[98]. This affected the areas of Dillion Bay, Point Henry and Bremer Bay. Within the same month, a fire threatened the Jerramungup Golf Club[99] and the town. While the town's water treatment plant was inoperable after the fire damage. Authorities delivered water to the town due to the supply running out, residents were urged to limit their water use. The fire burnt an area of 22,779ha and wrapped around the town. 2021 was the wettest winter which likely increased fuel loads along with windy conditions that allowed the Jerramungup blaze to take hold[100].

In early December 2012, a fire that was started by a lightning strike burnt over 11,000 hectares of bushland, the entire town was evacuated and the school closed for several days when the fire threatened the community from the west. The Department of Education and the Shire have been working to mitigate the risk with a works program to reduce the vegetation and reduce the BAL rating of the buildings.

The entire rural subdivision of Point Henry was burnt in 2012 by a fast-moving fire that reached the edge of the main townsite[101]. The existing rural residential area at Point Henry has been largely developed and is mainly limited to bush lots. This subdivision is recognised as having a significant risk of bushfire. Following the bushfire in 2012 the Shire of Jerramungup developed *Local Planning Policy (LPP) No. 18 - Point Henry Fire Management (2019)*. The properties have been strengthened with a strategic break network, clearing of vegetation along roads, communal water supply and a 20m APZ. The area has a high number of absentee landowners who may be unfamiliar with the area.

---

[96] McCabe K (2023) How does climate change affect thunderstorms? https://www.rmets.org/metmatters/how-does-climate-change-affect-thunderstorms

[97] Croy L (2022) Fire alarm: Homes feared lost as lightning sparks bushfire emergencies across southern WA Fire alarm: Homes feared lost as lightning sparks bushfire emergencies across southern WA

[98] Kagi J & Shepard B (2022) At least three homes lost in Jerramungup and Hopetoun blazes in WA's Great Southern region https://www.abc.net.au/news/2022-02-12/homes-lost-in-hopetoun-and-jerramungup-blazes/100825118

[99] Vieira I (2022) Jerramungup Golf Club caught in monster bushfire that threatened to wipe town off the map https://www.albanyadvertiser.com.au/news/albany-advertiser/jerramungup-golf-club-caught-in-monster-bushfire-that-threatened-to-wipe-town-off-the-map-c-5721683

[100] Smith L (2022) Wet winter boosted fuel loads https://www.abc.net.au/news/2022-04-29/bushfire-season-in-great-southern-wa-higher-fuel-loads/101027396

[101] Gray & Lewis (2010) Shire of Jerramungup Local Planning Strategy https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf

In 1997 two fires started in Thumb Park on 27 December caused by lightning, however, resources were sent to Jerdacuttup due to threats to life and property caused by another fire. As a result, the Thumb Park fire jumped the existing fuel reduced buffers. On the 15 January 1998, the fire was isolated by back burning. The map shows Areas 2 and 4 were partially burnt and Area 3 was completely burnt[102]. See Figure 30 below.

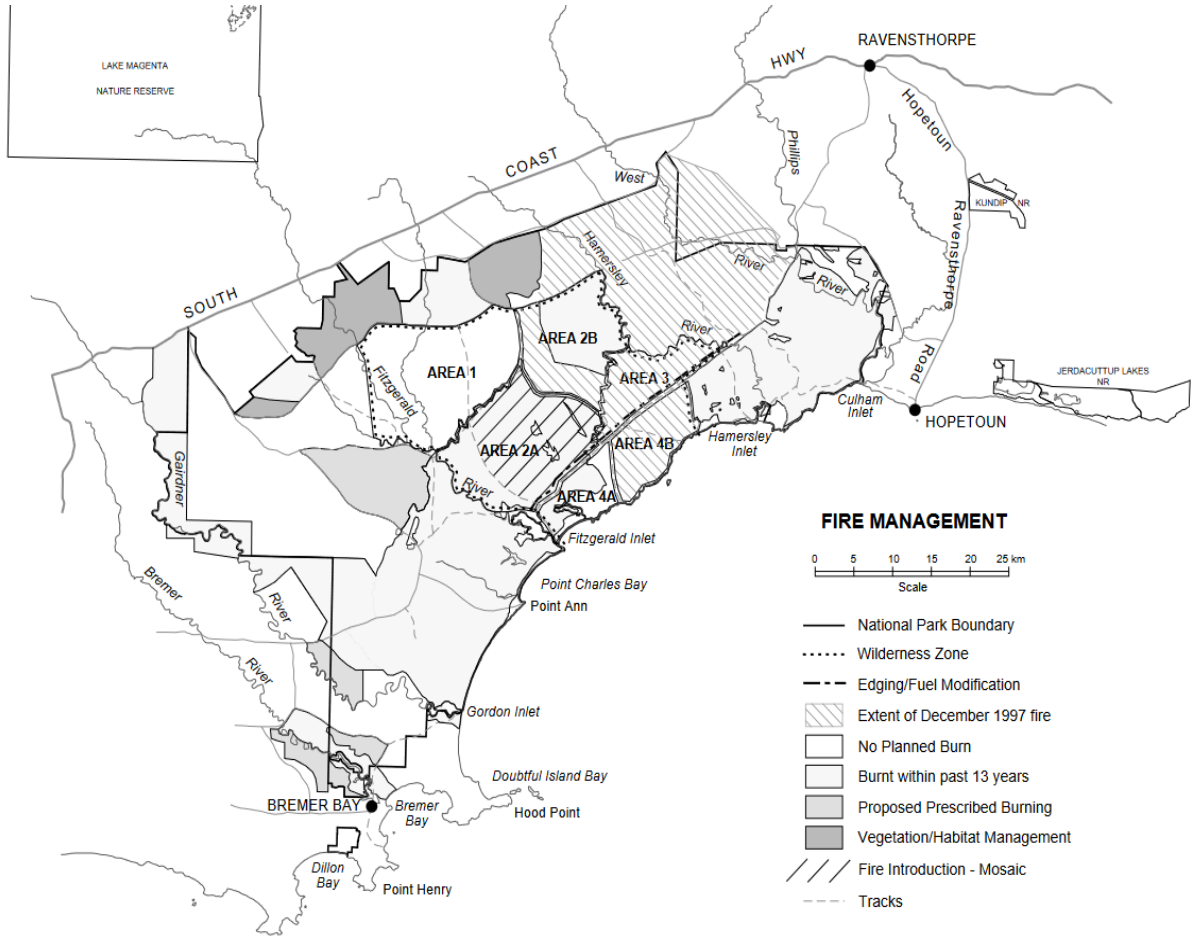

Figure 32: Fire Management for Fitzgerald River National Park[103]

On 22 December 2018 campers were advised to leave, as a bushfire started by lighting posed a risk. The areas included Point Henry, Dillon Bay settlement, Foster Beach campsite and all coastal campsites, and the eastern part of Boxwood Hill. The fire moved in a north-easterly direction towards the road which resulted in several roads being closed, this bushfire burnt some 3,600ha. People camping near Reef Beach were advised to leave immediately and others planning to camp in the area or visit Bremer Bay in the coming days should defer their plans. Given the area is popular with campers at this time of year and the

[102] DBCA (2003) FIRE MANAGEMENT STRATEGY FOR THE WILDERNESS ZONE OF THE FITZGERALD RIVER NATIONAL PARK, 1999 – 2001 Downloads/fitzgerald_river_national_park_management_plan_-_amendment_2003_0.pdf

[103]DBCA (2001) FIRE MANAGEMENT STRATEGY FOR THE WILDERNESS ZONE OF THE FITZGERALD RIVER NATIONAL PARK, 1999 - 2001 Downloads/fitzgerald_river_national_park_management_plan_-_amendment_2003_0.pdf

population within Bremer Bay swells to 15,000-20,000 people. This shows the risk of advising and evacuating campers during this time of year[104].

3.13 Current bushfire risk management controls

A list of Local Government Wide Controls for reducing bushfire risk in Shire of Jerramungup is provided in Appendix A.

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 Burn Options Program
- Shire of Jerramungup LPP No. 18 - Point Henry Fire Management Plan
- Shire of Jerramungup LPP No. 10 – Agroforestry and Plantations (s10.6)
- Plantation Managers Fire Agreement Forest Industry Federation (WA)

A multi-agency work plan has been developed and is attached in Appendix *D.* 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.

[104] WAtoday (2018) Campers near Bremer Bay told to leave as bushfire poses risk to lives and homes https://www.watoday.com.au/national/western-australia/leave-or-actively-defend-fire-threatens-lives-and-homes-near-bremer-bay-20181222-p50nvt.html

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, many are also from other backgrounds with varied knowledge.

Suppression capability is an important consideration for this region as resources are limited and backup 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 per dwelling (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.

Shire of Jerramungup *LPP No. 18 - Point Henry Fire Management (2019)* 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; and should upgrade the construction standard of buildings to comply with AS3959 where practicable. These requirements are being progressively phased in through the Fire Control Information 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.

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

Fire protection has been addressed on a district-wide basis with a specific fire plan for the Fitzgerald River National Park and strategic planning for the balance of the Shire. Planning for bush fire protection is now a major requirement associated with rural residential and residential development in or near fire prone areas.

P&W has established a Fire Working Group for the FRNP and specific fire management strategies for the wilderness zones of the FRNP[105]. The establishment of slashed or scrub-rolled buffers at least 50m wide is highly effective in containing summer wildfires in heath and low mallee vegetation. These slashed buffers reduce fire intensity allowing firefighters a safety

[105] Department of Parks and Wildlife (1999) *Fire Management Strategy for the Wilderness Zones of the Fitzgerald River National Park (1999-2001)* https://library.dbca.wa.gov.au/FullTextFiles/013111.pdf

margin and a greater likelihood of success in extinguishing wildfires. Buffers also provide a prepared base from which to initiate backburns against wildfires[106].

This policy requires detailed fire management plans to be prepared and implemented through the rezoning and Structure Plan/Outline Development Plan Stage (ODP). Fire management plans are required to address overall fire protection measures having regard for the ultimate development of an area, as well as detailed fire protection measures for specific stages of development.

Fire Management Plans prepared in association with rezoning or Structure Plans/ODPs are required to address the 'Planning for Bushfire Protection Guidelines'. Fire Management Plans will also be required to meet any guidelines outlined in any Local Planning Policy adopted by the Shire.

Implementation of the plans is to be achieved principally through the subdivision approval process whereby action must be taken before clearances by the appropriate authorities, prior to final endorsement of a plan of subdivision by the Western Australian Planning Commission.

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 *Phytophthora cinnamomi*. The soil-borne pathogen, *Phytophthora* and other related pathogens infest native plant communities causing the death of susceptible species[107]. P&W has developed specific fire management strategies for the wilderness zones of the FRNP[108].

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 fire line using earth moving machinery directly on the fire edge).

In addition to fire safety Council will have regard for issues such as environmental and visual impacts. For example, when examining strategic fire break locations, the Council may have regard to topography, potential erosion, vegetation removal and visual impact on major tourist routes/places. The Shire will require strategic firebreaks to provide legal vehicular public access for use in an emergency and for maintenance. Strategic firebreaks will be required to provide legal access as a public road, right of way, or through public easements in gross registered on the certificate of title(s).

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[106] Department of Parks and Wildlife (1999) *Fire Management Strategy for the Wilderness Zones of the Fitzgerald River National Park (1999-2001)* https://library.dbca.wa.gov.au/FullTextFiles/013111.pdf

[107] South Coast NRM (2009) Managing External Dieback Threats to the Fitzgerald River National Park https://library.dbca.wa.gov.au/static/FullTextFiles/628544.pdf

[108] Department of Conservation and Land Management (1991) Fitzgerald National Park Management Plan Management Plan No. 15 https://www.epa.wa.gov.au/sites/default/files/API_documents/Att%202%20-%20FRNP_ManagementPlan.pdf

The Water Corporation is reviewing the Bremer Bay water capacity and it is anticipated that estimates for the aquifer will substantially increase and may double. Additional infrastructure to access water may be required and will likely require developer funding[109]. This may cause a lack of water with the drying climate until the works are completed. The Shire of Jerramungup has a Local Planning Policy for Water Conservation, the policy is aimed at development using rainwater tanks to augment domestic water and encourages greywater reuse and water-wise measures[110].

3.14 Fire Restrictions

The Shire uses Section 33 notices to address the fire risk on private property, land in certain zones with a land area of 4000m^2 or less is required to reduce fuel and parkland clear vegetation. Land over 4000m^2 should establish and maintain an APZ around a habitable building, a 3m wide bare earth firebreak around fuel tanks, sheds, gas cylinders and 6m of a haystack. The remainder of the land should have grass less than 100mm high and implement parkland clearing of vegetation. Cleared vacant land must be maintained in that cleared state[115].

