CFA

Parks Victoria

Department of Environment, Land, Water & Planning

State Government Victoria

Mildura Rural City Council

MUNICIPAL EMERGENCY MANAGEMENT PLANNING COMMITTEE

RISK AND RESILIENCE SUB COMMITTEE

FIRE MANAGEMENT WORKGROUP

Municipal Fire Management Sub-Plan

2016 - 2020

Forward by Chairman

Mildura Rural City Council's Municipal Fire Management Sub-Plan 2016-2020 (MFMP), is a living document which details an integrated approach to fire management for the Municipality of Mildura. The MFMP focuses on bushfire risk encompassing a holistic approach to emergency management including Prevention, Preparedness, Response and Recovery.

The Municipality of Mildura shares similar bushfire risks to other areas of the State, however there are unique aspects of risks to the area, particularly with vast agricultural tracts and large expanses of parks and natural areas which have the potential to cause devastating impacts to our geographically isolated townships throughout the Municipality.

Together with stakeholders from Parks Victoria, DELWP, and Country Fire Authority, the MFMP has identified local risks and has been conceived in accordance with the principles outlined in the Victorian Government's Integrated Fire Management Planning Framework (2007) and Victoria's Safer Together Policy. The document will be reviewed annually, and updated on a regular basis.

The MFMP is based on a co-operative approach of all relevant agencies, and will assist and guide fire prevention and preparedness activities within the Municipality.

I applaud all of those involved with the drafting of this Plan, their valuable input and dedicated approach to a very detailed and successful plan for future use and the protection of our community.

Robert Tindall

Municipal Emergency Manager/Chair

Municipal Emergency Management Planning Committee

Version Control Table

Version number	Date of issue	Author(s)	Brief description of change
Version 1.0	May 2012	MFMPC	Draft Plan
Version 2.0	August 2012	MFMPC	Final Plan
Version 3.0	May 2016	Workgroup	2016 Revision

Endorsement

Those here by undersigned have review and affirm their support and approval of the plan for their organisations

Signed: ____________ Date: 29 JULY 2016

Sjaakie Adriaans
Local Laws Coordinator & MFPO
Mildura Rural City Council

Signed: ____________ Date: 29/8/16

Damian Kerr
Ranger In Charge
Fire and Emergency North West District
Parks Victoria

Signed: ____________ Date: 3/8/16

Nathan Cristian
Fire Management Officer
Fire & Land – Mallee District
Department of Environment, Land, Water & Planning

Signed: ____________ Date: 28/7/16

Ron Shiner
Operations Officer
Fire & Emergency Management District 18
Country Fire Authority

Authorisation

This Municipal Fire Management Sub-Plan has been prepared by the Municipal Fire Management Workgroup. The Plan has been considered by all parties identified within the Plan as reflecting the intent of their organisation with regard to fire management planning and committing to working together to deliver the actions identified in the Plan.

This Plan was endorsed through a formal motion by the Mildura Municipal Emergency Management Planning Committee at their meeting of Monday 4th July 2016.

Signed: Date: 29 July 2016

Robert Tindall
Municipal Emergency Manager/Chair
Municipal Emergency Management Planning Committee
Mildura Rural City Council

Contents

Introduction

This Municipal Fire Management Plan, (MFMP - *the Sub-Plan*), has been prepared and reviewed by the Mildura Municipal Emergency Management Planning Committee (MEMPC) in line with Part 6A of the Emergency Management Manual of Victoria (EMMV) and the State Fire Management Planning Committee's guidelines for integrated fire management planning.

This MFMP is task focused and encompasses:

- The risks and vulnerabilities identified to be managed across the Municipal footprint
- Reduction of the likelihood and consequence of fire hazards within local communities in the Municipality;
- Management of local priorities relating to protection of communities and physical, environmental, economic and social assets;
- Development and implementation of works programs for the management of fires, including hazard removal and fuel management;
- Community engagement activities;
- Encouragement of shared responsibility by the community; and
- Consideration of planning across municipal boundaries.

Authority for Plan

The Mildura Rural City Council has a legislative responsibility under section 21(4) of the Emergency Management Act 1986 and 2013 to prepare and maintain a Municipal Emergency Management Plan (MEMP). The MFMP will replace the requirement for the MFPP. The MFMP is a sub plan of the MEMP and is prepared and reviewed by Mildura Municipal Fire Management Workgroup.

Other Supporting Legislation and Policies

This Sub-Plan has been prepared in consultation with various community and statutory bodies and is supported by:

- Brigade Operational Plans;
- Municipal Fire Hazard Mapping Reports;
- Declared Bush Fire Prone Areas;
- CFA Road Management Plans;
- Victorian Planning Provisions and the Municipal Planning Scheme;

- Fire Prevention, Preparedness, Response & Recovery strategies and codes of practice of Statutory Authorities and MFMPC member organisations;
- Community Information Guides (CIGs); and
- Neighborhood Safer Places – Places of Last Resort.

Elements from these supporting documents have been used in the development of this Plan.

The MFMP is intended to support and complement the following plans:

- Municipal Emergency Management Plan;
- Township Fire Mitigation Plans; and
- Community Information Guides (CIGs).

The Municipal Fire Management Workgroup has also considered other Fire Management Plans and strategic documents that are listed below:

- The Loddon Mallee Regional Strategic Fire Management Plan;
- Victorian Fire Risk Register;
- DELWP Fire Operational Plans;
- DELWP Code of Practice for Fire Management on Public Lands;
- CFA Mildura Rural City Council Bushfire Response Plan; and
- DELWP Roadside Vegetation Guidelines.

Plan Endorsement and Adoption

Mildura Rural City Council is the custodian of the Municipal Fire Management Plan (MFMP) pursuant to current legislative arrangements. The Municipal Fire Management Workgroup drafted the MFMP and sought endorsement of the Plan from the Committee and, where appropriate, non-committee members with responsibilities and accountabilities under the Plan.

After appropriate stakeholder and community consultation and engagement, including perusal by the Loddon Mallee Regional Strategic Fire Management Planning Committee (RSFMPC), the Plan was endorsed through a formal motion by Mildura Rural City Council’s MFMPC (dated 9 August 2012). Following the process, the Workgroup recommend the MFMP to the MEMPC for endorsement. Once endorsed by the MEMPC, the Plan was sent to the Loddon Mallee RSFMPC for comment, prior to recommendation to Council for consideration and adoption. Mildura Rural City Council formally endorsed the Plan at its 23 August 2012 council meeting.

Period of plan

Municipal Fire Management Plans have a three year planning cycle. The Plan will be endorsed for a period of 3 years commencing from the date of Council adoption of the Plan – 23 August 2012, this revision to be validated by July 2016, and reviewed again by July 2020 with annual revision as required.

Plan Review and Updates

This Mildura MFMP will be reviewed and amended:

1. Annually in association with the MEMP;
2. Following significant incidents or change in risk exposure if required;
3. As directed by Emergency Management Victoria (EMV); and
4. As required by legislation.

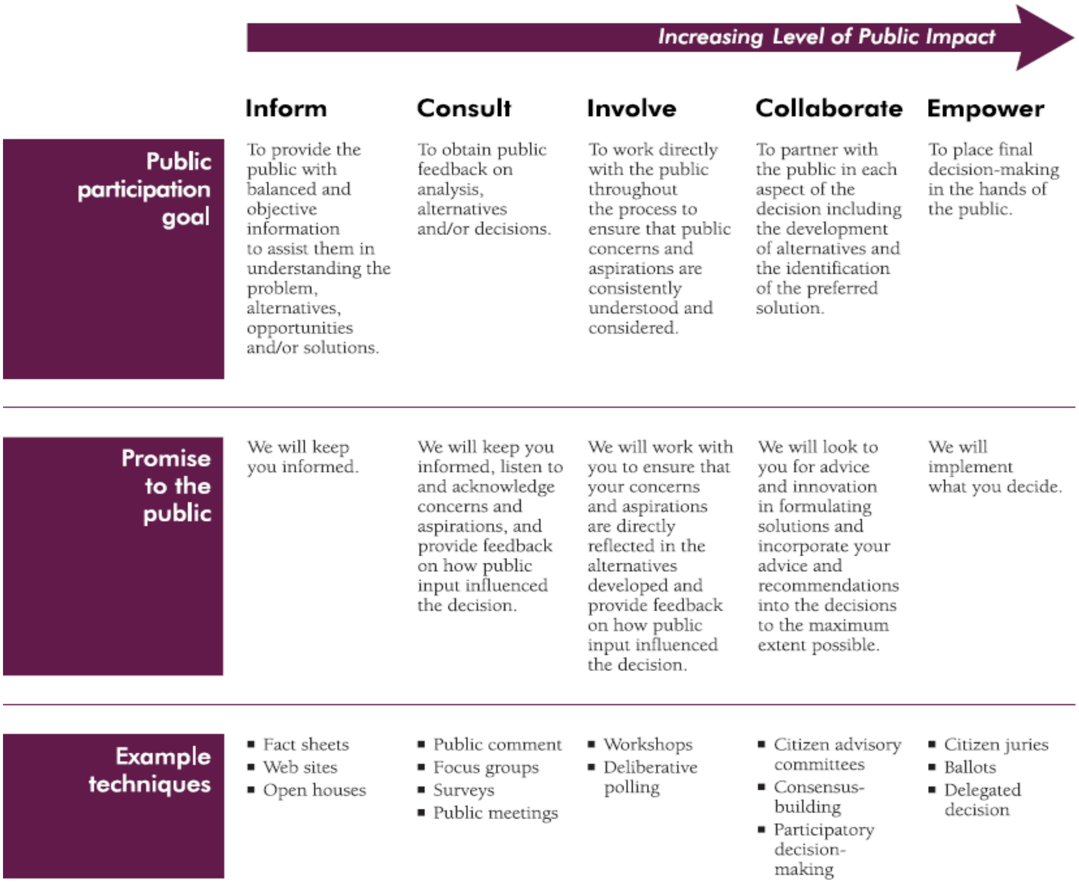
When a review is undertaken and amendments are made to the Plan, the amended plan is 'adopted' by the MEMC.

The Plan is a living document, to be reviewed annually and monitored by the MFMPC and any subsequent change and/or amendment can be submitted to the MFMPC for consideration and incorporated into the Plan.

Methodology

IAP2 / Community Engagement Principles

Community and organisational participation plays an important part in the development of this MFMP. To support this, the MFMPC has adopted the International Association for Public Participation (IAP2) Framework. The IAP2 framework has guided the engagement decisions by the Committee in development of this Fire Management Plan and makes clear the engagement commitment by the MFMPC.



Increasing Level of Public Impact

	Inform	Consult	Involve	Collaborate	Empower
Public participation goal	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.
Promise to the public	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.
Example techniques	▪ Fact sheets ▪ Web sites ▪ Open houses	▪ Public comment ▪ Focus groups ▪ Surveys ▪ Public meetings	▪ Workshops ▪ Deliberative polling	▪ Citizen advisory committees ▪ Consensus-building ▪ Participatory decision-making	▪ Citizen juries ▪ Ballots ▪ Delegated decision

Figure 1: IAP2 Framework

Source: International Association for Public Participation, www.iap2.org.

IFMP Engagement Process

As part of the Project Management Plan a Stakeholder and Community Engagement Plan was developed to detail the Workgroup's thoughts, the process the Workgroup would go through and the objectives of community engagement in the review of the Fire Management Plan.

The Engagement plan included:

- Engagement/Communication Objectives;
- Negotiable/Not Negotiable elements of engagement;
- Stakeholder Matrix and Engagement Approach; and
- Engagement Action Plan.

In preparation for the Engagement Plan the Workgroup set the following engagement objectives;

- Local intelligence (risks and concerns);
- Local community notification;
- Participation in the preparation of the Fire Management Plan;
- Future land use changes;
- Understand roles and responsibilities;
- Identification of critical infrastructure;
- Identifying valuable community assets;
- Cross border corporation/ issues/ relationships;
- Conduit to the community;
- Integrated process;
- Agency obligation;
- Improved knowledge regarding fire management and planning;
- Build confidence in fire management and planning; and
- Being fire ready and prepared for fire emergencies.

Planning Process

The Integrated Fire Management Planning framework enhances existing approaches to fire management planning and includes the following elements:

- Integration of plans and processes;
- Consistency at State, Regional, Municipal and local levels;
- Coordination of stakeholders and planning processes;
- High levels of community and stakeholder engagement;
- Performance management;
- Monitoring and continuous improvement;
- Supportive planning structure and environment; and
- Consistent identification and assessment of risk.

