ATTACHMENT A - IS235



# **City of Greater Geraldton**

# Bushfire Risk Management Plan



2021 - 2026

Office of Bushfire Risk Management (OBRM) Bushfire Risk Management (BRM) Plan reviewed 20 April 2021 Local Government Council approval XX Month 2021

City of Greater Geraldton Bushfire Risk Management Plan 2021 – 2026

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# **Document Control**

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### **Document Endorsements**

On XX month 2021 the City of Greater Geraldton's Council approved the City of Greater Geraldton's BRM Plan. This BRM plan has been reviewed and assessed by the Office of Bushfire Risk Management as compliant with the standard for bushfire risk management planning in Western Australia, the *Guidelines for Preparing a Bushfire Risk Management Plan*. The City of Greater Geraldton is the owner of this document and has responsibility, as far as is reasonable, to manage the implementation of the BRM Plan and facilitate the implementation of bushfire risk management treatments by risk owners. With the endorsement of the BRM Plan by City of Greater Geraldton Council, the City satisfies the obligations under *State Hazard Plan - Fire (Nov 2019)*. Sec 2.2.8

Local Government	Representative	Signature	Date	
City of Greater Geraldton	Ross McKim CEO			

Version	Date	Author	Section
1.0	01/12/2019	Murray Smith	Emergency Management
1.2	15/04/2020	Murray Smith	Emergency Management
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#### **Amendment List**

## **Publication Information**

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## 1. Introduction

## 1.1 Background

Under the *State Hazard Plan - Fire (Nov* 2019), Sect. 2.2.8, an integrated Bushfire Risk Management Plan (BRM Plan) is to be developed for local government areas with significant bushfire risk. The City of Greater Geraldton has been identified as having a high or extreme bushfire risk<sup>1</sup>. This BRM Plan has been prepared for the City of Greater Geraldton in accordance with the requirements of the *Guidelines for Preparing a Bushfire Risk Management Plan* (Guidelines) (OBRM 2015). The risk management processes used to develop this BRM Plan are aligned to the key principles of *AS/NZS ISO 31000:2009 Risk management – Principles and guidelines* (AS/NZS ISO 31000:2009), as described in the Second Edition of the *National Emergency Risk Assessment Guidelines* (NERAG 2015). This approach is consistent with *State Emergency Management Policy (State EM Policy) 3.2 - Emergency Risk Management Planning* (formerly *State Emergency Management Policy 2.9 – Management of Emergency Risks*).

This BRM Plan is a strategic document that identifies assets at risk from bushfire and their priority for treatment. The Treatment Schedule sets out a broad program of coordinated multi-agency treatments to address risks identified in the BRM Plan. All stakeholders, including government agencies and other land managers responsible for implementing treatments participate in developing and enacting the BRM Plan to ensure treatment strategies are collaborative and efficient, regardless of land tenure.

## **1.2** Aim and Objectives

The aim of the BRM Plan is to document, and implement, a coordinated and efficient approach towards the identification, assessment and treatment of assets exposed to bushfire risks within the City of Greater Geraldton.

The main objective of the BRM Plan is to effectively manage bushfire risks within the City of Greater Geraldton in order to protect people, and assets identified as having critical or community value.

Specifically, the objectives of this BRM Plan are to:

- <u>Guide</u> and coordinate a tenure blind, multi-agency bushfire risk management program over a recurring five-year period.
- <u>Document</u> the process used to identify, analyse and evaluate risk, determine priorities and develop a plan to systematically treat risk.
- <u>Facilitate</u> the effective use of the financial and physical resources available for bushfire risk management activities.
- <u>Integrate</u> bushfire risk management into the business processes of local government, land owners and other agencies.
- <u>Ensure</u> there is integration between land owners and bushfire risk management programs and activities.
- <u>Monitor</u> and review the implementation of treatments to ensure treatment plans are adaptable and the risk is managed at an acceptable level.

<sup>&</sup>lt;sup>1</sup> State Emergency Management Prevention and Mitigation Procedure, Emergency Risk Management Planning – Specialised Risk Criteria and Guidelines (table) pg11

## 1.3 Legislation, Policy and Standards

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

#### 1.3.1 Legislation

- Aboriginal Heritage Act 1972
- Building Act 2011
- Bush Fires Act 1954
- Bush Fires Regulations 1954
- Conservation and Land Management Act 1984
- Country Areas Water Supply Act 1947
- Emergency Management Act 2005
- Emergency Management Regulations 2006
- Environmental Protection Act 1986
- Environmental Protection and Biodiversity Conservation Act 1999 (cth.)
- Fire and Emergency Service Act 1998
- Fire Brigades Act 1942
- Metropolitan Water Supply, Sewerage and Drainage Act 1909
- Planning and Development (Local Planning Scheme) Regulations 2015
- Biodiversity Conservation Act 2016

#### **1.3.2** Policies, Guidelines and Standards

- AS 3959-2009 Construction of buildings in bushfire-prone areas
- AS/NZS ISO 31000:2009 Risk management Principles and guidelines
- Bushfire Risk Management Planning Guidelines for preparing a Bushfire Risk Management Plan (OBRM 2015)
- Firebreak Location, Construction and Maintenance Guidelines (DFES)
- Guidelines for Planning in Bushfire Prone Areas (WAPC 2017)
- Guidelines for Plantation Fire Protection (DFES 2011)
- National Emergency Risk Assessment Guidelines (NERAG) (Second Edition 2015)
- State Emergency Management Policy 2.5 Local Arrangements
- State Emergency Management Policy 3.2 Emergency Risk Management Planning (SEMC)
- State Emergency Management Preparedness Procedure 7 Local Emergency Management Committee (LEMC) (SEMC)
- State Emergency Management Preparedness Procedure 8 Local Emergency Management Arrangements (SEMC)
- State Emergency Management Prevention Procedure 1 Emergency Risk Management Planning (SEMC)
- State Hazard Plan Fire (SEMC 2019)
- State Planning Policy 3.4: Natural Hazards and Disasters (WAPC)
- State Planning Policy 3.7: Planning in Bushfire Prone Areas (WAPC)
- Western Australian Emergency Risk Management Guidelines (SEMC 2015)

#### 1.3.3 Other Related Documents

- Bushfire Risk Management Planning Handbook (DFES)
- Bushfire Risk Management System (BRMS) User Guide (DFES)
- City of Greater Geraldton 2017 2021 Corporate Business Plan
- City of Greater Geraldton 2017 2027 Community Strategic Plan
- City of Greater Geraldton Bushfire Response Plan
- City of Greater Geraldton Fire Break Notice (issued annually)
- City of Greater Geraldton Local Emergency Management Arrangements 2017
- Code of Practice for Timber Plantations in Western Australia (Forest Products Commission Second Edition 2014)
- National Statement of Capability for Fire and Emergency Services (AFAC 2015)
- National Strategy for Disaster Resilience
- Public Service Circular No. 88 Use of Herbicides in Water Catchment Areas
- The Batavia Local Emergency Management Arrangements 2020

#### 2. The Risk Management Process

The risk management processes used to identify and address risk in this BRM Plan are aligned with the international standard for risk management, AS/NZS ISO 31000:2009, as described in NERAG (2015). This process is outlined in Figure 1 below.



Figure 1 - An overview of the risk management process <sup>1</sup>

City of Greater Geraldton Bushfire Risk Management Plan (2021-2026)

<sup>&</sup>lt;sup>1</sup> AS/NZS ISO 31000:2009, Figure 3, reproduced under SAI Global copyright Licence 1411-c083.

# 2.1 Roles and Responsibilities

Stakeholder Name	Roles and Responsibilities
Local Government	<ul> <li>As custodian of the BRM Plan, coordinate of the development and ongoing review of the integrated BRM Plan.</li> <li>Negotiation of commitment from land owners to treat risks identified in the BRM Plan.</li> <li>As treatment manager, implement the identified treatment strategies within its tenure, some may involve community engagement, planning activities, improvements to assets etc, not only fuel modification type activities.</li> <li>As part of the approval process, submission of the draft BRM Plan to the Office of Bushfire Risk Management (OBRM) to review the plan for consistency with the guidelines.</li> <li>As part of the approval process, submission of the final BRM Plan to Council for their endorsement and adoption.</li> </ul>
Department of Fire and Emergency Services (DFES)	<ul> <li>Participation in, and contribution to, the development and implementation of BRM Plans, as per their agency responsibilities as the Hazard Management Agency for bushfire.</li> <li>Support to Local Government through expert knowledge and advice in relation to the identification, prevention and treatment of bushfire risk.</li> <li>Assist local government to engage State and Federal Government agencies in the local planning process.</li> <li>Undertake treatment strategies, including prescribed burning on behalf of the Department of Planning, Lands and Heritage for Unmanaged Reserves and for Unallocated Crown Land within gazetted town site boundaries.</li> <li>In accordance with Memorandums of Understanding and other agreements, implement treatment strategies for other landholders.</li> <li>Ensure bushfire risk is managed in accordance with AS/NZS ISO 31000 and report on the state of bushfire risk across Western Australia (OBRM).</li> <li>Review BRM Plans for consistency with the Guidelines prior to final endorsement by Council (OBRM).</li> </ul>
Department of Biodiversity, Conservation and Attractions - Parks and Wildlife Service (PWS)	<ul> <li>Participation in and contribution to the development and implementation of BRM Plans.</li> <li>Providing advice for the identification of environmental assets that are vulnerable to fire and planning, appropriate treatment strategies for their protection.</li> <li>As Treatment Manager, implement treatment strategies on department managed land for Unmanaged Reserves and Unallocated Crown Land, outside gazetted town site boundaries.</li> <li>In accordance with Memorandums of Understanding and other agreements, implement treatment strategies for other landholders.</li> </ul>
Other State and Federal Government	<ul> <li>Assist the Local Government by providing information about their assets and current risk treatment programs.</li> <li>Destining the and contribute to the development and implementation of</li> </ul>
Agencies	<ul> <li>Participate in and contribute to the development and implementation of BRM Plans.</li> <li>As Treatment Manager, implementation of treatment strategies.</li> </ul>
Public Utilities	<ul> <li>Assist the Local Government by providing information about their assets</li> </ul>
	<ul> <li>Participation in and contribution to the development and implementation of BRM Plans.</li> </ul>

#### Table 1 – Roles and Responsibilities

Stakeholder Name		Roles and Responsibilities
	•	As Treatment Manager, implementation of treatment strategies.
Corporations and Private Land Owners		As Treatment Manager, implementation of treatment strategies.

## 2.2 Communication & Consultation

As indicated in Figure 1 (page 8), communication and consultation throughout the risk management process is fundamental to the preparation of an effective BRM Plan. To ensure appropriate and effective communication occurs with relevant stakeholders in the development of the BRM Plan, a *Communication Strategy* was prepared. The strategy is provided in **Appendix 1**.

# 3. Establishing the Context

## 3.1 Description of the Local Government and Community Context

#### 3.1.1 Strategic and Corporate Framework

The Integrated Planning and Reporting Framework (IPRF) outlines and details the direction of all future economic, social and environmental development within the City of Greater Geraldton. The IPRF consists of a Strategic Community Plan, Corporate Business Plan, Annual Budget and Informing Strategies. The Informing Strategies are an integral part that assists the decision making processes used to achieve the objectives incorporated into the framework<sup>3</sup>. The BRM Plan will form an important part of the issue specific Informing Strategies used to achieve the City's objectives. The role of the BRM Plan within the IPRF is illustrated in Figure 2.