Point Henry Peninsula are required to clear a 20m strategic break for subdivisions, comply with a BMP if they have one, maintain driveways, have a 1m low fuel zone around power infrastructure, have a dedicated 20,000L water supply and 20m APZ.

Rural zones should have a 3m wide bare earth firebreak inside all external boundaries and around all buildings and within 20m of all haystacks. Landowners must have compliant driveways and turnaround areas. Where land is > 100ha they should have a 3m wide bare earth firebreak around all buildings, haystacks, flammable matter and fuel dumps. Plantations are required to maintain a 15m wide bare earth fire break inside boundaries and have an approved BMP. Guidelines for Plantation Fire Protection should be followed.

Total fire bans (TFB) are declared when extreme weather conditions or firefighting resources are stretched, DFES will declare a TFB after consulting with local governments. A TFB prohibits the lighting of fires in the open air and other activities that may start a fire, this includes welding, grinding and campfires[116].

The Local Government can issue Harvest & Vehicle Movement Bans under the Bush Fire Regulations 1954, The Chief Bushfire Control officer will decide if the conditions may result in a bushfire with the use of engines, vehicles, or machinery. A HVMB can be imposed for any length of time but is generally imposed for several days. 2024 has seen the extension of the restrictions to burning by several local governments until June.

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[109] Shire of Jerramungup (2010) Local Planning Strategy https://www.wa.gov.au/system/files/2021-11/LST-Jerramungup-shire.pdf

[110] Shire of Jerramungup n.d. Local Planning Policy no 17 Water Conservation https://www.jerramungup.wa.gov.au/documents/147/lpp17-water-conservation

[115] Shire of Jerramungup Fire Control Information 2023/2024 https://www.jerramungup.wa.gov.au/Profiles/jerramungup/Assets/ClientData/Fire_Control_Brochure_2023-2024.pdf

[116] Shire of Jerramungup Fire Control Information 2023/2024 https://www.jerramungup.wa.gov.au/Profiles/jerramungup/Assets/ClientData/Fire_Control_Brochure_2023-2024.pdf

3.15 Community Messaging

In 2015 the Western Australia Government released a suite of reforms in response to the Keelty Report 2011 that apply across the state and elevate bushfire issues to the highest level of planning policy.

The Department of Fire and Emergency Services (DFES), Building Commission and Western Australian Planning Commission (WAPC) collectively released:

- State Planning Policy 3.7 'Planning in Bushfire Prone Areas'
- Amendments to Planning Regulations
- Amendments to Building Regulations
- An order by the Fire & Emergency Services Commissioner designating bushfire prone areas
- Published the Map of Bushfire Prone areas
- Published the Guidelines for Planning in Bushfire Prone Areas

These controls play a part in making sure assets are protected from the vegetation that will cause more severe bushfires and ensuring buildings are built to provide a higher level of protection than in the past. To gain development approval the map of bushfire prone areas produced by ORBM should be consulted, if the property is within a bushfire prone area, they will require a Bushfire Attack Level (BAL) assessment. The Shire of Jerramungup and Bremer Bay town sites have a BAL Contour Plan that applies a BAL rating to the property which can be used. Otherwise, properties located outside of the town sites will need to have a site-specific BAL assessment prepared by an accredited person.

The BAL Assessment informs the design response to the bushfire threat for the area, the building will need to be constructed in accordance with Australian Standard AS 3959 Construction of buildings in bushfire prone areas. The development will be assessed for access, turnaround areas for emergency service vehicles, water for firefighting and an Asset Protection Zone (APZ). An APZ is an area of low fuel immediately around the building, depending on the BAL rating the size of the APZ area will vary.

The following map shows the locations of volunteer fire brigades and other bushfire response resources in the Shire of Jerramungup. There are 4 volunteer brigades located in the Shire of Jerramungup they include Jacup, Needilup, Gairdner and Boxwood Hill. Jerramungup and Bremer Bay are VFES brigades. They are joined by the DBCA and P&W staff. A number of farmers have experience and firefighting units that provide extra resources when available. They are most often the first on the scene in rural areas. The Shire recently held a Rural Fire Awareness training for farmers and another for the new bushfire volunteers to help boost numbers for the upcoming bushfire season.

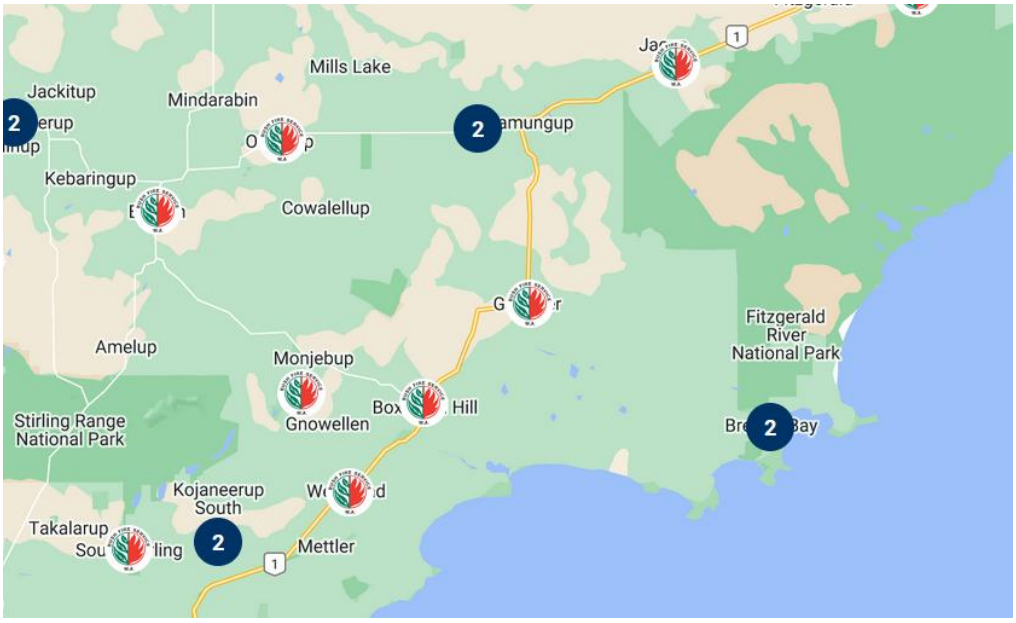

Figure 33: DFES volunteer service locations[117]

Parks and Wildlife Service at DBCA is responsible for managing fire in forests, parks, nature reserves, and other lands, they have a shared responsibility for fire protection along with local government and private landowners. The Shire of Jerramungup has a history of people camping informally along remote beaches and throughout the UCL, which does cause some concerns for evacuations.

3.16 Community programs

The Shire of Jerramungup is working with several other land managers to develop fuel management programs to reduce the risk to the town. The Shire of Jerramungup have produced a BAL contour map for the town sites of Jerramungup and Bremer Bay. The Shire has been completing work to reduce the BAL rating around the town and vulnerable sites and is using some Local Government controls to address specific areas.

The Shire of Jerramungup undertake a detailed annual Bushfire assessment and compliance audit with landowners in the Point Henry Peninsula to ensure compliance under the Shires Fire Control Information Notice. This annual inspection also provides an opportunity to educate landowners on bushfire risks and responsibilities.

DFES has several programs and information resources to help the community prepare for bushfire, what to do during the bushfire and how to commence recovery. DFES encourages the use of the My Bushfire plan so households are aware of the triggers to leave. They have information on warnings, alerts, bushfire preparation, pets, vegetation and Asset Protection Zones. The Shire of Jerramungup also runs a community website and Facebook updates for bushfires, internal communications are used for Councilors and staff, liaise with DFES for incidents and use Variable message boards for communication.

[117] DFES n.d. Volunteer service locations https://dfes.vol.org.au/services-map

A Memoranda of Understanding with local government, who are responsible for bushfire response on UCL lands. DBCA is responsible for fire preparedness on UCL outside of gazetted townsites and DFES is responsible for UCL within gazetted townsites. A clear understanding of those responsibilities is important to ensure effective application of mitigation and response activities[118].

The efforts organisations are making to improve intelligence information, particularly DFES, and highlights an opportunity for improved consistency across organisations in the sharing of intelligence and weekly discussions regarding regional risk profiles. There has been an improvement in collaboration across the sector in recent years and this is facilitating continuous improvement[119]. Acknowledging the increasing complexity and the imperative to protect Western Australian communities from bushfire has enabled organisations such as DFES, DBCA and local government to focus greater efforts on mitigating bushfire risk.

There is also an agreement between DFES and the Department of Education, where the school's bushfire risk is determined yearly in consultation with DFES. Local governments with support from DFES, conduct tailored and targeted information campaigns that change the behaviour of bushfire vulnerable communities.

DFES, WALGA and DBCA through consultation with local government, Volunteer Bush Fire Brigades, Volunteer Fire and Emergency Services, and Volunteer Fire and Rescue Service brigades to develop arrangements that will enable organisations to utilise existing local government equipment for planned burning activities, increasing capacity at a local level to implement bushfire risk treatments[120].

Under an MOU agreement between the Department of Justice, DBCA and DFES, Karnet prisoners also carry out significant fire mitigation work such as creating fire breaks and maintenance of equipment. DFES uses minimum-security prisoners from Bunbury Regional Prison, Walpole Work Camp and Karnet Prison Farm to help on 12 fire call-outs. The prisoners provide support to DBCA's water-bomber response including loading the planes with water, foam and fire retardant [121]. A list of Local Government Wide Controls for reducing bushfire risk in Shire of Jerramungup is provided in Appendix A.

[118] Office of Bushfire Risk Management (2018) Report of the escaped planned burns in the South West and Great Southern Regions in May 2018 https://assets-global.website-files.com/61de5d84c5a92d75c52a9ca6/62aaa54f8ad6cc0f4b64965a_Final-Report-Circumstances-Escape-of-Planned-Burns-SW-and-GS-Region-24-25-May-2018.pdf

[119] Office of Bushfire Risk Management (2018) Report of the escaped planned burns in the South West and Great Southern Regions in May 2018 https://assets-global.website-files.com/61de5d84c5a92d75c52a9ca6/62aaa54f8ad6cc0f4b64965a_Final-Report-Circumstances-Escape-of-Planned-Burns-SW-and-GS-Region-24-25-May-2018.pdf

[120] Office of Bushfire Risk Management (2018) Report of the escaped planned burns in the South West and Great Southern Regions in May 2018 https://assets-global.website-files.com/61de5d84c5a92d75c52a9ca6/62aaa54f8ad6cc0f4b64965a_Final-Report-Circumstances-Escape-of-Planned-Burns-SW-and-GS-Region-24-25-May-2018.pdf

[121] Government of Western Australia (2023) Prisons step up to assist bushfire response https://www.wa.gov.au/government/announcements/prisons-step-assist-bushfire-response

Chapter 4 Asset identification and risk assessment

Assets at risk from bushfire in the Shire of Jerramungup are recorded in the *Asset Risk Register* in the BRMS. Assets are divided into four categories: human settlement, economic, climate, and cultural. Each asset has been assigned a bushfire risk rating between low and extreme based on the risk assessment methodology described in the Guidelines and Handbook.

4.1. Local government asset risk profile

A summary of the risks assessed in the Shire of Jerramungup is shown in Table 5. This table shows the proportion of assets at risk from bushfire in each risk category at the time the BRM Plan was endorsed. This table was correct at the time of publication but may become outdated as risks are treated or additional risks are identified and assessed. A report may be generated from the BRMS to provide the most current risk profile.

Table 5: Local Government Asset Risk Summary

Asset Category	Risk Rating					
		Low	Medium	High	Very High	Extreme
	Human Settlement	*4.78%*	*5.15%*	*32.72%*	*27.94%*	*29.41%*
	Economic	*1.39%*	*20.83%*	*26.39%*	*38.89%*	*12.50%*
	Environmental	*0*	*0*	*0*	*100%*	*0*
	Cultural	*12.5%*	*0*	*25%*	*37.5%*	*25%*

Chapter 5 Risk evaluation

5.1. Risk acceptance criteria

The acceptable level of risk for each asset category is shown in Table 6. A risk that is assessed as exceeding these limits will be considered for treatment.

Table 6: Risk acceptance criteria for bushfire risk in the Shire of Jerramungup.

