



City of Karratha

Bushfire Risk Management Plan

2018 – 2023

*Office of Bushfire Risk Management (OBRM) Bushfire Risk Management (BRM) Plan
reviewed 20th October 2017*

Local Government Council BRM Plan endorsement ~~16 April~~ 17 September 2018

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Document Endorsements

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

| Local Government | Representative | Signature | Date |
|------------------|----------------------------|-----------|------|
| City of Karratha | Darrell Hutchens DCBFCO | | |

Amendment List

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1. Introduction

1.1 Background

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

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

1.2 Aim and Objectives

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

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

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

1.3 Legislation, Policy and Standards

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

1.3.1 Legislation

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

1.3.2 Policies, Guidelines and Standards

- National Emergency Risk Assessment Guidelines (NERAG) (Second Edition 2015)
- State Emergency Management Policy 2.5 Local Arrangements
- State Emergency Management Policy 3.2 – Emergency Management Risk Planning
- State Hazard Plan for Fire (Westplan Fire)
- State Planning Policy 3.7: Planning in Bushfire Prone Areas
- State Planning Policy 3.4: Natural Hazards and Disasters
- Guidelines for Planning in Bushfire Prone Areas (2015)
- Western Australian Emergency Risk Management Guidelines (Emergency Management WA 2005)
- A Guide to the Use of Pesticides in Western Australia (Dept. of Health 2010)
- Guidelines for Plantation Fire Protection (DFES 2011)
- Firebreak Location, Construction and Maintenance Guidelines (DFES)
- Bushfire Risk Management Planning – Guidelines for preparing a Bushfire Risk Management Plan (2015)
- AS/NZS ISO 31000:2009 - Risk management – Principles and guidelines
- AS 3959-2009 Construction of buildings in bushfire-prone areas
- Building Protection Zone Standards (DFES)

1.3.3 Other Related Documents

- National Strategy for Disaster Resilience
- National Statement of Capability for Fire and Emergency Services (AFAC 2015)
- Public Service Circular No. 88 Use of Herbicides in Water Catchment Areas (Dept. of Health 2007)
- Code of Practice for Timber Plantations in Western Australia (Forest Products Commission 2006)
- [Murujuga National Park Management Plan](#)
- Bushfire Risk Management Planning Handbook
- Bushfire Risk Management System (BRMS) User Guide
- City of Karratha Bushfire Management Plan
- City of Karratha Strategic Community Plan

- City of Karratha Local Recovery Plan
- Local Emergency Management Arrangements
- Memorandum of Understanding for the Management and Control of Bush Fire Brigades and Bush Fire and Emergency Services in the Pilbara Region of Western Australia

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.

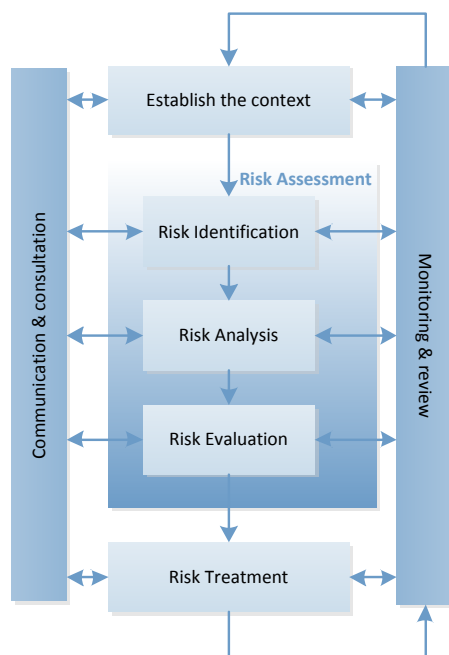


Figure 1 - An overview of the risk management process ¹

2.1 Roles and Responsibilities

Table 1 – Roles and Responsibilities

| Stakeholder Name* | Roles and Responsibilities |
|-------------------------|---|
| Local Government | <ul style="list-style-type: none"> ▪ As custodian of the BRM Plan, coordination of the development and ongoing review of the integrated BRM Plan. ▪ Negotiation of commitment from land owners to treat risks identified in the BRM Plan. ▪ As treatment manager, implementation of treatment strategies. ▪ As part of the approval process, submission of the draft BRM Plan to the Office of Bushfire Risk Management (OBRM) to review it for consistency with the Guidelines. ▪ As part of the approval process, submission of the final BRM Plan to council for their endorsement and adoption. ▪ <u>Undertake treatment strategies on all lands owned or managed by the Local Government</u> |

¹ Source: AS/NZS ISO 31000:2009, Figure 3, reproduced under SAI Global copyright Licence 1411-c083.

| Stakeholder Name* | Roles and Responsibilities |
|---|---|
| | <ul style="list-style-type: none"> ▪ <u>Responsible for compliance with Section 33 of the <i>Bush Fires Act 1954</i>.</u> ▪ <u>Undertake suppression activities when required within the City of Karratha, via FCOs and BFB units</u> |
| Department of Fire and Emergency Services (DFES) | <ul style="list-style-type: none"> ▪ Participation in and contribution to the development and implementation of BRM Plans, as per their agency responsibilities as the Westplan Fire Hazard Management Agency. ▪ Support to local government through expert knowledge and advice in relation to the identification, prevention and treatment of bushfire risk. ▪ Facilitation of local government engagement with state and federal government agencies in the local planning process. ▪ Undertake treatment strategies, including prescribed burning on behalf of Department of <u>Planning, Lands and Heritage</u> for Unmanaged Reserves and Unallocated Crown Land within gazetted town site boundaries. ▪ <u>In accordance with Memorandums of Understanding and other agreements, implementation of treatment strategies for other landholders.</u> ▪ <u>Undertake suppression activities when required within the City of Karratha, via BFB and VFRS units</u> |
| Office of Bushfire Risk Management (OBRM) | <ul style="list-style-type: none"> ▪ Under the OBRM Charter, to ensure bushfire risk is managed in accordance with AS/NZS ISO 31000 and reporting on the state of bushfire risk across Western Australia. ▪ Review BRM Plans for consistency with the Guidelines prior to final endorsement by council. |
| Department of Biodiversity, Conservation and Attractions | <ul style="list-style-type: none"> ▪ Participation in and contribution to the development and implementation of BRM Plans. ▪ Providing advice for the identification of environmental assets that are vulnerable to fire and planning appropriate treatment strategies for their protection. ▪ As treatment manager, implementation of treatment strategies on department managed land and for Unmanaged Reserves and Unallocated Crown Land outside gazetted town site boundaries. ▪ <u>In accordance with Memorandums of Understanding and other agreements, implementation of treatment strategies for other landholders.</u> ▪ <u>Development and maintenance of a fire management plan for the National Park which explores the ecological use of fire, without adversely impacting petroglyphs and rockpile PECs. BRM Plan and the MNP Fire Plan need to be consistent.</u> ▪ <u>Undertake suppression activities within the MNP.</u> |
| Other State and Federal Government Agencies | <ul style="list-style-type: none"> ▪ Assist the local government by providing information about their assets and current risk treatment programs. ▪ Participation in and contribution to the development and implementation of BRM Plans. ▪ As treatment manager, implementation of treatment strategies. |
| Public Utilities | <ul style="list-style-type: none"> ▪ Assist the local government by providing information about their assets and current risk treatment programs. ▪ Participation in and contribution to the development and implementation of BRM Plans. ▪ As treatment manager, implementation of treatment strategies. |

| Stakeholder Name* | Roles and Responsibilities |
|--------------------------------------|---|
| Corporations and Private Land Owners | <ul style="list-style-type: none"> As treatment manager, implementation of treatment strategies. |

2.2 Communication & Consultation

As indicated in Figure 1 (page 7), communication and consultation throughout the risk management process is fundamental to the preparation of an effective BRM Plan. To ensure appropriate and effective communication occurred with relevant stakeholders in the development of the BRM Plan, a *Communication Strategy* was prepared. The strategy is provided at **Appendix 1**.

3. Establishing the Context

3.1 Description of the Local Government and Community Context

3.1.1 Strategic and Corporate Framework

Local Government is responsible for the prevention of, planning for, management of and recovery from all active scrub and bushfires outside gazetted fire districts (ie town sites), and are responsible for the management, training and control of Bushfire Brigades (BFB) within the local government boundary. This is currently one of the functions of the Deputy Chief Bushfire Control Officer (DCBFCO), with each of the Rangers having a Fire Control Officer role. An MOU has been signed between the City of Karratha CEO and DFES Commissioner on the 26th February 2016 handing over initial response to Bushfire events to DFES. All mitigation works will remain with the City of Karratha. Additional DFES Area Officers have been located in the Pilbara to take over the role of the Chief Bushfire Control Officer.

Through the Chief Bush Fire Control Officer (now provided by DFES Regional Duty Coordinator) and DCBFCO, and two Volunteer bushfire brigades, a 24 hour on call service is provided to respond to and manage bushfires, primarily on pastoral stations and UCL within the City. This included responding to 53 fires in the 2014/15 financial year, 27 fires in the 2015/16 financial year, 32 fires in 2016/17 financial year and 34 in the current 2017/18 financial year.—This is supplemented by 4 Volunteer Fire and Rescue Service Brigades within the region to assist at fires adjacent to townsites.

The City, DFES and DBCA work in a collaborative manner to combat bushfires within their respective areas of control. BFB and VFRS units regularly train and exercise to respond to bushfires within the City, and adjoining local authorities. This extends to command and control, planning, logistics and communications. Larger scale exercises are developed by DFES and conducted on an annual basis. This training and exercising also forms part of the mitigation works contained within the BRMP.

Outcomes of the BRM Plan will assist the City of Karratha works Department to budget for and allocate resources to complete mitigation works as identified in the Plan on an annual basis. Outcomes of the Plan will also be disseminated to stakeholders such as the Local Emergency Management Committee (LEMC) to increase awareness of the importance of preparedness and preparation for bushfire events.

The BRM Plan will be developed and implemented by the Deputy Chief Bush Fire Control Officer. Annual firebreak inspections will be conducted by Ranger/Fire Control officers under the Deputies direction. Any areas of concern highlighted by the annual inspections will be integrated into the plan for implementation of mitigation strategies and for subsequent review of the effectiveness of these strategies.

In collaboration with the Cities Strategic Planners any new developments within the City will be considered for addition to the plan if there is an appropriate level of risk from Bushfire. As per the City of Karratha Local Planning Strategy Part A section 7.6 The City is committed to learning from Bushfire events and incorporating those learnings into management responses and a precautionary approach will be used at all times.

The Council's approved Strategic Community Plan 2016-2026 provides for this activity:

Our Outcome: 3.a. Appropriately managed natural assets.

Our Response: 3.a.2 Natural assets are well-managed and promoted.

3.1.2 Location, Boundaries and Tenure

The City of Karratha is situated on the Pilbara coast approximately 1,535kms north of Perth and 850kms south of Broome on the North West Coastal Highway and to the west is the Indian Ocean. It is joined by the Town of Port Hedland to the North and Shire of Ashburton to the South.

The City is also a gateway to a number of natural attractions in the region and experiences high levels of tourists on a seasonal basis. The major transport routes in the City are the North West Coastal Highway and the private railway lines from Dampier to Tom Price and Wickham to Pannawonica. A sealed road connecting the towns of Karratha and Tom Price is partially completed.

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

| Land Manager/Agency* | % of Plan Area |
|---|------------------------|
| Local Government | 0.5% |
| Private/residential/commercial lands | 4% |
| Department of Biodiversity, Conservation and Attractions | 2% |
| Department of Planning, Lands and Heritage | 3.5% |
| Resource/Mining Industry & related activities | 5% |
| Pastoral Lands | 85% |
| Total | 15,197 km ² |

Source: Estimates based on City of Karratha Local Biodiversity Strategy

Please refer to Appendix 2 for a plan of the City Boundary, together with the major towns.

3.1.3 Population and Demographics

The City has a resident population of 21,473 people (2016 Census) with Karratha being the major centre, along with town sites of Dampier, Wickham, Point Samson and Roebourne. There are also three Aboriginal Communities being Weymul, Cheeditha and Mingullatharndo. The majority of the population lives within these town centres, however due to mining and pastoral activities within the region there are 9 homesteads (and associate buildings) and 8 FIFO workers camps (some of which are in care and maintenance) which can house between 300 and 2500 persons each.

Karratha has a much younger demographic as compared to the rest of regional Western Australia with over 50% of the population between the age of 25 to 49. Retirees and seniors make up less than 5% of the population.