The IFMP planning cycle links the steps of contemporary planning and is consistent with international Risk Management Standard. The planning cycle diagram is provided below.

Figure 2: IFMP Planning Cycle

Source: Integrated Fire Management Planning Guide, 2010.

Risk Assessment Methodologies

Risk is generally described as the combination of the likelihood of an event occurring and the consequence should it happen.

In fire management planning the Crichton Risk pyramid helps explain the idea of fire risk in greater detail.

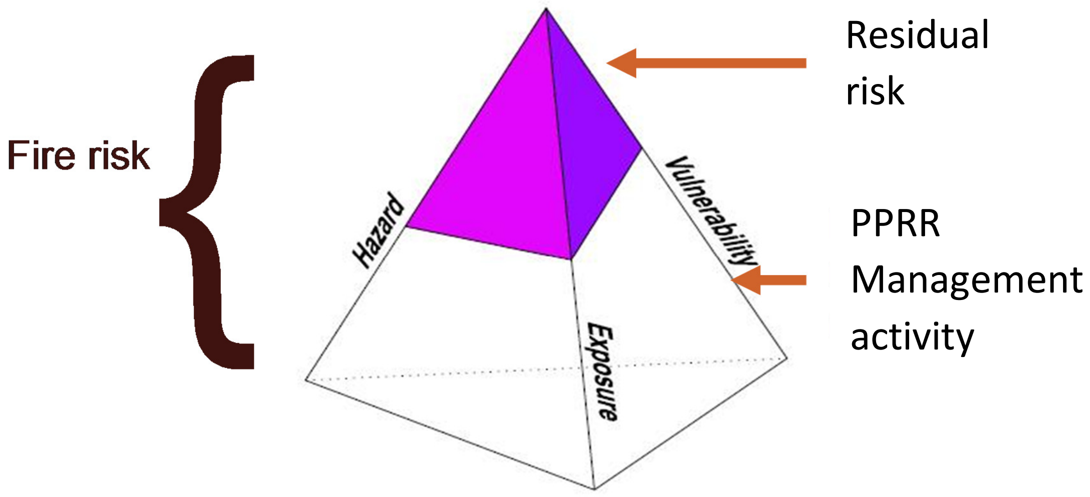


Figure 3: Risk Pyramid

In this revision we identify the relationship between the amount of risk generated by the hazard exposure, vulnerability relationship and the values according to the Community Emergency Risk Assessment (CERA) criteria (people, infrastructure, social setting, economic, environment, and public administration) of a location.

Typically fire management activities (prevention, preparedness, response and recovery (PPRR) activities) are applied across the pyramid to effectively:

- Reduce the incidence and severity of the hazard;
- Reduce the exposure of assets and values to the hazard; and
- Build the resilience (reduce vulnerability) of the assets and values within society.

This MFM Sub-Plan has considered the following risk statements:

1. The risk of a bush fire igniting, spreading and impacting upon assets and values;
2. The risk that the management (PPRR) of fire, is in line with level of exposure and vulnerability of assets and values; and
3. The risk of a structural fire igniting, spreading and impacting upon assets and values.

To undertake this bushfire assessment the Workgroup has undertaken a risk analysis process where it has:

- Identified the characteristics, values and directions of the municipality;

- Established the worst most likely scenario which is severe fire danger rating day with dry land crops fully cured;
- Identified the primary risks to people, environment, economy, public administration, social setting, infrastructure and their contributors; and
- Reviewed these risks in line with the CERA risk rating table of likelihood and consequence and prepared a Residual Risk Register which:

    i. identified the current fire management strategies and treatments that are in place;
    ii. considered the adequacy of those strategies and treatments;
    iii. identified alternate strategies or treatments where treatments are identified as inadequate;
    iv. reviewed the risk level to establish the perceived effectiveness of the alternate strategies or treatments; and
    v. agreed on process to establish improved fire management.

To support this approach GIS mapping techniques have been developed. Mapping of fire hazards, history, treatments assets and zoning information has been an important tool used in the risk management process.

The Victorian Fire Risk Register – Bushfire (VRFF-B) supports and informs the MFMP and is used as evidence base data to support bushfire planning and decision making. This online data base (http://www.vfrr.vic.gov.au), visually maps assets at risk within the Municipality from bushfire and assess the level of risk.

VFRR-B assess the asset with consideration of vegetation and slope, vegetation separation distance, susceptibility, ignition frequency, expected spread and reach assets on 100FDI day, hazard impact and direction of impact.

Physical, Geographical and Systems Risks

According to State guidelines, risks are now categorised according to the Community Emergency Risk Assessment Criteria (CERA).

Under each CERA risk category (People, Environment, Economy, Public Administration, Social Setting and Infrastructure) the Workgroup assessed at risk townships and critical infrastructure locations. The affected township and critical infrastructure list was developed based on Victorian Fire Risk Register (VFRR), information from Parks Victoria, DELWP and knowledge within the Workgroup participants.

The Workgroup considered these risk categories that may occur in relation to the township and critical infrastructure locations, and have undertaken specific analysis. The analysis considered the effectiveness of the current treatments that are in place.

The Residual Risk Rating Table *Appendix A and B* shows the township and critical infrastructure overall residual risk, along with the likelihood, combined CERA consequence (People, environment, economy, public administration, social setting and infrastructure) and rating for control/mitigation activities.

Each township and critical Infrastructure has the allocated VFRR-B ID number/s, these are areas within that township or critical infrastructure that have been highlighted as the potential risk. A full list of VFRR ID areas can be found on *Appendix F VFRR ID and Asset Names*

Planning Objectives

Strategic Directions

The implementation of the MFMP will be via the following Strategies:-

- Development of risk treatments for the preservation of life and property;
- Shared responsibility through the integration of agencies and the community;
- Development of fire risk treatments for the protection of the natural environment; and
- Support and use all existing legislative tools.

Regional Objectives

The MFMP provides input and is developed with reference and alignment to the Regional Plan, Loddon Mallee Regional Strategic Fire Management Plan 2011. The MFMP is principally a Plan that coordinates and aligns the fire management activities in a manner that is consistent with the Regional Plan. Of particular relevance to this Plan:

- The objectives of this Plan will be in line with the Regional Objectives to ensure alignment and a common approach to risks and treatments across the Loddon Mallee Region;
- This Plan will be used to provide appropriate information and strategies for input into both the development and any future review of the Regional Plan;
- Both the Regional Plan and the Municipal Plan identify life preservation as the highest risk; and
- Both the Regional Plan and the Municipal Plan discuss the need for integration of the agencies to provide better outcomes for fire management.

The MFMP sits within the context of state, organisational and municipal level plans as shown in the figure below.

Figure 4: State Fire Management Planning, Plan Relationships

Source: Loddon Mallee Regional Strategic Fire Management Plan, 2011.

The Vision of the Regional Plan is:

The Committee's vision for the future is one in which fire management supports a safer community, healthier environment and prosperous economy in the Loddon Mallee Region.

The Regional Plan has set the objectives based on the following:

- Healthier Environment;
- Safer Communities;
- Prosperous Economy;
- A cohesive fire management system; and
- Positive response from the fire management community.

Municipal Objectives

The development of the MFMP will enable the following objectives to be implemented:

- An integrated and robust partnership between Community, Council and Emergency Service Organisations;
- A community that is well prepared, able to respond and recover from fire;
- Manage arrangements for the utilisation and implementation of municipal resources in response to any fire emergency;
- A better understanding by Council and emergency services of the vulnerability of the Mildura community;
- To better understand the risk of fire and develop effective risk treatments;
- To make communities safer given the expanded knowledge of fire risks;
- To better understand the use of fire in the natural environment and to work towards the sustainability of the natural environment; and
- Be aware of and fulfil all legislative requirements.

Links to Other Business Programs

The MFMP links to all Emergency Services facilities for the planning, preparation, response and recovery of fire emergencies within the Region.

The development of the MFMP has been carried out in consultation with key stakeholders and the community. Every public authority shall take all practical steps (including burning) to prevent the occurrence of fires and to minimise the danger of the spread of fires on or from any land and roads vested in or under its control.

Situation and Assumptions

Stakeholders

Stakeholder Analysis

Stakeholder engagement and participation is an essential element of fire management planning. The Workgroup reviewed the stakeholders that needed to be engaged when reviewing this Fire Management Plan, their relationship to fire management and intended engagement approach.

Stakeholder	Interest in Fire Management Plan	Engagement Approach
Emergency Services		
CFA Staff & Volunteers	Response Agency EM	Collaborate
SA Fire Services	Response Agency EM	Collaborate
NSW Fire Service	Response Agency EM	Inform
Victoria Police	Response Agency EM	Collaborate
SES	Response Agency EM	Inform
MEMPC	Planning	Empower
Regional - LMRSFMP	Planning	Involve
Local Government		
Mildura Rural City Council	Response Agency EM/Planning	Collaborate
Community Groups / Organisations		
General Community	Awareness	Consult
Indigenous Groups	Vulnerable Assets	Consult
Service Clubs	Awareness	Consult
Progress Associations	Awareness	Consult
Churches	Awareness	Consult
Childcare Agencies	Asset and vulnerability	Consult
Education Facilities/ Schools	Asset and vulnerability	Consult
VFF	Awareness	Consult
Medical Services		
Hospitals (Mildura Base, Mildura Private, Sunraysia Community Health, Mallee Track Health and Community Service	Response and Recovery	Consult
Aged Care	Awareness	Consult

Ambulance Victoria	Response and Recovery	Consult
Red Cross	Recovery	Consult
Department of Human Services	Vulnerability	Consult
Industry/Employers / Business		
Mildura Development Corporation	Awareness	Consult
Mildura Tourism	Awareness	Consult
Mildura City Heart	Awareness	Consult
Media	Awareness	Inform
Utilities		
Water Authorities (LMW, CMA, GMW)	Asset based	Involve
VicRoads	Asset based	Collaborate
VLine	Asset based	Inform
Powercor/ SP Ausnet	Asset based	Consult/ Collaborate
Telstra/ Transact	Asset based	Consult/ Involve
Envestra/ APA	Asset based	Consult
Adjoining Municipalities		
NSW – Wentworth	Cross border alignment	Inform
Buloke Shire	Cross border alignment	Inform
Swan Hill Rural City Council	Cross border alignment	Inform
Yarriambiack	Cross border alignment	Inform
Hindmarsh	Cross border alignment	Inform
West Wimmera	Cross border alignment	Inform
SA Local Government	Cross border alignment	Inform
Government Departments		
DELWP	Response Agency EM/Planning	Collaborate/ Consult
DEDJTR	Response Agency EM/Planning	Collaborate/Consult
EPA	Awareness	Inform
DHHS	Recovery	Inform
Parks Victoria	Response Agency EM/Planning	Collaborate

Table 1: Stakeholder Analysis

Workgroup

Membership of the Municipal Fire Management Workgroup is made up of core committee members and associate members.

Core Members of the Municipal Fire Management Workgroup, as appointed by the MEMPC, comprises of representatives from the following key agencies and organisations:

- *Mildura Rural City Council;*
- *CFA Staff & Volunteers;*
- *Parks Victoria; and*
- *DELWP.*

Environmental Summary

Mildura Rural City Council is located in the far North-West of the State of Victoria with its borders comprising of Swan Hill Rural City Council, West Wimmera, Hindmarsh, Yarriambiack and Buloke local government areas.

This environmental scan has been prepared to provide information about the trends and direction of the Mildura region. The information has been developed using the resources of the Australian Bureau of Statistics, its various census and reports.