Figure 2 – Integrated Planning and Reporting Cycle (Source Department of Local Government and Communities)<sup>4</sup>

The Community Strategic Plan (2017-2027) and Corporate Business Plan (2017-2021) for the City of Greater Geraldton were adopted in June 2017 by Council and will be reviewed in 2021. The adoption and implementation of the plans enabled the Council and the community to jointly develop shared visions and aspirations for the future<sup>3</sup>. In collaboration with key stakeholders and the broader community, key areas of interest for future development were identified. The purpose of the plans is to guide the development of these key areas now and into the future.

Key areas outlined for future development in the Community Strategic Plan (2017-2027) were Community, Environment, Economy and Goverance<sup>3</sup>. Development of these areas will aim to stimulate

the local economy, support job security and maintain the lifestyle. The BRM Plan will assist in achieving the City's specific aims contained within the Community Strategic Plan (Emergency Management) and strengthen the overall objectives in the IPRF.

As outlined in the Community Strategic Plan – Emergency Management, the City of Greater Geraldton aims to:

- 1. build resilience and capacity to manage natural and man-made emergency events; and
- 2. undertake a coordinated approach with relevant agencies to minimise the impact of disaster events. The BRM Plan will assist the community to recognise the bushfire risk in their area and develop strategies to mitigate the risk.

The annual budget provides the City of Greater Geraldton a financial plan to achieve the objectives over the next financial year <sup>5</sup>. The objectives at the core of the annual budget include:

- Key strategic objectives outline by the community.
- Stimulating economic growth and maintaining job security.
- Delivering desired services.
- Meeting asset and operational needs.
- Addressing Council's long-term sustainability.

Finance of the City of Greater Geraldton BRM Plan is also incorporated into the annual budget. The budget funds the current development of the BRM Plan within the City of Greater Geraldton and the implementation of bushfire risk mitigation strategies in areas managed by the Local Government.

The BRM Plan is an Issue Specific Strategy that will enable unacceptable bushfire risks to be identified and support the programming of effective risk treatment activities to reduce the City's bushfire risk. The BRM Plan aims to reduce the potential impacts from bushfire across all land tenures within the City. The treatments, when implemented, will aim to reduce the potential loss and damage resulting from bushfires and help protect human life and assets within the City.

The City of Greater Geraldton, through the Office of the CEO, is the custodian of the BRM Plan. The Emergency Operations Officer and the Coordinator Emergency Management are jointly responsible for developing, implementing and reviewing the BRM Plan over the five year period. In the event of a cessation of the above roles within the City, the Office of the CEO will delegate the aforementioned responsibilities. Throughout implementation, the risk assessments and treatments outlined in the BRM Plan will be monitored periodically and the overall BRM Plan reviewed every five years.

The BRM Plan involves multiple stakeholders and will require the cooperation of all land owners/managers within the City. The stakeholders include, Local Government, community groups and the broader community, businesses, other government agencies and service providers. Land owners and managers including the Local Government, are ultimately responsible for implementing land-based bushfire risk treatments on the lands they own or manage. However, there may be other types of treatments identified within the Treatment Schedule that require the involvement of a range of stakeholders, beyond those that manage land.

<sup>5</sup> City of Greater Geraldton. (2019) 2019-20 Annual Budget

<sup>&</sup>lt;sup>3</sup> City of Greater Geraldton. (2017) 2017 - 2027 Community Strategic Plan https://www.cgg.wa.gov.au/documents/734/city-of-greater-geraldton-strategic-community-plan-2017-2027

<sup>&</sup>lt;sup>4</sup> Integrated Planning and Reporting Framework and Guidelines September 2016 <u>https://www.dlgsc.wa.gov.au/docs/default-source/local-government/integrated-planning-and-reporting/integrated-planning-and-reporting-framework-and-guidelines-september-2016.pdf?sfvrsn=4f3cff8\_2</u>

https://www.cgg.wa.gov.au/Profiles/cgg/Assets/ClientData/5-CCS425A-Attachment-Annual-Budget-2019-20-new.pdf

To effectively implement the BRM Plan across the City, the stakeholders involved are encouraged to work with each other and the Local Government. The land owners and managers are empowered to take responsibility on their own land and implement the appropriate mitigation measures or treatments outlined in the BRM Plan. The coordinated implementation of the treatments across all land tenures is critical to the BRM Plan process in order to reduce bushfire risk to a safe and manageable level across the entire City.

The Bush Fire Advisory Committees (BFAC) of the City of Greater Geraldton (Greenough & Mullewa BFAC), as well as the Batavia LEMC will be encouraged to be actively involved during the life cycle of the BRM Plan. BFAC and the Batavia LEMC will provide important advice and feedback to assist in guiding the BRM Plan process and the selection and implementation of appropriate risk treatments.

The outcomes of the BRM Plan will also benefit the aims and objectives of the BFAC and LEMC through collective interests and informing other processes related to bushfire and emergency management. For example, treatments implemented to reduce fuel loads adjacent to major highways and roads that access the City of Greater Geraldton internally and externally, contributes to reducing bushfire risk. This also provides safe access routes for the community and emergency services in the case of a bushfire. The activities outlined in the BRM Plan will benefit and reinforce the aims and objectives of the City of Greater Geraldton's Risk Management Framework<sup>6</sup> and Local Emergency Management Arrangements (LEMA)<sup>7</sup>.

Bushfire management within the City of Greater Geraldton in the past, has primarily focussed on the response to, and recovery from bushfires. In recent years there has been a gradual change to a risk management approach that uses risk identification, analysis, evaluation and treatment to manage risks. Key treatment strategies currently employed to improve preparedness and reduce the bushfire risk within the City include:

- reducing fuel loads through annual works programs, including brigade burning; and
- maintenance of asset protection zones on private and Local Government lands through the annual firebreak notice and inspections.

The BRM Plan will ensure that existing treatment strategies address priority risks using a combination of Local Government wide controls and asset specific treatments, which will also include community engagement and education programs such as Bush Fire Ready Groups. The Asset Risk Register contained within the BRM Plan details the assets within the City of Greater Geraldton that have been risk assessed and their priority for treatment. An asset's risk rating and treatment priority will assist and inform the decision making process when allocating valuable resources to reduce identified bushfire risks to an acceptable level.

The City of Greater Geraldton regularly experiences Level 2 bushfires within the river valley and in the vegetated reserves adjacent to the town. In the past, these fires have impacted urban areas on the outskirts of town and caused significant disruption to local residents. Multiple fires burning at one time has the potential to stretch the capacity of response resources quickly, increasing the likelihood for fire ignitions to establish and spread. Through the implementation of the BRM Plan, the City of Greater Geraldton will increase efforts to develop and support bushfire preparation programs and provide bushfire prevention education programs.

#### 3.1.2 Location, Boundaries and Tenure

The City of Greater Geraldton is located in the Midwest region of Western Australia, approximately 424 kilometres North of Perth. It is located adjacent to Champion Bay and contains the historical town site of Greenough. The City of Greater Geraldton also incorporates the town site of Mullewa which lies 98 kilometres north east of Geraldton.

It covers an area of 12335.87 square kilometres including the Houtman Abrolhos Islands (2444.71 square kilometres). The seat of government is contained within the Geraldton townsite<sup>7</sup>. The City of Greater Geraldton borders the Shires of Irwin, Mingenew, Morawa, Yalgoo, Murchison and Chapman Valley. The boundaries and town site locations are illustrated in **Appendix 2**.

The majority of the City of Greater Geraldton area is private freehold land with a total of 30,980 land parcels. The large number of private individuals presents a challenge for the City with varying understanding and commitments to mitigation works and bushfire preparation. One of the challenges is that bushfire risk can be strongly influenced by a small number of land owners not undertaking appropriate property preparation. The City manages these risks with its annual fire break notice and subsequent compliance program.

The Department of Biodiversity, Conservation and Attractions. (DBCA) Parks and Wildlife Service is the largest single land manager/agency with a total area equivalent to 1.20%. Parks and Wildlife Services is responsible for the management of the natural reserves in coastal areas and south east of the Walkaway (Burma Road Nature Reserve), north of Mullewa (Urawa Nature Reserve) and south of Tenindewa (Indarra Springs Nature Reserve)<sup>8</sup>. Under current arrangements, Department of Fire and Emergency Services (DFES) is responsible for managing the bushfire risk on Unallocated Crown Land and Unmanaged Reserves within gazetted town sites. The City of Greater Geraldton is the land and treatment manager for 0.0037% of the BRM Plan area. The breakdown of land manager/owners are shown in Table 2.

Table 2 – Overview of Lan	d Tenure and	Management	within the <b>B</b>	RM Plan Δrea
TUNCE OVERVIEW OF EAL	a remarciant	management	within the D	

Land Manager/Owner*	% of Plan Area
Local Government	0.003%
Private	96.18%
Department of Biodiversity, Conservation &	1.20%
Department of Housing	0.088%
Department of Planning, Lands and Heritage	1.52%
Rail Network	Less than 1%
Total	100%

Source: City of Greater Geraldton. (2019). Synergy Rates Data

The City of Greater Geraldton in total contains 19 nature reserves managed by DBCA which include; Cutubury Nature Reserve, Eradu Nature Reserve, Beetalyinna Nature Reserve, Burma Road Nature Reserve, Erangy Springs Nature Reserve, Forty Mile Nature Reserve, Indarra Spring Nature Reserve, Bindoo Hill Nature Reserve, Wongoody Nature Reserve, Warrawah Nature Reserve, Kockatea Nature Reserve, Uruwah Nature Reserve, Sand Springs Nature Reserve, Barrbarra Nature Reserve, Pallotine Nature Reserve, Wilroy Nature Reserve and three unnamed reserves R33799, R24185, R14776. There is also one conservation park, this is unnamed R23920. The City of Grater Geraldton also has over fifty-five Natural Areas, the most significant being the Chapman River Regional Park and the Greenough River Nature Reserve.

<sup>&</sup>lt;sup>6</sup> City of Greater Geraldton. (2019) 2018 Risk Management Framework <u>https://www.cgg.wa.gov.au/documents/752/city-of-greater-geraldton-2018-risk-management-framework</u>

<sup>&</sup>lt;sup>7</sup> City of Greater Geraldton. (2019) 2017 Local Emergency Management Arrangements

https://www.cgg.wa.gov.au/Profiles/cgg/Assets/ClientData/Fire and Emergency Services/CGG Local Emergency Manageme nt\_Arrangements\_2017 - Public.pdf

#### 3.1.3 Population and Demographics

According to the Australian Bureau of Statistics (ABS), the City of Greater Geraldton population is 38,738 people<sup>8</sup>. Geraldton contains the majority of the City of Greater Geraldton population (~95%) with over 36,813 residents. The City of Greater Geraldton population had a growth rate of 5.46%, between 2008 and 2014. This represents an increase of 2,007 people to a total of 36,731 people, since 2014 the population has been stable. Population growth over the last decade is illustrated in Figure 3.



Figure 3 – City of Greater Geraldton Population (Source ABS Census 2016)<sup>8</sup>

The City of Greater Geraldton contains a population with approximately 23% being born overseas and 76% born in Australia. This is illustrated in Figure 4. Approximately 9.7% are of indigenous heritage<sup>8</sup>. The age demographic of the resident population, compared to the State and Australian averages provided by the ABS, are illustrated in Figure 5.



