

**Loddon Mallee Regional Strategic Fire  
Management Plan  
2011 – 2021**

**Loddon Mallee Regional Strategic Fire Management Planning Committee,  
August 2011**

**Endorsement**

This Plan has been prepared by the Loddon Mallee Regional Strategic Fire Management Planning Committee. The individual organisations, listed below, that comprise the Committee, have endorsed the plan for that purpose.

<b>Loddon Mallee Strategic Fire Management Planning Committee</b>
Buloke Shire
City of Greater Bendigo
Coliban Water
Country Fire Authority - Loddon Mallee
Department of Education and Early Childhood Development
Department of Human Services
Department of Planning & Community Development
Department of Primary Industries
Department of Sustainability & Environment
Gannawarra Shire
Goulburn Murray Water
Grampians Wimmera Mallee Water
Loddon Shire
Lower Murray Water
Macedon Ranges Shire
Parks Victoria
Powercor
Rural City of Mildura
Shire of Campaspe
SP AusNett
State Fire Management Planning Committee
Victoria Police
Vic Roads
Victoria State Emergency Service
<i>Central Goldfields Shire</i>
<i>Mount Alexander Shire</i>
<i>Rural City of Swan Hill</i>



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**Abbreviations Table**

AFAC	Australasian Fire and Emergency Authorities Council
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CFA	Country Fire Authority
DEECD	Department of Education and Early Childhood Development
DHS	Department of Human Services
DPCD	Department of Planning and Community Development
DSE	Department of Sustainability and Environment
EMMV	Emergency Management Manual Victoria
EVC	Ecological Vegetation Class
FDR	Fire Danger Rating
FFDI	Forest Fire Danger Index
GFDI	Grassland Fire Danger Index
IFMP	Integrated Fire Management Planning
KBDI	Keetch-Byram Drought Index
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
MERI	Monitoring, Evaluation, Reporting and Improvement
MFMP	Municipal Fire Management Plan
MFPP	Municipal Fire Prevention Plan
RSFMP	Regional Strategic Fire Management Plan
SWER	Single Wire Earth Return
TFI	Tolerable Fire Interval
VBRC	2009 Victorian Bushfires Royal Commission
VEAC	Victorian Environmental Assessment Council
VicPol	Victoria Police
VicSES	Victoria State Emergency Service
VROT	Vulnerable Rare or Threatened

## Foreword by Chairman

Welcome to the first edition of the Loddon Mallee Regional Strategic Fire Management Plan.

In the first instance the Plan addresses only the bushfire risk in the Loddon Mallee Region. As soon as is feasible it will expand its focus to cover structural fire and other risks for which the fire agencies have responsibility under the EMMV.

Integrated Fire Management Planning implies a team-based, holistic approach by a wide range of stakeholders, to managing the risk of fire in the Loddon Mallee Region. Integrated planning encompasses the whole spectrum of emergency management: Prevention, Preparedness, Response and Recovery and the use of fire. It brings together all the stakeholders in the unique fire risk environment of the Region which encompasses:

- the riverine environments of the Murray River and its tributary systems of the Avoca, the Loddon, the Campaspe and the Goulburn Rivers, including the major red gum forests and the adjoining irrigation districts;
- the mallee forest environment of the Murray Sunset, Big Desert Wilderness, Wyperfeld and Hattah-Kulkyne major parks and adjoining areas;
- the broad acre cropping and grazing areas of the Mallee, Wimmera and Northern Country;
- the tall sclerophyll forests of the Macedon Ranges; and
- the Box and Ironbark forests and woodlands of the Loddon Shire, Mount Alexander Shire and the City of Greater Bendigo.

Stakeholders consist of the community, local and State Government, public and private land managers and owners, utilities and service providers, industry, and the fire agencies. Stakeholders contribute knowledge, experience, resources and capability. The Committee has sought input from these stakeholders through the release of the draft plan for comment from 21<sup>st</sup> March to 29<sup>th</sup> of April 2011. Comments received by all parties have assisted in improving the plan you see today.

This Regional Strategic Plan has two purposes:

- to facilitate municipal fire management planning by providing guidance on the Loddon Mallee risk environment and potential risk treatments which might be jointly applied to manage it; and
- to support fire management planning and its implementation by encouraging and coordinating stakeholder engagement at municipal and regional levels, by providing access to relevant research, development and data, and by supporting continuous improvement through performance measurement and feedback.

In this Plan we have chosen to identify desirable specified and measurable fire management outcomes using triple bottom line economic, social and environmental performance measures. In order to contribute to continuous improvement these measures need to be owned by all stakeholders. They need to be measured at least annually, to be broadly disseminated and, they need to be the catalyst for joint improvement action. By acting jointly they aim to achieve synergy.

At State, regional and municipal levels, effective Integrated Fire Management Planning will occur most successfully within the context of broader Emergency Management Planning. It is our intent that this Integrated Fire Management Plan will encourage and facilitate improved community safety outcomes. We rely on the active engagement and assistance of, and feedback from, all stakeholders to achieve this objective.