Traditional owners comprise roughly 10% of the total population in the City of Karratha. These owners have a strong connection to the land and setting fire to the bush has been a traditional way to manage the land. There are also cultural reasons for lighting fires including ceremonies and letting other language groups know that you are entering their land. Communication and collaboration is required with these traditional owners to ensure that when fires are required to be lit they are not lit in areas that will threaten life or property.

Due to a lack of heavily forested areas the general population in Karratha and the surrounding town sites have a perception of there being a relatively low threat from Bushfire. This can lead to a lack of fire readiness on privately owned properties and residences. As such developing and implementing a BRM Plan is an opportunity for the Local Government to increase awareness of the importance of mitigation strategies to reduce risk of Bushfire.

Since the end of the mining construction boom the City has normalised in terms of the property market and residential construction is very slow. New sub divisions at Gap Ridge Estate and Mulataga have virtually been put on hold. There is potential for some limited rural urban interface as these sub divisions are on the Western and Eastern edges of town respectively. If the City went through another construction phase this potential for RUI would need to be factored into a review of the plan.

3.1.4 Economic Activities and Industry

The majority of the workforce and business is currently geared toward the export of minerals and energy, with Iron Ore and Liquefied Natural Gas (LNG) being the primary commodities being mined, processed or exported from the City's ports.

Majority of heavy industry of state and federal significance is located around the Ports of Dampier and Cape Lambert, together with the Burrup Industrial area. A smaller port facility is located at Cape Preston which services a local mine (which includes power station, desalination plant etc.).

The larger players in the Mining industry have their own emergency response teams and fire appliances with a strong emphasis being placed on mitigation and the ability to respond to any unplanned event.

There are 7 major pastoral leases within the Cities boundaries comprising 85% of the total land use. There is very little infrastructure on these land parcels and the primary produce is beef cattle for live export markets. The pastoral managers have very good local knowledge of fire behaviour on their leases. They conduct prescribed burns on an annual basis to manage fuel loads and regenerate feed stocks. They are also the first responders to any bushfire event on their property. City FCO's have a strong working relationship with the pastoral leaseholders. They consult on and write permits for prescribed burns and the pastoral managers often monitor remote fires on their leases with daily updates to the DBFCO.

Between the months of May and September there is an influx of tourists to the region. They comprise mainly “Grey Nomad” Caravaners and European backpackers. There is on average approximately 225,000 visitors to the City of Karratha on an annual basis. 80% of these visitors attend the City for Business purposes with the remainder visiting for Holiday or Leisure.

Due to usually dry conditions all year round the City of Karratha has a restricted burning season 365 days of the year. The City disseminates this information via its website, The Karratha Visitor Centre and also via its Caretakers at the Nature based Camps. This is important that visitors to the Pilbara are aware of the restrictions because they are often visiting from southern regions where the fire season has concluded and fire safety may not be at the forefront of their minds.

The major arterial route for the region is the North West Coastal highway. Any enforced closure of the Highway from a Bushfire event causes major disruption to industry and residents commuting between townships. A consideration of the plan is to have a rapid response to any wildfire event that has the potential to impact the highway. Daily monitoring of satellite hotspot technology and prevailing weather conditions is integral for the FCO’s decision making process to determine the appropriate level of response. The combination of technology and local knowledge of fire behaviour facilitates early intervention if indicators are pointing towards a fire threatening the highway.

3.2 Description of the Environment and Bushfire Context

3.2.1 Topography and Landscape Features

The major river system in the City is the Fortescue system which flows down from the Hamersley Ranges. Along many of the regions rivers are rock holes, gorges, grassy floodplains and wooded riparian areas.

The coastline is characterised river deltas, extensive mangroves, wide tidal mudflats like the Roebourne plains and long sections of sandy beaches and rocky shorelines.

Inland areas consist of flat rocky plains that lead to the foothills of the mountain ranges. Many of these characteristics make vehicle access problematic. The harsh uneven rocky ground is hard on vehicles and vehicle access tracks are few and far between.

3.2.2 Climate and Bushfire Season

The City has a semi-arid climate that is characterised by high temperatures, low and variable rainfall and high evaporation. Between the months of October and April temperatures exceed 32 degrees Celsius almost every day and the average maximum temperature is often over 40 degrees Celsius. In the winter months the average temperature falls to 25 degrees.

The average rainfall is between 200mm to 350mm per year but can vary widely from year to year. Most of the rain falls in the summer months between December and March but can continue on through to June. This is followed by a pronounced dry period between August and November. The average yearly evaporation is about 2500mm per year. This exceeds the average yearly rainfall and is consistent throughout the year. This evaporation rate leads to dry conditions predominantly all year round. As such the City has a 365 day per restricted Fire period. However, the majority of significant bushfires occur in the hotter months from November to March.

The City of Karratha lies within the most cyclone prone area in Australia with three to four tropical cyclones expected every year. This is generally when most of the annual rainfall occurs when Cyclones and tropical lows impact the coast.

The predominant wind condition in the hotter bushfire prone months is hot easterly winds during the day that moderate during the evening and at times swing around to a North Westerly breeze.

3.2.3 Vegetation

Arid grasses and shrubs are found widely over the region. Due to the variable rainfall, grasses are adapted to long periods of drought, with hummock grasses (spinifex) being the main type of grass prevalent. The coastal strip consists of grasslands and low open woodlands. Coastal flats have fringing mangroves scrub. High shrub lands and low woodlands occur along major river valleys.

Hummock grasslands (which in WA are predominantly spinifex) are characterised by plants that grow in dense clumps. These species may form a substantial hummock or mound after several years. Hummock grasslands are particularly flammable. This is because the hummocks contain a living central dense core, surrounded by dead material with all of the majority of green material being carried on the outside of the plant. As the spinifex continues to grow and get bigger, the centre may die and collapse, leaving a living ring of vegetation. Over time, these rings may fragment, forming new, individual clumps.

Spinifex grasses are drought resistant perennials and generally grow 30–60 cm high and can be from 30–100 cm in diameter. The hummocks normally occupy 30–50% of the ground space, although, depending on age since last burn, the amount of ground covered with spinifex may be as low as 20% on rocky hills and as high as 100% in drainage lines. The area between the hummocks is usually bare but may contain soft grasses and herbs following rainfall.

Because of the scattered, hummocked nature of spinifex, the spread and behaviour of fire in spinifex is different to that in continuous fuels. Spinifex is normally a “discontinuous” fuel and fire is only able to move from one hummock to the next by direct flame contact. The spread of fire in spinifex depends on a number of factors, the most significant being:

- the distribution of the hummocks (the gap size between clumps)
- the size of the hummocks (fuel quantity)
- the moisture content of the fuel (fuel availability).
- the wind speed.

The amount of groundcover and wind speeds are the most important factors affecting fire behaviour. Before fire can spread in spinifex, the wind must be strong enough to extend the flames from one burning hummock, across bare ground and into the next hummock. There is very little lateral and virtually no back fire spread in spinifex, unless the clumps are in contact with each other. Spinifex fires will burn against the wind in these situations as seen in fires within drainage lines and wind rows.

The continuity (or lack thereof) will have a significant effect on the rate of spread of a fire. Fires tend to move much more quickly through continuous fuels. The distribution of hummocks across a particular landscape is generally assumed to be reasonably

uniform even though the amount of coverage may vary. The fuel load in spinifex is related directly to the amount of the ground's surface covered by hummocks and the height of the spinifex.

After rain and in moister sites such as drainage lines, short lived grasses may fill the gap between spinifex clumps. The amount of this grass "infill" will have a significant effect on how a fire travels through spinifex. It will change the fuel profile from discontinuous to continuous which would allow fire to travel between clumps even under light winds.

The second most prominent vegetation type in the area is Roebourne Plains grass. Plains grass is a carpet coverage and dominates the flat low lying areas between the coast and the hills. It is usually well grazed by stock and doesn't exceed 100mm in height. As it is a continuous fuel a fire will spread even under light wind conditions. However, it does not burn with the intensity of spinifex and direct attack is more viable to extinguish.

3.2.5 Threatened Ecological Communities and Priority Ecological Communities

A threatened ecological community (TEC) is one that has been endorsed by Minister for Environment as being subject to processes that threaten to destroy or significantly modify it across much of its range. TECs may be at risk from threatening processes including land clearing, inappropriate fire regimes, inappropriate grazing, trampling, pollution, competition or predation from introduced animals, weed invasion, hydrological changes, salinity and diseases. There are currently no areas within the BRMP which are considered a TEC (including the Burrup Peninsula), which would limit mitigation works being undertaken.

Possible threatened ecological communities are those that do not meet DCBA survey criteria or that are not adequately defined are added to the Priority Ecological Community (PEC) list under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community, and evaluation of conservation status, so that consideration can be given to their declaration as threatened ecological communities. Currently there are several PECs within the proposed mitigation works areas. DBCA has advised that although these PECs would be impacted by hazard reduction burning, the long term environmental impact on them would be significantly greater from that of an uncontrolled wild fire in the area. Irrespective of this, where prescribed burning is intended to take place, the Treatment Manager will be requested to take effort to minimise the impact of fire on those PECs.

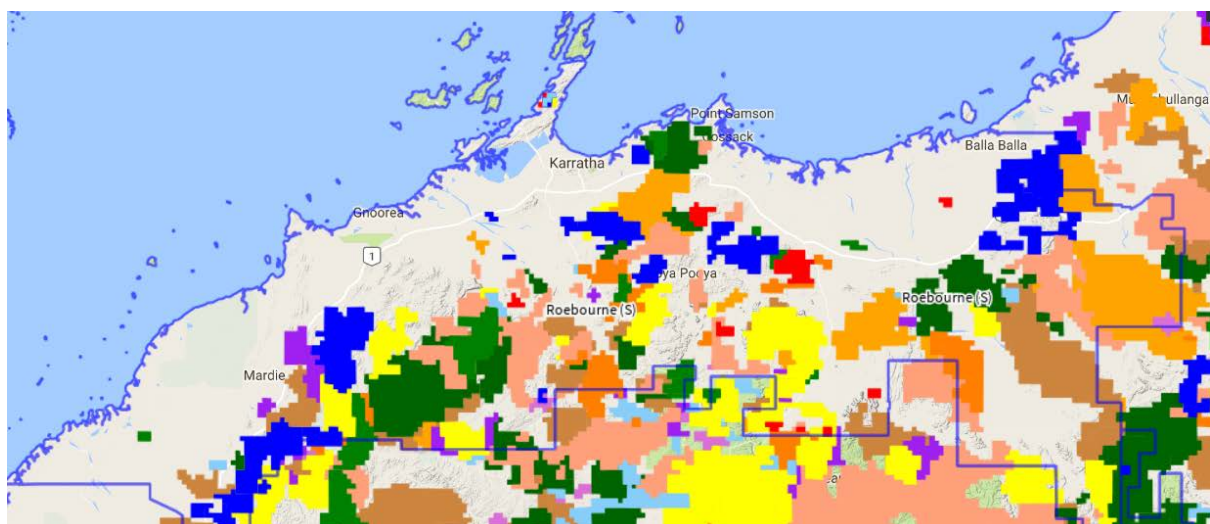
The introduction of fire and the possible emergence of weed species (post fire) can impact on the PECs. Where a hazard reduction burn is intended to be undertaken within an identified PEC, the burn plan (prescription for the burn) will be referred to DBCA Parks and Wildlife to determine what protective measures are necessary to minimise the fires impact, both during and post hazard reduction burn. These measures will be implemented by the agency responsible for the management of the hazard reduction burn (ie DFES within the townsite boundaries, the City for property owned or under management outside of the townsites and DBCA Parks and Wildlife for all other areas). In addition, irrespective of the mitigation method used, the City will request all vehicles involved in mitigation be cleaned prior to commencement of works to remove any invasive weed seeds. This will include vehicles ranging from small plant (slashers and sprayers) to fire appliances and heavy plant (loaders and graders).

Management and control of specific weeds (including how these works are to be conducted) will be mandated within the prescription approval for the burn if determined necessary by the approving authority (DBCA/DFES).

Vegetative buffers will be maintained in areas adjacent to developed sites to allow escape of fauna and minimise encroachment into residential areas. No prescribed burning is intended on the residential side of the Karratha Hills so as to provide a buffer between the natural habitat of fauna and that of the residential population.

3.2.45 Bushfire Frequency and Causes of Ignition

Fires in the City of Karratha since January 2012



Since January 2012 there have been 241 Bushfire events within the City of Karratha at an average of 48 per year. The majority of the fires occur on the inland side of the North West coastal highway.