	Asset category			
	Human settlement	**Economic**	**Environmental**	**Cultural**
Acceptable risk level	**Assets in the Extreme,** **Very high and High will be prioritised for treatments.**	**Assets in the Extreme,** **Very high and High will be prioritised for treatments.**	**High and above- see Table 5.**	**High and above- see table 5.**
	Loss of life unacceptable, loss of property to be minimised, Access to the hospital must not be compromised, Control centers, evacuation centers, emergency services facilities and schools must not be compromised, and minimal disruption to essential services including water, power and communications.	Economic loss to be minimised for the business community.	Harm to the natural environment to be minimised, and damage to the bio-diversity is unacceptable.	Harm to the cultural environment to be minimised.

Risks below the acceptable level do not require treatment during the life of this BRM Plan. They will be managed by routine Local Government Wide Controls and monitored to detect any increase in their risk rating.

5.2. Treatment priorities

The treatment priority for each asset is automatically assigned by BRMS, based on the asset's risk rating. Table 7 shows how consequence and likelihood combine to give the risk rating and subsequent treatment priority for an asset. The treatment priority assigned in BRMS will

help inform decision making for risk acceptability and development of the Treatment Strategy and schedule.

Table 7: Treatment priorities

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

Chapter 6 Risk Treatment

The purpose of risk treatment is to reduce the potential impact of 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 to make bushfires less likely or less harmful.

6.1. Treatment Strategy

The Treatment Strategy describes the overall approach to managing bushfire risk in the medium to long term in the Shire of Jerramungup. The strategy is shaped by factors such as the distribution of risk in the landscape, the community's values and objectives, stakeholders' mitigation programs and constraints on treatment options. The Treatment strategy helps guide the development of integrated annual treatment schedules.

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 mechanical, 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.

The Shire’s treatment strategy is to determine the appropriate type and frequency of treatment/s based on the terrain, vegetation, adjacent agricultural type (if applicable) and risk rating. Priority is given to extreme risk areas that have potential to impact human settlement assets including Shire owned/managed nature reserves and road reserves. It is anticipated that seasonal shifts and weather may dictate if treatments can occur as planned. Where treatments cannot take place due to circumstances beyond the treatment managers control, alternative treatments will be identified according to risk rating.

This may be within the human settlement category or selected from across all asset categories following consultation with
relevant stakeholders. Treatments are selected to support environmental considerations including threatened species and communities and to minimise negative effects such as erosion across the undulating terrain or potential spread of Dieback. Some treatments must be planned to suit conditions at certain times of the year, such as planned burns to be scheduled to support the native vegetation and avoid unnecessary loss of the threatened species and communities.

The community values the natural landscape in which they live. Consultation with the stakeholders will support the selection of appropriate treatments where required. Where situations arise for combined treatments with adjacent landowners, these will be prioritised to maximise the opportunity for greater strategic risk reduction and cost savings.

To facilitate every opportunity to carry out treatments and reduce the overall bushfire risk, the Shire will continue to request funding support through government and non-government grants. Due to the large percentage of private property in the Shire, non-physical approaches are incorporated to address bushfire risk. This includes a varied community engagement program that promotes resilience and preparedness and compliments the physical on-ground treatments.

6.2. Treatment Schedule

The Treatment Schedule is a list of bushfire risk treatments recorded in the BRMS. It is developed concerning the outcome of the risk assessment process and Treatment Strategy and in consultation with stakeholders.

A treatment schedule for the Shire of Jerramungup covering 2024-2027 has been entered into BRMS. This is a live document and will be regularly updated throughout the life of the BRM Plan.

Land managers are responsible for implementing agreed treatments on their 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 manager.

Chapter 7 Monitoring and review

Monitoring and review processes are in place to ensure that the BRM Plan remains current and considers the best available information.

7.1. Monitoring and review

Shire of Jerramungup will monitor the BRM Plan and BRMS data to identify any need for change. The Plan and BRMS data will be reviewed at least every two years to ensure they continue to reflect the local context, assets at risk, level of risk and treatment priorities.

7.2. Reporting

The Shire of Jerramungup CEO or their delegate will provide OBRM with the outcomes of biennial reviews of the BRM Plan. This is required to maintain OBRM endorsement of the Plan.

The Shire of Jerramungup will contribute information about their BRM Program to the annual OBRM *Fuel Management Activity Report*.

Glossary

Asset	Something 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 is used to record the details of assets identified in the Bushfire Risk Management Plan.
Asset risk register	A component within the Bushfire Risk Management System (BRMS) used to record the consequence, likelihood, risk rating and treatment priority for each asset identified in the BRM Plan.
Bushfire	Unplanned vegetation fire. A generic term which includes grass fires, forest fires and scrub fires both with and without a suppression objective.
Bushfire Management Plan	A document that sets out short, medium and long term bushfire risk management strategies for the life of a development.
Bushfire risk management	A systematic process to coordinate, direct and control activities relating to bushfire risk to limit the adverse effects of bushfire on the community.
Bushfire risk	The chance of a bushfire igniting, spreading and causing damage to the community or the assets they value.
Bushfire Threat	The threat posed by the hazard vegetation is 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 the local government council for endorsement.
Emergency Risk Management Plan	A document (developed under *State Emergency Management Policy 3.2 – Emergency Risk Management Planning*) 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.
Forest Mulch	Forestry mulching is a land clearing method that uses a single machine to cut, grind, and clear vegetation.

Geographic Information System (GIS)	A database technology, linking any aspect of land-related information to its precise geographic location.
Geographic Information System (GIS) Map	The mapping component of the Bushfire Risk Management System. Assets, treatments and other associated information are spatially identified, displayed and recorded within the GIS Map.
Landowner	The owner of the land, as listed on the Certificate of Title; or leaser under a registered lease agreement; or other entity that has a vested responsibility to manage the land.
Likelihood	The chance of something occurring. In this instance, it is the potential of a bushfire igniting, spreading and impacting an asset.
Locality	The officially recognised boundaries of suburbs (in cities and larger towns) and localities (outside cities and larger towns).
Parkland Clearing	Parkland clearing is the removal of most or all understorey vegetation and grasses while retaining an overstorey canopy of trees and selected shrubs.
Planning Area	A geographic area determined by the local government 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 is responsible for planning, coordinating, implementing, evaluating and reporting on risk treatment.
Risk acceptance	The informed decision to accept a risk is based on the knowledge gained during the risk assessment process.
Risk analysis	The application of consequence and likelihood to an event to determine the level of risk.
Risk assessment	The systematic process of identifying, analysing and evaluating risk.
Risk evaluation	The process of comparing the outcomes of risk analysis to the risk criteria 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 residences and other developments are scattered and intermingled with forest, range, or farmland and native vegetation or cultivated crops.
Rural Urban Interface (RUI)	The line or area where structures and other human development adjoin or overlap with undeveloped bushland.
Slope	The angle of the ground's surface is measured from the horizontal.
Tenure Blind	An approach where multiple land parcels are considered 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 aim is to be achieved by the treatment. Treatment objectives should be specific and measurable.
Treatment Manager	The organisation, or individual, is 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 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 BRMS details the treatment priority of each asset identified in the BRM Plan and the treatments scheduled.
Treatment Strategy	The general approach that will be taken to managing bushfire risk, in consideration of the local government context and objectives.
Treatment type	The specific treatment activity that will be implemented to modify risk, for example, a planned burn.
Vulnerability	The susceptibility of an asset to the impacts of bushfire.

Common abbreviations

ABS	Australian Bureau of Statistics
ACH	Aboriginal Cultural Heritage
AFAC	Australasian Fire and Emergency Services Authorities Council
AFDRS	Australasian Fire Danger Rating System
AFG	Australian Forest Growers
AHD	Australian Height Datum
AO	Area Officer
APZ	Asset Protection Zone
AS	Australian Standard
BFAC	Bush Fire Advisory Committee
BFB	Bushfire Brigade
BoM	Bureau of Meteorology
BRM	Bushfire Risk Management
BRM Branch	Bushfire Risk Management Branch (DFES)
BRM Plan	Bushfire Risk Management Plan
BRMO	Bushfire Risk Management Officer
BRMS	Bushfire Risk Management System
BRPC	Bushfire Risk Planning Coordinator
CBH	Co-operative Bulk Handling
CBFCO	Chief Bushfire Control Officer
CESM	Community Emergency Services Manager

DAFWA	Department of Agriculture and Food WA
DBCA	Department of Biodiversity, Conservation and Attractions
DEMC	District Emergency Management Committee
DoE	Department of Education
DFES	Department of Fire and Emergency Services
DMIRS	Department of Energy, Mines, Industry Regulation and Safety
DO	District Officer
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EFR	Extreme Fire Rating
EPBC	Environment Protection and Biodiversity Conservation
ESP01	Esperance Plains bioregion and Fitzgerald
FBI	Fire Behaviour Index
FCN	Fire Control Notice
FDR	Fire Danger Rating
FESA	Fire and Emergency Services Authority
FIFWA	Forest Industries Federation WA
FMP	Fire Management Plan
FPC	Forest Products Commission
FRNP	Fitzgerald River National Park
GIS	Geographic Information System
HFR	High Fire Rating

HP	Horizon Power
HSZ	Hazard Separation Zone
HV	High Voltage
HVMB	Harvest & Vehicle Movement Ban
ILUA	Indigenous Land Use Agreements
ISO	International Organization for Standardization
LEMA	Local Emergency Management Arrangements
LEMC	Local Emergency Management Committee
LG	Local Government
LGA	Local Government Areas
LPP	Local Planning Policy
MOU	Memorandum of Understanding
MRWA	Main Roads Western Australia
MWPC	Mechanical Works Parkland Clearing
NP	National Park
NRM	Natural Resource Management
OBRM	Office of Bushfire Risk Management (DFES)
OIC VES	Officer in Charge Volunteer Emergency Service
ODP	Outline Development Plan
P&W	Parks and Wildlife (Department of)
PB	Prescribed Burn
PBT	Burning Prohibited

RBT	Restricted Burning Time
SAP	Standard Administrative Procedure
SEMC	State Emergency Management Committee
SES	State Emergency Service
SoJ	Shire of Jerramungup
SoR	Shire of Ravensthorpe
TEC	Threatened Ecological Community
TM	Townsite Maintenance
UCL	Unallocated Crown Land
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WA	Western Australia
WALGA	Western Australian Local Government Association
WAPC	Western Australian Planning Commission
WAPOL	Western Australian Police Force
VFRS	Volunteer Fire & Rescue Service

Appendices

Appendix A: Local Government Wide Controls

Appendix B: Communication Plan

Appendix C: Protected Matters Search

Appendix D: Multi-agency work plan

Appendix A: Local government wide controls

Control		Action or activity description	Lead agency	Other stakeholder(s)	Notes and comments
Ref #	What is the control in place?	What is the name of the specific action or activity?	Who is the agency responsible for the implementation of the control?	Are there any other key stakeholders who contribute to the success of the control?	Provide a brief description of the action or activity, such as community education campaigns, including its contribution to bushfire risk management in the local government, target areas, key timeframes and any work being undertaken to improve the control.
01	Risk Analysis	BRMP extreme risks priority for treatment	LG/DFES	All	Treatments planned for all extreme risks and included in the 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 *Bush Fires Act 1954 s (33)*	Fire Control Information Notice published and issued	LG		Published annually

05		Review of Annual Fire Control Information Notice	LG		Annual review to improve the 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 fire control information notice. All bans will be communicated via the Shire's 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 due to seasonal changes. Any changes are to be published in the local newspaper and Shire's website.
08	*Bush Fires Act 1954 s (38)- Harvest Safety*	As per the Shire of Jerramungup Fire Control Information Notice, the FCO prohibits the use of a harvesting machine or header, other than a clover harvester, during the 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.	LG		The harvest period coincides with the highest bushfire risk period.
09	*Shire of Jerramungup LPP No. 18 - Point Henry Fire Management Plan*	Existing landowners are required to comply over a phased 5-year period;	LG		Requirements are published in the annual Fire Control Information Notice i.e. Compliant access/driveway, Turnarounds for heavy firefighting vehicles, 20,000L dedicated water supply, 20m APZ. LG inspects annually for compliance.