Figure 4 – City of Greater Geraldton Population <sup>8</sup>

<sup>&</sup>lt;sup>8</sup> Australian Bureau of Statistics, Regional Population Growth, Australia, 2017-18, Cat. 3218.0 (2017-18 data was released on 27 March 2019

Age	Greater Geraldton (C)	%	Western Australia	%	Australia	%
Median age	38		36		38	
0-4 years	2,573	6.7	161,727	6.5	1,464,779	6.3
5-9 years	2,728	7.1	164,153	6.6	1,502,646	6.4
10-14 years	2,731	7.1	150,806	6.1	1,397,183	6.0
15-19 years	2,679	6.9	149,997	6.1	1,421,595	6.1
20-24 years	2,203	5.7	160,332	6.5	1,566,793	6.7
25-29 years	2,292	5.9	184,908	7.5	1,664,602	7.1
30-34 years	2,416	6.3	194,267	7.9	1,703,847	7.3
35-39 years	2,318	6.0	173,041	7.0	1,561,679	6.7
40-44 years	2,617	6.8	171,996	7.0	1,583,257	6.8
45-49 years	2,894	7.5	172,520	7.0	1,581,455	6.8
50-54 years	2,741	7.1	162,438	6.6	1,523,551	6.5
55-59 years	2,557	6.6	149,899	6.1	1,454,332	6.2
60-64 years	2,183	5.7	132,145	5.3	1,299,397	5.6
65-69 years	1,891	4.9	116,755	4.7	1,188,999	5.1
70-74 years	1,364	3.5	82,911	3.4	887,716	3.8
75-79 years	1,068	2.8	61,509	2.5	652,657	2.8
80-84 years	737	1.9	42,590	1.7	460,549	2.0
85 years and over	638	1.7	42,420	1.7	486,842	2.1

Figure 5 – City of Greater Geraldton Population by Age<sup>9</sup>

This distribution shows the number of residents in the City of Greater Geraldton are aged between 15 to 44 years (37.6%) which is considerably lower than the State average (42%). In contrast. The number of people aged from 55 to 84 years (25.4%) is higher than the State average (23.7%). This supports the assertion that many people have settled in the area as a lifestyle and retirement choice<sup>9</sup>.

The above average portion of children under 18 years of age is a consideration for the BRMP. This group is particularly vulnerable in bushfire events as they are reliant on adults for decision making, evaluation and care. This means that additional planning is required to ensure that they are planned for in preplanning and recovery. This group has been considered by the Batavia LEMA as a vulnerable group and will need to be considered and supported before, during and after bushfire events.

The over 65 are also above average which has its own challenges. Elderly people are an identified vulnerable group the elderly tend to be frailer, have more health issues and may be dependent on others for care. The ability to elderly residents to prepare and maintain properties and fight a bushfire is limited. Often elderly people over estimate their abilities in emergencies which can lead to risk taking behaviours and is often not advisable for elderly to stay and defend properties. In addition, elderly people often have additional needs in time of emergency in relation to mobility, medical conditions and other special requirements meaning they need careful consideration and care in times of evacuation. For these reasons the City of Greater Geraldton has considered this group during all stages of their bushfire planning.

The level of bushfire preparedness and engagement with bushfire messaging differs across the various areas. The broadacre farms further inland and away from Geraldton have a higher level of engagement in bushfire preparedness. The higher level of preparedness is the combination of the inherent bushfire risk associated with farming especially during harvesting and from past bushfire experiences of families and neighbours within these areas. In densely populated coastal areas there is less engagement and currently only two (2) registered Bushfire Ready Groups operating within the City of Greater Geraldton.

<sup>&</sup>lt;sup>9</sup> Australian Bureau of Statistics 2016 Census of Population and Housing

#### 3.1.4 Economic Activities and Industry

The City of Greater Geraldton was historically known for its aquaculture industry and broad acre farming<sup>10</sup>. Currently there is a blend of coastal and rural environments which support various industries including; mining, fishing, aquaculture, agriculture, manufacturing, construction, retail and tourism. The City of Greater Geraldton also has a stable growing tourism industry and provides a number of accommodation options in various locations.

The Beresford Foreshore provides a summer playground and attraction for residents and tourists, especially during school holidays. In recent years the City of Greater Geraldton has undergone enormous development, revitalising the foreshore with the Eastern Breakwater, Multi-User Facility and Youth Precinct. The refurbishment of the original Railway Station which was a finalist in the 2015 Western Australia Heritage Awards. These developments have created spaces where people can connect with each other while enjoying the benefits of living in this special space<sup>10</sup>.

Geraldton is a regional hub and provides a range of services to surrounding areas, including major retail, health, education and government services. This is consistent with the employment sector data also. The port facility and associated logistics facilities service the regional export industries - wheat, sheep, mining, fishing and tourism (cruise ships), so transport infrastructure is also critical.

The largest employment sector in the City of Greater Geraldton is the combined Health Care and Social Assistance industry (14.2%)<sup>11</sup>. Other major industries include; retail trade, construction and education and training. The number of people employed in the different industry sectors within the local economy are illustrated in Figure 6.

More than half of all agricultural income to the region is derived from wheat production, with recent harvests valued at \$432.7 million. The Geraldton Port is Australia's second largest in terms of wheat export trade. The region's high quality grain makes it ideal for milling and for use in a wide variety of processed foods. Cereal, lupin and legume crops are also grown here.<sup>12</sup>

Due to the increased bushfire risk during agricultural operations the community have a well-developed network of communicating between farmers to notify each other when a fire starts. Some of our key farmers are also fire control officers so they can manage the risk of burning through the use of permits, and imposing conditions on the permits so fires are not lit on days that could be considered a risk. Our fire control officers have been appointed as they have a great deal of local knowledge of the farming practices, seasonal weather conditions and how the fire can be influenced by varying vegetation types.

The Dampier to Bunbury natural gas pipeline runs through the Local Government and has a state wide significance in the commercial and domestic supply of natural gas. Disruptions to the gas pipeline can prevent continuous distribution of gas to the southern region of Western Australia and has the potential to significantly impact the State's economy, as seen in 2008 when a rupture at the processing plant on Varanus Island disrupted supplies for several months. While the pipeline presents a low risk and it is buried deep underground, however the above ground infrastructure needs to be managed to avoid the impact of bushfire. This infrastructure has been assessed through the BRM Plan risk assessment process.

<sup>&</sup>lt;sup>10</sup> City of Greater Geraldton 2017 - 2027 Community Strategic Plan

https://www.cgg.wa.gov.au/documents/734/city-of-greater-geraldton-strategic-community-plan-2017-2027

<sup>&</sup>lt;sup>11</sup> REMPLAN data incorporating Australian Bureau of Statistics' (ABS) 2016 Census Place of Work Employment Data <sup>12</sup> City of Greater Geraldton webpage

https://www.cgg.wa.gov.au/work/economic-profiles/sectoral-performance.aspx

Utilising tourism opportunities within the industry is an important part for the future economic objectives. In the school holiday period through the warmer seasons, accommodation within the City of Greater Geraldton is usually at full capacity. This is indicated by the need to usually book six months to a year in advance to secure accommodation throughout these periods.

During the annual Wind on Water Festival held during April school holidays, the town has a significant influx of visitors<sup>13</sup>. The other two events that see significate local participation are the Australia Day festival and Christmas on the Terrace, both of these events are managed by the City of Greater Geraldton events team.

The school and public holidays require a balanced approach to bushfire risk management. In these periods, it is vital to protect people and assets from the potential impacts of bushfires. However it is important to minimise the affect some treatment activities may have on tourism during these times.



6 - City of Greater Geraldton Employment by Industry (2011 & 2016 data)<sup>14</sup>

<sup>&</sup>lt;sup>13</sup> City of Greater Geraldton 2017 - 2027 Community Strategic Plan

https://www.cgg.wa.gov.au/documents/734/city-of-greater-geraldton-strategic-community-plan-2017-2027

<sup>&</sup>lt;sup>14</sup> REMPLAN data incorporating Australian Bureau of Statistics' (ABS) 2016 Census Place of Work Employment Data

## 3.2 Description of the Environment and Bushfire Context

#### 3.2.1 Topography and Landscape Features

The City of Greater Geraldton is within the Chapman River catchment area (North of Geraldton) and the Greenough River catchment (South of Geraldton) with the suburb of Cape Burney on the Greenough River mouth. It contains no national parks, nineteen Nature Reserves and one Conservation Park (R23920). These protected natural areas constitute 1.2% (14,854.29 hectares) of the total City of Greater Geraldton area. The coastal landscape contains relatively flat terrain east of the coast line to the West of the Brand Highway with the exception of the Northern aspect of the City.<sup>15</sup>

The general topography of the City varies from the flat Coastal plain in the West to the Moresby Range hills. Certain areas of the Coastal plain are only just above sea level, whilst the hills area rises to a height of 160 metres above sea level. The hills have significant slopes with houses and other assets on the slope and the plateaus above them. This creates a significant bushfire risk because a bushfire will spread faster as it moves upslope – a 10° slope will double the rate of spread of a fire

The Coastal plains have several swamp areas around the Allanooka area. Peat swamps contain large amount of organic soils and have the risk of acid sulphate soils. Organic soils smoulder because their compact nature limits the oxygen available to the fire. This means they produce far more smoke, and for a longer period of time, than a vegetation fire of the same size.

Fires in these areas burn for long periods and can be difficult to access. Organic soils are unstable, especially when burnt, and may collapse beneath people or vehicles. Their thin surface crust may give way with little pressure, exposing the soft and extremely hot soil beneath. Because of this, extinguishing fires in organic soils requires large amounts of water and/or mechanical works.

Within the Moresby hills there a complex system of small creeks that join the Chapman River, this complex topography, creates valley systems that create a challenge for fire management. This creates areas where the vegetation in bifurcated and limits egress and access for both residents and first responders. This is particularly challenging when fires occur in these areas. Fires often spot across the watercourses where fire fighters cannot easily cross and may have to travel some distance to be able to get to the other side of the creek systems. This can often result in a minimum 15-minute delay in firefighting response allowing the fire to grow and develop in this time. These valleys also create challenges for fire predication and modelling as well as they can creating localised weather patterns and wind effects that can make fires hard to predict and control.

The impact of topography is greater in the east of the City, where the rock outcrops can restrict and, in some cases, prevent access by fire appliances. In areas where the rocky formations prevent ground based firefighting, direct attack of a fire is limited to aerial response (very limited) or waiting until the fire reaches an area of suitable topography for ground crews to access. This may greatly increase the time taken for fire to be suppressed, which can allow fires to grow, resulting larger, more destructive fires often with higher intensities and rates of spread. While these land formations can present challenges when installing firebreaks, the issue highlights the need for fuels to be broken up across the landscape using a range of suitable and sustainable strategies that provide low fuel buffers and firebreaks for use in fire suppression and mitigation.

<sup>&</sup>lt;sup>15</sup> Landgate Map Viewer, viewed 27/11/2019 https://maps.landgate.wa.gov.au/maps-landgate/registered/

The Cattamarra coal measure mainly underlies the coastline of the City of Greater Geraldton. The formation comprises of siltstone, shale, claystone, coal and sandstone. The Yarragadee formation underlies the area of Greenough region including Cape Burney. The Yarragadee formation consists of fine to coarse grained sandstone with thin interbeds of shale. The Cadda formation lies south of the Cattamarra Coal Measure and north of the Yarragadee formation. The Cadda formation consists of grey shale, siltstone and sandstone.

The geology underlying the Moresby ranges comprises of a series of complex geology formations. Quartzofeldspathetic gneiss is associated with the Northampton Complex. The Cadda formation underlies the area directly south and west of the Northampton Complex. The Cadda formation consists of grey shale, siltstone and sandstone. The Yarragadee formation is the dominant underlying geology east of the Cadda formation. Lying east of Yarragadee formation and west of the town site of Mullewa is the Nangetty formation and Tumblagooda Sandstone.

The Nangetty formation consists of diamictite, shale and sandstone. The Tumblagooda Sandstone consists of fine to coarse grained red-bed sandstone and minor siltstone. The Holmwood Shale underlies the area south of the Nangetty formation, which was formed during the Permian from sedimentary and volcanic rock. The Holmwood shale consists of grey shale, well-bedded clayey siltstone and interbedded limestone. The underlying geology within the area of the Mullewa town site and eastern portion of the City are the Gneiss and Granitic rocks, which forms a part of the Yilgarn Craton. The north eastern portion of the City of Greater Geraldton consists of the Granite gneiss with greenstone enclaves. Gabbro and dolerite form the southern scarp of the Granite gneiss.