During the warmer months from October to March numerous fires are instigated by dry lightning strikes. These are more often located in the southern inland section of the City boundary and often burn themselves out harmlessly in remote inaccessible areas.

Dry lightning is the only natural ignition source in the region. The remaining fires are deliberately lit. There is a high instance of prospector activity in the region due to frequent small deposits of gold. It is easier for prospectors to search burnt ground for gold deposits. As such there is a higher instance of unlawfully lit fires in inland areas known for their frequency of gold deposits. City of Karratha FCO's, DBCA Rangers, Department of Mines and Petroleum field officers, Pastoral Managers and WA Police staff share information and work together to combat this issue. Covert cameras and regular patrols are instigated in likely areas and registration details are taken of suspicious vehicles and handed to WA Police for entry into their suspected arson data base.

Another ignition source is from the railway lines that run from Dampier to Paraburdoo and Cape Lambert to Pannawonica. This usually occurs when routine grinding maintenance is being performed on the track. The large mining companies have contingencies for this and the fires are usually rapidly extinguished.

The predominate easterly winds in the hotter bushfire prone months will see fires move in a westerly direction across the plains and often threaten closure of the North West Coastal Highway. Westerly winds will push the fires up into the ranges where they become inaccessible and burn themselves out after a few days.

4. Asset Identification and Risk Assessment

4.1 Planning Areas

The City of Karratha has been divided into 3 planning areas, Mardie, Karratha and Roebourne. Attached at **Appendix 23** is a map showing the boundaries of the planning areas identified within the City of Karratha.

Assets were identified and assessed across the local government, based on the following order of priority.

Table 3 – Priorities for Asset Identification and Assessment

| Priority | Asset Category | Asset Subcategory | Planning Area |
|------------------------|------------------|--------------------------------------|---------------|
| First Priority | Human Settlement | Special Risk and Critical Facilities | All |
| Second Priority | Human Settlement | All other subcategories | All |
| Third Priority | Economic | Critical Infrastructure | All |
| Fourth Priority | Economic | All other subcategories | All |
| Fifth Priority | Environmental | All subcategories | All |
| Sixth Priority | Cultural | All subcategories | All |

4.2 Asset Identification

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

Table 4 – Asset Categories and Subcategories

| Asset Category | Asset Subcategories |
|-------------------------|---|
| Human Settlement | <ul style="list-style-type: none">• Residential areas Rural urban interface areas and rural properties.• Places of temporary occupation Commercial, mining and industrial areas located away from towns and population centres (that is, not adjoining residential areas).• Special risk and critical facilities Hospitals, nursing homes, schools and childcare facilities, tourist accommodation and facilities, prison and detention centres, government administration centres and depots, incident control centres, designated evacuation centres, police, fire and emergency services. |
| Economic | <ul style="list-style-type: none">• Agricultural Pasture, grazing, livestock, crops, viticulture, horticulture and other farming infrastructure.• Commercial and industrial Major industry, waste treatment plants, mines, mills and processing and manufacturing facilities and cottage industry.• Critical infrastructure |

| Asset Category | Asset Subcategories |
|----------------------|---|
| | <p>Power lines and substations, water and gas pipelines, telecommunications infrastructure, railways, bridges, port facilities and waste water treatments plants.</p> <ul style="list-style-type: none"> • Tourist and recreational Tourist attractions and recreational sites that generate significant tourism and/or employment within the local area. • Commercial forests and plantations • Drinking water catchments |
| Environmental | <ul style="list-style-type: none"> • Protected Rare and threatened flora and fauna, ecological communities and wetlands. • Priority Fire sensitive species and ecological communities. • Locally important Nature conservation and research sites, habitats, species and communities, areas of visual amenity. |
| Cultural | <ul style="list-style-type: none"> • Aboriginal heritage Places of indigenous significance. • Recognised heritage Assets afforded legislative protection through identification by the National Trust, State Heritage List or Local Planning Scheme Heritage List. • Local heritage Assets identified in a Municipal Heritage Inventory or by the community. • Other Other assets of cultural value, for example community centres and recreation facilities. |

4.3 Assessment of Bushfire Risk

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

The *Asset Risk Register* at **Appendix 3** shows the consequence and likelihood ratings assigned to each asset or group of assets identified and the subsequent risk rating.

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 5 – Likelihood Ratings

| Likelihood Rating | Description |
|---|--|
| Almost Certain (Sure to Happen) | <ul style="list-style-type: none"> • Is expected to occur in most circumstances; • High level of recorded incidents and/or strong anecdotal evidence; and/or • Strong likelihood the event will recur; and/or |

| Likelihood Rating | Description |
|--|--|
| | <ul style="list-style-type: none"> • Great opportunity, reason or means to occur; • May occur more than once in 5 years. |
| Likely (Probable) | <ul style="list-style-type: none"> • Regular recorded incidents and strong anecdotal evidence; and /or • Considerable opportunity, reason or means to occur; • May occur at least once in 5 years. |
| Possible (feasible but < probable) | <ul style="list-style-type: none"> • Should occur at some stage; and/or • Few, infrequent, random recorded incidents or little anecdotal evidence; and/or • Some opportunity, reason or means to occur. |
| Unlikely (Improbable, not likely) | <ul style="list-style-type: none"> • Would only occur under exceptional circumstances. |

4.3.2 Consequence Assessment

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

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

Table 6 – Consequence Ratings

| Consequence Rating | Descriptions |
|--------------------|---|
| Minor | <ul style="list-style-type: none"> • No fatalities. • Near misses or minor injuries with first aid treatment possibly required. • No persons are displaced. • Little or no personal support (physical, mental, emotional) required. • Inconsequential or no damage to an asset, with little or no specific recovery efforts required beyond the immediate clean-up. • Inconsequential or no disruption to community. • Inconsequential short-term failure of infrastructure or service delivery. (Repairs occur within 1 week, service outages last less than 24 hours.) • Inconsequential or no financial loss. Government sector losses managed within standard financial provisions. Inconsequential business disruptions. |
| Moderate | <ul style="list-style-type: none"> • Isolated cases of serious injuries, but no fatalities. Some hospitalisation required, managed within normal operating capacity of health services. • Isolated cases of displaced persons who return within 24 hours. • Personal support satisfied through local arrangements. • Localised damage to assets that is rectified by routine arrangements. • Community functioning as normal with some inconvenience. |

| Consequence Rating | Descriptions |
|---------------------|--|
| | <ul style="list-style-type: none"> Isolated cases of short to mid-term failure of infrastructure and disruption to service delivery. (Repairs occur within 1 week to 2 months, service outages last less than 1 week.) Local economy impacted with additional financial support required to recover. Government sector losses require activation of reserves to cover loss. Disruptions to businesses lead to isolated cases of loss of employment or business failure. Isolated cases of damage to environmental or cultural assets, one-off recovery efforts required, but with no long term effects to asset. |
| Major | <ul style="list-style-type: none"> Isolated cases of fatalities. Multiple cases of serious injuries. Significant hospitalisation required, leading to health services being overstretched. Large number of persons displaced (more than 24 hours duration). Significant resources required for personal support. Significant damage to assets, with ongoing recovery efforts and external resources required. Community only partially functioning. Widespread inconvenience, with some services unavailable. Mid to long-term failure of significant infrastructure and service delivery affecting large parts of the community. Initial external support required. (Repairs occur within 2 to 6 months, service outages last less than a month.) Local or regional economy impacted for a significant period of time with significant financial assistance required. Significant disruptions across industry sectors leading to multiple business failures or loss of employment. Significant damage to environmental or cultural assets that require major rehabilitation or recovery efforts. Localised extinction of native species. This may range from loss of a single population to loss of all of the species within the BRM Plan area (for a species which occupies a greater range than just the BRM Plan area). |
| Catastrophic | <ul style="list-style-type: none"> Multiple cases of fatalities. Extensive number of severe injuries. Extended and large number requiring hospitalisation, leading to health services being unable to cope. Extensive displacement of persons for extended duration. Extensive resources required for personal support. Extensive damage to assets that will require significant ongoing recovery efforts and extensive external resources. Community unable to function without significant support. Long-term failure of significant infrastructure and service delivery affecting all parts of the community. Ongoing external support required. (Repairs will take longer than 6 months, service outages last more than 1 month.) |

| Consequence Rating | Descriptions |
|--------------------|--|
| | <ul style="list-style-type: none"> Regional or State economy impacted for an extended period of time with significant financial assistance required. Significant disruptions across industry sectors leading to widespread business failures or loss of employment. Permanent damage to environmental or cultural assets. Extinction of a native species in nature. This category is most relevant to species that are restricted to the BRM Plan area, or also occur in adjoining areas and are likely to be impacted upon by the same fire event. 'In nature' means wild specimens and does not include flora or fauna bred or kept in captivity. |

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

• **Consequence Rating - Human Settlement Assets**

The outcome or impact of a bushfire event on the asset, or a group of assets, measured by the 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 and Cultural 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.

It is recognised that a bushfire would have a major impact on particular cultural assets (petroglyphs). A larger scale fire would result in significant damage to these cultural assets that require major rehabilitation or recovery efforts. However, it should also be noted that a small fire with no other significant impacts could also damage cultural heritage, therefore particular attention needs to be given to mitigation works in these areas.-

Within MJP, mitigation works may present a higher level of difficulty to conduct mitigation works and install fire control buffers while protecting the natural and cultural assets. The act of protecting the petroglyphs by the introduction of fire can lead to damage of object being protected. Very detailed planning in consultation with the Murujuga Elders and Murujuga Rangers will be required with precise implementation of burn plans. The impact of uncontrolled high heat bushfire will always result in the worst outcome.

5. Risk Evaluation

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.

5.1 Treatment Priorities

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

Table 7– Treatment Priorities

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

The treatment priority for each asset identified is recorded in the Treatment Schedule at **Appendix 45**.

5.2 Risk Acceptability

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

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

Table 8 – Criteria for Acceptance of Risk and Course of Action

| Risk Rating | Criteria for Acceptance of Risk | Course of Action |
|-------------|---------------------------------|------------------|
|-------------|---------------------------------|------------------|

| | | |
|---|--|--|
| Extreme (Priorities 1A, 1B, 1C) | <i>Only acceptable with excellent controls. Urgent treatment action is required.</i> | <i>Routine controls are not enough to adequately manage the risk. Immediate attention required as a priority. Specific action is required in first year of BRM Plan.</i> |
| Very High (Priorities 2A, 2B, 2C) | <i>Only acceptable with excellent controls. Treatment action is required.</i> | <i>Routine controls are not enough to adequately manage the risk. Specific action will be required during the period covered by the BRM Plan.</i> |
| High (Priorities 3A, 3B, 3C, 3D) | <i>Only acceptable with adequate controls. Treatment action may be required.</i> | <i>Specific action may be required. Risk may be managed with routine controls and monitored annually.</i> |
| Medium (Priorities 4A, 4B, 4C) | <i>Acceptable with adequate controls. Treatment action is not required but risk must be monitored regularly.</i> | <i>Specific action may not be required. Risk may be managed with routine controls and monitored periodically throughout the life of the BRM Plan.</i> |
| Low (Priorities 5A, 5B, 5C) | <i>Acceptable with adequate controls. Treatment action is not required but risk must be monitored.</i> | <i>Need for specific action is unlikely. Risk will be managed with routine controls and monitored as required.</i> |

6. Risk Treatment

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

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

6.1 Local Government-Wide Controls

Local government-wide controls are activities that reduce the overall bushfire risk within the *City of Karratha*. These types of treatments are not linked to specific assets, and are applied across all or part of the local government as part of normal business or due to legislative requirements. The following controls are currently in place across the *City of Karratha*:

- *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 DBACA 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; and
- 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 65**. The plan details work to be undertaken as a part of normal business, to improve current controls or to implement new controls to better manage bushfire risk across the local government.

6.2 Asset-Specific Treatment Strategies

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

- **Fuel management** - Treatment reduces or modifies the bushfire fuel through manual, chemical and prescribed burning methods;
- **Ignition management** - Treatment aims to reduce potential human and infrastructure sources of ignition in the landscape;
- **Preparedness** - Treatments aim to improve access and water supply arrangements to assist firefighting operations;
- **Planning** - Treatments focus on developing plans to improve the ability of firefighters and the community to respond to bushfire; and
- **Community Engagement** - Treatments seek to build relationships, raise awareness and change the behaviour of people exposed to bushfire risk.