10	*Shire of Jerramungup LPP No. 10 – Agroforestry and Plantations s (10.6)*	Fire Management Plans – In accordance with the Timber Code of Practice 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. The policy requires the FMP to be compiled by a qualified fire consultant.
11	*State Planning Policy 3.7 – Planning in Bushfire Prone Areas*	Shire declared *Bushfire Prone.* - Conducting hazard mapping throughout the Shire to formally recognise bushfire prone areas in the Shire; - Scheme Amendment to require all housing in recognised bush fire prone areas to comply with AS3959.	LG	WAPC DFES	Bushfire prone mapping is reviewed annually. Local government submits amendments through OBRM.
12	*Shire of Jerramungup LPP No. 22 – BAL Contours for existing town sites*	This policy seeks to aid applicants in preparing information for lodging development applications by providing a 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.	LG	WAPC DFES OBRM	Applied through the LG's development approvals processes. The majority of landowners and developers in the 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.
13	*Local Planning Policy – Bushfire Management Plans*	Local Planning Policy – Bushfire Management Plans to outline requirements for BFMP.	LG		The LPP was adopted by Council in 2014 and final adoption in 2019.
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. The Jerramungup Shire is in Zone B.	Forest Industry Federation (WA)	FPC	Reviewed annually. Shire of Jerramungup is in Zone B. FPC is the only Agreement member with plantations in SoJ. FPC enters 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. *4.7.6 Fire Prevention and Suppression* of the Code outlines Fire Prevention and Suppression Guidelines.	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, and 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 partner agencies. Includes community education, and gathering of intelligence by community and stakeholders.	WAPOL	DFES	Statewide – often targeted strategies in areas where suspicious fires have occurred.
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 are being planned as part of the treatment schedule.

Critical Infrastructure 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 was 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 Fire Control Information 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 a 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. Pallinup 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 *Perth Hills Bushfire Inquiry 2011 (Keelty 1).*

23	*MRWA Great Southern Region – Annual Bridge assessment & maintenance works plan*	Annual field assessment of individual bridges undertaken 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
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 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 for Schools*	All schools within areas declared bushfire prone are individually assessed. The risk treatment plan is developed and signed off and DoE appoints contractors to undertake agreed work.	Department of Education DFES	Department of Finance	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 Emergency and Critical Incident Management Plan.	Department of Education	DFES	Zone 1 schools require standalone bushfire plans.

Environmental 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 work together.
29	*Fitzgerald River National Park* *Fire Working Group*	P&W facilitates 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 is currently still relatively free of *Phytophthora cinnamomi* infestations. *Phytophthora* 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[122].

122 Department of Parks and Wildlife (2013) Fitzgerald River National Park Coastal Walk Trails; Dieback Management Plan https://www.dbca.wa.gov.au/management/plans/fitzgerald-river-national-park-coastal-walk-trails

31	*Bush Heritage - Fire Management Plans*	Bush Heritage land is bought for environmental and biodiversity value. The land is usually native vegetation that is managed or regenerated. They are required to meet the provisions of the Shire of Jerramungup - LPP 10 Agroforestry and Plantations. Inc. an independent and self-sufficient fire management plan.	Bush Heritage Gondwana Link Greening Australia	LG	Reviewed annually by LG for compliance. Bush Heritage manages five separate parcels of land.
32	*Indicative Annual Prescribed Burn Program – 2023/2024 South Coast Region, Albany District*	P&W prepared 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 Lands Managed by P&W and DPLH estate managed by P&W through MoU*	Risk management activities such as fuel reduction are undertaken by DFES on UMR and UCL. Funding is provided by DPLH.	P&W	Brigades	P&W region liaises with DFES and BRM Plan around the location of
34	*Preparedness, Mitigation and Response for land within gazetted town boundaries owned by DPLH 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 DPLH.	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 B: Communication Plan

This Communication Plan supports the development, implementation and review of the Shire of Jerramungup Bushfire Risk Management (BRM) Plan. It should document the:

- Communication objectives.
- Roles and responsibilities.
- Key stakeholders engaged in the development of the BRM Plan and Treatment Schedule.
- The implementation and review of the BRM Plan including: target audiences and key messages at each project stage; communication risks and strategies for their management; and communication monitoring and evaluation procedures.

Communication objectives

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

- Key stakeholders understand the purpose of the BRM Plan and their role in the BRM planning process.
- Stakeholders who are essential to the BRM planning process, or can supply required information, are identified and engaged in a timely and effective manner.
- Relevant stakeholders are involved in decisions regarding risk acceptability and treatment.
- Key stakeholders engage in the review of the BRM Plan as per the schedule in place for the local government.
- The community and other stakeholders engage with the BRM planning process and as a result are better informed about bushfire risk and understand their responsibilities to address bushfire risk on their land.

Roles and responsibilities

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

- CEO Shire of Jerramungup is responsible for requesting OBRM endorse the BRM Plan.
- The Director, Communications and Media Team at the *Shire of Jerramungup* is responsible for communication of the BRM Plan to the community.
- Bushfire Risk Mitigation Coordinator, *Shire of Jerramungup* is responsible for communication between the local government and the Department of Fire and Emergency Services.

Key Stakeholders for Communication

The following table identifies key stakeholders in the BRM planning process, its implementation and review. 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
Who is the stakeholder? Consider government agencies, interest groups and service providers.	What is their role or interest that makes them a stakeholder? Consider if they are an asset owner, landowner or manager, treatment manager, or interested party.	Consider how the implementation of the BRM Plan will impact each stakeholder and then assign them a rating of High, Medium, or Low.	What level of engagement is necessary for the stakeholder? Inform, consult, involve, collaborate, or empower?
Local Bushfire Stakeholders: **Local Government, DEFS, VFES Bushfire Advisory Committee, Fitzgerald River National Park Fire Working Group, Point Henry Bushfire Ready Group**	Land Managers/Asset Owners, Identify assets at risk, Identify risk and responsibility for it.	High	Inform, consult, collaborate
Advisory/Regulatory Stakeholders: **OBRM, DBCA Department of Environment and Water Regulation**	Provide advice and guidance on processes 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 values 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 Planning, Lands and Heritage, Department of Finance, Bremer Bay Primary School**	Land Managers/Asset Owners Identify assets at risk. Identify risk and responsibility for it.	High	Inform, involve and consult
Interest groups: **Gondwana Link, Bushfire Heritage Australia, Fitzgerald Biosphere Community Collective, Fitzgerald Biosphere Group,**	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, Represents 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 log

This Communications log captures the communications with key internal and external stakeholders that occurred during the development of the BRM Plan and associated Treatment Schedule, or review of the BRM Plan. Record any significant conversations, community engagement events, emails, meetings, presentations, workshops and other communication initiatives.

Timing of communication	Stakeholders	Purpose	Summary	Communication method	Lesson Identified	Follow up
Development of the BRM Plan						
When did this communication occur?	Who was the stakeholder or target audience?	What was the purpose of the communication?	What topics were discussed?	What communication method did you use?	Were there any issues or lessons identified?	Was there any follow up required?
Life of the plan	Shire of Jerramungup CEO & Executive, CESM	Inform & empower, strategic oversight, review and input, existing controls, identify assets, treatments.	Time constraints, stakeholder capacity (small executive), competing issues/projects, Report on progress, monitoring & review against milestones/funding, bushfires, annual works plans of respective stakeholders.	Regular emails, telephone calls, meetings (quarterly), Representation at bushfire stakeholder workshops.	Forward planning, achievable timeframes, strategic consultation.	Feedback, 'buy-in', and outcomes met response times.
Life of the plan	LEMC	Understanding BRMP process supports for project, inc. identified assets, treatments esp. priority.	Attendance of members at the scheduled meeting, Time constraints, lack of buy-in.	Presentation at each LEMC meeting.	Set clear objectives, and prepare succinct clear presentations.	Feedback, sign off on strategic milestones.
Strategic milestone i.e. last quarter	DEMC	Understanding the BRMP process, and strategic support within respective agencies.	Attendance of members at the scheduled meeting i.e. absence of key stakeholders Time constraints.	One presentation, as need arising issues. Follow-up with individual stakeholders as required.	Schedule follow-up with key agencies Set clear objectives, prepare succinct clear presentations, and provide opportunities for follow-up.	Feedback, questions, responses to follow-up meetings.

Life of the plan	DFES, Regional Superintendent, DO, AO, CESM	Understanding the BRMP process, engagement in the process i.e. identifying assets, risk assessment & treatment. Accept responsibilities.	Staff turnover, Travel distances, Limited buy-in to the project, Treatments not negotiated.	Inform, consult and collaborate, Quarterly meetings with Superintendent, emails & telephone calls, Representation at bushfire stakeholder workshops.	Adapt communication to staffing, document communication outcomes, foster ownership/ empowerment in the process.	Timely constructive feedback, support for/level of participation in the process, and negotiated treatments.
Life of the plan	Bushfire Stakeholders, CBFCO, BFB Captains, OIC VES, VFRS Captains	Understanding the BRMP process, and engagement in the process i.e. identifying assets, risk assessment & treatment.	Time constraints, Availability of Volunteers, Limited buy-in.	Inform, consult and collaborate, Presentations at brigade meetings Representation at bushfire stakeholder workshops ie. CBFCO or OIC/Captain.	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	Understanding the BRMP process, and engagement in the process i.e. existing controls identifying assets, risk assessment & negotiating treatments.	Time constraints Limited buy-in to the project, Treatments not negotiated.	Inform, consult and collaborate through regular emails, telephone calls, meetings, and Representation at bushfire stakeholder workshops.	Establish strategic buy-in, and agree to appropriate line communication.	Timely constructive feedback, support for/level of participation in the process, and negotiated treatments.
At strategic milestones	Govt/Critical Infrastructure Service Providers	Understanding the BRMP process, and engagement in the process i.e. existing controls identifying assets, risk assessment & negotiating treatments.	Time constraints Limited buy-in to the project, Treatments not negotiated.	Inform, consult and collaborate via regular emails, telephone calls, and meetings, to identify assets, assess risk negotiate treatments.	Establish strategic buy-in, and agree to appropriate line communication.	Timely constructive feedback, support for/level of participation in the process, and negotiated treatments.

At strategic project milestones during development	Business/ Industry	Understanding the BRMP process, engagement in the process i.e. existing controls identify assets, risk assessment & negotiate treatments.	Time constraints Limited buy-in to the project, Treatments not negotiated.	Inform, consult, and collaborate via regular emails, telephone calls, and meetings, to identify assets, assess risk negotiate treatments.	Establish strategic buy-in, and agree to appropriate line communication.	Timely constructive feedback, support for/level of participation in the process, and negotiated treatments.
At strategic project milestones during development	Community Interest Groups	Understanding the BRMP process, and engagement in the process i.e. expert knowledge, and community values.	Time constraints Limited buy-in to the project, Treatments not negotiated.	Inform, consult, and collaborate via regular emails, telephone calls, and meetings, to identify assets, assess risk negotiate treatments.	Establish strategic buy-in, and agree to appropriate line communication.	Timely constructive feedback, support for/level of participation in the process, and negotiated treatments.
At strategic project milestones during development	Community/ Residents at risk	Understanding the BRMP process, understand adjacent risks and acceptability of treatments, and responsibility for own risks.	Time constraints Limited buy-in to the project.	Inform, consult, empower. Letters, social media internet updates, presentations.	Appropriate communication methods, opportunities for two-way communication, and feedback.	Constructive feedback, support for/level of participation in the project.
Development of the Treatment Schedule						
Life of the plan	Shire of Jerramungup CEO & Executive, CESM, DFES, Regional Superintendent, DO, AO, Bushfire Stakeholders, CBFCO, BFB Captains, OIC VES, VFRS Captains	Understanding the BRMP process, and engagement in the process i.e. identifying assets, risk assessment & treatment.	Time constraints, stakeholder capacity (small executive), competing issues/projects, Report on progress, monitoring & review against milestones/funding, bushfires, annual works plans of respective	Regular emails, telephone calls, meetings (quarterly), Representation at bushfire stakeholder workshops. Inform, consult and collaborate, Quarterly meetings with Superintendent,	Forward planning, achievable timeframes, strategic consultation. Adapt communication to staffing, document communication outcomes, foster ownership/ empowerment in the process. Planning for	Feedback, 'buy-in', and outcomes met response times. Timely constructive feedback, support for/level of participation in the process, and negotiated treatments.

			stakeholders. Availability of Volunteers	Presentations at brigade meetings, Representation at bushfire stakeholder workshops ie. CBFCO or OIC/Captain.	scheduled meetings Effective communication i.e. clear objectives, appropriate level of information, ensure feedback incorporated.	

Implementation (life of BRMP)

3 yearly	Shire of Jerramungup CEO & Executive, CESM, DFES	Inform & align, strategic oversight, clarifies objectives, and addresses potential obstacles	Time constraints, stakeholder capacity (small executive), competing, issues/projects. Report on progress, monitoring & review against milestones/funding, bushfires, annual works plans of respective.	Regular emails and meeting	Forward planning, Change in report format	Feedback and outcomes met response times. Timely constructive feedback, support for/level of participation in the process, and negotiated treatments.