The coastline of the City of Greater Geraldton consists of deep calcareous sandy soils associated with alluvial plains and complex dune system. The area east of the coastline is characterised loam earthy soils overlying gently rolling terrain. Sodic subsoils of red loamy duplexes overlies the Northampton Complex. Sandy and loamy duplexes of non-alkaline subsoils often overlies relics of an alluvial plain associated with river beds and terraces lies east of Northampton Complex.

Deep siliceous sandy soils often associated with a lateritic breakaway and long gentle slope broken by low gravel ridges and broad open depression, lies in the southern portion of the City of Greater Geraldton. The eastern portion of the City of Greater Geraldton is characterised by loamy earth soils of red shallow loams and red-brown hardpan soils overlying undulating plain and low hills/sandy rises. Deep sandy and sandy earth soils underlies the area associated with the boundary of the City of Greater Geraldton and Shire of Yalgoo<sup>16</sup>.

The majority of the population is concentrated within the town site of Geraldton. There are relatively efficient response times in these densely populated areas from the two Fire Brigades (Geraldton Career Fire and Rescue Service and Geraldton Volunteer Fire and Rescue Service) within the City of Greater Geraldton. Response times are likely to be increased in areas that are isolated such as remote/regional farms or areas that contain thick parcels of dense vegetation that hinder vehicle access. These considerations will be taken into account during the development of bushfire risk management strategies. The City of Greater Geraldton is supported by eleven bush fire brigades spread across the Local Government. These brigades have approximately 280 volunteer members and eleven appliances ranging from Light Tankers to 4000L 4WD rural tankers.

<sup>&</sup>lt;sup>16</sup> Northern Agricultural Regional Vision (NARvis), City of Greater Geraldton (Landscape and Topography profile, viewed 5/08/2020

#### 3.2.2 Climate and Bushfire Season

The climatic conditions in the Coastal Mid-West Gascoyne Region consists of a typical Mediterranean climate. Summers are relatively dry with the hottest month on average being February and the winters are generally mild and relatively wet with July/August having the coldest monthly average maximum. A number of Department of Primary Industries and Regional Development Automatic Weather Stations (AWS) provide automated weather updates in the following localities Allanooka, Eradu, Tenindewa and Mullewa. The annual temperature trend in the City of Greater Geraldton provided by these weather stations is illustrated in Figure 7 and 8.<sup>17</sup>



Figure 7 – Average Maximum Temperatures for 4 AWS in CGG (2018)<sup>18</sup>



Figure 8 – Average Maximum Temperatures for 4 AWS in CGG (2017)<sup>18</sup>

<sup>17 & 18</sup> Government of Western Australia. (2019, November Thursday). Weather Charts. Retrieved from the Department of Agriculture and Food: https://www.agric.wa.wa.au/weather-stations







Figure 10 – Total Rainfall for 4 AWS in CGG (2017)<sup>19</sup>

Rainfall is relatively minimal during the summer months with only the occasional storm bringing rain to the area. The driest month with the lowest rainfall on average is February. During February 2018 the Eradu AWS recorded 0.2mm<sup>19</sup>. The wettest month with the highest rainfall on average is July. During July 2018 the Allanooka AWS recorded (141mm).<sup>19</sup> The amount of rainfall ranges between 5.3mm in December to 97.2mm in June with a monthly average of 34.78 (Allanooka AWS, 2018). The annual rainfall data from the four (4) weather stations is illustrated in Figure 9 and 10).<sup>19</sup>

<sup>&</sup>lt;sup>19</sup> Government of Western Australia. (2019, November Thursday). Weather Charts. Retrieved from the Department of Agriculture and Food: https://www.agric.wa.wa.au/weather-stations



Figure 11 – Wind Rose for the City of Greater Geraldton (BoM Geraldton)<sup>20</sup>

The prevailing wind direction is generally from the South West during the cooler seasons. The wind direction changes in the hotter months and periods to Southerly. Winter months experience the greatest wind speeds but on average the summer months are higher.<sup>20</sup>

The average wind speed and direction for the City of Greater Geraldton since 1941 are illustrated in Figure 11.

In the summer months, hot, dry easterly winds can result in very high temperatures, low humidity and strong winds, and are associated with the formation of low pressure troughs along the west coast. These weather conditions make firefighting difficult as these hot easterly winds increase the fire intensity and make fire suppression difficult. Using these climatic variables a Grassland Fire Danger Index (GFDI) can be determined and used to rate the conditions in relation to potential fire behaviour and suppression difficulty. Over the past three years, weather conditions resulted in the local area having a GFDI of either extreme or catastrophic a total of eight times<sup>21</sup>. During these conditions dry lightning storms may be prevalent and there is high potential for vegetation to ignite. This can lead to significant bushfires causing concern for land owners/managers and residents in the town sites and rural areas. In 2018, a total fire ban was declared in the City of Greater Geraldton nineteen (19) days over the bushfire season<sup>21</sup>. Extreme weather conditions are not the only reason a total fire ban may be declared, as many factors can cause the total fire ban, including reduced response capacity from resource commitments in other areas of the State.

<sup>&</sup>lt;sup>20</sup> Australian Bureau of Meteorology 2019, Geraldton Airport online climate data, viewed 27/11/2019.

<sup>&</sup>lt;sup>21</sup> Data supplied by Department of Fire and Emergency Services.



ALTERATION TO RESTRICTED AND PROHIBITED

**BURNING TIMES:** 

Figure 12 – Restricted and Prohibited Burning Times 2019/20 City of Greater Geraldton<sup>22</sup>

The risk of a fire outbreak is substantially larger prior to and during harvesting, due to increased fuel loads in areas of cured crops and grasses and an increase for potential ignition from harvesting activities. Within the PBT, it is a requirement that a fire appliance is in attendance during harvesting activities, so that ignitions can be dealt with quickly. Once harvesting is complete, the risk of bushfire decreases quite significantly in these areas due to the fuel load being removed. Burning of stubble and windrows is undertaken outside of the fire season, so the risk of a bushfire is minimal. Burning of stubble and windrows is undertaken outside of the peak fire season (e.g. February onwards), but often prior to the autumn rains, where soil moisture is minimal. Prefrontal winds, late season cyclones and other weather events can occur during this time, so the risks associated with these activities need to be carefully managed by land owners.

<sup>&</sup>lt;sup>22</sup> City of Greater Geraldton – First & Final Firebreak Annual Notice.

#### 3.2.3 Vegetation

The City of Greater Geraldton vegetation types change progressively between the coastline and inland areas. Information describing vegetation types has been sourced from the Geraldton Regional Flora and Vegetation Survey (GRFVS, WAPC 2010) and Beard Vegetation Associations (BVA).

Along the coastal area, fore dunes the vegetation is dominated by *Atriplex isatidea* and *Spinifex longifolius* (GRFVS PC3), which blends into the *Acacia rostellifera* open low shrubland plant community (GRFVS PC8). The vegetation found within the dune system typically have high ground fuels made up largely of leaf litter, particularly under the *Acacia rostellifera*. Fires in this area have the potential to move fast through the leaf litter and when the acacia's burn they are known for producing lots of embers with large spotting distances. This results in fast moving fires that can be perpetuated by spotting and easily cross small breaks in the landscape.

East of the coastal dune systems is where the Acacia shrubland plant community (GRFVS PC10) can be found, which can be taller and denser as you move away from the coast. The *Melaleuca caridiophylla* plant community (GRFVS 12) occurs on limestone ridges and slopes high in the landscape. Between the near-coastal areas and the Moresby Ranges, most of the large patches of remnant vegetation are Acacia/Banksia shrubland types of plant community (GRFVS 10, 13). These are mostly located in proximity to either the Chapman or Greenough Rivers which wind through the City of Greater Geraldton area. These larger trees have the potential to escalate the fire behaviour as the bark acts as a ladder fuel carrying the fire from the understorey into the overstorey which increases the intensity, speed and spotting potential of the fire.

As you move further inland, vast areas are cleared for agricultural purposes including broad acre cropping and grazing. Large areas of open grassland and crop paddocks are found around the town sites. Fires in the cropped areas are generally fast moving due to the finer fuels and open nature of the country but the intensity and rate of spread can be greatly influenced by the type of crop planted and the seasonal growth. Contained within the farming paddocks are smaller pockets of Jam scrub (BVA 35), Melaleuca/Hakea mixed thicket (BVA 675) with scattering York Gum woodland vegetation depending on the distance from the coastline. Towards Mullewa, the vegetation turns to scrub-heath on deeper sands (BVA 372, 380), before you get to the clearing line. These areas of remnant vegetation carry hot fires and often spot ahead of the main fire front, the mix of vegetation with cropping country can result in complex fires that require multiple approaches to managing.

On farmland, the fuel load will depend on the growing stage of the crop and will vary greatly before and after the harvesting period. For risk assessment purposes, it is assumed that a fire in any of the different broad vegetation types will reach human settlement and/or cultural assets. The exceptions are in circumstances where either an asset protection zone of  $\geq$ 20m for grasslands or crops and/or a hazard separation zone  $\geq$ 100m for scrub/shrub/woodland are existent between the asset and vegetation. The risk assessment also excludes managed or manicured gardens as a bushfire risk.

In the summer months, hot, dry easterly winds can result in very high temperatures, low humidity and strong winds and are associated with the formation of low-pressure troughs along the west coast. Using these climatic variables a Grassland Fire Danger Index (GFDI) can be determined and used to rate the conditions in relation to bushfire risk. The high wind speeds experienced during the summer and the fuel type being predominantly coastal shrub lands and crop, means that bushfires are typically wind driven and therefore fast moving.

The fuel can be relatively evenly distributed and aerated, resulting in fires that are extremely fast-moving, this is especially prevalent in wind driven fires. In the broad acre farming areas East of Geraldton and west

of Mullewa these crop fires are often challenging to extinguish. These fires have extreme intensity, flame lengths often exceeding 20M making suppression difficult. The terrain can be extremely steep and inaccessible with or without heavy machinery. Additionally, the changes in topography often provides for unexpected wind forecasts due to channelling from ridges and gullies which can quickly change the direction of the fire and entrap unwary or inexperienced firefighters.

The GRFVS determined that 15% of the pre-European extent of native vegetation remains in the GRFVS area, in 625 discrete remnants. Analysis of remaining vegetation extent has indicated that, of the nine Beard vegetation associations occurring in the GRFVS area, three Beard vegetation associations (371, 387 and 675) have less than 10% remaining in the GRFVS area, and two have approximately 10% remaining in Western Australia (35 and 371), which is the level at which a vegetation association is regarded as 'endangered'. Any treatment strategies that may be required in natural areas that contain environmentally sensitive flora, fauna or ecological communities will be conducted in direct consultation with Department and CGG Environmental Planning Officers.

There are areas within and adjacent to town sites that contain dense vegetation which present a substantial bushfire risk while also containing environmentally sensitive flora and fauna values. If bushfire mitigation works are required in these areas relevant stakeholders will need to be consulted. This aims to ensure that any impacts on these species is minimised and does not compound soil erosion, removal of vegetation or loss of habitat occurring in the area. In these areas a range of mitigation activities can be investigated to ensure that it ensures species richness and biodiversity are not negatively impacted.