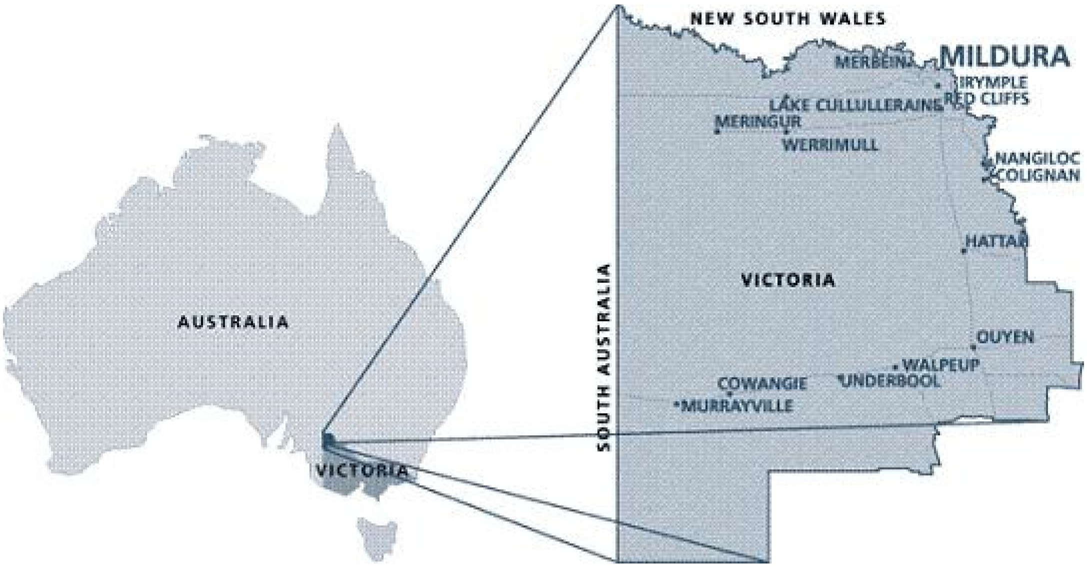


Figure 5: Mildura Rural City Council Locality Plan

The Municipality

Mildura is located at the junction of three States – Victoria, New South Wales and South Australia. It is adjacent to the Murray River and the City of Mildura commands a unique position in Australia's domestic economy. The Mildura Rural City Council area covers approximately 10% of the State of Victoria and, as at 30 June 2013 has a population of approximately 52,685 (*ABS, 1379.0.55.001).* Further the population is expected to continue growing into the future, reaching 71,000 by 2031.

Population

Mildura Rural City is a rapidly growing municipality that includes Mildura City as well as a number of other communities including Red Cliffs, Merbein and Irymple near the Murray River, and Ouyen and Murrayville further inland.

There is a significant peak in the population during the holiday seasons and warmer months due to the large attraction of tourists, also during harvest periods when horticulture workers are attracted to the Region.

Demographics

Age	2013 (%)
Persons – 0-14 years	20.3
Persons – 15-24 years	13.4
Persons – 25-34 years	11.4
Persons – 35-44 years	12.6
Persons – 45-54 years	13.3
Persons – 55-64 years	12.2
Persons – 65-74 years	8.9
Persons – 75-84 years	5.6
Persons – 85 years and over	2.4
Total (no.)	**52,685**

Table 2: Estimated Resident Population (%)

Source: ABS 1379.0.55.001 National Regional Profile, Mildura (RC), 2009-2013

Viewing the percentage estimated resident population over the duration of 2009 – 2013 (5 years), it can be significantly noticed the age population 55-64 years, 65-74 years, 75-84 years and 85 years and over have increased during the year span.

With a slight increase of overall residential population of 2.5% over the 5 year duration, and a significantly notable increase in the above older age brackets, it can easily be established the Municipality has an aging population.

Culture

Mildura Rural City Council acknowledges the traditional custodians of the land, the Latje Latje people, and pay respect to Elders both past and present.

As such, the Region has a rich indigenous cultural history. Council acknowledges the traditional owners of this land and the part they play in the community.

Economy

From the Murray River in the north to the Mallee national parks and dryland farming districts, our Region includes significant natural assets that are the hallmark of our district.

Mildura City is a population and transport hub in comparison to the surrounding region which contains much of the agricultural activity.

The Mildura region has a diverse economy valued at approximately $2.98 billion. Significant agriculture and horticulture sectors generate economic activity in other sectors such as manufacturing, wholesale trade, transport and storage. An emerging industry is mining and its support infrastructure.

The Municipality has a number of key industries including: - Dryland farming, irrigated horticulture (table grapes, wine grapes, dried grapes, citrus and vegetables), tourism, food and beverage manufacturing, transport and logistics, retail, health and community services.

There are also a number of emerging industries including: - Renewable energy generation, aquaculture, mineral sands mining and recycling.

Climate

Mildura has a semi-arid climate, which contain hot summers and cool winters. Mildura, being located so far inland is only about 50 metres above sea level

The climate is warm and sunny with the mean minimum temperature being 10.3 degrees Celsius and the maximum mean temperature 23.9 degrees Celsius.

Most rain falls between May to October, with an average of 290mm per annum.

Geographic Characteristics

Mildura Rural City Council has a variety of geographical features in the Municipality including:

- A total land mass for the Mildura municipality at 2,208,250 Ha there is a diverse range of environmental conditions.
- A total of 1,048,799 Ha (47.5%) of the municipality are protected areas.

The protected National Parks include;

- Hattah Kulkyne National Park 48,000 hectares;
- Murray Sunset National Park 633,000 hectares; and
- Northern section of Big Desert/Wyperfeld National Park 361,070 hectares.

Mildura City which is situated on flat land without hills or mountains on the southern bank of the Murray River and surrounded to the west, north and east by lakes and billabongs including, Lake Hawthorn, Lake Ranfurly and Lake Gol Gol. Several towns surround Mildura are situated on the flat plains including Merbein to the west as well as Irymple and Red Cliffs to the south which could be considered suburban areas or satellite towns separated by small stretches of open farmland.

While the land along the river and irrigation channels is fertile, much of the land around Mildura is also dry, saline and semi-arid.

The southern area of the Municipality is predominately dry land farming.

The Mallee is, for all practical purposes, completely flat and very low-lying: in fact for long geographical periods the whole region has been inundated by the ocean. Most of the Mallee consists of sand dunes that have been deposited as a result of movement of sand from the interior of Australia during arid glacial periods of Quaternary. The soils are generally very infertile and sandy: the better ones on more stabilised sand dunes in the east are slightly loamy and pink to light brown and have been able to support wheat and barley growing as a result of the development of superphosphate and other fertilisers. In the west the soils are unconsolidated sand, much less alkaline than in the east and not generally able to support any cropping.

The Mallee has no surface drainage: the native vegetation has so high a rooting density that the rainfall of most years is easily absorbed and the porous sandy soils mean that any excess in an exceptionally wet year will recharge underground water supplies which tend to be highly saline, semi-arid undulating sand dunes with salt pans.

Flora

The Municipality has a complex and diverse array of vegetation communities occurring as complex mosaics in the landscape. One source of diversity for fire-prone vegetation is the post-fire age of that vegetation. Of particular note is the large area of essentially undisturbed vegetation in the dunefields of the large blocks of public land. These communities, variously comprising mallee and heath on nutrient-deficient sandy soils, support the continued conservation of a range of plant and animal species. Many of these species are restricted to the Mallee region.

Most local species of flora have successful strategies to cope with occasional summer wildfires, and regenerate readily from seed or by resprouting. Depending on the particular plant community, the prolonged absence of fire, fires that occur at short rotational intervals, or fires outside the summer period may pose a risk to the sustainability of a plant community.

Such altered fire regimes have been identified as a threatening process to the heath communities dominated by *Banksia ornata*. Other vegetation communities, e.g. Pine-buloke woodland, are sensitive to fire and may need to be actively protected from wildfire. Pine-buloke woodlands of the Riverine and Murray Darling Depression bioregions is a nationally threatened ecological community listed under the *Environment Protection and Biodiversity Conservation Act, 1999.*

The hummock grasses (predominantly *Triodia irritans*) of the mallee dunefields are very flammable even under conditions of moderate fire danger index. The spread of fire between Triodia hummocks is strongly related to wind speed. An understanding of the threshold wind speeds for given levels of Triodia cover, is useful in the development of prescriptions for prescribed burning where that vegetation type is present.

The continued survival of various stages of mallee-heath vegetation relies on the active management of fire across the landscape (Wouters et al.). In a post-fire flora study of the Big Desert following the 2002 fire, Cheal (2004) found that a checklist of rare or threatened species had not been disadvantaged by the fire and were, in fact, generally more abundant post-fire.

Soil

The Municipality is predominantly fragmented landscape, with two large Mallee Parks, the Murray Sunset National Park and Big Desert Wilderness Park.

The Mildura region has a great diversity of soil types that reflect differences in material, topography, climate, organic activity and age. There are five main soil categories:

- Calcareous Soils;
- Sandy Soils;
- Texture Contrast Soils;
- Cracking Clay Soils; and
- Wet Soils.

Assumptions About The Future

The Mildura region is considered to have a stable population, according to 2014 Regional Overview Mildura-Wentworth Report, the population of the Mildura region is expected to continue growing, reaching almost 71,000 by 2031, with an increase of over 9000 people. There will continue to be a transient population throughout the year due to tourism, events and festivals and the harvest of a variety of horticultural products.

The Bushfire Management Overlay (BMO) has also been introduced into the Mildura Planning Scheme by the State Government. Areas in the BMO are areas that have the highest fire risk and are likely to be particularly exposed to the impact of bushfire. The suitability of new development (including subdivision) in these areas must be fully considered before it proceeds. Where development does occur in these areas appropriate bushfire protection measures will be required, under planning and building regulations.

Hazard Analysis

Bushfire Landscapes

The Mildura Region has five key bushfire landscapes. Each landscape has unique characteristics which when combined with weather conditions of the day will drive how bushfires behave.

Landscape	Fuel Hazard Level	Topography	Primary Driver	Spotting/ ember potential
Mallee Forest	Moderate to extreme	Flat	Wind/fuel/plume	Moderate/high
Grass, crop and stubble	Low to moderate	Flat to undulating	Wind	Low
Riverine forest	High to extreme	Flat	Fuel	Low
Urban	Low to high	Flat to undulating	Wind/fuel	Low
Urban/ Rural Interface	Low to high	Flat to undulating	Wind/fuel	Low

Table 3: Bushfire Landscapes of the Mildura Region

Within each of these landscapes, bushfires are influenced by four key elements;

- Weather;
- Fine fuels, their arrangements and how they dry;
- Topography; and
- Ignition source and its location.

Bushfires require an ignition source, suitable weather conditions and a fine fuel source. The spread and intensity of the subsequent fire will be determined by these three factors, and the topography and fuel arrangements. The arrangement and condition of the fuel will then determine how assets are impacted; either by direct flame contact; ember contact or both.

The most dangerous bushfires are those that have high flame intensity and high ember intensity that is distributed ahead of the fire front. Ember attack ignites buildings in which people are sheltering before the main fire front arrives.

Bushfires in the Mildura Region can be ignited by natural or human means. Lightning is the only naturally occurring fire source.

Bushfire Risk

In developing the Loddon Mallee Regional Strategic Fire Management Plan 2011, an assessment was undertaken to identify the ranking of each Municipality against certain criteria. The matrix below highlights the rankings for Mildura Rural City Council in relation to other Municipalities in the Region.

Category	Ranking (out of 10 Municipalities)	Description
Likelihood of Grass Fire	First (1st)	Based on the history of ignition, number of days of Grass Fire Danger Rating Greater then Very High and the percentage of fuel hazard that is High, Very High or Extreme in the municipality
Likelihood of Forest Fire	First (1st)	Based on the history of ignition, number of days of Forest Fire Danger Rating greater than Very High, and the percentage of fuel hazard that is High, Very High or Extreme in the municipality
Human Vulnerability	Third (3rd)	Based on the barriers to capability building and levels of social connectedness across the prevention, preparedness, response and recovery spectrum
Human Settlement Exposure	Fifth (5th)	The extent and number of human settlements and places that house vulnerable community members rated Extreme or Very High that have been identified by the Victorian Fire Risk Register assessment process
Business and Asset Exposure	Fourth (4th)	The extent of business and infrastructure assets rated Extreme or Very High that have been identified by the Victorian Fire Risk Register assessment process
Biodiversity Risk	Tenth (10th)	The extent of endangered and vulnerable Ecological Vegetation Classes in the municipality identified in the office of the Emergency Services Commissioner's Consequence of Loss project
Aboriginal Heritage Risk	Fourth (4th)	The extent of fire sensitive aboriginal sites in the municipality identified in the office of the Emergency Services Commissioner's Consequences of Loss project
Non-Aboriginal Heritage Risk	Seventh (7th)	The extent of listed on the Victorian Heritage Register in the municipality identified in the office of the Emergency Services Commissioner's Consequences of Loss project

Table 4: Summary table of Mildura Rural City Council, Bushfire Likelihood, Vulnerability and Consequence rankings
Source: Mallee Regional Strategic Fire Management Plan 2011

Fire History

Mildura Rural City Council has the highest rankings in the Region for grass fires and forest fires likelihood. This reflects the high historical levels of ignition, 105 per year of which 14 (13%) are naturally occurring. Fuel levels, of high or greater, make up 46%, or more than 10,000 square kilometres of the Municipality. This percentage is the highest by far, both in percentage and area, in the Region. The Municipality has a long bushfire season, where the grassland fire danger index of greater than 25 occurs nearly 80 days per year.