When did this communication occur?	Who was the stakeholder or target audience?	What was the purpose of the communication?	What topics were discussed?	What communication method did you use?	Were there any issues or lessons identified?	Was there any follow up required?

Review of the BRM Plan (if relevant)

Yearly	Shire of Jerramungup, CEO & Executive, CESM	Review monitoring reporting against milestones/funding, bushfires, and annual works plans of respective stakeholders	LG capacity in the absence of BRMO & BRPC	Email Annual Meeting	Forward planning, achievable timeframes, strategic consultation	On-going support and positive feedback from Council

Yearly	LEMC	Review monitoring reporting against milestones/funding, bushfires, and annual works plans of respective stakeholders	LG capacity in the absence of BRMO & BRPC	Annual Meeting	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.	Review monitoring reporting against milestones/funding, bushfires, and annual works plans of respective stakeholders	LG capacity in the 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	Compliance to plan and acceptance of risk	LG capacity in the absence of BRMO & BRPC		Forward planning, achievable timeframes, strategic consultation	On-going support and positive feedback from Council

Communication Plan

This Communication Plan outlines the key communication initiatives that will be undertaken during the implementation of the BRM Plan.

Timing of communication	Stakeholders	Communication Objective(s)	Communication Method	Key Message or Purpose	Responsibility	Identified Risks to Communication	Strategy to Manage Risks	Monitoring and Evaluation Method
What is the timeframe or date for this communication?	Who is the stakeholder(s) or target audience?	Which communication objective(s) does this activity support or achieve?	How are you communicating (e.g. email, meetings) and how often? What resources are required?	What is the key message or purpose that needs to be understood?	Who is responsible for planning and undertaking the communication activity?	What could reduce the effectiveness of the communication?	What will be done to reduce the likelihood of this happening?	How will you know if your communication was successful?
Life of the plan	Shire of Jerramungup, CEO & Executive, CESM	All (1-6)	Emails, telephone calls, meetings (quarterly),	Report on progress, monitor & review against milestones/funding, bushfires, annual works plans of respective stakeholders	BRPC & BRMO, Planner, Deputy CEO	Time constraints, stakeholder capacity (small executive), competing issues/project	Forward planning, achievable timeframes, strategic consultation	Feedback, 'buy-in', and outcomes met response times.
Life of Plan	Bushfire Stakeholder Group – CESM, DFES AO/DO, P&W, CBFCO/OIC/ Captain	All (1-6)	Email updates Annual Meeting	Report on progress, monitor & review against milestones/ funding, bushfires, annual works plans	BRPC & BRMO, Planner, Deputy CEO	LG capacity in the absence of BRMO & BRPC	Forward planning, achievable timeframes, strategic consultation	Feedback, 'buy-in', and outcomes met response times.

				of respective stakeholders				
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 the absence of BRMO & BRPC	Forward planning, achievable timeframes, strategic consultation	Feedback, 'buy-in', and outcomes met response times.

Appendix C: Protected Matters searches

State and Commonwealth protected Fauna[123] [124]

Threatened Fauna	Status	WA	Commonwealth
Curlew Sandpiper	Critically Endangered	Yes	Yes
Tristan Albatross	Critically Endangered	Yes	Yes
Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit	Critically Endangered	Yes	Yes
Eastern Curlew, Far Eastern Curlew	Critically Endangered	Yes	Yes
Western Ground Parrot	Critically Endangered	Yes	Yes
Tristan Albatross	Critically Endangered	Yes	Yes
Carnaby's Black- Cockatoo	Endangered	Yes	Yes
Dibbler	Endangered	Yes	Yes
Indian Yellow-nosed Albatross	Endangered	Yes	Yes
Red Tailed Phascogale	Endangered	Yes	Yes
Australasian Bittern	Endangered	Yes	Yes
Red Knot, Knot	Endangered	Yes	Yes
Western Bristlebird	Endangered	Yes	Yes
Northern Royal Albatross	Endangered	Yes	Yes
Sooty Albatross	Endangered	Yes	Yes
Numbat	Endangered	Yes	Yes
Black-browed Albatross	Endangered	Yes	Yes
Chuditch	Vulnerable	Yes	Yes
Malleefowl	Vulnerable	Yes	Yes
Numbat	Vulnerable	Yes	Yes
Heath Mouse	Vulnerable	Yes	Yes

[123] Department of Environment and Conservation (2012) Fitzgerald Biosphere Recovery Plan: A Landscape Approach to Threatened Species and Ecological Communities Recovery and Biodiversity Conservation https://www.dcceew.gov.au/sites/default/files/documents/fitzgerald-biosphere-recovery-plan.pdf

[124] Department of Climate Change, Energy, the Environment and Water (2024) EPBC Act Protected Matters Report https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool

Cape Barren Goose (south-western), Recherche Cape Barren Goose	Vulnerable	Yes	Yes
Greater Sand Plover, Large Sand Plover	Vulnerable	Yes	Yes
Southern Royal Albatross	Vulnerable	Yes	Yes
Wandering Albatross	Vulnerable	Yes	Yes
Shy Albatross	Vulnerable	Yes	Yes
Campbell Albatross, Campbell Black browed Albatross	Vulnerable	Yes	Yes
White-capped Albatross	Vulnerable	Yes	Yes
Grey Falcon	Vulnerable	Yes	Yes
Australian Fairy Tern	Vulnerable	Yes	Yes
Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor	Vulnerable	Yes	Yes
Southern Royal Albatross	Vulnerable	Yes	Yes
White-capped Albatross	Vulnerable	Yes	Yes
Flesh-footed Shearwater	Vulnerable	Yes	
Bridled Tern			Yes
Noisy Scrub Bird			
Western whipbird (western mallee)			

State and Commonwealth protected Flora[125] [126]

Threatened flora	Status	WA	Commonwealth
Kundip Wattle	Critically Endangered	Yes	Yes
Cactus Dryandra	Critically Endangered	Yes	Yes
Lake King Eremophila	Critically Endangered	Yes	Yes
Whorled Eremophila	Critically Endangered	Yes	Yes
Bandalup Buttercup	Critically Endangered	Yes	Yes
Kunzea similis subsp. Similis	Critically Endangered	Yes	Yes
South Coast Underground Orchid	Critically Endangered	Yes	Yes
Oval Leaved Adenanthos	Endangered	Yes	Yes
Small Two-Coloured Kangaroo Paw	Endangered	Yes	Yes
Bremer Boronia	Endangered	Yes	Yes
Dwarf Spider Orchid	Endangered	Yes	Yes
Sedge Conostylis	Endangered	Yes	Yes
Mauve Coopernookia	Endangered	Yes	Yes
Long sepalled Daviesia	Endangered	Yes	Yes
Paddle leaved Daviesia	Endangered	Yes	Yes
Crowned Mallee	Endangered	Yes	Yes
Burdett Gum	Endangered	Yes	Yes
Fan Leaved Grevillea	Endangered	Yes	Yes
Hairy fruited Marianthus	Endangered	Yes	Yes
Barrens Wedding bush	Endangered	Yes	Yes

[125] Department of Environment and Conservation (2012) Fitzgerald Biosphere Recovery Plan: A Landscape Approach to Threatened Species and Ecological Communities Recovery and Biodiversity Conservation https://www.dcceew.gov.au/sites/default/files/documents/fitzgerald-biosphere-recovery-plan.pdf

[126] Department of Climate Change, Energy, the Environment and Water (2024) EPBC Act Protected Matters Report https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool

Mt Barren Featherflower	Endangered	Yes	Yes
False Plumed-Banksia	Endangered	Yes	Yes
Hoffman's Spider-orchid	Endangered	Yes	Yes
Stilted Tinsel Lily	Endangered	Yes	Yes
Tall Donkey Orchid	Endangered	Yes	Yes
Remote Thorny Lignum	Endangered	Yes	Yes
Little Pine Verticordia, Pine-like Featherflower	Endangered	Yes	Yes
Fitzgerald Woollybush	Vulnerable	Yes	Yes
Ironcaps Banksia	Vulnerable	Yes	Yes
Fitzgerald Eremophila	Vulnerable	Yes	Yes
Lake Varley Grevillea	Vulnerable	Yes	Yes
Spiny Peppercress	Vulnerable	Yes	Yes
Jerramungup Myoporum	Vulnerable	Yes	Yes
Yellow Mountain Trigger plant	Vulnerable	Yes	Yes
Sandplain Sun orchid	Vulnerable	Yes	Yes
Crowded Featherflower	Vulnerable	Yes	Yes
Coast Featherflower	Vulnerable	Yes	Yes
Woolly Wattle	Vulnerable	Yes	Yes
Kunzea ericifolia subsp. subulata	Vulnerable	Yes	Yes
Saltmat	Vulnerable	Yes	Yes
Verticordia crebra	Vulnerable	Yes	Yes
Granite Featherflower	Vulnerable	Yes	Yes
Hopetoun Beard Orchid	Critical	Yes	
Kunzea similis subsp. mediterranea	Endangered	Yes	
Beyeria cockertonii	Vulnerable	Yes	
Red Flowered Moort	Vulnerable	Yes	
Eucalyptus purpurata	Vulnerable	Yes	
Bungalbin Tetratheca	Vulnerable		Yes

Department of Climate Change, Energy, the Environment and Water

Protected Matters Search Tool

Report Generated - 1:46PM - 03 May 2024

World Heritage Properties	0
National Heritage Places	1
Wetlands of International Importance (Ramsar Wetlands)	0
Great Barrier Reef Marine Park	0
Commonwealth Marine Area	1
Listed Threatened Ecological Communities	3
Listed Threatened Species	77
Listed Migratory Species	47

Commonwealth Lands	11
Commonwealth Heritage Places	0
Listed Marine Species	70
Whales and Other Cetaceans	28
Critical Habitats	0
Commonwealth Reserves Terrestrial	0
Australian Marine Parks	1
Habitat Critical to the Survival of Marine Turtles	0

Extra Information	Count
State and Territory Reserves	18
Regional Forest Agreements	0
Nationally Important Wetlands	1
EPBC Act Referrals	6
Key Ecological Features	0
Biologically Important Areas	13
Bioregional Assessments	0
Geological and Bioregional Assessments	0

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected and is accurate at the time of generation.
Please see the caveat for interpretation of information provided here.
Consider carefully the age of information for decision making.

Report Metadata	Caveat

National Heritage Places

Place ID	Place Name	State	Heritage Class	Legal Status	Website
105974	Fitzgerald River	WA	Natural	Listed place	Australian Heritage

Listed Threatened Ecological Communities

				Presence	
Community ID	Community Name	Threatened Category	Website	Rank	Text
128	Eucalypt Woodlands of	Critically Endangered	Species Profile and	Likely	Community likely to
118	Subtropical and	Vulnerable	Species Profile and	Likely	Community likely to
126	Proteaceae Dominated	Endangered	Species Profile and	Likely	Community likely to

Listed Threatened Species	[Resource Information]

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website
68453	*Galeorhinus galeus*	School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark	Shark	May	Species or species habitat may occur within the area	Conservation Dependent					Species Profile and Threat Database (SPRAT)
69402	*Thunnus maccoyii*	Southern Bluefin Tuna	Fish	Known	Species or species habitat known to occur within the area	Conservation Dependent					Species Profile and Threat Database (SPRAT)
82758	*Banksia anatona*	Cactus Dryandra	Plant	May	Species or species habitat may occur within the area	Critically Endangered					Species Profile and Threat Database (SPRAT)
84650	*Pezoporus flaviventris*	Western Ground Parrot, Kyloring	Bird	May	Species or species habitat may occur within the area	Critically Endangered					Species Profile and Threat Database (SPRAT)

847	*Numenius madagascariensis*	Eastern Curlew, Far Eastern Curlew	Bird	May	Species or species habitat may occur within the area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
65295	*Caladenia melanema*	Ballerina Orchid, Ballerina Spider Orchid	Plant	May	Species or species habitat may occur within the area	Critically Endangered					Species Profile and Threat Database (SPRAT)
856	*Calidris ferruginea*	Curlew Sandpiper	Bird	Known	Species or species habitat known to occur within the area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
87538	*Duma horrida subsp. abdita*	Remote Thorny Lignum	Plant	May	Species or species habitat may occur within the area	Critically Endangered					Species Profile and Threat Database (SPRAT)
91824	*Phaethon rubricauda westralis*	Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird	Bird	May	Species or species habitat may occur within the area	Endangered					Species Profile and Threat Database (SPRAT)