#### 3.2.4 Bushfire Frequency and Causes of Ignition

Between 1 July 2014 and 30 June 2020 a total of 677 landscape fire incidents occurred within the City of Greater Geraldton with an average of almost 112 per year. Deliberate (suspicious) was the major source of ignition (~56%) and the number started by lightning was relatively negligible (~5%). The majority of landscape fire incidents over this period occurred in the Geraldton area (~14%) and Mullewa (~11%) The majority of these fires ranged between 680ha to less than 1ha in size. The number of fires in the City of Greater Geraldton recorded by Department of Fire and Emergency Services between 2014 and 2019 are shown in Table 3.

The frequency of fires in different the different planning areas (Appendix 2a) over the last 3 years show that the Hills and Mullewa have the highest occurrence of reported fires. This is to be expected as these are the largest, least developed planning areas predominately made up of agriculture land uses. Combined with agricultural farming practices (header fires) and the areas being susceptible to the seasonal storm events that typically bring dry lightning. These often result from a front that traversers the coast near Kalbarri and heads in a South Easterly direction through Yuna-Tenindewa and heads toward Mingenew.

Potential fire paths include the Chapman River Regional Park, which runs through the Rural Urban Interface and encompasses the suburbs of Sunset, Spalding, Strathalbyn, Deepdale and Woorree, and the coastal dune area on the Greenough River Walk Trail in Cape Burney, which has the potential to impact adjacent residential and farming properties

There have been two significant fires in the City of Greater Geraldton in 2019. Both fires occurred under severe fire weather conditions (high temperatures, low humidity and dry fuels) and were driven by high winds ranging from East North East to Easterly, with unstable atmospheric conditions.

The Utakarra fire was suspicious in nature and occurred in Unallocated Crown Land near the residential suburb of Utakarra and Karloo. The 30 km/hr easterly winds, relative humidity of ~12% and an ambient temperature of 39°C saw the fire quickly develop. The fire raced through the landscape with rates of

spread of approximately 9.7km/h, impacting several out buildings and resulting in considerable damaged to the natural environment. Due to the fire burning in the Rural Urban Interface there were considerable resources deployed to this fire (in excess of 15 appliances) and also resulted in several main roads being closed.

The Glenfield fire occurred in the suburb of Glenfield on the same day as the Utakarra fire. The fire ignited at around half hour after the Utakarra fire in vacant land that contained natural grasses, stands of black wattle (*Acacia rostellifera*) and widely spaced Tuart gums. Even though the fire was extremely fast moving, at times on steep western slopes and quite intense, there was no loss of life or property associated with the fire event. Another issue fire crews had to attend to was the area declared as an Unexploded Ordnance Area and particular attention had to be taken to heavy plant operations to minimise the disturbance to the ground.

On review of the ignition data it is indicated that "burn off fires" are a cause for concern within the City of Greater Geraldton, as this was the third highest cause of ignition. This trend has prompted a further investigation to be conducted by the City of Greater Geraldton Emergency Management team to understand factors contributing to burn off related fires and improve permit issuing practices and education.

	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020
No. of Bushfires of all sizes.	114	84	102	101	133	143
Suspicious/Deliberate	74	48	53	56	77	73
Cigarette	11	12	10	9	5	3
Previous fires re-ignited	1	0	2	9	10	19
Burn off fires	3	2	11	8	10	6
Weather Conditions - Lightning	2	8	5	5	5	7
Vehicles (incl. Farming Equipment/Activities)	1	5	4	5	6	6
Power lines	6	2	1	0	5	9
Unreported	3	4	6	2	0	4
Undetermined	3	0	3	1	5	2
Other open flames or fire	1	1	4	2	1	2
Hot works (grinding, cutting, drilling etc.)	3	0	1	0	1	2
Improper Fuelling/Cleaning/Storage/Use of material ignited	2	0	0	1	2	1
Campfires/bonfires/outdoor cooking	1	0	0	1	1	2
Human Error (Left on, knock over, unattended etc.)	0	1	1	0	1	1
Children misadventure	0	0	1	1	1	1
Weather Conditions (High winds, natural combustion etc. Excludes Lightning)	0	0	0	0	3	1
Fireworks/flares	1	0	0	0	0	1
Equipment - Operational deficiency	1	0	0	1	0	0

#### Table 3 – Number of Landscape Fires in the City of Greater Geraldton<sup>23</sup>

Sleeping/Alcohol/Drugs/Physical- Mental impairment	0	1	0	0	0	1
Equipment - Mechanical or electrical fault	0	0	0	0	0	2
Yard maintenance, hand held equipment	1	0	0	0	0	0

#### 3.2.5 Current Bushfire Risk Management Activities

The City of Greater Geraldton has eleven Volunteer Bush Fire Brigades, two Volunteer Fire and Rescue Service Brigades (Geraldton and Mullewa), and one Career Fire & Rescue Service strategically positioned throughout the City of Greater Geraldton. The Bush Fire Brigades house two 4.4, five 3.4, two 2.4, one 1.4 and two Light Tanker appliances. The Volunteer Fire and Rescue Service house one country pump, one HAZMAT Structural Rescue appliance and two Light Tankers. The Career Fire & Rescue Service house one Urban Pump Heavy Rescue, one 3.4 appliance and two light tankers. Initial suppression is supported throughout the farming areas of the City by local farmer response units. Private appliances range in sizes from 500L upwards.

It is a wide spread perception held by communities that firefighting resources will be readily available to respond to calls for assistance during significant fire events. When resources are being committed it is also vital that the community have adequately prepared their properties and are ready to enact their bushfire plans if required, as multiple demands for assistance at the same time has the potential to quickly exceed the capacity of available resources.

The City of Greater Geraldton issues an annual Fire Break Notice which details the requirements for residents to maintain and construct fire breaks, asset protection zones and undertake other fire mitigation activities. There are currently two Bushfire Ready Groups operating in the central zone of the City of Greater Geraldton. Supported by DFES, this program is run by volunteers and provides residents with additional advice and information to assist them to prepare for bushfire events. The City's bush fire brigades also run community events to promote bushfire awareness and preparedness activities. These include group run kiosks at local events as well as education sessions during individual brigade fund raising events.

The intent of the WA Government's Bushfire Prone Planning Policy is to implement effective risk based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure. The State Planning Policy 3.7 - Planning for Bushfire Prone Areas ensures bushfire risk is given due consideration in all future planning and development decisions. As the policy does not apply retrospectively and focuses on individual developments and buildings, the BRM Plan focuses on identifying existing bushfire risk and establishing an effective treatment plan to manage unacceptable community risks.

The City of Greater Geraldton has area's designated as Bushfire Prone, as evidenced by the associated map (the 2019 Map of Bushfire Prone Areas are shown in 'pink' on the map in Appendix 2b). Bushfire Prone Areas are subject to increased planning and construction requirements. These are addressed through the City of Greater Geraldton's Local Planning Scheme No 4, including deemed provision for Local Planning Scheme amendment as provided for under the Planning and Development (Local Planning Scheme amendment) Regulations 201,5.

Throughout the bushfire season, the City of Greater Geraldton enforces Restricted Burning Times (RBT), PBT and Harvest and Vehicle Movement Bans. Total Fire Bans (TFB) are declared by DFES, in consultation with the City of Greater Geraldton. These measures are used to prevent the outbreak of bushfires in accordance with the Bush Fires Act 1954. The RBT are in place from the 14 February to 15 October

(Geraldton CBD and Semi-Rural Areas), between the 14 February and 7 March (Broadacre), and between the 14 February and 28 February (Mullewa). The PBT is between the 15 October and 14 February<sup>24</sup>.

# 4. Asset Identification and Risk Assessment

#### 4.1 Planning Areas

For the purpose of the BRM Plan, the City of Greater Geraldton has been divided into the seven (7) planning areas of Champion Bay, Chapman, Geraldton Port, Hills, Mullewa, Tarcoola and Willcock. The planning areas were determined using the existing City of Greater Geraldton ward boundaries and geographical features. Attached in **Appendix 2a** is a map illustrating the boundaries of each planning area.

#### 4.1.1 Priorities for Asset Identification and Assessment

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

Assets were identified and assessed in each planning area, based on the results of the planning area assessment outlined in Table 4.

Risk Factor	Champion Bay	Chapman	Geraldton Port	Hills	Mullewa	Tarcoola	Willcock
1. % of LG Population in Planning Area	20	20	40	20	20	40	40
2. Fuel Structures	60	60	20	40	60	60	40
3. Assets	40	40	60	20	20	40	40
4. Rural Urban Interface	60	80	40	40	40	60	60
5. Suppression response times	20	40	20	60	60	40	20
6. Suppression strategies	40	40	20	60	60	40	20
TOTAL	240	280	200	240	260	280	220
PRIORITY	4	1	7	5	3	2	6

Table 4 – Planning	Area	Assessment Summary
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## 4.2 Asset Identification

Asset identification and risk assessment has been conducted at the local level using the methodology described in the Guidelines. Identified assets have been mapped, recorded and assessed in the Bushfire Risk Management System (BRMS). This system is the software that has been specifically designed to achieve consistency between BRM Plans across the state. Identified assets are categorised into the following subcategories.

<sup>&</sup>lt;sup>24</sup> City of Greater Geraldton – First & Final Firebreak Annual Notice.

#### Table 5 – Asset Categories and Subcategories

Asset Category	Asset Subcategories
Human Settlement	<ul> <li>Residential areas         <ul> <li>Rural urban interface areas and rural properties.</li> </ul> </li> <li>Places of temporary occupation             Commercial, mining and industrial areas located away from towns and             population centres (that is, not adjoining residential areas).</li> <li>Special risk and critical facilities             Hospitals, nursing homes, schools and childcare facilities, tourist             accommodation and facilities, prison and detention centres, government             administration centres and depots, incident control centres, designated             evacuation centres, police, fire and emergency services.</li> </ul>
Economic	<ul> <li>Agricultural         Pasture, grazing, livestock, crops, viticulture, horticulture and other farming infrastructure.     </li> <li>Commercial and industrial         Major industry, waste treatment plants, mines, mills and processing and manufacturing facilities and cottage industry.     </li> <li>Critical Infrastructure         Power lines and substations, water and gas pipelines, telecommunications infrastructure, railways, bridges, port facilities and waste water treatments plants.     </li> <li>Tourist and recreational         Tourist attractions and recreational sites that generate significant tourism and/or employment within the local area.     </li> <li>Commercial forests and plantations</li> <li>Drinking water catchments</li> </ul>
Environmental	<ul> <li>Protected Rare and threatened flora and fauna, ecological communities and wetlands.</li> <li>Priority Fire sensitive species and ecological communities.</li> <li>Locally important Nature conservation and research sites, habitats, species and communities, areas of visual amenity.</li> </ul>
Cultural	<ul> <li>Aboriginal heritage         Places of indigenous significance.     </li> <li>Recognised heritage         Assets afforded legislative protection through identification by the             National Trust, State Heritage List or Local Planning Scheme Heritage List.     </li> <li>Local heritage         Assets identified in a Municipal Heritage Inventory or by the community.     </li> <li>Other         Other assets of cultural value, for example community centres and         recreation facilities.     </li> </ul>

#### 4.3 Assessment of Bushfire Risk

Risk assessments are being undertaken for each asset or group of assets identified using the methodology described in the guidelines. The Asset Risk Register shows the consequence and likelihood ratings assigned to each asset or group of assets identified and the subsequent Risk rating, it is not included in this Plan, however can be accessed separately as an excel spreadsheet or in BRMS.