- **Other** - Local government-wide controls, such as community education campaigns and planning policies, will be used to manage the risk. Asset-specific treatment is not required or not possible in these circumstances.

6.3 Prescribed Burning

Introduction of fire (prescribed burning) as a risk mitigation measure is subject to a prescription from the relevant Agency. DFES is responsible for undertaking treatment strategies, including prescribed burning on behalf of Department of Planning, Lands and Heritage for Unmanaged Reserves and Unallocated Crown Land within gazetted town site boundaries. DBCA Parks and Wildlife is responsible for undertaking treatment strategies, including prescribed burning on department managed land and for Unmanaged Reserves and Unallocated Crown Land outside gazetted town site boundaries. The City is responsible for it owns or manages both inside and outside townsite boundaries (including Cleaverville and 40 Mile/Gnoorea Nature Based Camping Grounds, and areas within Cossack)

Under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) prescribed burning, under some circumstances, may be considered a controlled action and therefore approval must be sought for prescribed burns that may affect Threatened Ecological Communities, Priority Ecological Communities, Threatened Flora/Fauna, Critical Habitat or Migratory species. The EPBC Act is administered by the Department of the Environment.

Information pertaining to individual sensitivities is gained by referral to:

- DFES Geographical Information System (GIS) servers with access to current Shared Land Information Platform (SLIP) data.(e.g. IBRMS) and/or;
- The relevant agency.

Environmental and cultural considerations are assessed as part of the development of a prescription to burn land (ie prescribed burn) with referral to agencies depending on the sensitivity as per the following table:

| Type | Agency for Referral |
|--|--|
| <u>Declared Rare Flora (DRF)</u> | <u>DBCA Parks and Wildlife</u> |
| <u>Rare and Endangered Fauna</u> | <u>DBCA Parks and Wildlife</u> |
| <u>Threatened Ecological Community (State Listing)</u> | <u>DBCA Parks and Wildlife</u> |
| <u>Threatened Ecological Community (Federal Listing)</u> | <u>DBCA Parks and Wildlife</u> |
| <u>Phytophthora cinnamomi (Dieback)</u> | <u>DBCA Parks and Wildlife</u> |
| <u>Fragile Areas (Karst, Dune, Acid Sulphate Soils)</u> | <u>DBCA Parks and Wildlife</u> |
| <u>Native Title</u> | <u>Dept. of Planning, Lands and Heritage (Aboriginal Affairs)</u> |
| <u>Aboriginal Cultural Sites</u> | <u>Dept. of Planning, Lands and Heritage (Aboriginal Affairs)</u> |
| <u>State Heritage Sites</u> | <u>Heritage Council WA</u> |
| <u>State Recreation Area or Trail</u> | <u>DBCA Parks and Wildlife</u> |
| <u>Public Drinking Water Supply Area (PDWSA)</u> | <u>Dept. of Water and Environment Regulation</u> |
| <u>Sensitive Agricultural Industries</u> | <u>Dept. of Primary Industries and Regional Development (Agriculture and Food)</u> |

Protection of sensitivities must be managed in accordance with legal requirements. It should be noted that some checks and the resultant treatment action may take some time and where sensitivities are identified, and will be allowed for when planning the prescribed burn date. The resultant treatment action directed within the prescription may include wet breaks, lighting

and managing the fire in a manner which directs it away from an environmental or culturally sensitive area, or reduces heat intensity. Weed identification and management (both pre and post fire) will be included with the prescription where directed by the referral agency (DBCA), which the organisation undertaking the hazard reduction burn must comply with.

It should be noted that flora and fauna mapping is NOT displayed in public documents due to their sensitivity.

The use of prescribed fire is considered an exempt activity under the State *Environmental Protection Act 1986* (EP Act) where it is conducted by DFES on Crown Land.

Prescribed burning will only be undertaken during the cooler months to produce less heat, subject to weather conditions, fire danger and availability of resources (both machinery and firefighters). Lower fuel loadings as a result of these burns will reduce the heat of bushfires, therefore diminishing its impact on the environmental or culturally sensitive areas. Consideration also needs to be given to ensure that sufficient rainfall has fallen in an area to promote seed growth from existing vegetation prior to it being burned again. This will replenish the seed bank in the soil, allowing regrowth after a fire.

Prescribed burning can have a detrimental effect on the environment, including the native seed bank, where an area is consistently subject to burning on a regular basis. To enable vegetation regrowth, prescribed burning will not be conducted in an area which has been subject to fire (either bushfire or prescribed burn) in the previous 5 years. Furthermore, each area will be assessed to determine whether fuel loadings exceed recommended safe limits (ie 4.6T/Ha in grasslands) prior to burning. If the threshold of 4.6T/Ha is not exceeded, the area will not be considered for a prescribed burn until the following year.

Maps have been developed (separate to the BRM Plan) which identify areas or cells which should be considered for mitigation works. These are a guide for areas to be considered for prescribed burning, however does not mean that the whole area must be subject to introduced fire. By block burning there is a risk of developing a uniform fuel age across the buffer, which under most conditions will provide good protection. But under extreme fire weather conditions (not uncommon at Karratha), relatively light spinifex fuel will carry fire across these areas.

If ground conditions and terrain permit, consideration can be given to providing buffers between tracks spread at 50-100m increments. These would allow for concentric burning, proving a significant buffer to strategically protect assets and residents while minimising the footprint of the burnt country.

•

6.43 Determining the Treatment Schedule

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

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

7. Monitoring and Review

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

7.1 Review

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

- Changes to the BRM Plan area, organisational responsibilities or legislation;
- Changes to the bushfire risk profile of the area; or
- Following a major fire event.
- The reviewed BRM Plan will be presented to Council for endorsement prior to its submission to OBRM.

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. Additions to the BRM Plan as a result of monitoring will not be reported to Council until the next Review is undertaken

7.3 Reporting

The City of Karratha will submit an annual report to OBRM each year summarising progress made towards implementation of the BRM Plan. As per Communications plan an annual report will also be supplied to Council with a major review being conducted every 5 years.

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 Register | Risk | 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. ² |
| Bushfire Management Plan | | A document that sets out short, medium and long term bushfire risk management strategies for the life of a development. ³ |
| Bushfire risk management | | A systematic process to coordinate, direct and control activities relating to bushfire risk with the aim of limiting the adverse effects of bushfire on the community. |
| Bushfire Threat | | The threat posed by the hazard vegetation, based on the vegetation category, slope and separation distance. |
| Consequence | | The outcome or impact of a bushfire event. |
| Draft Bushfire Risk Management Plan | | The finalised draft Bushfire Risk Management Plan (BRM Plan) is submitted to the OBRM for review. Once the OBRM review is complete, the BRM Plan is called the 'Final BRM Plan' and can be progressed to local government council for endorsement. |

² Australasian Fire and Emergency Service Authorities Council 2012, *AFAC Bushfire Glossary*, AFAC Limited, East Melbourne.

³ Western Australian Planning Commission 2015, *State Planning Policy 3.7: Planning in Bushfire Prone Areas*, WAPC, Perth.

| | |
|--|---|
| Emergency Risk Management Plan | A document (developed under <i>State Emergency Management Policy</i> 2.9) that describes how an organisation(s) intends to undertake the activities of emergency risk management based on minimising risk. These plans help inform the ongoing development of Local Emergency Management Arrangements (LEMA) and Westplans. |
| Geographic Information System (GIS) | A data base technology, linking any aspect of land-related information to its precise geographic location. ⁴ |
| Geographic Information System (GIS) Map | The mapping component of the Bushfire Risk Management System. Assets, treatments and other associated information is spatially identified, displayed and recorded within the GIS Map. |
| Land Owner | The owner of the land, as listed on the Certificate of Title; or leaser under a registered lease agreement; or other entity that has a vested responsibility to manage the land. |
| Likelihood | The chance of something occurring. In this instance, the chance of a bushfire igniting, spreading and reaching the asset. |
| Locality | The officially recognised boundaries of suburbs (in cities and larger towns) and localities (outside cities and larger towns). |
| Planning Area | A geographic area determine by the local government which is used to provide a suitable scale for risk assessment and stakeholder engagement. |
| <u>Prescribed burning</u> | <u>Use of fire to reduce fuel loading and provide protection from bush fire, subject to a prescription from the relevant agency (ie DFES, DBCA Parks & Wildlife or Local Government). Also known as Hazard Reduction Burns.</u> |
| Priority | See Treatment Priority. |
| Recovery Cost | The capacity of an asset to recover from the impacts of a bushfire. |
| Responsible Person | The person responsible for planning, coordinating, implementing, evaluating and reporting on a risk treatment. |
| Risk acceptance | The informed decision to accept a risk, based on the knowledge gained during the risk assessment process. |
| Risk analysis | The application of consequence and likelihood to an event in order to determine the level of risk. |

⁴ Landgate 2015, *Glossary of terms*, Landgate, Perth

| | |
|------------------------------------|---|
| Risk assessment | The systematic process of identifying, analysing and evaluating risk. |
| Risk evaluation | The process of comparing the outcomes of risk analysis to the risk criteria in order to determine whether a risk is acceptable or tolerable. |
| Risk identification | The process of recognising, identifying and describing risks. |
| Risk Manager | The organisation or individual responsible for managing a risk identified in the Bushfire Risk Management Plan; including review, monitoring and reporting. |
| Risk Register | A component within the Bushfire Risk Management System used to record, review and monitor risk assessments and treatments associated with assets recorded in the Bushfire Risk Management Plan. |
| Risk treatment | A process to select and implement appropriate measures undertaken to modify risk. |
| Rural | Any area where in residences and other developments are scattered and intermingled with forest, range, or farm land and native vegetation or cultivated crops. ⁵ |
| Rural Urban Interface (RUI) | The line or area where structures and other human development adjoin or overlap with undeveloped bushland. ⁶ |
| Slope | The angle of the ground's surface measured from the horizontal. |
| Tenure Blind | An approach where multiple land parcels are consider as a whole, regardless of individual ownership or management arrangements. |
| Treatment | An activity undertaken to modify risk, for example a prescribed burn. |
| Treatment Objective | The specific aim to be achieved or action to be undertaken, in order to complete the treatment. Treatment objectives should be specific and measurable. |
| Treatment Manager | The organisation, or individual, responsible for all aspects of a treatment listed in the Treatment Schedule of the Bushfire Risk Management Plan, including coordinating or undertaking work, monitoring, reviewing and reporting. |

⁵ Australasian Fire and Emergency Service Authorities Council 2012, *AFAC Bushfire Glossary*, AFAC Limited, East Melbourne

⁶ Australasian Fire and Emergency Service Authorities Council 2012, *AFAC Bushfire Glossary*, AFAC Limited, East Melbourne

| | |
|---------------------------|--|
| 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. |

References

Landgate Firewatch Aurora <http://aurora.landgate.wa.gov.au/>

Australian Bureau of Statistics <http://www.abs.gov.au/>

Rangelands DAFWA <https://www.agric.wa.gov.au/climate-land-water/land-use/rangelands>

9. Common Abbreviations

| | |
|------------|---|
| APZ | Asset Protection Zone |
| BFB | Bush Fire Brigade |
| BRMP | Bushfire Risk Management Planning |
| BRMS | Bushfire Risk Management System |
| CALD | Culturally and Linguistically Diverse |
| DBCA | Department of Biodiversity, Conservation and Attractions – Parks and Wildlife |
| DEMC | District Emergency Management Committee |
| DFES | Department of Fire and Emergency Services |
| ERMP | Emergency Risk Management Plan |
| FFDI | Forest Fire Danger Index |
| FMP | Fire Management Plan |
| GFDI | Grassland Fire Danger Index |
| GIS | Geographic Information System |
| HSZ | Hazard Separation Zone |
| JAFFA | Juvenile and Family Fire Awareness |
| LEMA | Local Emergency Management Arrangements |
| LEMC | Local Emergency Management Committee |
| LG | Local Government |
| LMZ | Land Management Zone |
| OBRM | Office of Bushfire Risk Management |
| <u>MNP</u> | <u>Murujuga National Park</u> |
| SEMC | State Emergency Management Committee |
| SLIP | Shared Land Information Platform |
| VFRS | Volunteer Fire and Rescue Service |
| WAPC | Western Australian Planning Commission |

Appendices

1 *Communication Strategy*



CITY OF KARRATHA

Bushfire Risk Management Planning Communication Strategy

Document Control

| | | | |
|-------------------|---|------------------|------------|
| Document Name | Bushfire Risk Management Plan Communications Strategy | Current Version | 1.0 |
| Document Owner | City of Karratha CEO | Issue Date | 01/07/2017 |
| Document Location | Synergy Central records Bushfire risk management planning | Next Review Date | 01/07/2022 |

Related Documents

| Title | Version | Date |
|---|---------|------------|
| City of Karratha Bushfire Risk Management Plan | 1.0 | 02/05/2017 |
| | | |
| | | |

Amendment List

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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 Karratha*. This Communication Strategy accompanies the BRM Plan for the *City of Karratha*. 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.