66471	*Diomedea dabbenena*	Tristan Albatross	Bird	May	Species or species habitat may occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
313	*Parantechinus apicalis*	Dibbler	Mammal	Known	Species or species habitat known to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)
832	*Tringa nebularia*	Common Greenshank, Greenshank	Bird	Likely	Species or species habitat likely to occur within the area	Endangered	Migratory	Migratory Wetlands Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
7032	*Eremophila verticillata*	Whorled Eremophila	Plant	Likely	Species or species habitat likely to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)
4631	*Grevillea involucrata*	Lake Varley Grevillea	Plant	May	Species or species habitat may occur within the area	Endangered					Species Profile and Threat Database (SPRAT)

86432	*Limosa lapponica menzbieri*	Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit	Bird	Known	Species or species habitat known to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)
21160	*Sphenotoma drummondii*	Mountain Paper-heath	Plant	May	Species or species habitat may occur within the area	Endangered					Species Profile and Threat Database (SPRAT)
1060	*Macronectes giganteus*	Southern Giant-Petrel, Southern Giant Petrel	Bird	May	Species or species habitat may occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
21161	*Roycea pycnophylloides*	Saltmat	Plant	Likely	Species or species habitat likely to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)
82760	*Banksia pseudoplumosa*	False Plumed-Banksia	Plant	Likely	Species or species habitat likely to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)

22	*Neophoca cinerea*	Australian Sea-lion, Australian Sea Lion	Mammal	Known	Breeding is known to occur within the area	Endangered			Listed	Species Profile and Threat Database (SPRAT)
21253	*Adenanthos dobagii*	Fitzgerald Woollybush	Plant	Likely	Species or species habitat likely to occur within the area	Endangered				Species Profile and Threat Database (SPRAT)
19931	*Ricinocarpos trichophorus*	Barrens Wedding Bush	Plant	Known	Species or species habitat known to occur within the area	Endangered				Species Profile and Threat Database (SPRAT)
77	*Pseudomys shortridgei*	Heath Mouse, Dayang, Heath Rat	Mammal	Known	Species or species habitat known to occur within the area	Endangered				Species Profile and Threat Database (SPRAT)
64456	*Diomedea sanfordi*	Northern Royal Albatross	Bird	May	Species or species habitat may occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed	Species Profile and Threat Database (SPRAT)

55575	*Acacia lanuginophylla*	Woolly Wattle	Plant	May	Species or species habitat may occur within the area	Endangered					Species Profile and Threat Database (SPRAT)
40	*Eubalaena australis*	Southern Right Whale	Mammal	Known	Breeding is known to occur within the area	Endangered	Migratory (as Balaena glacialis australis)	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
515	*Dasyornis longirostris*	Western Bristlebird	Bird	Known	Species or species habitat known to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)
1001	*Botaurus poiciloptilus*	Australasian Bittern	Bird	Likely	Species or species habitat likely to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)
294	*Myrmecobius fasciatus*	Numbat	Mammal	Known	Species or species habitat known to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)

36	*Balaenoptera musculus*	Blue Whale	Mammal	Likely	Species or species habitat likely to occur within the area	Endangered	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
5538	*Boronia clavata*	Bremer Boronia	Plant	Known	Species or species habitat known to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)
21241	*Anigozanthos bicolor subsp. minor*	Little Kangaroo Paw, Two-coloured Kangaroo Paw, Small Two-colour Kangaroo Paw	Plant	Known	Species or species habitat known to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)
1763	*Caretta caretta*	Loggerhead Turtle	Reptile	Known	Foraging, feeding or related behaviour known to occur within the area	Endangered	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)
21745	*Grevillea maxwellii*	Maxwell's Grevillea	Plant	Known	Species or species habitat known to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)

64503	*Caladenia bryceana subsp. bryceana*	Dwarf Spider-orchid	Plant	Known	Species or species habitat known to occur within the area	Endangered					Species Profile and Threat Database (SPRAT)
1768	*Dermochelys coriacea*	Leatherback Turtle, Leathery Turtle, Luth	Reptile	Likely	Breeding is likely to occur within the area	Endangered	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)
89224	*Thalassarche cauta*	Shy Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
87737	*Zanda latirostris*	Carnaby's Black Cockatoo, Short-billed Black-cockatoo	Bird	Known	Breeding known to occur within the area	Endangered (listed as Calyptorhynchus latirostris)					Species Profile and Threat Database (SPRAT)
66472	*Thalassarche melanophris*	Black-browed Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
316	*Phascogale calura*	Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor	Mammal	Known	Species or species habitat known to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)

10976	*Lepidium aschersonii*	Spiny Peppercress	Plant	May	Species or species habitat may occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
1061	*Macronectes halli*	Northern Giant Petrel	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
4570	*Adenanthos ellipticus*	Oval-leaf Adenanthos	Plant	Known	Species or species habitat known to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
64470	*Carcharodon carcharias*	White Shark, Great White Shark	Shark	Known	Foraging, feeding or related behaviour known to occur within the area	Vulnerable	Migratory	Migratory Marine Species			Species Profile and Threat Database (SPRAT)
929	*Falco hypoleucos*	Grey Falcon	Bird	Likely	Species or species habitat likely to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
2915	*Tetratheca aphylla*	Bungalbin Tetratheca	Plant	May	Species or species habitat may occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)

934	*Leipoa ocellata*	Malleefowl	Bird	Known	Species or species habitat known to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
1075	*Phoebetria fusca*	Sooty Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
89147	*Kunzea ericifolia subsp. subulata*	null	Plant	Known	Species or species habitat known to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
877	*Charadrius leschenaultii*	Greater Sand Plover, Large Sand Plover	Bird	Known	Species or species habitat known to occur within the area	Vulnerable	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
874	*Calidris acuminata*	Sharp-tailed Sandpiper	Bird	Known	Species or species habitat known to occur within the area	Vulnerable	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
34	*Balaenoptera borealis*	Sei Whale	Mammal	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
330	*Dasyurus geoffroii*	Chuditch, Western Quoll	Mammal	Known	Species or species habitat known to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)

82018	*Calectasia pignattiana*	Stilted Tinsel Lily	Plant	May	Species or species habitat may occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
64464	*Thalassarche carteri*	Indian Yellow-nosed Albatross	Bird	Likely	Species or species habitat likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
64458	*Diomedea antipodensis*	Antipodean Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
19429	*Adenanthos pungens subsp. pungens*	Spiky Adenanthos	Plant	May	Species or species habitat may occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
64462	*Thalassarche steadi*	White-capped Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
64459	*Thalassarche impavida*	Campbell Albatross, Campbell Black-browed Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)

82950	*Sternula nereis nereis*	Australian Fairy Tern	Bird	Known	Foraging, feeding or related behaviour known to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
68752	*Carcharias taurus (west coast population)*	Grey Nurse Shark (West Coast population)	Shark	Likely	Species or species habitat likely to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
55678	*Verticordia crebra*	null	Plant	Likely	Species or species habitat likely to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
8204	*Verticordia helichrysantha*	Coast Featherflower	Plant	Likely	Species or species habitat likely to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
25978	*Cereopsis novaehollandiae grisea*	Cape Barren Goose (south-western), Recherche Cape Barren Goose	Bird	Known	Species or species habitat known to occur within the area	Vulnerable			Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
37	*Balaenoptera physalus*	Fin Whale	Mammal	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)

1765	*Chelonia mydas*	Green Turtle	Reptile	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)
529	*Aphelocephala leucopsis*	Southern Whiteface	Bird	May	Species or species habitat may occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
4908	*Thelymitra psammophila*	Sandplain Sun-orchid	Plant	Known	Species or species habitat known to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
64445	*Pachyptila turtur subantarctica*	Fairy Prion (southern)	Bird	May	Species or species habitat may occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
89221	*Diomedea epomophora*	Southern Royal Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
89223	*Diomedea exulans*	Wandering Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)

82651	*Ardenna grisea*	Sooty Shearwater	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed (as Puffinus griseus)		Species Profile and Threat Database (SPRAT)
1059	*Halobaena caerulea*	Blue Petrel	Bird	May	Species or species habitat may occur within the area	Vulnerable			Listed		Species Profile and Threat Database (SPRAT)
24223	*Myoporum cordifolium*	Jerramungup Myoporum	Plant	Known	Species or species habitat known to occur within the area	Vulnerable					Species Profile and Threat Database (SPRAT)
66680	*Rhincodon typus*	Whale Shark	Shark	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Species			Species Profile and Threat Database (SPRAT)
1036	*Pterodroma mollis*	Soft-plumaged Petrel	Bird	May	Species or species habitat may occur within the area	Vulnerable			Listed		Species Profile and Threat Database (SPRAT)
855	*Calidris canutus*	Red Knot, Knot	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Wetlands Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)

State and Territory Reserves

Protected Area ID	Protected Area Name	Reserve Type	State	Jurisdiction	Environment
BHA_NTWA_1	Chereninup Creek	Conservation Reserve	WA	Private	Terrestrial
WA_26793	Corackerup	Nature Reserve	WA	State	Terrestrial
WA_23516	Doubtful Islands	Nature Reserve	WA	State	Terrestrial
NTWA_0139	NTWA Bushland	Conservation Covenant	WA	Private	Terrestrial
NTWA_0082	NTWA Bushland	Conservation Covenant	WA	Private	Terrestrial
WA_31737	Fitzgerald River	National Park	WA	State	Terrestrial
WA_14039	Needilup	Nature Reserve	WA	State	Terrestrial
BHA_30	Red Moort	Conservation Reserve	WA	Private	Terrestrial
BHA_19	Beringa	Conservation Reserve	WA	Private	Terrestrial
BHA_16	Monjebup North	Conservation Reserve	WA	Private	Terrestrial
WA_25113	Lake Magenta	Nature Reserve	WA	State	Terrestrial
WA_26792	Unnamed WA26792	Nature Reserve	WA	State	Terrestrial
NTWA_0088	NTWA Bushland	Conservation Covenant	WA	Private	Terrestrial
NTWA_0083	NTWA Bushland	Conservation Covenant	WA	Private	Terrestrial
BHA_40	Ediegarrup	Conservation Reserve	WA	Private	Terrestrial
WA_28687	Pallinup	Nature Reserve	WA	State	Terrestrial
NTWA_0087	NTWA Bushland	Conservation Covenant	WA	Private	Terrestrial
WA_31909	Glasse Island	Nature Reserve	WA	State	Terrestrial

Listed Migratory Species [Resource Information]

Species ID	Scientific Name	Common Name	Class	Presence		Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website
				Rank	Text						
66471	*Diomedea dabbenena*	Tristan Albatross	Bird	May	Species or species habitat may occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
66472	*Thalassarche melanophris*	Black-browed Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
832	*Tringa nebularia*	Common Greenshank, Greenshank	Bird	Likely	Species or species habitat likely to occur within the area	Endangered	Migratory	Migratory Wetlands Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
1061	*Macronectes halli*	Northern Giant Petrel	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)

43	*Lagenorhynchus obscurus*	Dusky Dolphin	Mammal	May	Species or species habitat may occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
64470	*Carcharodon carcharias*	White Shark, Great White Shark	Shark	Known	Foraging, feeding or related behaviour known to occur within the area	Vulnerable	Migratory	Migratory Marine Species			Species Profile and Threat Database (SPRAT)
1060	*Macronectes giganteus*	Southern Giant-Petrel, Southern Giant Petrel	Bird	May	Species or species habitat may occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
90033	*Mobula alfredi*	Reef Manta Ray, Coastal Manta Ray	Shark	May	Species or species habitat may occur within the area		Migratory (as Manta alfredi)	Migratory Marine Species			Species Profile and Threat Database (SPRAT)
678	*Apus pacificus*	Fork-tailed Swift	Bird	Likely	Species or species habitat likely to occur within the area		Migratory	Migratory Marine Birds	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
82845	*Onychoprion anaethetus*	Bridled Tern	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area		Migratory	Migratory Marine Birds	Listed (as Sterna anaethetus)		Species Profile and Threat Database (SPRAT)

1075	*Phoebetria fusca*	Sooty Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
59	*Physeter macrocephalus*	Sperm Whale	Mammal	May	Species or species habitat may occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
877	*Charadrius leschenaultii*	Greater Sand Plover, Large Sand Plover	Bird	Known	Species or species habitat known to occur within the area	Vulnerable	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
874	*Calidris acuminata*	Sharp-tailed Sandpiper	Bird	Known	Species or species habitat known to occur within the area	Vulnerable	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
34	*Balaenoptera borealis*	Sei Whale	Mammal	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
46	*Orcinus orca*	Killer Whale, Orca	Mammal	May	Species or species habitat may occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)