Below, lists details of recent occurred fire events,

Area	Date and time	Size	Safe
Bronzewing - Sunraysia Highway	17:05 15/01/2014	14,102Ha	24/02/14
Wyperfeld - Lake Albacutya Wirrengren Plain, formed when 4 separate ignitions joined	all ignitions started 16:55 14/01/14	56,543Ha	patrolling ceased 18/03/14
Murray Sunset NP - Danyo Reference Area	13:04 17/01/14	4668Ha	15/02/2014
Murray Sunset NP - Rocket Lake Reference Area	16:50 15/01/2014	1214Ha	15/02/2014
Big Desert WP Red Bluff (out of Municipality, West Wimmera)	20:05 14/01/14	29,896Ha	24/02/2014
Paradise FFR - Eys Moyles Road (out of Municipality, Yarriambiack)	20:13 14/01/14	3871Ha	18/03/14

Table 5: Recent Significate Fire History

Resources used across the 6 major fires, 182 personnel were deployed, 6 fixed wing Firebombing aircraft, 2 Helicopters, 3 Planes, 10 Dozers, 2 Graders, 2 Multi Terrain Loaders, 1 Skidder, & 1 Tractor & Roller.

The total area burnt is 123,739Ha, of that only 5,028Ha was private (majority associated with Lake Albacutya fire in Yarriambiack municipality). The highest rate of spread calculated at 370 metres per minute (17/01/2014), coinciding with gusty (70kph) southerly change. Total cost of damages in excess of $14 million towards repairs and infrastructure.

Incidents

The following data shows the total incidents of Public Lands within DELWP for the region from 2006-2016.

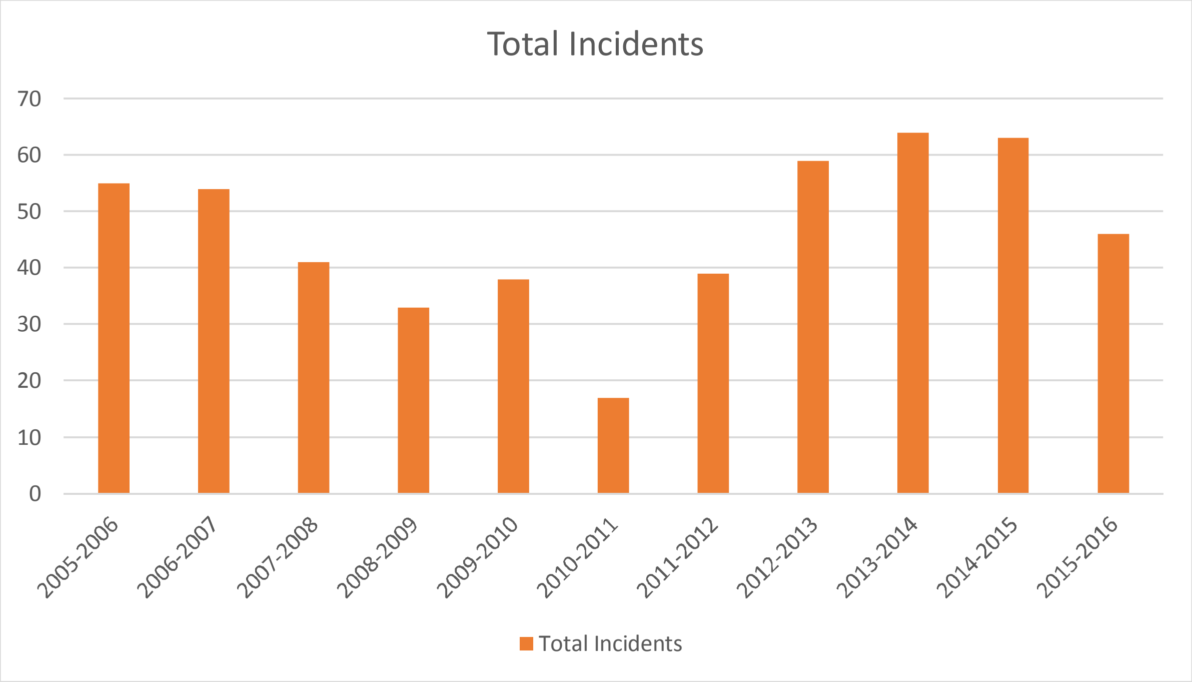


Figure 6: Total Incidents in the Mildura Region 2006-2016

The following information is sourced from CFA Fire Incident Reporting System (FIRS) data, which details fire and incidents reported to CFA from 2006-2016. FIRS data covers all fire hazards and types: - Wildfire, Structure & non structure fires, hazmat and incidents. False alarm statistics are provided to paint the overall response numbers of emergency services, more specifically CFA.

	Structure Fire	Wildfire	Non Structure Fire	Rescue / Search / Medical Assistance	Hazmat	False Alarm	Other
2006	97	99	95	35	25	205	24
2007	100	113	116	45	30	236	35
2008	101	109	101	57	29	234	40
2009	121	93	104	46	38	198	35
2010	86	67	106	41	25	229	38
2011	105	59	85	49	33	239	71
2012	94	92	127	58	33	265	43
2013	122	79	118	75	45	236	49
2014	92	52	120	61	44	237	67
2015	94	92	89	54	43	196	69

Table 6: FIRS Data 2006-2015

The figure below graphs the CFA FIRS data for the period. It should be noted that the numbers and levels of fire related incidents is consistent between 2006-2009 and can notably see a slight decreases in all areas from 2009 - 2011, however instances of wildfire have reduced again between 2012-2014.

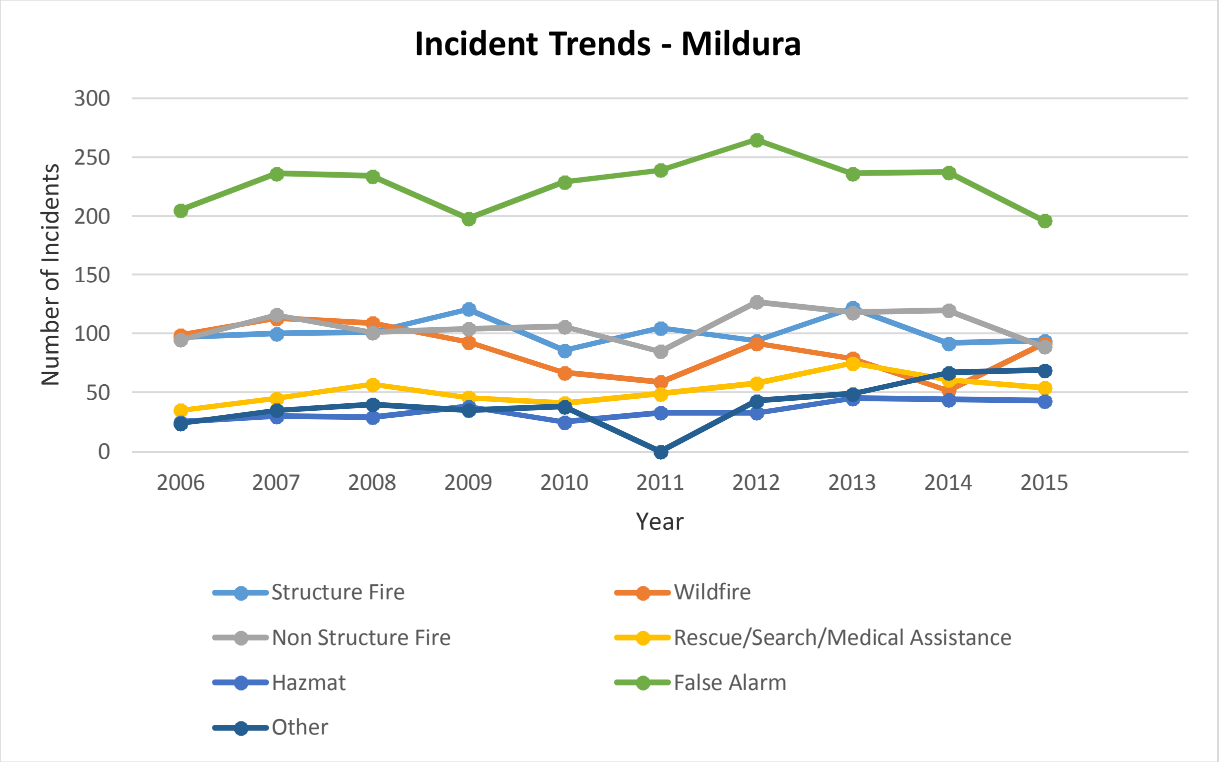


Figure 7: Incident Trends in the Mildura Region 2006-2016

Over the past ten years Department of Environment, Land, Water & Planning (DELWP) managed ignitions in the Mallee have declined, in part due to the increase in Prescribed Burning throughout the Mallee, the easing of drought conditions and increasing efficiencies in Fire Suppression.

Lightning accounts for the majority of fires within the large public land management units, such as Murray Sunset National Park, Wyperfeld National Park, Annuello Flora & Fauna Reserve, and Hattah Kulkyne National Park.

Naturally caused bushfires within the Mallee, generally occurs as a result of the passage of a pre-frontal trough, and subsequent lightning activity. Bushfires tend to make an initial run under a north westerly to westerly influence, and as the cold front comes through, bushfires make a run to the north east, under a south westerly influence.

Season	Lightening	Other	Unknown	Burning Off (Departmental Prescribed)	Burning Off (Stubble, Grass, Scrub)	Burning Off (Windrow, Heap)	Burning Vehicle, Machine	Campfire, Barbeque	Deliberate Lighting (Malicious)	Exhaust, other	Pipe, Cigarette, Match	Power Transmission	Relight – Burning Off	Relight – Prescribed Fire	Relight – Wildfire	Train	Waste Disposal, Domestic	Waste Disposal, Industrial, Sawmill, Tip	(blank)	**TOTAL**
2015-2016	14	1	2		1		3	7	7										11	**46**
2014-2015	19	1	6		1	4	1	17	11	1							2			**63**
2013-2014	30		4		3		2	14	9						1			1		**64**
2012-2013	17		8		3	3	2	14	8	1		1					2			**59**
2011-2012	9		4	1	2		1	14	8											**39**
2010-2011	2	4	1	2	1		2	2	3											**17**
2009-2010	9	1	1	1	1		3	11	7								4			**38**
2008-2009	7		8				1	8	7	1		1								**33**
2007-2008	10	3	8		1		1	8	7		2	1								**41**
2006-2007	26		1	2			1	11	11					1	1					**54**
2005-2006	14		9			1		16	13			2								**55**

Table 7: DELWP Mallee District Ignition History 2006-2016

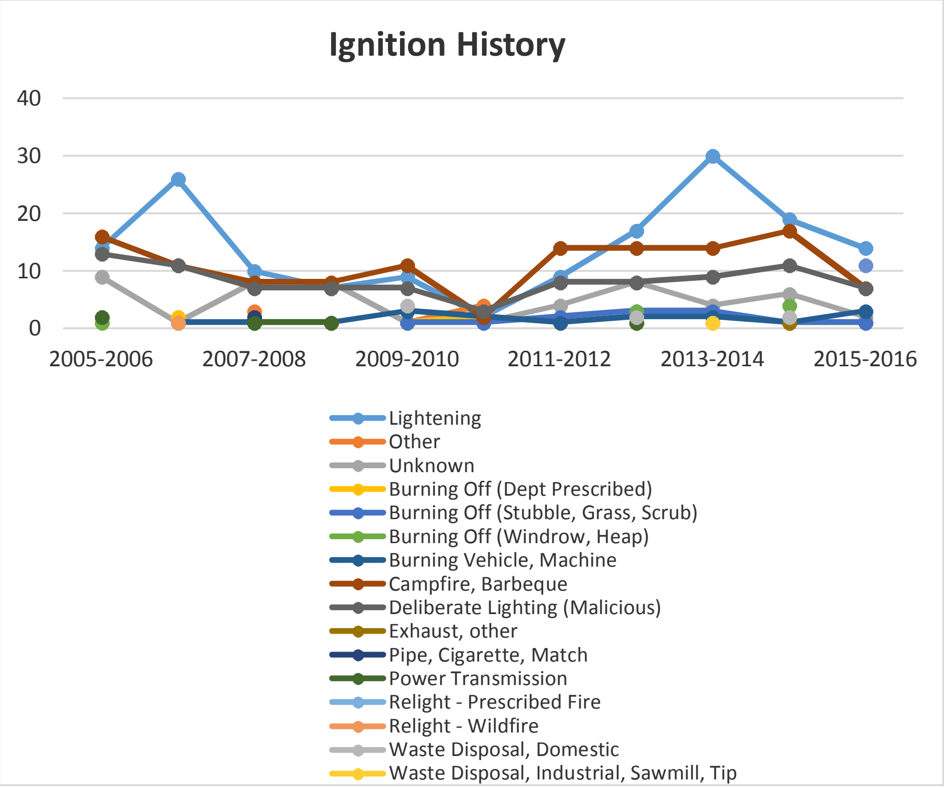


Figure 8: DELWP Mallee District Ignition History 2006-2016

Mitigation Treatments

The Workgroup reviewed the various treatments and programs they currently have in place for each at risk township and critical infrastructure. The treatments list was exported from VFRR-B to assist the Workgroup in reviewing the treatment action plan and adjusting to what is currently being implemented and for future treatments to be applied to the risk townships and critical infrastructures.