#### 4.3.1 Likelihood Assessment

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

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

**Table 6 – Likelihood Ratings** 

Likelihood Rating	Description
Almost Certain (Sure to Happen)	<ul> <li>Is expected to occur in most circumstances;</li> <li>High level of recorded incidents and/or strong anecdotal evidence and/or;</li> <li>Strong likelihood the event will recur and/or;</li> <li>Great opportunity, reason or means to occur; and</li> <li>May occur more than once in 5 years.</li> </ul>
<b>Likely</b> (Probable)	<ul> <li>Regular recorded incidents and strong anecdotal evidence; and /or</li> <li>Considerable opportunity, reason or means to occur; and</li> <li>May occur at least once in 5 years.</li> </ul>
Possible (feasible but < probable)	<ul> <li>Should occur at some stage; and/or</li> <li>Few, infrequent, random recorded incidents or little anecdotal evidence; and/or</li> <li>Some opportunity, reason or means to occur.</li> </ul>
Unlikely (Improbable, not likely)	Would only occur under exceptional circumstances.

#### 4.3.2 Consequence Assessment

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

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

**Table 7 – Consequence Ratings** 

Consequence Rating	Descriptions
Minor	No fatalities.
	• Near misses or minor injuries with first aid treatment possibly required.
	No persons are displaced.
	Little or no personal support (physical, mental, emotional) required.
	• Inconsequential or no damage to an asset, with little or no specific recovery
	efforts required beyond the immediate clean-up.
	Inconsequential or no disruption to community.
	• Inconsequential short-term failure of infrastructure or service delivery.
	(Repairs occur within 1 week, service outages last less than 24 hours.).
	Inconsequential or no financial loss. Government sector losses managed
	within standard financial provisions. Inconsequential business disruptions.
Moderate	Isolated cases of serious injuries, but no fatalities. Some hospitalisation
	required, managed within normal operating capacity of health services.
	Isolated cases of displaced persons who return within 24 hours.
	Personal support satisfied through local arrangements.
	Localised damage to assets that is rectified by routine arrangements.

Consequence	Descriptions
Rating	
	Community functioning as normal with some inconvenience.
	• Isolated cases of short to mid-term failure of infrastructure and disruption
	to service delivery (Repairs occur within 1 week to 2 months, service
	outages last less than 1 week.).
	• Local economy impacted with additional financial support required to
	recover. Government sector losses require activation of reserves to cover
	loss. Disruptions to businesses lead to isolated cases of loss of employment
	or business failure.
	<ul> <li>Isolated cases of damage to environmental or cultural assets, one-off</li> </ul>
	recovery efforts required, but with no long-term effects to asset.
Maior	Isolated cases of fatalities
	Multiple cases of serious injuries. Significant hospitalisation required
	<ul> <li>Multiple cases of serious injuries. Significant hospitalisation required,</li> <li>loading to boalth sorvices being overstrotched</li> </ul>
	leading to health services being overstretched.
	• Large number of persons displaced (more than 24 hours duration).
	Significant resources required for personal support.
	• Significant damage to assets, with ongoing recovery efforts and external
	resources required.
	Community only partially functioning. Widespread inconvenience, with
	some services unavailable.
	Mid to long-term failure of significant infrastructure and service delivery
	affecting large parts of the community. Initial external support required.
	(Repairs occur within 2 to 6 months, service outages last less than a month.)
	• Local or regional economy impacted for a significant period of time with
	significant financial assistance required. Significant disruptions across
	industry sectors leading to multiple business failures or loss of employment.
	• Significant damage to environmental or cultural assets that require major
	rehabilitation or recovery efforts.
	• Localised extinction of native species. This may range from loss of a single
	population to loss of all of the species within the BRM Plan area (for a
	species which occupies a greater range than just the BRM Plan area).
Catastrophic	Multiple cases of fatalities.
·	Extensive number of severe injuries.
	Extended and large number requiring hospitalisation, leading to health
	services being unable to cone
	Extensive displacement of persons for extended duration
	Extensive displacement of persons for extended duration.
	Extensive resources required for personal support.
	Extensive damage to assets that will require significant ongoing recovery
	enoris and extensive external resources.
	Community unable to function without significant support.
	Long-term failure of significant infrastructure and service delivery affecting
	all parts of the community. Ongoing external support required. (Repairs will
	take longer than 6 months, service outages last more than 1 month.)
	Regional or State economy impacted for an extended period of time with
	significant financial assistance required. Significant disruptions across

Consequence Rating	Descriptions
	industry sectors leading to widespread business failures or loss of
	employment.
	<ul> <li>Permanent damage to environmental or cultural assets.</li> </ul>
	• Extinction of a native species in nature. This category is most relevant to
	species that are restricted to the BRM Plan area, or also occur in adjoining
	areas and are likely to be impacted upon by the same fire event. 'In nature'
	means wild specimens and does not include flora or fauna bred or kept in
	captivity.

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

#### Consequence Rating - Human Settlement Assets

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

#### • Consequence Rating - Economic Assets

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

#### Consequence Rating - Environmental Assets

The outcome or impact of a bushfire event on the asset, or a group of assets, measured by the vulnerability of the asset and the potential impact of a bushfire or fire regime.

#### • Consequence Rating - Cultural Assets

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

#### 4.3.3 Assessment of Environmental Assets

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

#### 4.3.4 Local Government Asset Risk Summary

A risk profile for the Local Government is provided in the summary table below. This table shows the proportion of assets at risk from bushfire in each risk category at the time the BRM Plan was endorsed. Environmental assets are clearly depicted within BRMS 'Sensitivities' Layers and as a consequence have not been identified individually as part of the Bushfire Risk Management plan. In many instances 'environmental assets' represent the actual source of risk to other asset categories and as such must be considered, and priorities identified within this context.

Where environmental sensitivities are identified in the vicinity of assets these will be considered in the identification of appropriate asset treatments and all legislative/statutory requirements to protect these would be adhered to.

Cultural assets have been identified via data provide from Department of Aboriginal Affairs, these assets are important and will be included within other risk assessments, appropriate asset treatments and all legislative/statutory requirements to protect these would be adhered to.

Risk Rating Asset Category	Low	Medium	High	Very High	Extreme
Human Settlement	5	27	115	43	74
Economic	2	17	42	56	17
Environmental	0	1	32	25	0
Cultural	0	1	3	2	4

#### Table 8. Local Government Asset Risk Summary

#### 5. Risk Evaluation

#### 5.1 Evaluating Bushfire risk

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

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

#### 5.2 Treatment Priorities

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

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

#### **Table 9 – Treatment Priorities**

#### 5.3 Risk Acceptability

Risks below at High level were not considered to require specific treatment during the life of this BRM Plan. They will be managed by routine Local Government wide controls and monitored for any significant change in risk. In most circumstances risk acceptability and treatment will be determined by the land owner, in collaboration with Local Government and fire agencies. However, as a general rule, the following courses of action have been adopted for each risk rating.

Risk Rating	Criteria for Acceptance of Risk	Course of Action
Extreme (Priorities 1A, 1B, 1C)	Requires asset specific treatment strategies to be applied. Treatment action is required within 1 Year for Rural Urban Interface (RUI) areas and 2 years for all others of the plan being endorsed. It is unlikely that Local Government Wide Controls would be adequate to manage the risk.	<ul> <li>Specific action is recommended in the first 1 year of BRM Plan</li> <li>Treatment priorities will include <ul> <li>treatments that will have maximum benefit to multiple assets and critical infrastructure.</li> <li>Partnerships with other agencies for strategic mitigation.</li> </ul> </li> <li>Ideally, a face to face meeting (on site) should be held with landowner or a letter sent to reinforce hazard status.</li> <li>Treatments should include activities that modify the hazard vegetation where possible.</li> <li>Risk assessment to be reviewed prior to the fire season (October) each year.</li> <li>Asset to be included on Annual Fire Break inspection.</li> <li>Private landholders will be encouraged to join local bushfire ready groups via letter or face to face for strategic mitigation.</li> </ul>
Very High (Priorities 2A, 2B, 2C)	Requires asset specific treatment strategies to be applied. Treatment action is required within 2 years of the plan being endorsed. It is unlikely that Local Government Wide Controls would be adequate to manage the risk.	<ul> <li>Specific action(s) required in the first</li> <li>2 years of the BRM Plan where</li> <li>resourcing and funding permits</li> <li>Treatment priorities will include         <ul> <li>Treatment priorities will include</li> <li>Treatments that will have maximum benefit to multiple assets and critical infrastructure.</li> <li>Partnerships with other agencies for strategic mitigation.</li> </ul> </li> <li>Assets within the town site to be included on Annual Fire Break inspection list.</li> <li>Communication with stakeholders as per the Communications Plan.</li> </ul>

#### Table 10 – Criteria for Acceptance of Risk and Course of Action

High (Priorities 3A, 3B, 3C, 3D)	Asset specific treatment strategies will likely be required to adequately manage the risk.	<ul> <li>Specific action(s) required in the first</li> <li>3 years of the BRM Plan where</li> <li>resourcing and funding permits:</li> <li>Priorities will include <ul> <li>Assets that fall adjacent to</li> <li>Extreme or Very High risk</li> <li>assets.</li> </ul> </li> <li>Treatments that will have <ul> <li>maximum benefit to multiple assets</li> <li>and critical infrastructure.</li> </ul> </li> <li>Partnerships with other agencies <ul> <li>for strategic mitigation.</li> </ul> </li> <li>Communication with stakeholders as <ul> <li>per the Communications Plan.</li> </ul> </li> </ul>
Medium (Priorities 4A, 4B, 4C)	Asset specific treatments are not required, but risk should be monitored. Local government wide controls should be sufficient to manage the risk If there is a change in the landscape / environment these assets may need to be reassessed more frequently.	<ul> <li>Addressed through Local Government Wide Controls.</li> <li>Specific action is not required.</li> </ul>
Low (Priorities 5A, 5B, 5C)	Asset specific treatments are not required, but risk should be monitored. Local Government Wide Controls should be sufficient to manage the risk. If there is a change in the landscape / environment these assets may need to be reassessed more frequently.	<ul> <li>Addressed through Local Government Wide Controls and/or Community Education.</li> <li>Specific action is not required.</li> </ul>

## 6. Risk Treatment

The purpose of risk treatment is to reduce the likelihood of a bushfire occurring and/or the potential impact of a bushfire on the community, economy and environment. This is achieved by implementing treatments that modify the characteristics of the hazard, the community or the environment.

There are many strategies available to treat bushfire risk. The treatment strategy (or combination of treatment strategies) selected will depend on the level of risk and the type of asset being treated. Not all treatment strategies will be suitable in every circumstance.

## 6.1 Local Government-Wide Controls

Local Government-Wide Controls are activities that reduce the overall bushfire risk within the City of Greater Geraldton. These types of treatments are not linked to specific assets and are applied across all or part of the Local Government as normal business or due to legislative requirements. The following controls are currently in place across the City of Greater Geraldton:

• *Bush Fires Act 1954* Section 33 notices, including applicable fuel management requirements, firebreak standards and annual enforcement programs.

- Declaration and management of Prohibited Burn Times, Restricted Burn Times and Total Fire Bans for the Local Government.
- Public education campaigns and the use of DBCA 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, Department of Planning and Building Commission policies and standards.
- Monitoring performance against the BRM Plan and reporting annually to the Local Government council and OBRM.

A multi-agency work plan has been developed and is attached at **Appendix 6.** The plan details work to be undertaken as a part of normal business, to improve current controls or to implement new controls to better manage bushfire risk across the Local Government.

#### 6.2 Asset-Specific Treatment Strategies

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

- **Fuel management** Treatments aim to reduce or modify the bushfire fuel loads through manual, chemical and prescribed burning methods.
- **Ignition management** Treatments 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.
- **Community Engagement** Treatments seek to build relationships, raise awareness and change the behaviour of people exposed to bushfire risk.
- **Other** Local Government-Wide Controls, such as community education campaigns and planning policies, will be used to manage the risk. Asset-specific treatment is not required or not possible in these circumstances.