952	*Pandion haliaetus*	Osprey	Bird	Known	Species or species habitat known to occur within the area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
642	*Motacilla cinerea*	Grey Wagtail	Bird	May	Species or species habitat may occur within the area		Migratory	Migratory Terrestrial Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
64464	*Thalassarche carteri*	Indian Yellow-nosed Albatross	Bird	Likely	Species or species habitat likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
83288	*Lamna nasus*	Porbeagle, Mackerel Shark	Shark	Likely	Species or species habitat likely to occur within the area		Migratory	Migratory Marine Species			Species Profile and Threat Database (SPRAT)
64458	*Diomedea antipodensis*	Antipodean Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
64456	*Diomedea sanfordi*	Northern Royal Albatross	Bird	May	Species or species habitat may occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)

64462	*Thalassarche steadi*	White-capped Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
64459	*Thalassarche impavida*	Campbell Albatross, Campbell Black-browed Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
40	*Eubalaena australis*	Southern Right Whale	Mammal	Known	Breeding is known to occur within the area	Endangered	Migratory (as Balaena glacialis australis)	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
83000	*Thalasseus bergii*	Greater Crested Tern	Bird	Known	Breeding is known to occur within the area		Migratory	Migratory Wetlands Species	Listed (as Sterna bergii)		Species Profile and Threat Database (SPRAT)
36	*Balaenoptera musculus*	Blue Whale	Mammal	Likely	Species or species habitat likely to occur within the area	Endangered	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
35	*Balaenoptera edeni*	Bryde's Whale	Mammal	May	Species or species habitat may occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)

37	*Balaenoptera physalus*	Fin Whale	Mammal	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
39	*Caperea marginata*	Pygmy Right Whale	Mammal	May	Species or species habitat may occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
38	*Megaptera novaeangliae*	Humpback Whale	Mammal	Likely	Species or species habitat likely to occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
1763	*Caretta caretta*	Loggerhead Turtle	Reptile	Known	Foraging, feeding or related behaviour known to occur within the area	Endangered	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)
1765	*Chelonia mydas*	Green Turtle	Reptile	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)
59309	*Actitis hypoleucos*	Common Sandpiper	Bird	Known	Species or species habitat known to occur within the area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)

1768	*Dermochelys coriacea*	Leatherback Turtle, Leathery Turtle, Luth	Reptile	Likely	Breeding is likely to occur within the area	Endangered	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)
808	*Hydroprogne caspia*	Caspian Tern	Bird	Known	Foraging, feeding or related behaviour known to occur within the area		Migratory	Migratory Marine Birds	Listed (as Sterna caspia)		Species Profile and Threat Database (SPRAT)
89221	*Diomedea epomophora*	Southern Royal Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
89223	*Diomedea exulans*	Wandering Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
82651	*Ardenna grisea*	Sooty Shearwater	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed (as Puffinus griseus)		Species Profile and Threat Database (SPRAT)
89224	*Thalassarche cauta*	Shy Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)

66680	*Rhincodon typus*	Whale Shark	Shark	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Species			Species Profile and Threat Database (SPRAT)
844	*Limosa lapponica*	Bar-tailed Godwit	Bird	Known	Species or species habitat known to occur within the area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
847	*Numenius madagascariensis*	Eastern Curlew, Far Eastern Curlew	Bird	May	Species or species habitat may occur within the area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
858	*Calidris melanotos*	Pectoral Sandpiper	Bird	May	Species or species habitat may occur within the area		Migratory	Migratory Wetlands Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
82404	*Ardenna carneipes*	Flesh-footed Shearwater, Fleshy-footed Shearwater	Bird	Known	Breeding is known to occur within the area		Migratory	Migratory Marine Birds	Listed (as Puffinus carneipes)		Species Profile and Threat Database (SPRAT)
856	*Calidris ferruginea*	Curlew Sandpiper	Bird	Known	Species or species habitat known to occur within the area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)

855	*Calidris canutus*	Red Knot, Knot	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Wetlands Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)

Nationally Important Wetlands

Reference Code	Wetland Name	State	Website
WA030	Yellilup Yate Swamp	WA	Australian Wetlands

Australian Marine Parks

Zone ID	Park Name	Zone & IUCN	Network
swbrespm03	Bremer	Special Purpose Zone	South-west

Listed Marine Species [Resource Information]

Species ID	Scientific Name	Common Name	Class	Presence Rank	Presence Text	Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website
1085	*Eudyptula minor*	Little Penguin	Bird	Known	Breeding is known to occur within the area				Listed		Species Profile and Threat Database (SPRAT)
66471	*Diomedea dabbenena*	Tristan Albatross	Bird	May	Species or species habitat may occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
66472	*Thalassarche melanophris*	Black-browed Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
832	*Tringa nebularia*	Common Greenshank, Greenshank	Bird	Likely	Species or species habitat likely to occur within the area	Endangered	Migratory	Migratory Wetlands Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
943	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	Bird	Known	Species or species habitat known to occur within the area				Listed		Species Profile and Threat Database (SPRAT)
66249	*Lissocampus caudalis*	Australian Smooth Pipefish, Smooth Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)

1061	*Macronectes halli*	Northern Giant Petrel	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
66248	*Leptoichthys fistularius*	Brushtail Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
66243	*Histiogamphelus cristatus*	Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
66191	*Campichthys galei*	Gale's Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
66273	*Solegnathus lettiensis*	Gunther's Pipehorse, Indonesian Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
1066	*Pachyptila turtur*	Fairy Prion	Bird	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
1060	*Macronectes giganteus*	Southern Giant-Petrel, Southern Giant Petrel	Bird	May	Species or species habitat may occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)

66276	*Stigmatopora argus*	Spotted Pipefish, Gulf Pipefish, Peacock Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
670	*Merops ornatus*	Rainbow Bee-eater	Bird	May	Species or species habitat may occur within the area				Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
678	*Apus pacificus*	Fork-tailed Swift	Bird	Likely	Species or species habitat likely to occur within the area		Migratory	Migratory Marine Birds	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
82845	*Onychoprion anaethetus*	Bridled Tern	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area		Migratory	Migratory Marine Birds	Listed (as Sterna anaethetus)		Species Profile and Threat Database (SPRAT)
811	*Larus pacificus*	Pacific Gull	Bird	Known	Foraging, feeding or related behaviour known to occur within the area				Listed		Species Profile and Threat Database (SPRAT)
22	*Neophoca cinerea*	Australian Sea-lion, Australian Sea Lion	Mammal	Known	Breeding is known to occur within the area	Endangered			Listed		Species Profile and Threat Database (SPRAT)
1075	*Phoebetria fusca*	Sooty Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)

66277	*Stigmatopora nigra*	Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
877	*Charadrius leschenaultii*	Greater Sand Plover, Large Sand Plover	Bird	Known	Species or species habitat known to occur within the area	Vulnerable	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
874	*Calidris acuminata*	Sharp-tailed Sandpiper	Bird	Known	Species or species habitat known to occur within the area	Vulnerable	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
66284	*Vanacampus phillipi*	Port Phillip Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
66285	*Vanacampus poecilolaemus*	Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
66185	*Acentronura australe*	Southern Pygmy Pipehorse	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
952	*Pandion haliaetus*	Osprey	Bird	Known	Species or species habitat known to occur within the area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)

809	*Larus dominicanus*	Kelp Gull	Bird	Known	Breeding is known to occur within the area				Listed	Species Profile and Threat Database (SPRAT)
87735	*Thinornis cucullatus*	Hooded Plover, Hooded Dotterel	Bird	Known	Species or species habitat known to occur within the area				Listed - overfly marine area (as Thinornis rubricollis)	Species Profile and Threat Database (SPRAT)
642	*Motacilla cinerea*	Grey Wagtail	Bird	May	Species or species habitat may occur within the area		Migratory	Migratory Terrestrial Species	Listed - overfly the marine area	Species Profile and Threat Database (SPRAT)
64464	*Thalassarche carteri*	Indian Yellow-nosed Albatross	Bird	Likely	Species or species habitat likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed	Species Profile and Threat Database (SPRAT)
64458	*Diomedea antipodensis*	Antipodean Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed	Species Profile and Threat Database (SPRAT)
64456	*Diomedea sanfordi*	Northern Royal Albatross	Bird	May	Species or species habitat may occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed	Species Profile and Threat Database (SPRAT)
64462	*Thalassarche steadi*	White-capped Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed	Species Profile and Threat Database (SPRAT)

64459	*Thalassarche impavida*	Campbell Albatross, Campbell Black-browed Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed	Species Profile and Threat Database (SPRAT)
66227	*Heraldia nocturna*	Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish	Fish	May	Species or species habitat may occur within the area				Listed	Species Profile and Threat Database (SPRAT)
66283	*Vanacampus margaritifer*	Mother-of-pearl Pipefish	Fish	May	Species or species habitat may occur within the area				Listed	Species Profile and Threat Database (SPRAT)
66282	*Urocampus carinirostris*	Hairy Pipefish	Fish	May	Species or species habitat may occur within the area				Listed	Species Profile and Threat Database (SPRAT)
66267	*Phycodurus eques*	Leafy Sea dragon	Fish	May	Species or species habitat may occur within the area				Listed	Species Profile and Threat Database (SPRAT)
66265	*Notiocampus ruber*	Red Pipefish	Fish	May	Species or species habitat may occur within the area				Listed	Species Profile and Threat Database (SPRAT)
66264	*Nannocampus subosseus*	Bonyhead Pipefish, Bony-headed Pipefish	Fish	May	Species or species habitat may occur within the area				Listed	Species Profile and Threat Database (SPRAT)

20	*Arctocephalus forsteri*	Long-nosed Fur-seal, New Zealand Fur-seal	Mammal	Known	Breeding is known to occur within the area				Listed		Species Profile and Threat Database (SPRAT)
83000	*Thalasseus bergii*	Greater Crested Tern	Bird	Known	Breeding is known to occur within the area		Migratory	Migratory Wetlands Species	Listed (as Sterna bergii)		Species Profile and Threat Database (SPRAT)
66269	*Pugnaso curtirostris*	Pugnose Pipefish, Pug-nosed Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
66268	*Phyllopteryx taeniolatus*	Common Seadragon, Weedy Seadragon	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
25978	*Cereopsis novaehollandiae grisea*	Cape Barren Goose (south-western), Recherche Cape Barren Goose	Bird	Known	Species or species habitat known to occur within the area	Vulnerable			Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
85039	*Stercorarius antarcticus*	Brown Skua	Bird	May	Species or species habitat may occur within the area				Listed (as Catharacta skua)		Species Profile and Threat Database (SPRAT)
1763	*Caretta caretta*	Loggerhead Turtle	Reptile	Known	Foraging, feeding or related behaviour known to occur within the area	Endangered	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)
1765	*Chelonia mydas*	Green Turtle	Reptile	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)
59309	*Actitis hypoleucos*	Common Sandpiper	Bird	Known	Species or species habitat known to occur within the area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)

66251	*Lissocampus runa*	Javelin Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
83425	*Chalcites osculans*	Black-eared Cuckoo	Bird	Likely	Species or species habitat likely to occur within the area				Listed - overfly marine area (as Chrysococcyx osculans)		Species Profile and Threat Database (SPRAT)
66252	*Maroubra perserrata*	Sawtooth Pipefish	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
1768	*Dermochelys coriacea*	Leatherback Turtle, Leathery Turtle, Luth	Reptile	Likely	Breeding is likely to occur within the area	Endangered	Migratory	Migratory Marine Species	Listed		Species Profile and Threat Database (SPRAT)
808	*Hydroprogne caspia*	Caspian Tern	Bird	Known	Foraging, feeding or related behaviour known to occur within the area		Migratory	Migratory Marine Birds	Listed (as Sterna caspia)		Species Profile and Threat Database (SPRAT)
89221	*Diomedea epomophora*	Southern Royal Albatross	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
89223	*Diomedea exulans*	Wandering Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
82651	*Ardenna grisea*	Sooty Shearwater	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Birds	Listed (as Puffinus griseus)		Species Profile and Threat Database (SPRAT)