COMMUNICATIONS OVERVIEW

Communication Objectives

The communication objectives for the development, implementation and review of the BRM Plan for the *City of Karratha* 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 Roles and Responsibilities

City of Karratha 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 Karratha, responsible for endorsement of the BRM Plan Communications Strategy.
- Manager, Communications and Marketing, City of Karratha, responsible for external communication with the local government area.
- Deputy Chief Bushfire Control Officer, City of Karratha, responsible for operational-level communication between the City and the Department of Fire and Emergency Services.

Key Stakeholders for Communication

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

| Stakeholder | Role or interest | Level of impact of outcomes | Level of engagement |
|--|--|-----------------------------|--|
| DFES | Provide expert knowledge and advise in relation to bushfire risk, prevention and treatment | High | Collaborate and consult during development and implementation of BRMP |
| OBRM | Review draft version of BMRP before it is presented to Council | High | Consult to ensure plan meets guidelines for quality assurance |
| DBCA | Responsible for prevention, preparedness and response within their designated areas. | Medium | Seek DBCA participation in preparation of BMR Plan as a significant land owner and treatment manager in the City. |
| DOLA | Manager of significant tracts of Crown land within the Municipality | Medium | Participation in Risk assessment process and provide information about risk treatments for their assets |
| Horizon Power and Water Corporation of Western Australia | Manage and Maintain critical infrastructure | High | Provide information about assets and advise of current risk treatments |
| Private Land Owners | Carry out treatment strategies on their own land in accordance with BRM Plan | Medium | Inform and consult on risk assessments and treatment schedules for private property to effectively mitigate risk from Bushfire.. |
| Industry | Responsible for mitigation of their | High | Consultation on BRM Plan to implement mitigation |

| | | | |
|--------------|---|------|---|
| | own economic assets | | works to protect significant economic assets |
| Pastoralists | Land managers for 85% of Shires land mass | High | Consultation on BRM Plan so working relationships are maintained to a high level. |

Communications Plan

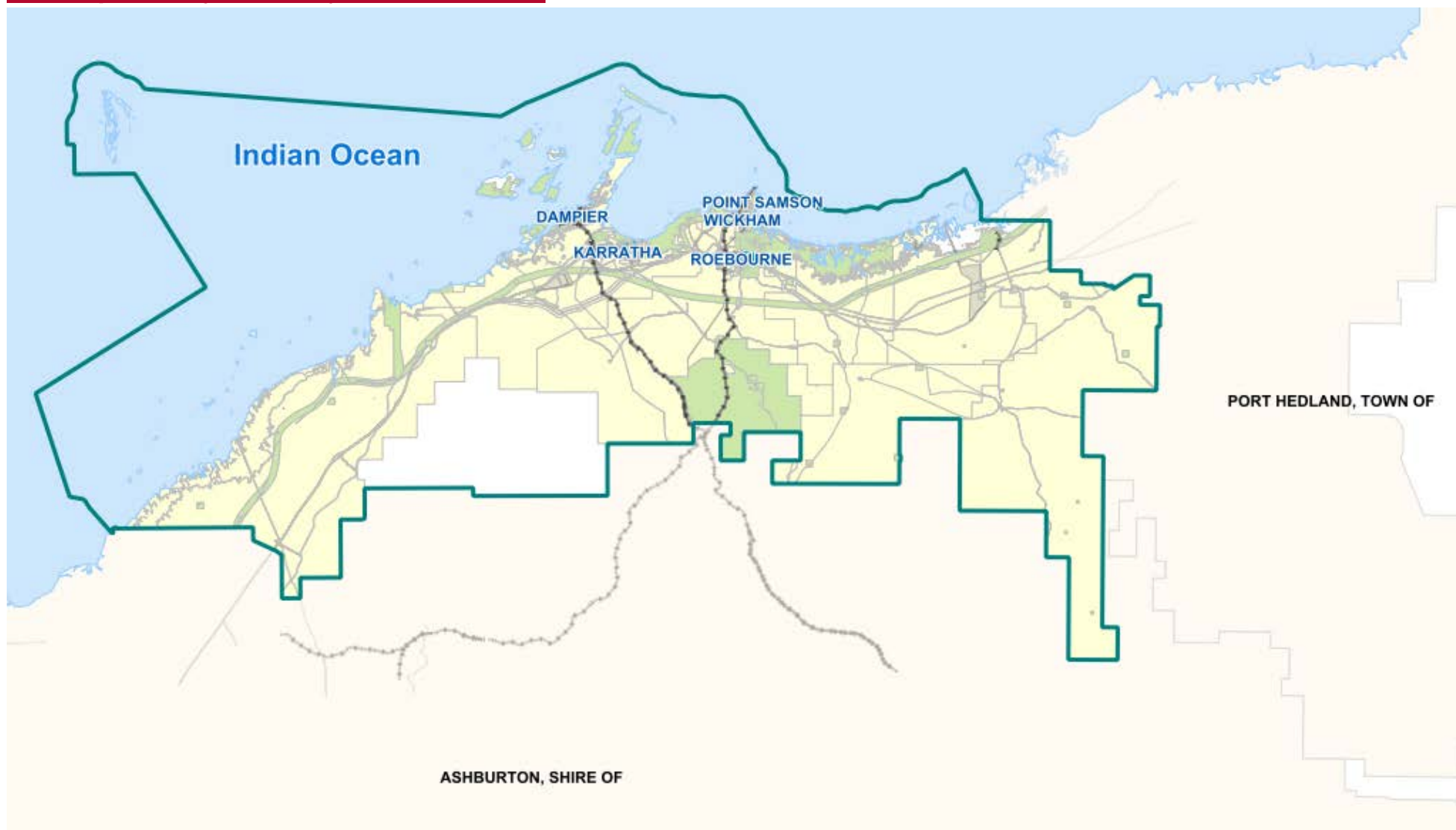
| Timing of Communicat'n | Stakeholder (s) | Communicat'n Objective(s) | Communicat'n Method | Key Message or Purpose | Responsibility | Identified Risks to Communication | Strategy to Manage Risks | Monitoring and Evaluation Method |
|------------------------------------|--|---------------------------|--|---|----------------|--|--|---|
| Development of the BRM Plan | | | | | | | | |
| Life of Plan | City of Karratha CEO, Executive Management Team and Staff | All(1-6) | Emails Meetings (quarterly) City Intranet (Sharepoint) | Informed, consulted, review and input into plan | DCBFCO | Apathy of internal stakeholders Time constraints | Clear explanation of importance of plan, planning and time management | Feedback, constructive ideas and level of support |
| Life of Plan | District Operations and Advisory Committee | All (1-6) | Bi-Annual Meetings Emails | Informed, consulted, review and input into plan | DCBFCO | Lack of regular contact with DOAC committee members | Regular contact and consultation | Feedback, constructive ideas and level of support |
| Life of Plan | FCOs, BFB Captains, VFRS Captains | All (1-6) | Meetings organised with each brigade as required | Engaged in process of BRM Plan Identify risk and share information | DCBFCO | Time constraints Lack of planning Availability of Volunteers | Explain value/benefits of input into plan Plan regular meetings with volunteers | Engaged Buy in for BMR Plan process |
| April 2017 | LEMC members | All(1-6) | Quarterly meetings Group email updates on progress | Contribute local knowledge to assist building the plan | DCBFCO | Lack of attendance from members | Follow up correspondence so members have written version of plan/process | Comments and input from LEMC members |

| | | | | | | | | |
|--------------|----------------------------|-----------|---|--|--|---|--|---|
| | | | Present to LEMC meeting on development and implementation process of BRM Plan | | | | | |
| Life of Plan | General Public | All(1-6) | Annual Firebreaks notice, annual firebreak inspections by FCOs, City of Karratha Website and Facebook page, Local Paper | Importance of Bushfire mitigation and responsibilities of individual private landholders | DCBFCO, FCOs. Manager Media and Communications | Apathy of general community, lack of understanding of Bushfire risk | Effective messaging on all communication platforms to promote better understanding on the importance of mitigation works | High level of compliance and awareness in the general community |
| June 2017 | DBCA | All(1-6) | Face to face meeting, telephone, emails | Dissemination of mitigation plan for DBAC managed lands | DCBFCO and DBCA regional fire manager | Lack of contact/cooperation between agencies | Establish strong transparent relationship between City and DBCA staff | High level of cooperation and communication between FCOs and DBCA fire managers |
| March 2017 | DFES/DOLA | All (1-6) | Face to face meeting, telephone and emails | Identification of fire risk and mitigation strategies on UCL | DCBFCO Regional DFES Superintendent | Lack of commitment/cooperation between agencies to work through process | Share resources to achieve satisfactory mitigation outcomes | Successful identification and application of remedial works |
| Life of Plan | Industry/ Public Utilities | All (1-6) | Face to Face meetings, telephone, emails | Advise of development of BRM Plan and cooperate with conducting of | DCBFCO | Lack of buy in from land owners/occupiers | Thorough explanation of benefits of mitigation and preparedness | High level of compliance and preparedness |

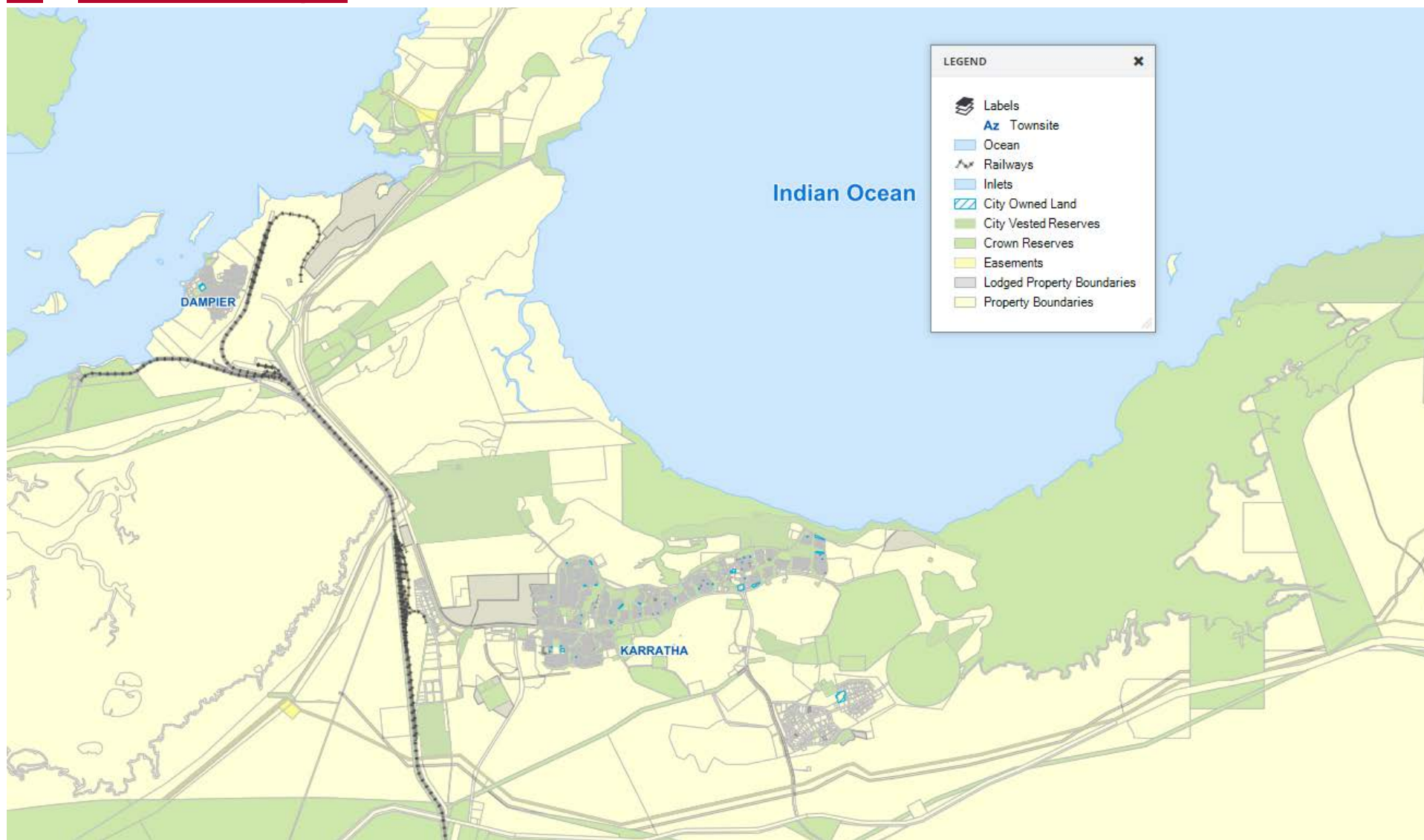
| | | | | | | | | |
|---------------------------------------|-----------------------------------|-----------|------------------------------------|---|---|---|---|---|
| | | | | Risk assessments | | | | |
| Implementation of the BRM Plan | | | | | | | | |
| July 2017 | OBRM | All (1-6) | Email and hard copy correspondence | To receive feedback and final approval of plan before presenting to Council | DCBFCO | Time constraints lack of understanding for any required modifications | Clear direction and acknowledgement of improvements to plan | Endorsement of plan from Council |
| January 2018 | Council | All (1-6) | Meeting to adopt BRMP | Request council endorsement of BRMP | Manager Regulatory Services, DCBFCO, CEO, Council | Council lack of understanding of purpose of plan | Clear explanation to Council of requirements and benefits of BRMP | Endorsement of Plan from Council |
| Life of Plan | DOAC | All (1-6) | Bi Annual Meetings | Update on implementation of plan | DCBFCO | Lack of attendance at DOAC meetings | Regular contact with committee members even outside of scheduled meetings | Feedback and support for plan |
| Life of Plan | Private Land Owners | All (1-6) | Face to face, telephone , emails | Review treatment schedules for effectiveness | DCBFCO | Time constraints, lack of cooperation from private landowners | Sound time management practices | High completion rate of treatments |
| Life of Plan | City of Karratha Depot works crew | All (1-6) | Face to Face, telephone , emails | Timely scheduling of mitigation works on City land parcels | DCBFCO Works Coordinator | Time and budget constraints | Sufficient planning and budgeting of mitigation works | All City mitigation works carried out on time and on budget |
| Review of the BRM Plan | | | | | | | | |
| Annually | Council | All (1-6) | Council meeting agenda item | Perform minor updates to BRM Plan | Manager Regulatory Services DCBFCO | Lack of time to undertake work lack of full understanding of plan | Awareness of effectively reviewing works and effective time management | Review completed with improvements acted upon |