VFRR-B online will be updated accordingly with treatments at a later time

An example of the current treatments and prevention activities that are in place within Mildura Rural City Council include:

- Slashing programs;
- Vegetation Management;
- Strategic Fuel Breaks; and
- Fuel Hazard Management.

For a full list of treatments refer to *Appendix G Treatments*

For agreed strategic treatments to be implemented refer to *Appendix C Township Treatments* and *Appendix D Critical Infrastructure Treatments*.

Treatments In Place

Community Information Guides (CIG)

Community Information Guides have been developed for the most high risk bushfire locations. They contain important fire and emergency information to support residents before and during a fire. This includes Neighborhood Safer Places (if available in the area), where people can shelter from fire as a last resort, and fire safety information for members of the local community. The CIG’s can be found on the CFA website, www.cfa.vic.gov.au

The available CIGs within the Mildura municipality are:

- Murrayville
- Underbool
- Walpeup
- Ouyen
- Nangiloc
- Merbein

Neighbourhood Safer Places (NSP) - Place of Last Resort

Neighbourhood Safer Places are Municipal council designated buildings or spaces within the community that may afford some protection from radiant heat.

They are a place of last resort in bushfire emergencies only. They are a last resort shelter location that may assist people when there is imminent threat of bushfire and they have no plan, or their planned options are not possible.

The following locations are Neighbourhood Safer Places throughout the Municipality:

- Mildura Aerodrome Ovals, Eleventh Street, Mildura;
- Johanansen Memorial Recreational Reserve, Sturt Highway, Cullulleraine;
- Mildura South Football Ground, Twelfth Street, Mildura;
- Kenny Park, Box Street, Merbein;
- Quandong Park, Calder Highway, Red Cliffs;
- Henshilwood Oval, Karadoc Avenue, Irymple;
- Blackburn Park, Calder Highway, Ouyen;
- Mildura Show Grounds, Twelfth Street, Mildura; and
- Underbool-Linga Memorial Hall, 12-14 Malkin Avenue, Underbool.

MERI - Monitoring, Evaluation, Reporting and Improvement

The integrated fire management planning process is a continuous cycle of analysis, review and improvement, which operates within a complex and challenging environment.

Within this complex environment there are limited and competing resources to achieve the desired outcome of acceptable levels of residual risk to the community. Therefore, fundamental to its success is the establishment and preservation of healthy stakeholder partnerships that allow for continued transparent and robust dialogue in the interest of achieving the Plan's objectives in the long-term. It is the role of the MFMPC to spearhead relationship management for this purpose.

In addition to monitoring the 'health' of the process, implementation of the plan itself must be monitored and reported upon to enable continuous improvement. The table below summarises the proposed implementation, reporting and review activities.

Frequency	Task / Action	Responsible Party
Ongoing	Implement treatments, as per agreed Plan (*Appendix C & Appendix D*)	All treatment owners
	Further explore identified opportunities for new or enhanced treatments with relevant stakeholders, and agree course of action	Municipal Fire Workgroup
Biannually (every 6 months)	Update Risk Register & Work Plan to reflect treatment status, as reported by treatment owner	Municipal Fire Workgroup
Annually (every 12 months)	Conduct strategic review of risks and associated treatment program, asking: Are the identified risks still valid? Do their pre-treatment and residual risk ratings still hold true? Are there new risks that need to be added to the register and managed? Do the treatments currently in place adequately address the identified risks? Are there any new or enhanced treatments required?	Municipal Fire Workgroup
	Review and update Plan content and mapping to ensure validity	Municipal Fire Workgroup
	Provide overarching progress report (example *Appendix E*) to Municipal Emergency Management Planning Committee, focusing on the collective effectiveness of treatments in the management of risks and progress towards the achievement of objectives	Municipal Fire Workgroup

Frequency	Task / Action	Responsible Party
Triennially (every 3 years)	Conduct end-to-end review of Plan, with particular focus on the environment scan and objectives	Municipal Fire Workgroup

Table 8: MERI

Appendices

Appendix A Township Residual Risk Rating

Appendix A Township Residual Risk Rating

VFRR #	Township	Likelihood	Combined CERA Consequence	Control Risk Rating	Overall Risk Rating
49233	Cardross	Unlikely	Minor	Effective	Low
49023, 49232	Carwarp	Unlikely	Moderate	Moderately effective	Low
49611, 49015	Cowangie	Possible/Likely	Minor	Effective	Low
49026	Cullulleraine	Unlikely	Minor	Effective	Low
49074, 49019, 4952324, 4952325, 49039	Hattah	Possible/Likely	Moderate	Moderately ineffective	High
49217, 49074	Karadoc	Possible/Likely	Minor	Effective	Low
4952323, 4952327	Koorlong	Possible/Likely	Moderate	Moderately Effective	Moderate
49027, 4952330, 49074	Lindsay Point	Possible/Likely	Minor	Moderately effective	Low
49068, 49073, 49604	Merbein	Almost Certain	Minor	Moderately effective	Low
49025, 4952326	Meringur	Possible/Likely	Minor	Moderately effective	Low
49042, 49033, 49073	Mildura	Almost Certain	Minor	Moderately effective	Low
49040, 49060, 49014, 49056, 49610	Murrayville	Unlikely	Moderate	Moderately ineffective	Moderate
4951203, 4951202, 49074	Nangiloc	Unlikely	Moderate	Moderately effective	Low
49041, 49074	Neds Corner	Possible/Likely	Minor	Moderately effective	Low
49075, 49606, 49034, 49229, 49073	Nichols Point	Almost Certain	Minor	Moderately effective	Low
49226, 4950078,	Ouyen	Unlikely	Moderate	Moderately effective	Low

49072, 49018					
49037	Patchewollock *Pine Plains Lodge	Unlikely	Minor	Moderately effective	Moderate
49074	Red Cliffs	Possible/Likely	Minor	Moderately effective	Moderate
49038	Taplan (SA) *Shearers Quarters Accommodation	Unlikely	Minor	Moderately effective	Low
49016, 4951195	Underbool	Unlikely	Moderate	Moderately effective	Low
49248, 49036, 49017, 4951196, 4951871	Walpeup	Unlikely	Moderate	Moderately effective	Low
49249, 49066, 49024, 49048	Werrimull	Unlikely	Moderate	Moderately effective	Low

Appendix B Critical Infrastructure Residual Risk Rating

Appendix B Critical Infrastructure Residual Risk Rating

VFRR #	Critical Infrastructure	Likelihood	Combined CERA Consequence	Control Risk Rating	Overall Risk Rating
49224	Bambill Incident Channel	Unlikely	Moderate	Effective	Low
49211	Calder HWY	Possible/Likely	Moderate	Effective	Low
49218	Carwarp Repeater Tower	Unlikely	Moderate	Effective	Low
49207	Hattah - Wemen 66KV Sub-transmission Line	Unlikely	Moderate	Effective	Low
49215	Hattah Communications Tower	Unlikely	Major	Effective	Low
49208	Hattah Switching Station	Unlikely	Moderate	Effective	Low
49201	HOTS-RCTS 220KV Transmission Line	Unlikely	Major	Effective	Low
49202	KGTS-RCTS 220KV Transmission Line	Unlikely	Major	Effective	Low
49227	Mildura Airport and Navigational Aids	Rare	Major	Effective	Low
49223	Morkalla Incident Channel	Unlikely	Moderate	Effective	Low
49222	Murrayville Incident Channel	Unlikely	Moderate	Effective	Low
49219	Ouyen Repeater Tower	Unlikely	Moderate	Effective	Low
4951873	Ouyen WTP	Unlikely	Minor	Effective	Low
49231	Ouyen Zone Substation	Unlikely	Moderate	Effective	Low
49213	Ouyen-Mildura Rail Line	Possible/Likely	Major	Effective	Low
49206	Red Cliffs - Hattah 66KV Sub-transmission Line	Unlikely	Moderate	Effective	Low
49205	Red Cliffs - Merbein 66KV Sub-transmission Line	Unlikely	Moderate	Effective	Low
49203	Red Cliffs - Mildura 66KV Sub-transmission Line	Unlikely	Moderate	Effective	Low
49204	Red Cliffs - Robinvale 66KV Sub-transmission Line	Unlikely	Moderate	Effective	Low
49210	Sturt HWY	Unlikely	Moderate	Effective	Low
49221	Tutye Incident Channel	Unlikely	Moderate	Effective	Low
4951870	Underbool WTP	Unlikely	Minor	Effective	Low
4951872	Walpeup Boosters PS NMPL	Unlikely	Moderate	Effective	Low
49220	Walpeup Incident Channel	Unlikely	Moderate	Effective	Low
49230	Wemen Zone Substation	Unlikely	Moderate	Effective	Low

Appendix C Township Treatments

Appendix C Township Treatments

VFRR #	Township	Treatments
49233	Cardross	Community Education Hazard Reduction Ignition Management
49023, 49232	Carwarp	Community Education Hazard Reduction Ignition Management
49611, 49015	Cowangie	Community Education Hazard Reduction Ignition Management
49026	Cullulleraine	Community Education Hazard Reduction
49074, 49019, 4952324, 49039	Hattah	Community Education Hazard Reduction Ignition Management Preparedness
49217, 49074	Karadoc	Community Education Ignition Management
4952323, 4952327	Koorlong	Community Education Hazard Reduction Ignition Management Preparedness
49027, 4952330, 49074	Lindsay Point	Community Education Preparedness
49068, 49073, 49604	Merbein	Community Education Hazard Reduction Ignition Management Preparedness
49025, 4952326	Meringur	Community Education Hazard Reduction Ignition Management Preparedness

49042, 49033, 49073	Mildura	• Community Education • Hazard Reduction • Ignition Management
49040, 49060, 49014, 49056, 49610	Murrayville	• Community Education • Hazard Reduction • Ignition Management • Preparedness
4951203, 4951202, 49074	Nangiloc	• Community Education • Ignition Management
49041, 49074	Neds Corner	• Community Education
49075, 49606, 49034, 49229, 49073	Nichols Point	• Community Education • Hazard Reduction • Ignition Management • Preparedness
49226, 4950078, 49072, 49018	Ouyen	• Community Education • Hazard Reduction • Ignition Management • Preparedness
49037	Patchewollock *Pine Plains Lodge	• Community Education • Hazard Reduction
49074	Red Cliffs	• Community Education • Ignition Management
49038	Taplan (SA) *Shearers Quarters Accommodation	• Community Education • Hazard Reduction • Preparedness
49016, 4951195	Underbool	• Community Education • Hazard Reduction • Ignition Management • Preparedness
49248, 49036, 49017, 4951196, 4951871	Walpeup	• Community Education • Hazard Reduction • Ignition Management • Preparedness
49249, 49066, 49024, 49048	Werrimull	• Community Education • Hazard Reduction • Ignition Management • Preparedness