89224	*Thalassarche cauta*	Shy Albatross	Bird	Likely	Foraging, feeding or related behaviour likely to occur within the area	Endangered	Migratory	Migratory Marine Birds	Listed		Species Profile and Threat Database (SPRAT)
1059	*Halobaena caerulea*	Blue Petrel	Bird	May	Species or species habitat may occur within the area	Vulnerable			Listed		Species Profile and Threat Database (SPRAT)
844	*Limosa lapponica*	Bar-tailed Godwit	Bird	Known	Species or species habitat known to occur within the area		Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
66521	*Bubulcus ibis*	Cattle Egret	Bird	May	Species or species habitat may occur within the area				Listed - overfly marine area (as Ardea ibis)		Species Profile and Threat Database (SPRAT)
847	*Numenius madagascariensis*	Eastern Curlew, Far Eastern Curlew	Bird	May	Species or species habitat may occur within the area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed		Species Profile and Threat Database (SPRAT)
1036	*Pterodroma mollis*	Soft-plumaged Petrel	Bird	May	Species or species habitat may occur within the area	Vulnerable			Listed		Species Profile and Threat Database (SPRAT)

66235	*Hippocampus breviceps*	Short-head Seahorse, Short-snouted Seahorse	Fish	May	Species or species habitat may occur within the area				Listed		Species Profile and Threat Database (SPRAT)
858	*Calidris melanotos*	Pectoral Sandpiper	Bird	May	Species or species habitat may occur within the area		Migratory	Migratory Wetlands Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
82404	*Ardenna carneipes*	Flesh-footed Shearwater, Fleshy-footed Shearwater	Bird	Known	Breeding is known to occur within the area		Migratory	Migratory Marine Birds	Listed (as Puffinus carneipes)		Species Profile and Threat Database (SPRAT)
59363	*Puffinus assimilis*	Little Shearwater	Bird	Known	Foraging, feeding or related behaviour known to occur within the area				Listed		Species Profile and Threat Database (SPRAT)
856	*Calidris ferruginea*	Curlew Sandpiper	Bird	Known	Species or species habitat known to occur within the area	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)
855	*Calidris canutus*	Red Knot, Knot	Bird	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Wetlands Species	Listed - overfly the marine area		Species Profile and Threat Database (SPRAT)

Whales and Other Cetaceans [Resource Information]

Species ID	Scientific Name	Common Name	Class	Presence		Threatened Category	Migratory Status	Migratory Category	Marine Status	Cetacean Status	Website
				Rank	Text						
56	*Ziphius cavirostris*	Cuvier's Beaked Whale, Goose-beaked Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
54	*Mesoplodon mirus*	True's Beaked Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
57	*Kogia breviceps*	Pygmy Sperm Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
43	*Lagenorhynchus obscurus*	Dusky Dolphin	Mammal	May	Species or species habitat may occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
59	*Physeter macrocephalus*	Sperm Whale	Mammal	May	Species or species habitat may occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)

70	*Berardius arnuxii*	Arnoux's Beaked Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
34	*Balaenoptera borealis*	Sei Whale	Mammal	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
46	*Orcinus orca*	Killer Whale, Orca	Mammal	May	Species or species habitat may occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
85043	*Kogia sima*	Dwarf Sperm Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
61	*Feresa attenuata*	Pygmy Killer Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
62	*Globicephala macrorhynchus*	Short-finned Pilot Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
60	*Delphinus delphis*	Common Dolphin, Short-beaked Common Dolphin	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)

64	*Grampus griseus*	Risso's Dolphin, Grampus	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
68417	*Tursiops truncatus s. str.*	Bottlenose Dolphin	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
74	*Mesoplodon densirostris*	Blainville's Beaked Whale, Dense-beaked Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
73	*Mesoplodon bowdoini*	Andrew's Beaked Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
40	*Eubalaena australis*	Southern Right Whale	Mammal	Known	Breeding is known to occur within the area	Endangered	Migratory (as Balaena glacialis australis)	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
68418	*Tursiops aduncus*	Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin	Mammal	Likely	Species or species habitat likely to occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
36	*Balaenoptera musculus*	Blue Whale	Mammal	Likely	Species or species habitat likely to occur within the area	Endangered	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)

35	*Balaenoptera edeni*	Bryde's Whale	Mammal	May	Species or species habitat may occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
37	*Balaenoptera physalus*	Fin Whale	Mammal	May	Species or species habitat may occur within the area	Vulnerable	Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
39	*Caperea marginata*	Pygmy Right Whale	Mammal	May	Species or species habitat may occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
38	*Megaptera novaeangliae*	Humpback Whale	Mammal	Likely	Species or species habitat likely to occur within the area		Migratory	Migratory Marine Species		Cetacean	Species Profile and Threat Database (SPRAT)
44	*Lissodelphis peronii*	Southern Right Whale Dolphin	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
47	*Peponocephala electra*	Melon-headed Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
33	*Balaenoptera acutorostrata*	Minke Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)

25556	*Mesoplodon layardii*	Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)
59282	*Globicephala melas*	Long-finned Pilot Whale	Mammal	May	Species or species habitat may occur within the area					Cetacean	Species Profile and Threat Database (SPRAT)

EPBC Act Referrals [Resource Information]

Reference Number	Title of referral	Jurisdiction	Industry Type	Stage	Stage Description	Referral Outcome
2009/5013	Bremer Basin 2D	CM	Exploration (mineral, oil	Post-Approval	Referral Decision Made	Not Controlled Action
2019/8434	Proposed cross runway	WA	Transport - Air and	Assessment	Assessment Approach	
2017/7996	INDIGO Marine Cable	CM	Telecommunications	Post-Approval	Referral Decision Made	Not Controlled Action
2009/4958	Road upgrades and	WA	Tourism and Recreation	Post-Approval	Referral Decision Made	Not Controlled Action
2017/8127	INDIGO Central	NSW	Telecommunications	Completed	Referral Decision Made	Not Controlled Action
2015/7522	Improving rabbit	NSW	Natural Resources	Completed	Referral Decision Made	Not Controlled Action

Biologically Important Areas						[Resource Information]
Species ID	**Scientific Name**	**Common Name**	**Species Group**	**Behaviour**	**Presence**	**Website**
82404	Ardenna carneipes	Flesh-footed Shearwater	Seabirds	Foraging (in high numbers)	Known to occur	Species Profile and Threat Database (SPRAT)
1085	Eudyptula minor	Little Penguin	Seabirds	Foraging (provisioning young)	Known to occur	Species Profile and Threat Database (SPRAT)
808	Hydroprogne caspia	Caspian Tern	Seabirds	Foraging (provisioning young)	Known to occur	Species Profile and Threat Database (SPRAT)
811	Larus pacificus	Pacific Gull	Seabirds	Foraging (in high numbers)	Known to occur	Species Profile and Threat Database (SPRAT)
82845	Onychoprion anaethetus	Bridled Tern	Seabirds	Foraging (in high numbers)	Known to occur	Species Profile and Threat Database (SPRAT)
59363	Puffinus assimilis tunneyi	Little Shearwater	Seabirds	Foraging (in high numbers)	Known to occur	Species Profile and Threat Database (SPRAT)
82949	Sternula nereis	Fairy Tern	Seabirds	Foraging (in high numbers)	Known to occur	Species Profile and Threat Database (SPRAT)
85249	Thalassarche chlororhynchos bassi	Indian Yellow-nosed Albatross	Seabirds	Foraging (in high numbers)	Known to occur	Species Profile and Threat Database (SPRAT)
22	Neophoca cinerea	Australian Sea Lion	Seals	Foraging (male)	Likely to occur	Species Profile and Threat Database (SPRAT)
22	Neophoca cinerea	Australian Sea Lion	Seals	Foraging (male and female)	Known to occur	Species Profile and Threat Database (SPRAT)
64470	Carcharodon carcharias	White Shark	Sharks	Foraging	Known to occur	Species Profile and Threat Database (SPRAT)
81317	Balaenoptera musculus brevicauda	Pygmy Blue Whale	Whales	Distribution	Known to occur	Species Profile and Threat Database (SPRAT)
38	Megaptera novaeangliae	Humpback Whale	Whales	Migration (north)	Known to occur	Species Profile and Threat Database (SPRAT)

Appendix D: Multi-agency 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 included in the 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 *Bush Fires Act 1954 s(33)*	Fire Control Information Notice published and issued	LG		Published annually
05		Review of Annual Fire Control Information Notice	LG		Annual review to improve the 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 fire control information notice. All bans will be communicated via the Shire's SMS system and website, Facebook, 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 due to seasonal changes. Any changes are to be published in the local newspaper and Shire's website.

08	*Bush Fires Act 1954 s(38)- Harvest Safety*	As per the Shire of Jerramungup Fire Control Information Notice, the FCO prohibits the use of a harvesting machine or header, other than a clover harvester, during the 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.	LG		The harvest period coincides with the highest bushfire risk period.
09	*Shire of Jerramungup LPP No. 18 - Point Henry Fire Management Plan*	Existing landowners are required to comply over a phased 5 year period;	LG		Requirements are published in the annual Fire Control Information Notice i.e. Compliant access/driveway 31st Oct 2016 Turnarounds for heavy firefighting vehicles 31st Oct 2017 20,000L dedicated water supply; 31st Oct 2018 20 metre BPZ 31st Oct 2019 LG inspects annually for compliance.
10	*Shire of Jerramungup LPP No. 10 – Agroforestry and Plantations s(10.6)*	Fire Management Plans – In accordance with the *Timber Code of Practice* 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. The policy requires the FMPs to be compiled by a qualified fire consultant.

11	*State Planning Policy 3.7 – Planning in Bushfire Prone Areas*	Shire declared *Bushfire Prone.* - Conducting hazard mapping throughout the Shire to formally recognise bush fire prone areas in the Shire; - Scheme Amendment to require all housing in recognised bush fire prone areas to comply with AS3959;	LG	WAPC DFES	Bushfire prone mapping is reviewed annually. Local government submits amendments through OBRM.
12	*Shire of Jerramungup LPP No. 22 – BAL Contours for existing town sites*	This policy seeks to aid applicants in preparing information for lodging development applications by providing a 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.	LG	WAPC DFES OBRM	Applied through the LG's development approvals processes. The majority of landowners and developers in the 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.
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 the only Agreement member with plantations in SoJ. FPC enters 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. *4.7.6 Fire Prevention and Suppression* of the Code outlines Fire Prevention and Suppression Guidelines[127].	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 fire control information notices. Softwood plantations should be pruned, Grazing should be considered, and 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 partner agencies. Includes community education, and gathering of intelligence by community and stakeholders.	WAPOL	DFES	Statewide – often targeted strategies in areas where suspicious fires have occurred.
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 are being planned as part of the treatment schedule.

[127] Forest Industries Federation (WA) (2014) *Code of Practice for Timber Plantations in Western Australia* 2 Edition https://faolex.fao.org/docs/pdf/wa210107.pdf

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 the 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 *Perth Hills Bushfire Inquiry 2011 (Keelty 1).*
23	MRWA Great Southern Region – Annual Bridge assessment & maintenance works plan	Annual field assessment of individual bridges undertaken 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
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 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. The risk treatment plan is developed and signed off and DoE appoints contractors to undertake agreed work.	DoE 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 - DoE	All schools should include their bushfire plan as a part of their *Emergency and Critical* Incident *Management* Plan.	DoE	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 work together.
29	Fitzgerald River National Park Fire Working Group	P&W facilitates 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 is currently still relatively free of *Phytophthora cinnamomi* infestations. *Phytophthora* 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)[128].

[128] Department of Parks and Wildlife 2013 Fitzgerald River National Park Coastal Walk Trails https://www.epa.wa.gov.au/sites/default/files/API_documents/Att%208.pdf

31	Bush Heritage - Fire Management Plans	Bush Heritage land is bought for environmental and biodiversity value. The land is usually native vegetation that is managed or regenerated. They are required to meet the provisions of the Shire of Jerramungup - LPP 10 Agroforestry and Plantations. Inc. an independent and self-sufficient fire management plan.	Bush Heritage Gondwana Link Greening Australia	LG	Reviewed annually by LG for compliance. Bush Heritage manages five separate parcels of land.
32	Indicative Annual Prescribed Burn Program - South Coast Region, Albany District	P&W prepared 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 Lands Managed by P&W and DPLH estate managed by P&W through MoU	Risk management activities such as fuel reduction are undertaken by DFES on UMR and UCL. Funding is provided by DPLH	P&W	Brigades	P&W region liaises with DFES and BRM Plan around the location of
34	Preparedness, Mitigation and Response for land within gazetted town boundaries owned by	Risk management activities such as fuel reduction are undertaken by DFES on UMR and UCL. Funding is provided by DPLH.	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.

	DPLH and managed by DFES through MoU				