## 6.3 Determining the Treatment Schedule

Efforts will be made to finalise the Treatment Schedule within six months of this BRM Plan being approved by Council. The Treatment Schedule will be developed in broad consultation with land owners and other stakeholders. Land owners are ultimately responsible for treatments implemented on their own land. This includes any costs associated with the treatment and obtaining the relevant approvals, permits or licences to undertake an activity. Where agreed, another agency may manage a treatment on behalf of a land owner. However, the onus is still on the land owner to ensure treatments detailed in this BRM Plan are completed.

## 7. Monitoring and Review

Monitoring and review processes are in place to ensure that the BRM Plan remains current and valid. These processes are detailed below to ensure outcomes are achieved in accordance with the *Communication Strategy* and *Treatment Schedule*. The CGG Emergency Management team are responsible for managing the monitoring and review process. This process will be undertaken in consultation with the CEO, LEMC and BFAC. In the event of a cessation of Coordinator, Emergency

Management and/or Emergency Operations Officer roles, the Office of the CEO will delegate the responsibility.

#### 7.1 Review

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

- Changes to the BRM Plan area, organisational responsibilities or legislation.
- Changes to the bushfire risk profile of the area; or
- Following a major fire event.

Review of the risk evaluations and treatment strategies utilised for assessing important assets with local value depend on the level of exposure to bushfire related risk. The timeframes for routine review are as follows:

- Assets with an Extreme, Very High- or High-risk rating will be reviewed annually.
- Assets with a Medium risk rating will be reviewed every 2 years.
- Assets with a Low risk rating will be reviewed every 5 years.

In the event of significant changes in circumstances due to construction and development or adversely impacted by natural disasters or emergencies, the review period may alter.

#### 7.2 Monitoring

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

#### 7.3 Reporting

The City of Greater Geraldton will submit an annual report to OBRM each year summarising progress made towards implementation of the entire BRM Plan.

The Emergency Operations Officer will document the progress of the BRM plan quarterly to the Executive Management Team (EMT) to the City of Greater Geraldton. The performance and progress of the BRM Plan over the financial year will be presented to BFAC, LEMC and Local Council on an annual basis. The presentations are to be concurrently used as a platform to generate feedback and potential advice on ways to improve the outcomes generated by the BRM Plan. The feedback will be used to inform decision making when selecting the bushfire risk treatments for the next financial year and to ensure the BRM Plan is in line with the City of Greater Geraldton's values and future goals.

# 8. Glossary

Asset	A term used to describe anything of value that may be adversely impacted by bushfire. This may include residential houses, infrastructure, commercial, agriculture, industry, environmental, cultural and heritage sites.
Asset Category	There are four categories that classify the type of asset – Human Settlement, Economic, Environmental and Cultural.
Asset Owner	The owner, occupier or custodian of the asset itself. Note: this may differ from the owner of the land the asset is located on, for example a communication tower located on leased land or private property.
Asset Register	A component within the Bushfire Risk Management System used to record the details of assets identified in the Bushfire Risk Management Plan.
Asset Risk Register	A report produced within the Bushfire Risk Management System that details the consequence, likelihood, risk rating and treatment priority for each asset identified in the Bushfire Risk Management Plan.
Bushfire	Unplanned vegetation fire. A generic term which includes grass fires, forest fires and scrub fires both with and without a suppression objective. <sup>25</sup>
Bushfire Management Plan	A document that sets out short, medium- and long-term bushfire risk management strategies for the life of a development. <sup>26</sup>
Bushfire risk management	A systematic process to coordinate, direct and control activities relating to bushfire risk with the aim of limiting the adverse effects of bushfire on the community.
Bushfire Hazard	The hazard posed by the classified vegetation, based on the vegetation category, slope and separation distance.
Consequence	The outcome or impact of a bushfire event.
Draft Bushfire Risk Management Plan	The finalised draft BRM Plan is submitted to the OBRM for review. Once the OBRM review is complete, the BRM Plan is called the 'Final BRM Plan' and can be progressed to local government council for endorsement.
Emergency Risk Management Plan	A document (developed under <i>State Emergency Management Policy 2.9</i> ) that describes how an organisation(s) intends to undertake the activities of emergency risk management based on minimising risk. These plans help inform the ongoing development of Local Emergency Management Arrangements (LEMA) and <i>State Hazard Plans</i> .

<sup>&</sup>lt;sup>25</sup> Australasian Fire and Emergency Service Authorities Council 2012, *AFAC Bushfire Glossary*, AFAC Limited, East Melbourne.

<sup>&</sup>lt;sup>26</sup> Western Australian Planning Commission 2015, *State Planning Policy 3.7: Planning in Bushfire Prone Areas*, WAPC, Perth

Geographic Information System (GIS)	A data base technology, linking any aspect of land-related information to its precise geographic location. <sup>327</sup>
Geographic Information System (GIS) Map	The mapping component of the Bushfire Risk Management System. Assets, treatments and other associated information is spatially identified, displayed and recorded within the GIS Map.
Land Owner	The owner of the land, as listed on the Certificate of Title; or leaser under a registered lease agreement; or other entity that has a vested responsibility tc manage the land.
Likelihood	The chance of something occurring. In this instance, the chance of a bushfire igniting, spreading and reaching the asset.
Locality	The officially recognised boundaries of suburbs (in cities and larger towns) and localities (outside cities and larger towns).
Planning Area	A geographic area determined by the local government which is used to provide a suitable scale for risk assessment and stakeholder engagement.
Priority	See Treatment Priority.
Responsible Person	The person responsible for planning, coordinating, implementing, evaluating and reporting on a risk treatment.
Risk acceptance	The informed decision to accept a risk, based on the knowledge gained during the risk assessment process.
Risk analysis	The application of consequence and likelihood to an event in order to determine the level of risk.
Risk assessment	The systematic process of identifying, analysing and evaluating risk.
Risk evaluation	The process of comparing the outcomes of risk analysis to the risk criteria in order to determine whether a risk is acceptable or tolerable.
Risk identification	The process of recognising, identifying and describing risks.
Risk Manager	The organisation or individual responsible for managing a risk identified in the Bushfire Risk Management Plan; including review, monitoring and reporting.
Risk Register	A component within the Bushfire Risk Management System used to record, review and monitor risk assessments and treatments associated with assets recorded in the Bushfire Risk Management Plan.

<sup>&</sup>lt;sup>27</sup> Landgate 2015, *Glossary of terms*, Landgate, Perth

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Risk treatment	A process to select and implement appropriate measures undertaken to modify risk.
Rural	Any area where in residences and other developments are scattered and intermingled with forest, range, or farm land and native vegetation or cultivated crops.
Rural Urban Interface (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 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 specific aim to be achieved or action to be undertaken, in order to complete the treatment. Treatment objectives should be specific and measurable.
Treatment Manager	The organisation, or individual, responsible for all aspects of a treatment listed in the Treatment Schedule of the Bushfire Risk Management Plan, including coordinating or undertaking work, monitoring, reviewing and reporting.
Treatment Priority	The order, importance or urgency for allocation of funding, resources and opportunity to treatments associated with a particular asset. The treatment priority is based on an asset's risk rating.
Treatment Schedule	A report produced within the Bushfire Risk Management System that details the treatment priority of each asset identified in the Bushfire Risk Management Plan and the treatments scheduled.
Treatment Strategy	The broad approach that will be used to modify risk, for example fuel management.
Treatment Type	The specific treatment activity that will be implemented to modify risk, for example a prescribed burn.
Vulnerability	The susceptibility of an asset to the impacts of bushfire.

# 9. Common Abbreviations

APZ	Asset Protection Zone
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BRMP	Bushfire Risk Management Planning
BRM Plan	Bushfire Risk Management Plan
BRMS	Bushfire Risk Management System
DBCA	Department of Biodiversity, Conservation & Attractions
DFES	Department of Fire and Emergency Services
ERMP	Emergency Risk Management Plan
FFDI	Forest Fire Danger Index
FMP	Fire Management Plan
GFDI	Grassland Fire Danger Index
GIS	Geographic Information System
HSZ	Hazard Separation Zone
LEMA	Local Emergency Management Arrangements
LEMC	Local Emergency Management Committee
LG	Local Government
LMZ	Land Management Zone
OBRM	Office of Bushfire Risk Management
OEM	Office of Emergency Management
SEMC	State Emergency Management Committee
WAPC	Western Australian Planning Commission



# **City of Greater Geraldton**

# Bushfire Risk Management Plan

# **Communication Strategy**



# 2021 - 2026

# **Document Control**

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	Management Plan			
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# **Related Documents**

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City of Greater Geraldton Bushfire Risk Management Plan	1.7	01/04/2021

## **Amendment List**

Version	Date	Author	Section	
1.0	23/07/2019	Murray Smith	Original document	
1.1	20/04/2020	Wayne Ellis	Review and update	
1.2	01/04/2021	Murray Smith	Minor amendments	

## **1 INTRODUCTION**

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

## 2 COMMUNICATIONS OVERVIEW

#### **Communication Objectives**

The communication objectives for the development, implementation and review of the BRM Plan for the City of Greater Geraldton are as follows:

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

## **Communication Role and Responsibilities**

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

- **CEO City of Greater Geraldton**: responsible for endorsement of the BRM Plan Communications Strategy including external communications within the Local Government area.
- **Emergency Operations Officer CGG**: responsible for operational-level communication between the City and the Department of Fire and Emergency Services.
- **Coordinator, Emergency Management CGG**: responsible for strategic-level communication between the City and the Department of Fire and Emergency Services and the Office of Bushfire Risk Management.

In the event of a cessation of the Emergency Operations Officer and/or Coordinator Emergency Management roles within the City of Greater Geraldton, they will delegate the roles and responsibilities pertaining to the communications plan to the Chief Executive Officer.

# Key Stakeholders for Communication

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

Stakeholder	Role or interest	Level of impact of outcomes	Level of engagement	
Local Government	Significant Role in plan development, implementation and review. Significant interest as a land manager.	High	Inform, consult, involve, collaborate and empower.	
DFES	Role in plan development, implementation and review. Support role in treatment Implementation.	High	Inform, consult, involve, collaborate, empower.	
DBCA	Role in plan development, implementation and review. Significant interest as a land manager.	High	Inform, consult, involve, collaborate, empower	
Bushfire Advisory Committee, DOAC & LEMC	Role in plan development, implementation and review	High	Inform, consult, involve, collaborate	
Bushfire Brigades and other Emergency Services Volunteers	Significant role in plan and treatment development, implementation and review	High	Inform, consult, involve, collaborate	
Local Community and land owners	Role in plan development, implementation and review. Significant interest as a land manager.	Hìgh	Inform, consult and involve	
Department of Planning Lands and Heritage, Land Corp & Landgate	Role in plan and treatment development, implementation and review	Medium	Inform, consult, involve, collaborate and empower	
Main Roads WA	Role in plan development, implementation and review. Interest as a land manager. Critical infrastructure interest.	Medium	Inform, consult, involve and collaborate	
Landcare, Local Community Conservation Groups	Role in plan and treatment development, implementation and review	Medium	Inform, consult and involve	
Telstra	Role in plan development, implementation and review. Interest as a land manager. Critical infrastructure interest.	Medium	Inform, consult, involve and collaborate	
Water Corporation	Role in plan development, implementation and review. Interest as a land manager. Critical infrastructure interest.	Medium	Inform, consult, involve and collaborate	
Western Power	Role in plan development, implementation and review. Interest as a land manager. Critical infrastructure interest.	Medium	Inform, consult, involve and collaborate	

Oil & Gas Industry	Role in plan development, implementation and review. Significant interest as a land manager. Critical infrastructure interest.	Medium	Inform, consult, involve and collaborate	
Traditional Owners, Department of Aboriginal Affairs	Role in plan and treatment development, implementation and review	Medium	Inform, consult and involve	
Tourism Groups	Tourism Groups Role in plan and treatment development, implementation and review		Inform, consult and involve	
Business Owners Role in plan and treatment development, implementation and review		Medium	Inform, consult and involve	

Stakeholders with larger land tenures and percentage of the BRM Plan area, are more likely to be exposed to bushfire risk and will be impacted more significantly by the BRM Plan. These stakeholders subsequently must have a higher level of engagement and responsibility to implement bushfire risk land treatments. The benefit in participating in the BRMP Process and the prudent approach to bushfire risk, is a greater reduction in the potential impacts from a bushfire. This includes preventing and minimising the loss of life and damage to assets residing on their land and surrounding adjacent properties in the situation of a significant bushfire.