Appendix D Critical Infrastructure Treatments

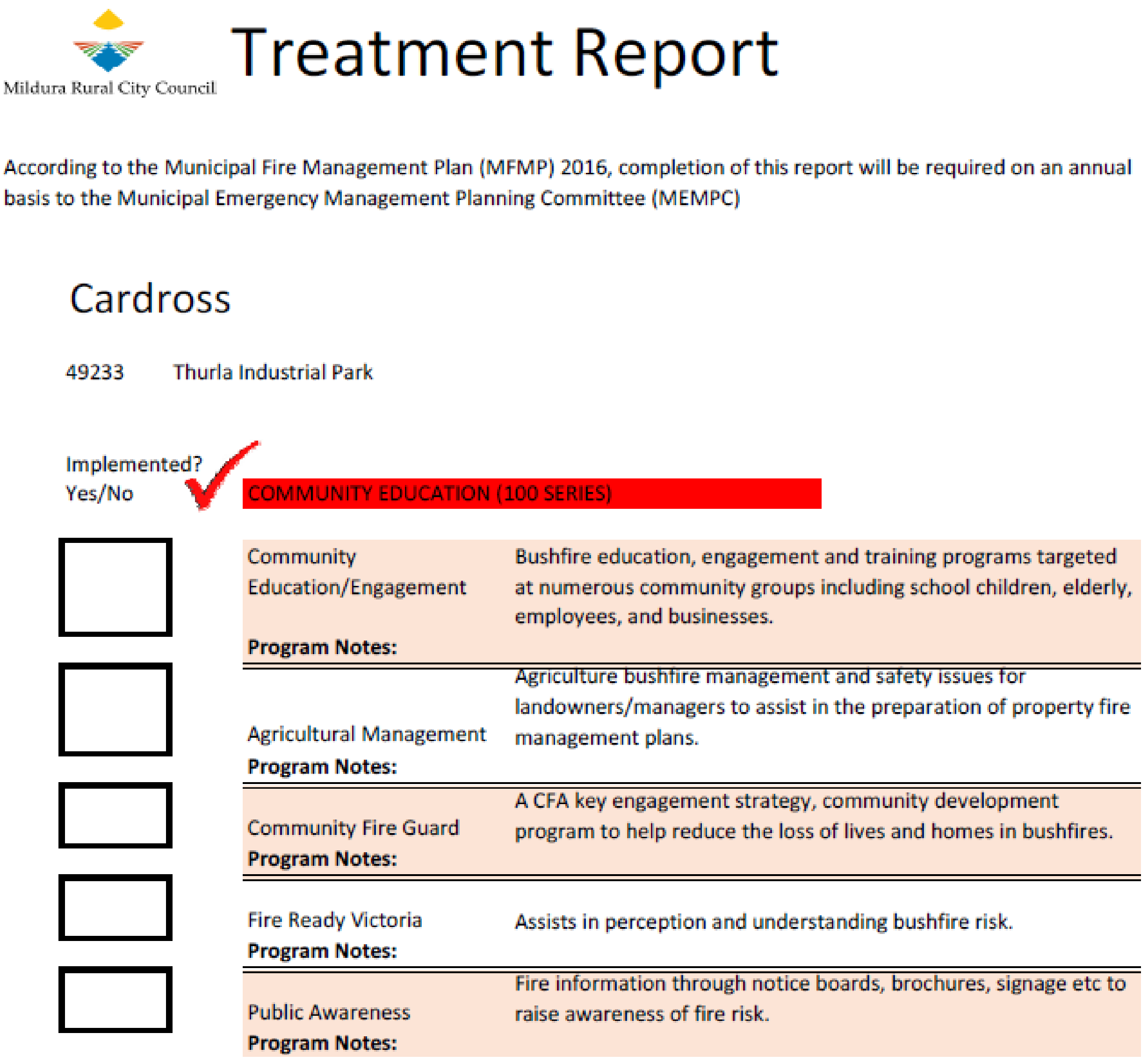
Appendix D Critical Infrastructure Treatments

VFRR #	Critical Infrastructure	Treatments
49224	Bambill Incident Channel	Hazard Reduction Ignition Management
49211	Calder HWY	Community Education Hazard Reduction Ignition Management
49218	Carwarp Repeater Tower	Hazard Reduction Ignition Management
49207	Hattah - Wemen 66KV Sub-transmission Line	Hazard Reduction Ignition Management
49215	Hattah Communications Tower	Hazard Reduction Ignition Management
49208	Hattah Switching Station	Hazard Reduction Ignition Management
49201	HOTS-RCTS 220KV Transmission Line	Hazard Reduction Ignition Management
49202	KGTS-RCTS 220KV Transmission Line	Hazard Reduction Ignition Management
49227	Mildura Airport and Navigational Aids	Community Education Hazard Reduction Ignition Management Preparedness
49223	Morkalla Incident Channel	Hazard Reduction Ignition Management
49222	Murrayville Incident Channel	Hazard Reduction Ignition Management
49219	Ouyen Repeater Tower	Hazard Reduction Ignition Management
4951873	Ouyen WTP	Hazard Reduction Ignition Management

49231	Ouyen Zone Substation	• Hazard Reduction • Ignition Management
49213	Ouyen-Mildura Rail Line	• Hazard Reduction • Ignition Management
49212	Panitya Rail Line	• Hazard Reduction • Ignition Management
49206	Red Cliffs - Hattah 66KV Sub-transmission Line	• Hazard Reduction • Ignition Management
49205	Red Cliffs - Merbein 66KV Sub-transmission Line	• Hazard Reduction • Ignition Management
49203	Red Cliffs - Mildura 66KV Sub-transmission Line	• Hazard Reduction • Ignition Management
49204	Red Cliffs - Robinvale 66KV Sub-transmission Line	Hazard Reduction • Ignition Management
49210	Sturt HWY	• Community Education • Hazard Reduction • Ignition Management
49221	Tutye Incident Channel	• Hazard Reduction • Ignition Management
4951870	Underbool WTP	• Hazard Reduction • Ignition Management
4951872	Walpeup Boosters PS NMPL	• Ignition Management
49220	Walpeup Incident Channel	• Hazard Reduction • Ignition Management
49230	Wemen Zone Substation	• Hazard Reduction • Ignition Management

Appendix E Township Treatment Report Example

Appendix E Township Treatment Report Example



Mildura Rural City Council

Treatment Report

According to the Municipal Fire Management Plan (MFMP) 2016, completion of this report will be required on an annual basis to the Municipal Emergency Management Planning Committee (MEMPC)

Cardross

49233 Thurla Industrial Park

Implemented? Yes/No ✓	COMMUNITY EDUCATION (100 SERIES)	
☐	Community Education/Engagement **Program Notes:**	Bushfire education, engagement and training programs targeted at numerous community groups including school children, elderly, employees, and businesses.
☐	Agricultural Management **Program Notes:**	Agriculture bushfire management and safety issues for landowners/managers to assist in the preparation of property fire management plans.
☐	Community Fire Guard **Program Notes:**	A CFA key engagement strategy, community development program to help reduce the loss of lives and homes in bushfires.
☐	Fire Ready Victoria **Program Notes:**	Assists in perception and understanding bushfire risk.
☐	Public Awareness **Program Notes:**	Fire information through notice boards, brochures, signage etc to raise awareness of fire risk.

Appendix F VFRR ID and Asset Names

Appendix F VFRR ID and Asset Names

VFRR ID	VFRR Asset Name	Asset Type
49224	Bambill Incident Channel	Critical Infrastructure
49211	Calder HWY	Critical Infrastructure
49218	Carwarp Repeater Tower	Critical Infrastructure
49207	Hattah - Wemen 66KV Sub-transmission Line	Critical Infrastructure
49215	Hattah Communications Tower	Critical Infrastructure
49208	Hattah Switching Station	Critical Infrastructure
49201	HOTS-RCTS 220KV Transmission Line	Critical Infrastructure
49202	KGTS-RCTS 220KV Transmission Line	Critical Infrastructure
49214	Kulwin Rail Line	Critical Infrastructure
4951868	Mallee HWY Bores 1-92	Critical Infrastructure
49227	Mildura Airport and Navigational Aids	Critical Infrastructure
49223	Morkalla Incident Channel	Critical Infrastructure
49222	Murrayville Incident Channel	Critical Infrastructure
49219	Ouyen Repeater Tower	Critical Infrastructure
4951873	Ouyen WTP	Critical Infrastructure
49231	Ouyen Zone Substation	Critical Infrastructure
49213	Ouyen-Mildura Rail Line	Critical Infrastructure
49212	Panitya Rail Line	Critical Infrastructure
49206	Red Cliffs - Hattah 66KV Sub-transmission Line	Critical Infrastructure
49205	Red Cliffs - Merbein 66KV Sub-transmission Line	Critical Infrastructure
49203	Red Cliffs - Mildura 66KV Sub-transmission Line	Critical Infrastructure
49204	Red Cliffs - Robinvale 66KV Sub-transmission Line	Critical Infrastructure
49210	Sturt HWY	Critical Infrastructure
49221	Tutye Incident Channel	Critical Infrastructure
4951870	Underbool WTP	Critical Infrastructure
4951872	Walpeup Boosters PS NMPL	Critical Infrastructure
49220	Walpeup Incident Channel	Critical Infrastructure
49230	Wemen Zone Substation	Critical Infrastructure
49042	Apex Riverbeach Holiday Park	Township
49248	AusBulk Grain Site	Township
49249	AusBulk Grain Site	Township
49040	Big Billy Bore Camping Ground	Township
49608	Big Lizzie	Township
49606	Billabong Pumping Station	Township
4952322	Birdwoodton	Township
49075	Bruces Bend Marina	Township
49023	Carwarp	Township
49069	Cliffside	Township
49611	Cow (Kow) Plains Homestead	Township
49015	Cowangie	Township
49026	Cullulleraine	Township
49225	Easter Power Sports	Township
49033	Eighth ST	Township

49602	Former Methodist Church	Township
49603	Former Mildura Base Hospital	Township
49609	Former Murrayville Consolidated School	Township
49019	Hattah	Township
4952324	Hattah Lakes Camping Grounds (Little Hattah Lake)	Township
4952325	Hattah Lakes Camping Grounds (Lake Mournpall)	Township
49226	Iluka Kulwin Mine Site	Township
49605	Irymple Railway Station	Township
49034	Kings Billabong	Township
4952323	Koorlong	Township
4952327	Koorlong PS	Township
49217	Lindeman's Winery	Township
49027	Lindsay Point	Township
4952330	Lindsay Point Almonds	Township
49060	Mallee Minors Childcare Centre and Preschool Murrayville	Township
49036	Mallee Research Station	Township
49068	Merbein	Township
49073	Merbein to Bruce's Bend Riverside Camping Sites	Township
49025	Meringur	Township
4952326	Meringur Community Hall and Fire Station	Township
49604	Mildura Blass Distillery	Township
49066	Millewa Preschool	Township
49074	Murray River Bush Camping Sites	Township
49014	Murrayville	Township
49056	Murrayville Community College	Township
4952209	Murrayville Preschool	Township
49610	Murrayville Railway Station Complex	Township
4951203	Nangiloc and District Kindergarten	Township
4951202	Nangiloc Colignan and District PS	Township
49041	Neds Corner Accommodation and Residence	Township
49232	Olam Almond Processing Plant	Township
4950078	Ouyen	Township
49072	Ouyen South East	Township
49018	Ouyen West	Township
49037	Pine Plains Lodge	Township
49229	Psyche Bend Pump Station	Township
49607	Psyche Bend Pumping Station	Township
49601	Rio Vista	Township
49039	Sextons Bend Educational Camp	Township
49038	Shearers Quarters Accommodation	Township
49233	Thurla Industrial Park	Township
49016	Underbool	Township
4951195	Underbool Preschool and Play Centre	Township
49017	Walpeup	Township
4951196	Walpeup PS	Township
4951871	Walpeup Urban PS	Township
49024	Werrimull	Township
49048	Werrimull P12	Township