| | | | | | | | | |
|----------------------------|----------------------|-----------|---|--|--|---|---|---|
| Major Review every 5 years | Council/stakeholders | All (1-6) | Letters, emails, telephone calls and meetings with stakeholders | Conduct major review and additions to BRM Plan | Manager Regulatory Services and DCBFCO | Lack of response for request's for feedback | Maintain engagement with stakeholders by demonstrating effectiveness/benefits of plan | Review completed and improvement acted upon |
|----------------------------|----------------------|-----------|---|--|--|---|---|---|

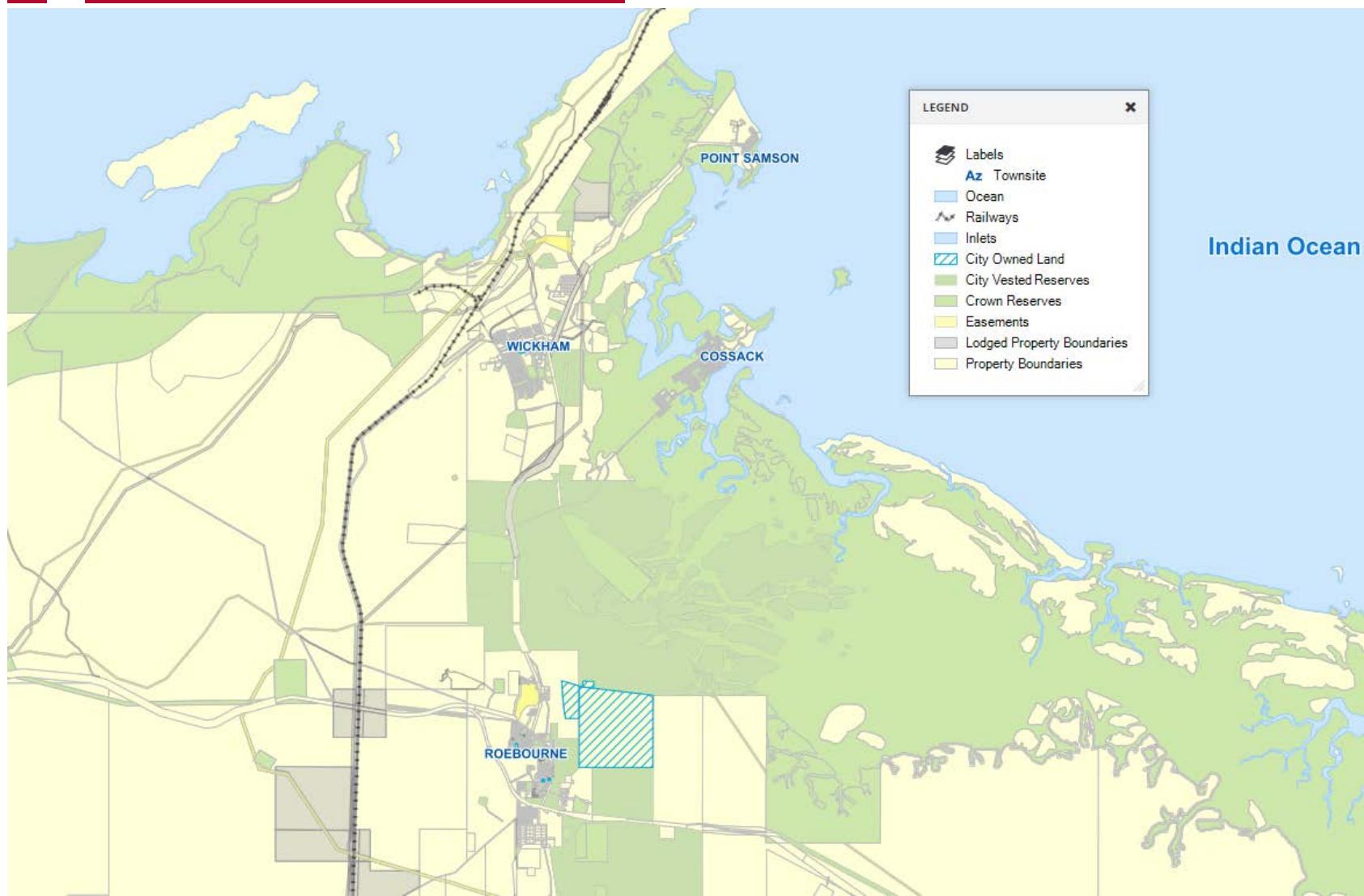
2 Maps of City boundary, and town areas



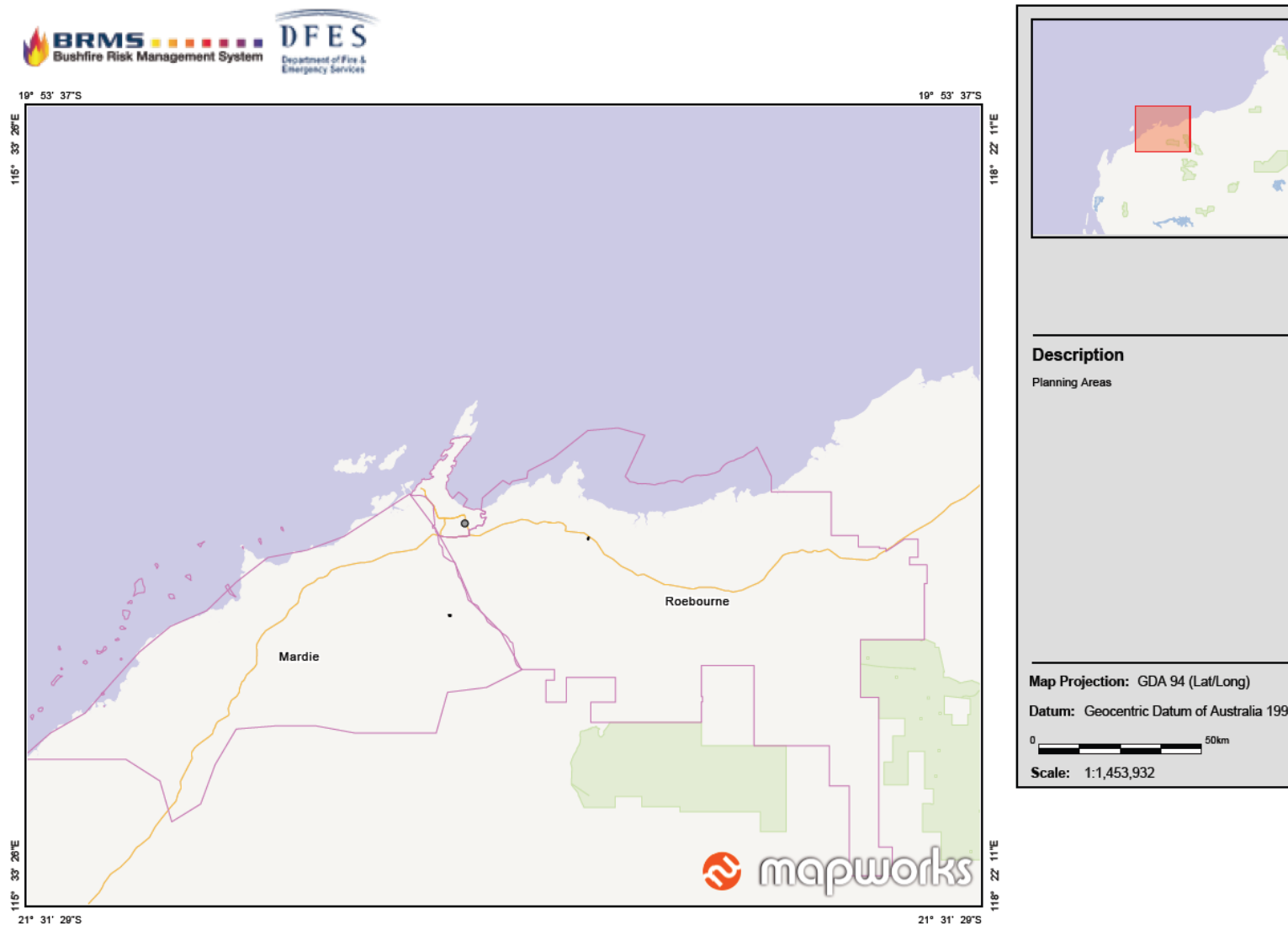
2.1 Karratha and Dampier



2.2 Roebourne, Wickham and Point Samson



23 Planning Area Map



43 Asset Risk Register

| Asset ID | Asset Category | Asset Sub Category | Asset Name | Location Description | Planning Area | Likelihood | Consequence | Risk Rating | Priority |
|-----------|------------------|--------------------------------------|---|---|---------------|----------------|--------------|-------------|----------|
| KTH012 | Economic | Commercial and Industrial | East Intercourse Island | East Intercourse Island Dampier | | Unlikely | Catastrophic | High | 3C |
| KTHKTA009 | Human Settlement | Residential | South East Baynton | South East Corner Baynton West Rosemary Road | KTA | Likely | Major | Very High | 4B |
| KTHKTA011 | Economic | Commercial and Industrial | Rio Tinto Parker Point | Lot 24 Parker Point Dampier | KTA | Unlikely | Catastrophic | High | 3C |
| KTHKTA018 | Economic | Commercial and Industrial | Yarra Fertiliser Plant | Village Road Burrup Peninsula | KTA | Likely | Major | Very High | 4B |
| KTHKTA019 | Human Settlement | Temporary Occupation | Civeo Workers Camp | Madigan Road Gap Ridge | KTA | Likely | Catastrophic | Extreme | 3C |
| KTHKTA020 | Economic | Commercial and Industrial | Karratha Gas Plant | Burrup Peninsula | KTA | Almost Certain | Catastrophic | Extreme | 2B |
| KTHKTA021 | Economic | Commercial and Industrial | Communications towers Karratha Gas Plant | Burrup Peninsula | KTA | Almost Certain | Major | Extreme | 3B |
| KTHKTA022 | Human Settlement | Temporary Occupation | Kingfisher Village | Kingfisher Village Madigan Road | KTA | Likely | Catastrophic | Extreme | 4B |
| KTHKTA024 | Human Settlement | Special Risk and Critical Facilities | Karratha Hospital | Karratha Hospital Dampier Road | KTA | Unlikely | Major | Medium | 5C |
| KTHKTA025 | Human Settlement | Temporary Occupation | Balmoral Caravan Park | Bayveiw Road Karratha | KTA | Likely | Catastrophic | Extreme | 5C |
| KTHKTA030 | Cultural | Aboriginal Heritage | Murujuga National Park | Burrup Peninsula | KTA | Likely | Catastrophic | Extreme | 1B |
| KTHKTA031 | Economic | Commercial and Industrial | South Western corner Karratha Industrial Estate | South Western Corner Karratha Industrial Estate Anderson Road | KTA | Possible | Minor | Low | 5A |