The Volunteer Fire Brigade members within the City may be land owners and are a part of the local community. However, they also have additional roles and responsibilities in relation to the BRM Plan giving them a higher level of collaboration. They collaborate with various stakeholders and agencies in the implementation of strategies and bushfire mitigation treatments that may include bushfire awareness education and prescribed burning programs in the City of Greater Geraldton.

Comm	unicatio	ons Plan

Communication timing	Stakeholder(s)	Objective(s)	Method	Key Message or Purpose	Responsibility	Risks to Communication	Strategy to Manage Risks	Monitoring and Evaluation Method
Development of BRM Plan								
Throughout development	- City of Greater Geraldton CEO - EMT - CGG Staff	All (1-5)	- Emails - Meetings (Quarterly) - City Website and Intranet	<ul> <li>Informed and consulted</li> <li>Accountability and responsibility</li> <li>Review and input into Plan</li> </ul>	- EEO - CEM	<ul> <li>Time Constraints</li> <li>No Clear message</li> <li>Incorrect audience</li> </ul>	<ul> <li>Prudent planning and efficient time management</li> <li>Objective and goal setting for each meeting</li> <li>Clear communication</li> </ul>	<ul> <li>Feedback questions</li> <li>level of support received</li> <li>Evaluation of meeting objectives/goals with actual outcomes</li> </ul>
Throughout development	-Bushfire Advisory Committee (BFAC)	All (1-5)	- Meetings (Bi – Annually) - Face to Face (presentations in council chambers if required)	<ul> <li>Engaged in process of BRM</li> <li>Plan</li> <li>Treatment</li> <li>Schedule and Risk</li> <li>Analysis</li> </ul>	- EEO - CEM	<ul> <li>Plan not</li> <li>complete</li> <li>Treatments not</li> <li>negotiated</li> <li>Time constraints</li> </ul>	<ul> <li>Prepare</li> <li>presentation for</li> <li>each BFAC</li> <li>Give updates as</li> <li>required</li> </ul>	<ul> <li>Feedback</li> <li>Treatments negotiated and supported by committee</li> </ul>
Throughout development	- FCO's - BFB Captains, - VFRS Captain	All (1-5)	- Meetings organised with each brigade as required	- Engaged in process of BRM Plan - Identify Risk, and share information	- EEO - CEM	-Time constraints -No structured agenda -Availability of volunteers	-Prudent planning and efficient time management -Setting specific and achievable objectives for each meeting	-Feedback and level of support received for BRMP process -Evaluation of objectives with actual outcomes
Throughout development	-DBCA	All (1-5)	-Emails -Meetings	-Engaged in process of BRM Plan -Identify Risk, and share information	- EEO - CEM	-Time Constraints -No Clear message -Sourcing information from the incorrect branch	-Prudent planning and efficient Time management -Objective and goal setting for each meeting -Clear communication	<ul> <li>-Feedback questions</li> <li>-level of support received</li> <li>-Evaluation of meeting objectives/goals with actual outcomes</li> </ul>

Throughout development	-Home Owners -Land Managers -Interest groups or businesses	1&2	-Media (Newspaper) - CGG Website -Face to face meetings -Community workshops and forums	-Inform about the BRMP Process -Identify valued assets -Identify existing controls	- EEO - CEM	-Media not reaching target audience -Workshops and forums could get abstracted by other agendas	-Newspaper and website details -Objective and goal setting for each meeting	-Engaged throughout the process -Feedback -Success of outcomes
Throughout development	-State Agencies (DBCA, DFES etc.) -Service providers -Stakeholders (WP, Mainroads, Telstra etc.)	All (1-5)	-Emails -Face to Face Meetings -Telephone	-Inform about the BRMP process -Identify assets at risk -Identify existing controls/programs	- EEO - CEM	-Time constraints and travel -Level of interest and engagements in process	-Select appropriate channel of communication -Prepare materials and good planning	-High engagement and participation levels -Feedback
Life of plan	<ul> <li>City of Greater Geraldton CEO</li> <li>EMT</li> <li>CGG Staff</li> </ul>	All (1-5)	-Emails -Meetings (Quarterly) - CGG Website and Intranet	-Inform BRMP progress and status -consult -accountable or responsible -Review and input into Plan.	- EEO - CEM	-Time constraints -Availability -Lack of understanding -Budget (for LG mitigation)	-Prudent planning and efficient time management -Setting specific and achievable objectives for each meeting -Clear communication - Regular updates	-Feedback, questions -Level of support received
Life of Plan	-Stakeholder groups (Home Owners/ Land Managers, Volunteer Groups, Main Roads, Telstra, Water Corporation, Western Power, Arc Infrastructure & Oil and Gas Industry)	All (1-5)	-Emails -Website -Telephone -Meetings as required	-Inform BRMP progress and status -consult -accountable or responsible -Review and input into Plan and Treatments.	- EEO - CEM	-Availability -Travel -Commitment lost	-Planned and coordinated sharing of information -Setting specific and achievable objectives for meetings -Negotiations conducted	-Feedback -Commitment received to implement agreed controls -Highly engaged

Life of Plan	-DBCA	All (1-5)	-Emails	-Inform BRMP	- EEO	-Availability	-Planned and	-Feedback
			-Website	progress and	- CEM	-Travel	coordinated	
			-Telephone	status		-Commitment lost	sharing of	-Commitment received to
			-Meetings as required	-consult			information	implement agreed controls
				-accountable or			-Setting specific	
				responsible			and achievable	-Highly engaged
				-Review and input			objectives for	
				into Plan and			meetings	
				treatments,			-Negotiations	
				especially			conducted	
				environmental				
				assets.				
Life of Plan	-BFAC/LEMC	All (1-5)	-Meetings Bi	-Report on progress	-EEO	-Poor	-Collate data and	-Positive feedback received on
			Annually/Quarterly	to plan	- CEM	communication	report on progress	treatment works
			-Face to Face	-Report		from stakeholders	and success of	
			(presentations in	issues/constraints		and LG on	treatments	-FCO's satisfied with work to
			council chambers as			progress and	-Ensure	date
			required)			completion of	Compliance to	
						treatment works	agreed	
							treatment works	
							from stakeholders	
<b>Review of Busl</b>	nfire Risk Mana	igement Plan						
Annually (Shire)	-City of Greater	All (1-5)	-Email	-Review, Monitor	- EEO	-Poor reporting	- EEO & CEM to	-Feedback from Council
	Geraldton CEO,		-Meetings	and Reporting	- CEM	and recording of	produce ad hoc	
	Councillors			-Endorse plan		information	reports, record	-Cost effective treatment works
	- OBRM			-Compliance to plan		-Review not	data and	completed as a result of plan
	- EEO			and acceptance of		completed by	information	
	-BRM Branch			risk		BRMB and OBRM	appropriately	-Accurate and concise reporting
	- CEM						-Approved by	
5 Yearly (Shire,	-LG Council						BRMB and OBRM	
DFES and OBRM)	-LEMC						for LG	
Review of Asse	ets Risk Assessr	nents and Tr	eatment Strategie	S				
Annually, Biennial	- City of Greater	All (1-5)	-Annual Meetings	-Review, Monitor	- EEO	-Poor reporting	- EEO & CEM to	-Feedback from BFAC and LEMC
and 5 Yearly	Geraldton CEO		-Email as required	and Reporting	- CEM	and recording of	produce ad hoc	
	- EMT		-Telephone as	-Endorse risk		information	reports, record	-Cost effective treatment works
	-LEMC		required	assessments and		-Limited feedback	data and	completed
	-BFAC			treatments used		provided by BFAC,	information	
	-OBRM			-Compliance to plan		BFB and VFRS.	appropriately	-A reduction in bushfire risk
	-BRMO			and acceptance of		-Annual Review	-Approved by	within the Shire from the
	-BRMB			risk		not completed by	BRMB and OBRM	previous year
						BRMB and OBRM	tor LG	



# Appendix 2 - City of Greater Geraldton Localities Map

# Appendix 2a - Planning Area Map



City of Greater Geraldton Bushfire Risk Management Plan 2021-2026

# Appendix 2b - Map of Bushfire Prone Areas



# **Appendix 3 - Vegetation Map**



# Appendix 4 – Asset Risk Register

Refer to attachment

# Appendix 5 – Treatment Schedule

Treatment Schedule to be produced at Mitigation Activity Funding

Control		Action or Activity Description	Lead Agency	Other Stakeholder(s)	Notes and Comments		
1	City of Greater Geraldton, Local Firebreak Notice <i>(Bush Fires Act 1954)</i>	Annual LG Firebreak and Fuel Reduction Notice.	LG	Landowners	Delivered annually normally with rates notice and advertised in local newspapers. Non- compliance may result in the issuing of Fines and/or Invoices for works undertaken to ensure compliance in accordance with the <i>Bush Fires Act 1954</i> (Section 33).		
2	City of Greater Geraldton, Prohibited, Restricted Burning Times and Total Fire Bans. Bush Fire Control (Bush Fires Act 1954)	Annual LG Firebreak and Fuel Reduction Notice.	LG, DFES	Landowners, Community	Prohibited and restricted burn periods are designed to reduce the risk during the Bushfire Season. Notice reviewed annually and dates can be subject to change as required by the City. Total Fire Bans are issued by DFES subject to weather conditions.		
3	City of Greater Geraldton mitigation works (Works Plan)	City carries out programs to reduce fuel load and remove hazards as required.	LG	Community	Work includes; spraying, slashing, mulching and other mechanical treatments.		
4	DFES UCL/UMR land management	Preparedness, mitigation work conducted on lands owned by Department of Planning, Lands and Heritage (DPLH) and managed by DFES.	DFES	DBCA, LG, Fire brigades	Budgeting and cooperation being developed to include mitigating risk on UCL/UMR.		
5	Department of Biodiversity, Conservation and Attractions (DBCA) Annual Burn Plans	DBCA have a seasonal burn program. The annual plan for the region is being provided.	DBCA	Community, Local brigades, DFES, LG	The plan will be provided and will; be accessible by sharing shape files (BRMS/GIS) and be communicated at Local BFAC and other various meetings.		
6	DBCA mitigation works	DBCA conduct mulching and other mechanical treatments to reduce fuel load or provide fire access.	DBCA	DFES, LG	No formal plan exists however, works are completed as required, upon request or when identified.		
7	Public preparedness and education campaigns	Community (preparedness, education and information), Council and DFES Website, Community events.	LG, DFES	Community Groups	Bushfire Brigade Recruitment Drives and Street meets, TV and Radio. One source of information re. Bushfire mitigation.		
8	Harvest and Vehicle Movement Bans	Restricting the movement of vehicles during harvesting in the Bushfire Season.	LG	Landowners, Community	Enforced during the Bushfire Season in accordance with the <i>Bush Fires Act 1954</i> (Section 27).		

# Appendix 6 - Local Government-Wide Controls, Multi-Agency Treatment Work Plan