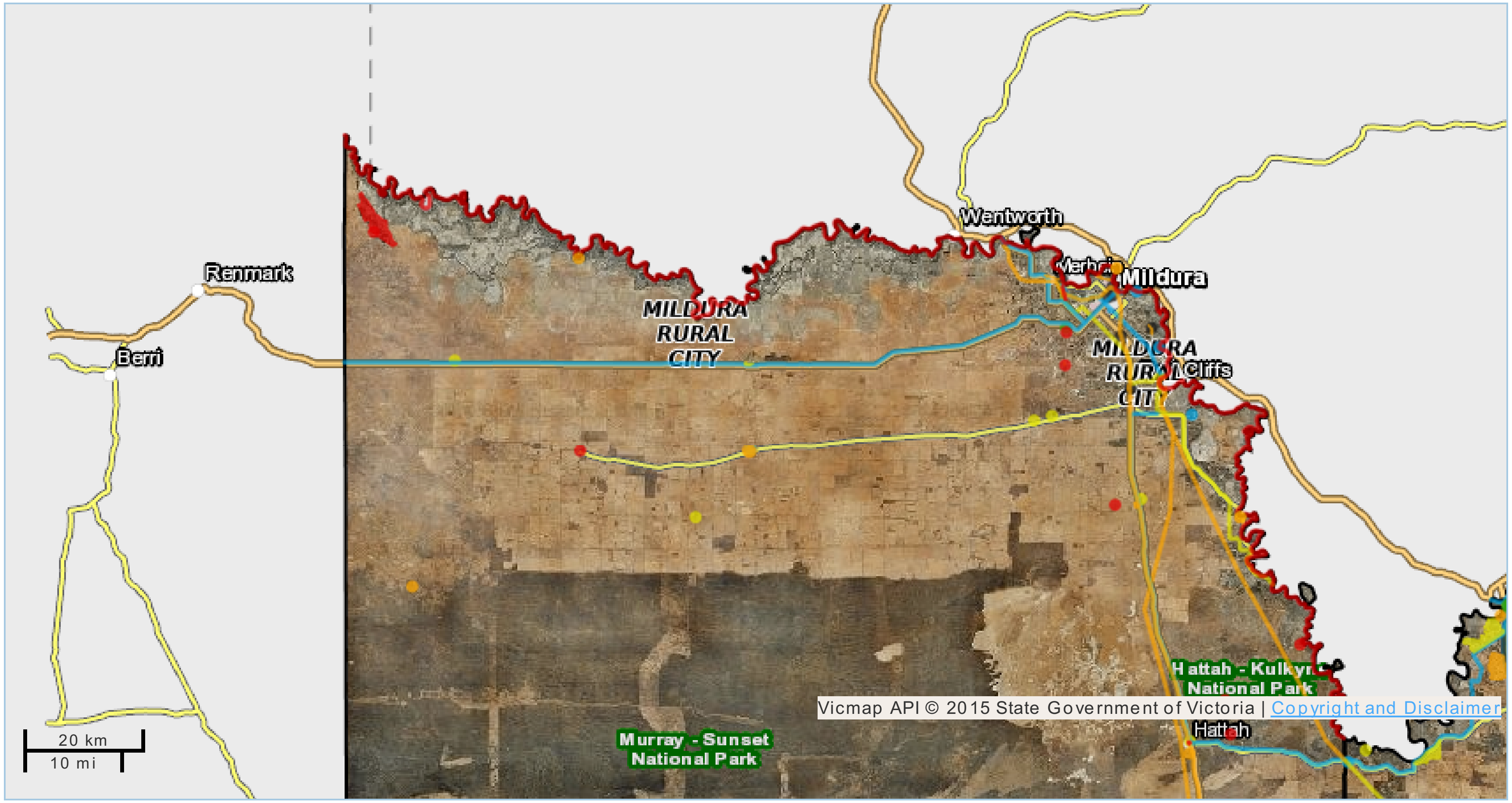
Appendix G Treatments

VFRR-B Treatment Overview

2016 Version 1

TREATMENT NAME	TREATMENT DEFINITION	RESPONSIBLE AGENCY	TREATMENT NUMBER
COMMUNITY EDUCATION (100 SERIES)			
Community Education/Engagement	Bushfire education, engagement and training programs targeted at numerous community groups including school children, elderly, employees, and businesses.		
		CFA	100
		LGA	101
		DET	102
		Utility	103
		MFB	121
Agricultural Management	Agriculture bushfire management and safety issues for landowners/managers to assist in the preparation of property fire management plans.		
		CFA	104
		DELWP; PV	105
Community Fire Guard	A CFA key engagement strategy, community development program to help reduce the loss of lives and homes in bushfires.		
		CFA	106
Fire Ready Victoria	Assists in perception and understanding bushfire risk.		
		CFA	107
Public Awareness	Fire information through notice boards, brochures, signage etc to raise awareness of fire risk.		
		Utility	108
		CFA	109
		LGA	110
		Other	120
		MFB	122
		DELWP; PV	124
Tourism Fire Awareness	Community education and information for tourists about Bushfire risk in the area.		
		CFA	111
		DELWP; PV	112
		LGA	113
		Tourism Victoria	117
Multicultural/ Special Needs Engagement	Translations of campaigns to suite all muliticultural and special needs persons.		
		LGA	115
		CFA	116
		MFB	123
HAZARD REDUCTION (200 SERIES)			
Burn Program	Removal of selected vegetation in large patches.		
		LGA	201
		CFA	202
		Utility	233
		DELWP; PV	231
Crown and Freehold Land Fuel Reduction	Reducing fuel loads on crown land and freehold land.		
		DELWP; PV	203
		Utility	234
Fuel Hazard Management	Modification of vegetation: Altering vegetation structure and/or separation distance between asset and fuel load.		
		Other	205
		Utility	206
		LGA	207
		CFA	208
		DELWP; PV	232
Routine Maintenance of Rail Line	Removal of vegetation on and around rail lines to ensure protection of assets, minimise ignition potential, and ensure adequete access and egress.		
		Utility	209
		DOT	210
		CFA	211
Routine Asset Site Maintenance	Ongoing mowing/ slashing/ spraying of sites to reduce fuel loads for protection of assets or adjoining properties.		
		Other	212
		DET	213
		Utility	214
		DELWP; PV	215
		LGA	216
Asset Protection Zones	Buffer zone between bushfire hazard and the asset.		
		DELWP; PV	227
Fire Management Zones	To provide areas of sufficient width to reduce the spread of bushfire.		
		DELWP; PV	217
		Other	228
		LGA	229
Powerline Clearance	Vegetation management around powerlines.		
		LGA	218
		Utility	219
		Telstra	221
Roadside Vegetation Management	Removal of vegetation along roadsides.		
		LGA	222
		VicRoads	223
		DELWP; PV	224
		Other	225
		Private	226
IGNITION MANAGEMENT (300 SERIES)			
Operations Restrictions	Operation of machinery restricted on elevated fire weather days.		
		HVP Plantations	300
		Utility	310
Patrol/ Inspection	Inspections of assets to ensure compliance with regulations and safety requirements and to assess for fire hazards.		
		LGA	303
		CFA	304
		DELWP; PV	305
		MFB	306
		Victoria Police	309

Appendix H Northern Municipality VFRR Assets



Victorian Fire Risk Register - Bushfire (VFRR-B)

Northern Municipality VFRR Assets

Date Produced: 27/05/2016

email: riskintelligence@cfa.vic.gov.au

- 🟥 Risk Rating = Extreme
- 🟧 Risk Rating = Very High
- 🟨 Risk Rating = High
- 🟦 Risk Rating = Medium
- 🟩 Risk Rating = Low
- ⬛ N/A

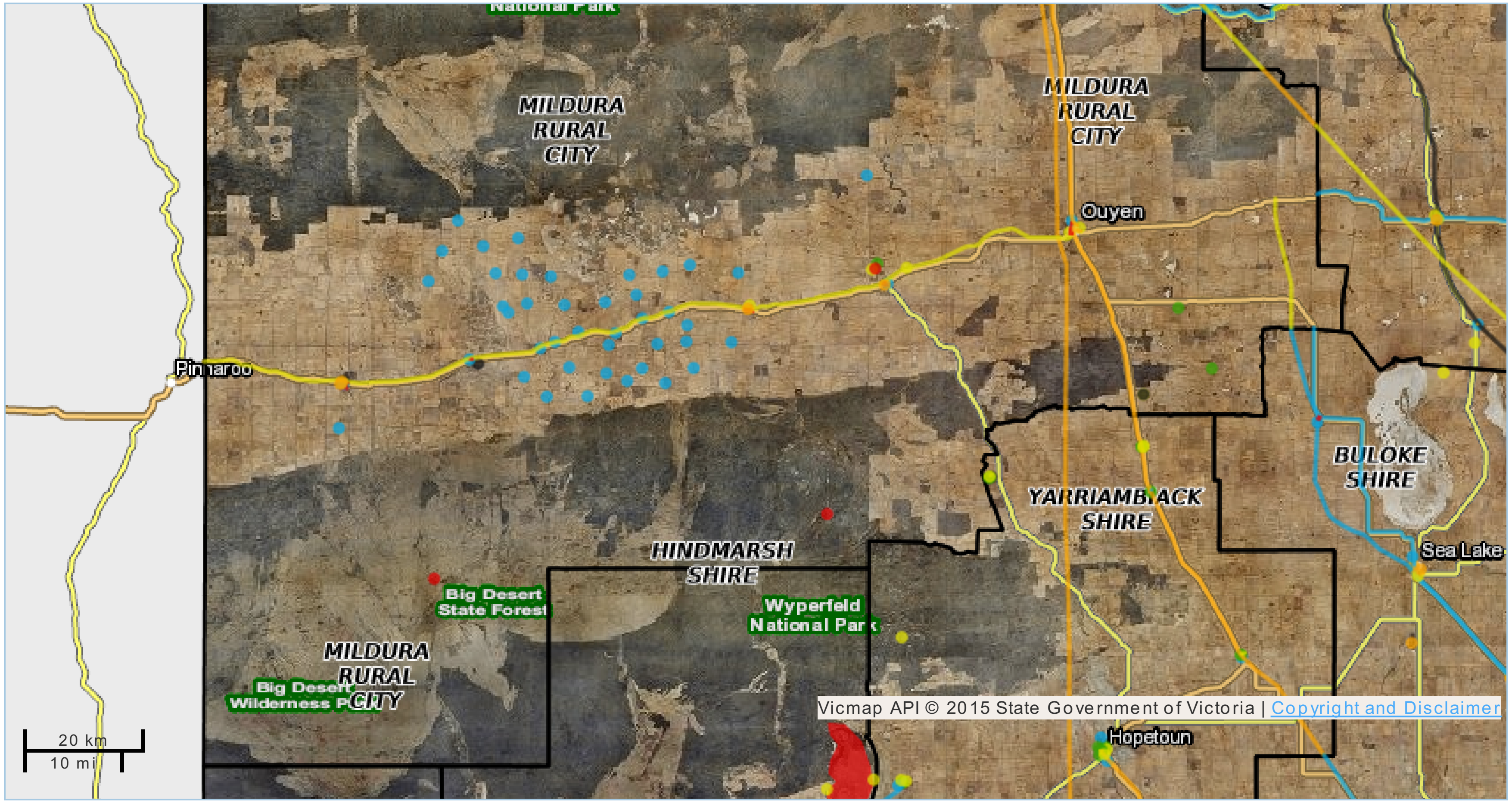
Disclaimer:

This map displays assets at risk from bushfire according to VFRR-B criteria within the local government area. It should be viewed in conjunction with the accompanying documentation which provides further details on the assets assessed and the risk assessment process used.

The municipal working group makes every effort to ensure the quality of the information available on this map.

This map is a snapshot generated from Victorian Government data. The State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for errors, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of the data.

Appendix I Southern Municipality VFRR Assets



Victorian Fire Risk Register - Bushfire (VFRR-B)

Southern Municipality VFRR Assets

Date Produced: 27/05/2016

email: riskintelligence@cfa.vic.gov.au

🟥 Risk Rating = Extreme
🟧 Risk Rating = Very High
🟨 Risk Rating = High
🟦 Risk Rating = Medium
🟩 Risk Rating = Low
⬛ N/A

Disclaimer:

This map displays assets at risk from bushfire according to VFRR-B criteria within the local government area. It should be viewed in conjunction with the accompanying documentation which provides further details on the assets assessed and the risk assessment process used.