| Asset ID | Asset Category | Asset Sub Category | Asset Name | Location Description | Planning Area | Likelihood | Consequence | Risk Rating | Priority |
|-----------|------------------|--------------------------------------|---|--|---------------|------------|--------------|-------------|----------|
| KTHKTA032 | Economic | Commercial and Industrial | North Western corner Karratha Industrial Estate | Industrial lots abutting Orkney and Mooligunn Roads | KTA | Likely | Minor | Medium | 4C |
| KTHKTA037 | Environmental | Locally Important | Lot 501 Dewitt Road | Lot 501 Dewitt Road Karratha | KTA | Likely | Minor | Medium | 4C |
| KTHKTA038 | Environmental | Locally Important | Stove Hill UCL | Stove Hill UCL south of power station | KTA | Likely | Minor | Medium | 4C |
| KTHMDE013 | Economic | Commercial and Industrial | Quadrant Energy Gas Plant Devils Creek | North West Coastal Highway Devils Creek | MDE | Likely | Major | Very High | 4B |
| KTHMDE014 | Human Settlement | Temporary Occupation | Quadrant Energy Workers Camp Devils Creek | Devils Creek North West Coastal Highway | MDE | Likely | Major | Very High | 4B |
| KTHMDE015 | Human Settlement | Temporary Occupation | Fortescue Roadhouse and Workers Camp | 51 North West Coastal Highway | MDE | Likely | Moderate | High | 4B |
| KTHMDE023 | Human Settlement | Temporary Occupation | Eramurra Village Citic Workers Camp | North West Coastal Highway Mardie | MDE | Unlikely | Major | Medium | 5C |
| KTHMDE028 | Human Settlement | Temporary Occupation | Gnoorea Nature Based Camp | Nature Based Campsite | MDE | Likely | Moderate | High | 3A |
| KTHRBN016 | Human Settlement | Residential | Roebourne Pt Samson Road and Fisher Street | Roebourne Point Samson Road and Fisher Street point Samson | RBN | Likely | Catastrophic | Extreme | 4B |
| KTHRBN017 | Human Settlement | Special Risk and Critical Facilities | Roebourne Prison | Roebourne Point Samson Road | RBN | Likely | Major | Very High | 4B |
| KTHRBN027 | Human Settlement | Temporary Occupation | Whim Creek Hotel | North West Coastal Highway Mardie | RBN | Likely | Catastrophic | Extreme | 4B |

| Asset ID | Asset Category | Asset Sub Category | Asset Name | Location Description | Planning Area | Likelihood | Consequence | Risk Rating | Priority |
|-----------|------------------|---------------------------|--------------------------------|-------------------------------------|---------------|------------|-------------|-------------|----------|
| KTHRBN029 | Human Settlement | Temporary Occupation | Cleaverville Nature Based Camp | Cleaverville Nature Based Campsite | RBN | Likely | Major | Very High | 3A |
| KTHRBN033 | Economic | Commercial and Industrial | Roebourne Industrial Area | Roebourne Point Samson Road | RBN | Likely | Minor | Medium | 4C |
| KTHRBN034 | Economic | Commercial and Industrial | Cleanaway | Warlu Road | RBN | Likely | Moderate | High | 3A |
| KTHRBN035 | Economic | Commercial and Industrial | Toxfree | Toxfree Waste Plant Warlu Road | RBN | Likely | Moderate | High | 3A |
| KTHRBN036 | Economic | Commercial and Industrial | Sodexo Yard Wickham | Lot 791 Point Samson Roebourne Road | RBN | Likely | Major | Very High | 2A |

45 Treatment Schedule

| Priority | Asset ID | Asset Name | Asset Category | Treatment Strategy | Treatment Type | Treatment Objective | Treatment Manager | Responsible Person | Date Scheduled | Season | Initial Year of Works | Completed | Frequency of Inspection/ Review |
|----------|------------|--|------------------|--------------------|-------------------------------|--|--|--------------------|----------------|--------|-----------------------|-----------|---------------------------------|
| 1B | KTHRB N016 | Roebourne Pt Samson Road and Fisher Street | Human Settlement | Preparedness | FirebreakFire Access Track(s) | Maintain existing break access tracks and establish new break access track on eastern boundary | Local Government | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | Y | Annual |
| 1B | KTHRB N029 | Cleaverville Nature Based Camp | Human Settlement | Fuel Management | Mechanical Works | Slash all dry flammable material from site | Local Government | Darrell Hutchens | 1/05/2017 | Autumn | 16/17 | Y | Annual |
| | | | | Preparedness | Fire Access Road / Track(s) | Maintain safe access/egress to camp | Local Government | Darrell Hutchens | 8/05/2017 | Autumn | 16/17 | Y | Annual |
| 1B | KTHKTA 030 | Murujuga National Park | Environmental | Fuel Management | Prescribed Burning | Fuel reduction between Port Pluto Gas Plant and National Park | Local Government | Darrell Hutchens | 29/07/2017 | Winter | 17/18 | N | Annual/5 year burn rotation |
| | | | | | | Reduce fuel loads south east corner of park and tie in to previously burnt ground | Department of Biodiversity, Conservation and Attractions | Darrell Hutchens | 31/05/2018 | Autumn | 17/18 | N | Annual/5 year burn rotation |
| | | | | | | Reduce fuel loading Northern Burrup | Department of Biodiversity, Conservation | Darrell Hutchens | 23/05/2019 | Autumn | 18/19 | N | Annual/5 year burn rotation |

| | | | | | | | | | | | | | |
|----|------------|---|------------------|-----------------|---|--|--|------------------|------------|--------|-------|---|---|
| | | | | | | | n and Attractions | | | | | | |
| | | | | | | Reduce fuel loading southern perimeter of NP | Department of Biodiversity, Conservation and Attractions | Darrell Hutchens | 27/04/2018 | Autumn | 17/18 | N | Annual/5 year burn rotation |
| | | | Cultural | Fuel Management | Prescribed Burning | Reduce fuel loads between Port Pluto Gas Plant and Murujuga National Park | Local Government | Darrell Hutchens | 29/07/2017 | Winter | 17/18 | N | Annual/5 year burn rotation |
| 2A | KTHKTA009 | South East Baynton | Human Settlement | Preparedness | Firebreak(s) Fire Access Track(s) | Machine-3m mineral earth break along properties that abut bushland | Local Government | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | Y | Annual |
| 2A | KTHMD E014 | Quadrant Energy Workers Camp Devils Creek | Human Settlement | Preparedness | Firebreak(s) Fire Access Track(s) | Maintain 3m mineral earth break around perimeter all year round | Private | Darrell Hutchens | 10/03/2017 | Autumn | 16/17 | Y | Annual |
| | | | | | Firefighting Appliance / Equipment | Rapid response to bushfire event via fast attackLight Tanker | Private | Darrell Hutchens | 10/03/2017 | Autumn | 16/17 | Y | Annual |
| 2A | KTHRB N017 | Roebourne prison | Human Settlement | Preparedness | Firebreak(s) Fire Access Track(s) | Maintain fire 3m mineral earth breaks around perimeter | Department of Justice | Darrell Hutchens | 30/09/2017 | Spring | 17/18 | Y | Annual |

| | | | | | | | | | | | | | |
|----|------------|---------------------|------------------|--------------|---|--|-----------------------|------------------|------------|--------|-------|---|------------------------|
| | | | | | Firefighting Appliance / Equipment | Provide rapid initial response with 1000lt trailer and pump unit | Department of Justice | Darrell Hutchens | 1/09/2017 | Spring | 17/18 | N | Annual |
| | | | | | Training / Exercise | Train staff in use of 1000lt trailer and pump unit to enable rapid response | Department of Justice | Darrell Hutchens | 1/09/2017 | Spring | 17/18 | N | Annual |
| 2A | KTHRB N036 | Sodexo Yard Wickham | Economic | Preparedness | Firebreak(s) Fire Access Track(s) | Maintain 3m Mineral earth firebreak break/track around perimeter of yard | Private | Darrell Hutchens | 8/12/2017 | Summer | 17/18 | N | Annual |
| 2B | KTHKTA 008 | Searipple Village | Human Settlement | Preparedness | Firebreak(s) Fire Access Track(s) | Maintain 3m Mineral earth break around perimeter of camp to allow appliance access | Local Government | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | Y | Annual |
| 2B | KTHRB N027 | WHIM CREEK HOTEL | Human Settlement | Preparedness | Firebreak(s) Fire Access Track(s) | Create 3m mineral earth break on south eastern side of accommodation dongas | Private | Darrell Hutchens | 31/05/2017 | Autumn | 16/17 | Y | Annual |
| | | | Cultural | Preparedness | Firebreak(s) Fire Access Track(s) | Establish firebreak-3m mineral earth break on south | Private | Darrell Hutchens | 31/05/2017 | Autumn | 16/17 | Y | Annual |

| | | | | | | | | | | | | | |
|----|------------|---------------------------|------------------|-----------------|--|--|------------------|------------------|------------|--------|-------|---|---------------|
| | | | | | | eastern boundary | | | | | | | |
| 3A | KTHKTA 004 | Ranges Hotel | Economic | Preparedness | <u>Firebreak(s)</u> <u>Fire Access</u> <u>Track(s)</u> | Establish and maintain <u>firebreaks-3m mineral earth break</u> on Western, Northern and Southern boundary | Private | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | Y | <u>Annual</u> |
| 3A | KTHKTA 022 | Kingfisher Village | Human Settlement | Preparedness | <u>Firebreak(s)</u> <u>Fire Access</u> <u>Track(s)</u> | Establish <u>firebreak-3m mineral earth break around</u> perimeter of complex | Local Government | Darrell Hutchens | 30/06/2017 | Winter | 16/17 | Y | <u>Annual</u> |
| 3A | KTHKTA 025 | Balmoral Caravan Park | Human Settlement | Preparedness | <u>Firebreak(s)</u> <u>Fire Access</u> <u>Track(s)</u> | Maintain <u>3m mineral earth break</u> <u>firebreak</u> around park | Local Government | Darrell Hutchens | 1/06/2017 | Winter | 16/17 | Y | <u>Annual</u> |
| 3A | KTHMD E028 | Gnoorea Nature Based Camp | Human Settlement | Preparedness | Firefighting Appliance / Equipment | Rapid response | Private | Darrell Hutchens | 8/05/2017 | Autumn | 16/17 | Y | <u>Annual</u> |
| | | | | | Fire Access Road / Track(s) | Safe access/egress to from Campsite | Local Government | Darrell Hutchens | 1/09/2017 | Spring | 17/18 | Y | <u>Annual</u> |
| | | | | Fuel Management | Mechanical Works | Slash campsites to remove dry flammable material | Local Government | Darrell Hutchens | 1/05/2017 | Autumn | 16/17 | Y | <u>Annual</u> |