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Appendix J CERA Consequence Rating Criteria Tables

COMMUNITY EMERGENCY RISK ASSESSMENT CRITERIA

Consequence Rating Criteria (Table 1)

	Rating	People	Environment	Economy	Public Administration	Social Setting	Infrastructure
1	**Insignificant**	• Near misses or minor injuries, no reliance on health system.	• Near misses or incidents without environmental damage, no recovery efforts required	• Financial loss < 0.1% of the jurisdiction's revenues[1], to be managed within standard financial provisions. • Inconsequential disruptions at business level.	• Governing body manages the event within normal parameters. • Public administration functions without disturbances. • Public confidence in governance, no media attention.	• Inconsequential short-term reduction of services. • No damages to objects of cultural significance. • No adverse emotional and psychological impacts.	• Inconsequential short-term failure of infrastructure and service delivery. • No disruption to the public services.
2	**Minor**	• Isolated cases of serious injuries. • Health system operating within normal parameters. • Displacement of people within jurisdictional capacity to cope. • Personal support needs being met.	• Isolated cases of environmental damage. • One-off recovery efforts required to supplement self-repair. • Damage localised in extent. • Short term impairment of ecosystem functions up to one year.	• Financial loss, 0.1-0.3% of the jurisdiction's revenues[1], requiring activation of reserves to cover loss. • Disruptions at business level leading to isolated cases of loss of employment.	• Governing body manages the emergency event under emergency regime. • Public administration functions with some disturbances. • Isolated expressions of public concern. • Jurisdiction perceived as able to pursue business as usual despite disruptions.	• Isolated and temporary cases of reduced services within community. • Repairable damage to objects of cultural/ heritage significance. • Localised disruption to community wellbeing and social networks over a small area for a period of weeks.	• Infrastructure/ systems failure impacts on part of community's functioning over a small area for a short period (a few weeks). • Localised inconvenience.
3	**Moderate**	• Isolated cases of lives lost and/or some cases of serious injuries. • Health system operating at maximum surge capacity. • Displacement of people within capacity of the jurisdiction to cope for periods of less than 24 hours. • Elements of jurisdictional personal support system operating at maximum capacity.	• Isolated but significant cases of impairment or loss of ecosystem function(s) at locality within jurisdiction. • Some remedial efforts required for recovery. • Medium term impairment up to two years.	• Financial loss, 0.3-1% of the jurisdiction's revenues[1], requiring adjustments to business strategy to cover loss. • Disruptions to selected industry sectors leading to isolated cases of business failure and multiple loss of employment.	• Governing body manages the emergency event with considerable diversion from policy. • Public administration functions limited by focus on critical services. • Instances of public protests with emergent alarm. • Significant diversion from State policy goal(s) or program(s).	• Ongoing reduced services within community. • Permanent damage to objects of cultural/heritage significance. • Major disruption to community wellbeing and social networks over a locality for a period of months.	• Infrastructure/ systems failure puts severe pressure on part of community's functioning over a medium to large area for a medium period (up to three months). • Widespread inconveniences but no external support required.
4	**Major**	• Multiple loss of life (mortality in the order of 0.001% of the jurisdictional population). • Health system operating at maximum capacity, under severe pressure. • Isolated cases of displacement of people for periods in the order of a day. • Jurisdictional personal support system operating at maximum capacity. • Normal health care and living standards difficult to maintain.	• Severe impairment or loss of ecosystem functions affecting one or more species or regional landscapes. • Progressive environmental damage. • Extensive recovery effort required. • Serious long term impairment or loss of ecosystem function(s) up to five years.	• Financial loss, 1-3% of the jurisdiction's revenues[1], requiring major changes in business strategy to (partly) cover loss. • Significant disruptions across industry sectors leading to multiple business failures and loss of employment.	• Governing body absorbed with managing the emergency event. • Public administration struggles to provide critical services. • Loss of public confidence in governance, with serious widespread public outcry and some alarm. • State policy goal(s) or program(s) abandoned.	• Reduced quality of life within community. • Significant loss or damage to objects of cultural/heritage significance. • Severe disruption to community wellbeing and social networks over a wide area for up to two years.	• Medium to long term (three to six months) failure of significant infrastructure and service delivery affecting large parts of the community. • Initial external support required.
5	**Catastrophic**	• Widespread multiple loss of life (mortality in the order of 0.01% of the jurisdictional population). • Health system over-stressed. • Large numbers of displaced people for periods of days or more. • Aid sourced from outside the jurisdiction, people leave the jurisdiction to seek help. • Normal health care and living standards abandoned.	• Widespread severe impairment or loss of ecosystem function(s) across many species and multiple or large regional landscapes. • Irrecoverable environmental damage. • Permanent loss of ecosystem in its pre-existing form. • Limited ecosystem recovery over more than five years.	• Unrecoverable financial loss > 3% of the jurisdiction's revenues[1]. • Asset destruction across industry sectors leading to widespread business failures and loss of employment	• Governing body unable to manage the emergency event. • Disordered public administration without effective functioning. • Public alarm and unrest, civil order requires inter-jurisdictional reinforcement. • Government resigns or alternative governance necessary for some period.	• Community ability to support itself severely impaired. • Widespread loss of objects of cultural/ heritage significance. • Severe disruption to community wellbeing and social networks over the whole area or a large part of it for a period of many years.	• Long term failure (over six months) of significant infrastructure and service delivery affecting most of the community. • Ongoing external support at a large scale required.

Consequence Rating Criteria Tables - V4.1 March 2014

Consequence Category Definitions (Table 2)

People	• The health system, i.e. doctors, hospitals, ambulances at local/regional levels. • Local/regionally-based resources and systems to assist people who are displaced from their homes for a length of time. This includes temporary accommodation. • Local/regionally-based resources for supporting affected/displaced people with e.g. material aid, food, financial assistance, personal support services.
Environment	• The continued normal functioning of significant ecosystems.

Economy	• The economy of the local area, considering:
	  • value of overall damage and consequential losses incurred
	  • disruption to particular sectors of industry
	  • need for extraordinary government financial provisions for recovery

Public Administration	• Relates to the impacts of the emergency on the governing body's ability to govern.
Social Setting	• The ability of the community to maintain normal functioning, its resilience, its social fabric and cultural values and heritage.
Infrastructure	• The functionality and continued supply, via the critical infrastructure systems, of the essentials of contemporary society, e.g. fuel, water, telecommunications, transport, food supply, money.

Controls / mitigation activities rating criteria (Table 3)

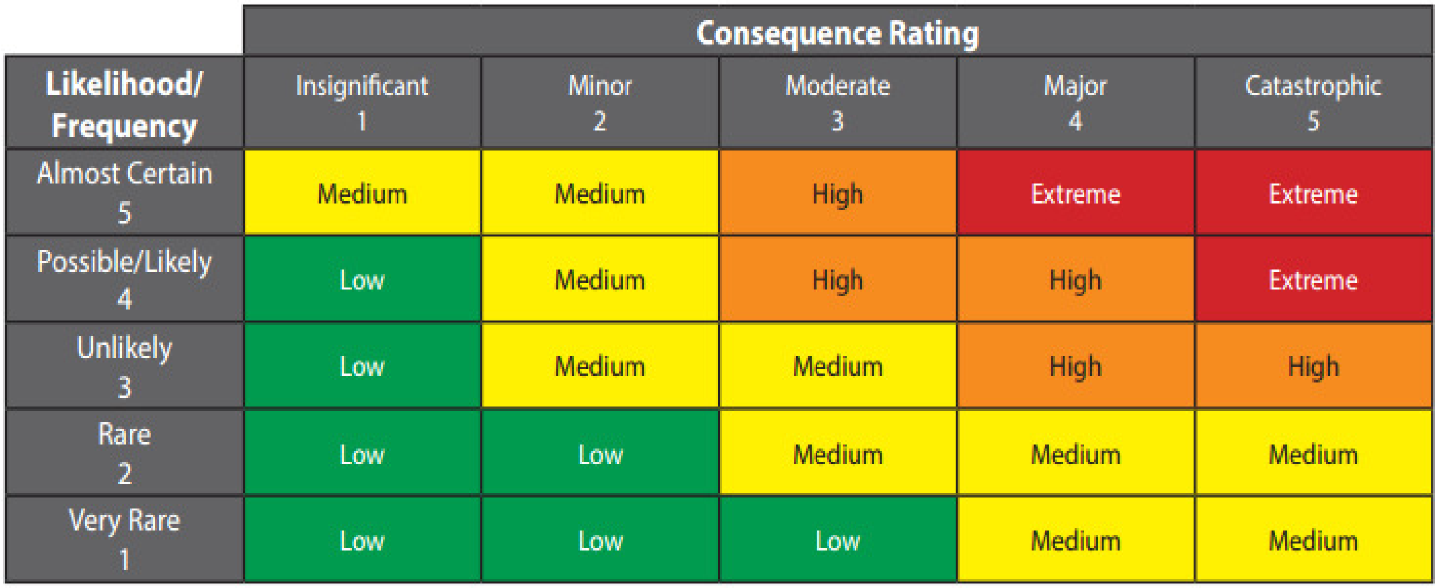
	Rating	Criteria
1	**Effective**	• Controls in place are effective. There may be no need to change the controls but they should be reviewed for appropriateness.
2	**Moderately effective**	• Although current controls are effective, some improvement opportunities may be/have been identified. Further review and analysis suggested
3	**Moderately ineffective**	• Controls are in place but may be insufficient to reduce risk consequence and/or likelihood to an acceptable level. Review of controls is highly desirable with potential need for update/remediation.
4	**Very ineffective**	• Controls are in place but are likely insufficient to reduce risk consequence and/or likelihood to an acceptable level. Review and remediation of controls is required.
5	**Completely ineffective or non-existent**	• Few if any controls are in place. Urgent review and remediation of controls is required.

Likelihood Rating Criteria (Table 4)

	Likelihood category	Estimated average recurrence interval	Description
1	**Very Rare**	>1,000 years	• No recorded events or any indicative evidence • No recent events in comparable jurisdictions • Minuscule opportunity, reason or means to occur
2	**Rare**	101 – 1,000 years	• Few recorded events or little indicative evidence • Some similar events in comparable jurisdictions • Little opportunity, reason or means to occur
3	**Unlikely**	11 - 100 years	• Some recorded events • Some events in comparable jurisdictions • Some opportunity, reason, or means to occur
4	**Possible / Likely**	1 - 10 years	• Many recorded events • Some events in comparable jurisdictions • Great opportunity, reason, or means to occur
5	**Almost Certain**	More than once a year	• Expected to occur in most circumstances; with strong anecdotal evidence and history of recorded incidents

Appendix K CERA Risk Rating Table

Table. 1: Risk Rating Table



	Consequence Rating				
Likelihood/ Frequency	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Almost Certain 5	Medium	Medium	High	Extreme	Extreme
Possible/Likely 4	Low	Medium	High	High	Extreme
Unlikely 3	Low	Medium	Medium	High	High
Rare 2	Low	Low	Medium	Medium	Medium
Very Rare 1	Low	Low	Low	Medium	Medium

Adapted from: Australian Emergency Management Committee (2009), 'National Emergency Risk Assessment Guidelines', Tasmanian State Emergency Service, Hobart.

Residual risk rating	**Indicative risk tolerance levels**
Extreme or High	Generally intolerable – Measures should be taken to reduce the risk and will generally require consultation with and support from agencies
Moderate	Tolerable – subject to being reduced to ALARP levels and with the goal of moving them into the broadly acceptable region.
Low	Broadly acceptable – generally requiring little if any additional action.

Appendix L Acronyms

Acronyms used in this plan

AFAC	Australasian Fire and Emergency Authorities Council
CERA	Community Emergency Risk Assessment
CIG	Community Information Guides
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CFA	Country Fire Authority
CMA	Catchment Management Authority
DEDJTR	Dept. of Economic Development Jobs Transport & Resources
DEECD	Department of Education and Early Childhood Development
DELWP	Department of Environment Land Water and Planning
DHHS	Department of Human Services
EMMV	Emergency Management Manual Victoria
EPA	Environment Protection Authority
EVC	Ecological Vegetation Class
FDI	Fire Danger Index
FDR	Fire Danger Rating
FFDI	Forest Fire Danger Index
FIRS	Fire Incident Reporting System
GFDI	Grassland Fire Danger Index
GIS	Geographic Information Systems
GMW	Goulburn Murray Water
IFMP	Integrated Fire Management Planning
IAP2	International Association of Public Participation
LGA	Local Government Area
LMR	Loddon Mallee Region
LMRSFMPC	Loddon Mallee Region Strategic Fire management Planning Committee
LMRSFMP	Loddon Mallee Regional Strategic Fire Management Plan
LMW	Lower Murray Water
MEMPC	Municipal Emergency Management Planning Committee
MEMP	Municipal Emergency management Plan
MERI	Monitoring, Evaluation, Reporting an Improvement
MFMP	Municipal Fire Management Plan
MFPP	Municipal Fire Prevention Plan
NSP	Neighbourhood Safer Place
PPRR	Prevention, Preparedness, Response, Recovery
RSFMP	Regional Strategic Fire Management Plan
TFI	Tolerable Fire Interval
TTP	Township Protection Plan
VBRC	2009 Victorian Bushfires Royal Commission
VEAC	Victorian Environmental Assessment Council
VFF	Victorian Farmers Federation
VFRR	Victorian Fire Risk Register
VFRR-B	Victorian Fire Risk Register - Bushfire
VicPol	Victoria Police
VicSES	Victoria State Emergency Service
VROT	Vulnerable Rare or Threatened

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