| | | | | | | | | | | | | | |
|----|---------------|---|---------------------|--------------|--|--|---------------------|---------------------|----------------|------------|-------|---|---------------|
| 3A | KTHRB N034 | Cleanaway | Economic | Preparedness | Fire Access Road / Track(s) | Mineral <u>3m</u> earth firebreak around perimeter of yard | Private | Darrell Hutchens | 8/12/201 7 | Summ er | 17/18 | N | <u>Annual</u> |
| 3A | KTHRB N035 | Toxfree | Economic | Preparedness | <u>Firebreak(s)</u> <u>Fire Access</u> <u>Track(s)</u> | Mineral <u>3m</u> earth firebreak around perimeter of site | Private | Darrell Hutchens | 8/12/201 7 | Summ er | 17/18 | N | <u>Annual</u> |
| 4A | KTHKTA 001 | Horizon Power Station | Economic | Preparedness | <u>Firebreak(s)</u> <u>Fire Access</u> <u>Track(s)</u> | To establish and maintain double blade width <u>mineral</u> <u>earth break</u> firebreak on Eastern, Northern and Western Side of Power Station | Local Government | Darrell Hutchens | 29/09/20 17 | Spring | 17/18 | Y | <u>Annual</u> |
| 4A | KTHKTA 011 | Rio Tinto Parker Point | Economic | Preparedness | Firefighting Appliance / Equipment | Rapid response to bushfire event | Private | Darrell Hutchens | 8/03/201 7 | Autum n | 16/17 | Y | <u>Annual</u> |
| 4A | KTH012 | East Intercourse island | Economic | Preparedness | Firefighting Appliance / Equipment | Rapid response to bushfire event | Private | Darrell Hutchens | 8/03/201 7 | Autum n | 16/17 | Y | <u>Annual</u> |
| 4A | KTHMD E015 | Fortescue Roadhouse and Workers Camp | Human Settlement | Preparedness | Firefighting Appliance / Equipment | Rapid response to wildfire event | Private | Darrell Hutchens | 31/03/20 17 | Autum n | 16/17 | Y | <u>Annual</u> |
| | | | | | Training / Exercise | Adequately trained operators and ERT members | Private | Darrell Hutchens | 31/03/20 17 | Autum n | 16/17 | Y | <u>Annual</u> |

| | | | | | | | | | | | | | |
|----|------------|--------------------|------------------|-----------------|---|--|------------------|------------------|------------|--------|-------|---|---------------------------------------|
| | | | | | Firebreak(s) Fire Access Track(s) | Establish and maintain mineral earth fire breaks around Fortescue Workers Camp | Private | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | Y | Annual |
| 4A | KTHKTA 019 | Civeo Workers Camp | Human Settlement | Preparedness | Firebreak(s) Fire Access Track(s) | Maintain 3m mineral earth break firebreak on southern boundary for fire appliance access and to create buffer zone for revegetated area at old gap ridge village site | Local Government | Darrell Hutchens | 31/08/2017 | Winter | 17/18 | Y | Annual |
| 4A | KTHKTA 020 | Karratha Gas Plant | Economic | Fuel Management | Mechanical Works | Maintain existing 3m mineral earth break breaks on eastern perimeter of plant | Private | Darrell Hutchens | 30/09/2017 | Spring | 17/18 | N | Annual |
| | | | | | | Create 3m mineral earth firebreak on eastern side of pipeline running from tank to the plant south to North | Private | Darrell Hutchens | 30/09/2017 | Spring | 17/18 | N | Annual once installed |

| | | | | | | | | | | | | | |
|----|------------|--|------------------|--------------|---|--|------------------------|------------------|------------|--------|-------|---|---|
| | | | | | Prescribed Burning | Reduce fuel loading in bushland east of the plant | Private | Darrell Hutchens | 1/09/2017 | Spring | 17/18 | N | Annual/5 year burn rotation |
| | | | | | | Reduce fuel load east of plant provide low fuel zone between plant and NP | Private | Darrell Hutchens | 26/04/2018 | Autumn | 17/18 | N | Annual/5 year burn rotation |
| | | | | Preparedness | Firefighting Appliance / Equipment | Rapid response to Bushfire event in vicinity of plant | Private | Darrell Hutchens | 24/03/2017 | Autumn | 16/17 | Y | Annual |
| | | | | | Hydrant(s) | Adequate water supply plant wide | Private | Darrell Hutchens | 24/03/2017 | Autumn | 16/17 | Y | Annual |
| 4A | KTHKTA 021 | Communications Towers Karratha Gas Plant | Economic | Preparedness | Firebreak(s) Fire Access Track(s) | Maintain 3m mineral earth fire breaks around communications complex | Private | Darrell Hutchens | 30/09/2017 | Spring | 17/18 | N | Annual |
| | | | | | Firefighting Appliance / Equipment | Rapid 24/7 response to bushfire threat | Private | Darrell Hutchens | 30/09/2017 | Spring | 17/18 | Y | Annual |
| 4A | KTHMD E023 | Eramurra Village Citic Workers Camp | Human Settlement | Preparedness | Firefighting Appliance / Equipment | Rapid response to wildfire event | Private | Darrell Hutchens | 31/03/2017 | Autumn | 16/17 | Y | Annual |
| | | | | | Training / Exercise | Adequately trained first responders | Other State Government | Darrell Hutchens | 31/03/2017 | Autumn | 16/17 | Y | Annual |

| | | | | | | | | | | | | | |
|----|------------|------------------------------------|------------------|--------------|--|--|------------------|------------------|------------|--------|-------|---|---------------|
| | | | | | <u>Firebreak(s)</u> <u>Fire Access</u> <u>Track(s)</u> | Maintain <u>3m mineral earth break</u> firebreak outside of walking track on perimeter of the camp | Private | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | Y | <u>Annual</u> |
| 4A | KTHKTA 024 | Karratha Hospital | Human Settlement | Preparedness | <u>Firebreak(s)</u> <u>Fire Access</u> <u>Track(s)</u> | Maintain <u>3m mineral earth break</u> Firebreak southern and eastern side of Hospital | Local Government | Darrell Hutchens | 1/06/2017 | Winter | 16/17 | Y | <u>Annual</u> |
| 4B | KTHKTA 010 | Bay Village | Human Settlement | Preparedness | <u>Firebreak(s)</u> <u>Fire Access</u> <u>Track(s)</u> | Machine break Maintain <u>3m mineral earth break</u> to allow appliance access | Private | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | Y | <u>Annual</u> |
| 4C | KTHKTA 005 | Karratha Visitor Centre | Economic | Preparedness | <u>Firebreak(s)</u> <u>Fire Access</u> <u>Track(s)</u> | Install <u>3m mineral earth machine</u> break to protect western perimeter of property | Local Government | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | Y | <u>Annual</u> |
| 4C | KTHKTA 006 | Bulgarra Sub Station Horizon Power | Economic | Preparedness | <u>Firebreak(s)</u> <u>Fire Access</u> <u>Track(s)</u> | Install and maintain <u>3m mineral earth break machine</u> firebreak on eastern, western and southern perimeters | Local Government | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | Y | <u>Annual</u> |

| | | | | | | | | | | | | | |
|----|------------|---|---------------|-----------------|--|--|---|------------------|------------|--------|-------|---|---|
| 4C | KTHKTA 007 | TV Hill | Economic | Fuel Management | Chemical Works | Poison surrounding vegetation to achieve greater separation from fuel loading near the asset | Local Government | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | N | Annual |
| 4C | KTHKTA 032 | North Western corner Karratha Industrial Estate | Economic | Preparedness | Firefighting Appliance / Equipment | Rapid response to bushfire event | Department of Fire & Emergency Services | Darrell Hutchens | 27/06/2017 | Winter | 16/17 | Y | Annual |
| 4C | KTHRB N033 | Roebourne Industrial Area | Economic | Preparedness | Firebreak(s) Fire Access Track(s) | 3m mineral earth break Firebreak around perimeter of estate to achieve fuel separation and emergency vehicle access | Local Government | Darrell Hutchens | 1/11/2017 | Spring | 17/18 | N | Annual |
| 4C | KTHKTA 037 | Lot 501 Dewitt Road | Environmental | Fuel Management | Prescribed Burning | To reduce fuel load and tie in with previously burnt ground to north west | Local Government | Darrell Hutchens | 27/04/2018 | Autumn | 17/18 | N | Annual/5 year burn rotation |
| 4C | KTHKTA 038 | Stove Hill UCL | Environmental | Fuel Management | Prescribed Burning | Tie in burn to previously burnt ground | Local Government | Darrell Hutchens | 26/04/2019 | Autumn | 18/19 | N | Annual/5 year burn rotation |
| 5A | KTHKTA 002 | North East Karratha Industrial Estate | Economic | Preparedness | Firebreak(s) Fire Access Track(s) | Establish and maintain 3m mineral earth machine breaks on | Local Government | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | Y | Annual once installed |

| | | | | | | | | | | | | | |
|----|------------|--|----------|--------------|---|--|------------------|------------------|------------|--------|-------|---|---------------------------------------|
| | | | | | | Northern, eastern and western perimeter of industrial lots that abut bushland | | | | | | | |
| 5A | KTHKTA 003 | South East Karratha Industrial Estate | Economic | Preparedness | Firebreak(s) Fire Access Track(s) | Establish and maintain 3m mineral earth machine-grade breaks on western, eastern and southern perimeters of the industrial lots. | Local Government | Darrell Hutchens | 29/09/2017 | Spring | 17/18 | Y | Annual once installed |
| 5A | KTHMD E013 | Quadrant Energy Gas Plant Devils Creek | Economic | Preparedness | Firebreak(s) Fire Access Track(s) | Maintain 3 metre firebreak mineral earth break around perimeter of plant | Private | Darrell Hutchens | 31/07/2017 | Winter | 17/18 | Y | Annual |
| | | | | | Firefighting Appliance / Equipment | Quick response to bushfire event Fast Attack on Site 24/7 response | Private | Darrell Hutchens | 10/03/2017 | Autumn | 16/17 | Y | Annual |
| 5A | KTHKTA 018 | Yarra Fertiliser Plant | Economic | Preparedness | Firebreak(s) Fire Access Track(s) | Maintain 3m mineral earth break firebreaks around northern and western boundaries of | Private | Darrell Hutchens | 30/09/2017 | Spring | 17/18 | N | Annual |

| | | | | | | | | | | | | | |
|----|------------|---|----------|--------------|---|--|---|------------------|------------|--------|-------|---|------------------------|
| | | | | | | the fertiliser plant | | | | | | | |
| | | | | | Asset Fire Protection / Defence System | Protect plant and perimeter with hydrants and monitors 30 meters apart throughout the site | Private | Darrell Hutchens | 20/03/2017 | Autumn | 16/17 | Y | Annual |
| | | | | | Firebreak(s) Fire Access Track(s) | Maintain fire trail on north and eastern sides of the TAMS plant | Private | Darrell Hutchens | 30/09/2017 | Spring | 17/18 | N | Annual |
| 5A | KTHKTA 031 | South Western corner Karratha Industrial Estate | Economic | Preparedness | Firefighting Appliance / Equipment | Rapid response to Bushfire event that could threaten industrial estate | Department of Fire & Emergency Services | Darrell Hutchens | 27/06/2017 | Winter | 16/17 | Y | Annual |

56 Local Government-Wide Controls, Multi-Agency Treatment Work Plan

| | Control | Action or Activity Description | Lead Agency | Other Stakeholder(s) | Notes and Comments |
|----------------|-------------------------|--|------------------|---|---|
| | | | | | |
| 01 | Risk Analysis | BRMP extreme risks priority for treatment | LG DFES | All | Treatments planned for extreme risks and included in BRMP treatment Schedule |
| 02 | Risk Analysis | Maintain and refine BRMP | LG DFES | All | Currently planning treatments for all very high risks |
| 03 | Bush Fire Act 1954 S.33 | Annual Fire Break Notice published | LG | N/A | Published Annually |
| 04 | Bush Fire Act 1954 S.33 | Annual Firebreak Inspections | LG | N/A | To be completed October each year |
| 05 | <u>Mitigation</u> | <u>Annual assessment of treatments and maintenance work as listed in the BRMP</u> | <u>LG</u> | <u>DFES, DBCA, Pastoralists, Asset owners</u> | <u>Contact to be made with each agency and asset owner to confirm maintenance works are completed and maintained as per the BRMP – these are to be recorded and updated in the plan as required</u> |
| 06 | <u>Mitigation</u> | <u>Conducting fuel reduction/modification works</u> | <u>LG</u> | <u>DFES, DBCA</u> | <u>Undertaking fuel reduction/modification if determined necessary by means of prescribed burning, slashing, chemical works, or other approved means.</u> |
| 07 | <u>Mitigation</u> | <u>Training of staff and volunteers</u> | <u>DFES/DBCA</u> | <u>Applicable asset owners</u> | <u>Undertake regular training and exercising of staff and volunteers in use of skills, knowledge and equipment to combat fires</u> |
| 085 | Response | Satellite Hotspot Monitoring | LG | DFES DBCA Pastoralists | Daily monitoring of NAFI and Aurora website to allow early intervention if required |
| 096 | Response | Annual meeting with pastoralists to present updated version of City of Karratha Fire Management Plan | LG | Pastoralists | Conduct this meeting before fire season so all parties aware of capabilities and responsibilities |