It is my privilege to present this Plan on behalf of the Loddon Mallee Regional Strategic Fire Management Planning Committee. In doing so I gratefully acknowledge the willing assistance and valuable contributions of the inaugural Loddon Mallee Regional Strategic Fire Management Planning Committee members.

Patrick O'Brien  
Chairman  
Loddon Mallee Regional Strategic Fire Management Planning Committee



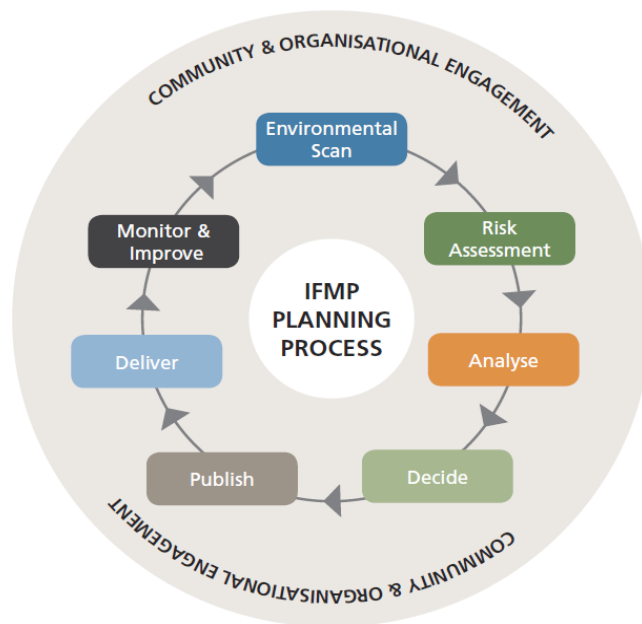


## Introduction

This Loddon Mallee Regional Strategic Fire Management Plan, (the Plan), has been prepared by the Loddon Mallee Regional Strategic Fire Management Planning Committee, (the Committee), in line with Part 5 of the Emergency Management Manual Victoria (EMMV)<sup>1</sup> and the State Committee’s guidelines for integrated fire management planning.<sup>2</sup> The Committee has been established by the Coordinator-in-Chief of Emergency Management under the *Emergency Management Act, 1986*.

The Loddon Mallee Regional Strategic Fire Management Plan will be the mechanism to identify strategies to fill the gap between potential impact of bushfires and the desired level of resilience of the community, economy and environment in the Loddon Mallee Region (the Region).

The Committee has worked in a collaborative manner to bring together information to allow it to understand the characteristic of the Loddon Mallee Region, and its future direction. These are captured in the Environmental Scan, Annex A. Fire management objectives have been established to support and sustain the Region and support its ongoing direction, development and implementation. Analysis of and the distribution of fire management risks, Annex B has identified how these may be impacted upon by bushfire and appropriate strategies developed to manage these.



**Figure 1. The integrated fire management planning cycle<sup>3</sup>**  
 Source: *IFMP State Fire Management Strategy 2009*

<sup>1</sup> Emergency Management Manual Victoria, Office of the Emergency Services Commissioner, 2010.

<sup>2</sup> Integrated Fire Management Planning Guide, State Fire Management Planning Committee, 2010.

<sup>3</sup> State Fire Management Strategy 2009, State Fire Management Planning Committee, 2009.

The Committee represents all stakeholders involved in fire management in the Loddon Mallee Region. The delivery of this plan is reliant on the ongoing collaboration of committee member organisations and the coordination of their fire management programs through Municipal Fire Management Plans. Committee member organisations have been nominated to lead the Strategy activities in association with key stakeholders. It is anticipated that new projects and programs, supported by the State Fire Management Planning Committee and individual organisations will evolve to support the activities identified in this plan.

### ***Integrated Fire Management Planning***

In response to the challenges that have emerged in fire management over the last decade the Victorian Government established an Integrated Fire Management Planning (IFMP) Framework for Victoria.<sup>4</sup>

This framework provides structures, policies and procedures to help build on the existing spirit of cooperation and networks that exists in fire management.

Through the *Emergency Management Act, 1986* the Framework establishes a State Committee and Regional and Municipal Committees to govern fire management in Victoria.<sup>5</sup> The Loddon Mallee Regional Strategic Fire Management Planning Committee (LMRSFMPC) is one of eight regional Committees operating across Victoria.

As part of implementing the IFMP Framework, the Regional Committees are required to prepare a 10 year regional strategic fire management plan. These regional plans have a strategic focus on minimising the impact of bushfire on Victoria's communities, its economy and valued environmental and cultural assets and services. They identify broad fire management risks across the Region and identify strategies for addressing these in a collaborative manner. The Plan, and its development, supports IFMP aims to achieve a consistent and effective means for fire management planning within Victoria through a commitment to cooperation, including information sharing and the building of collective knowledge.

Fire management is all activities associated with the management of fire on land. Under IFMP it is the responsibility of the fire management Committees to deliver and support integrated fire management as described in Figure 2.

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<sup>4</sup> The Integrated Fire Management Planning Framework, State Fire Management Planning Committee, 2009.

<sup>5</sup> Emergency Management Manual Victoria, Office of the Emergency Services Commissioner, 2010.

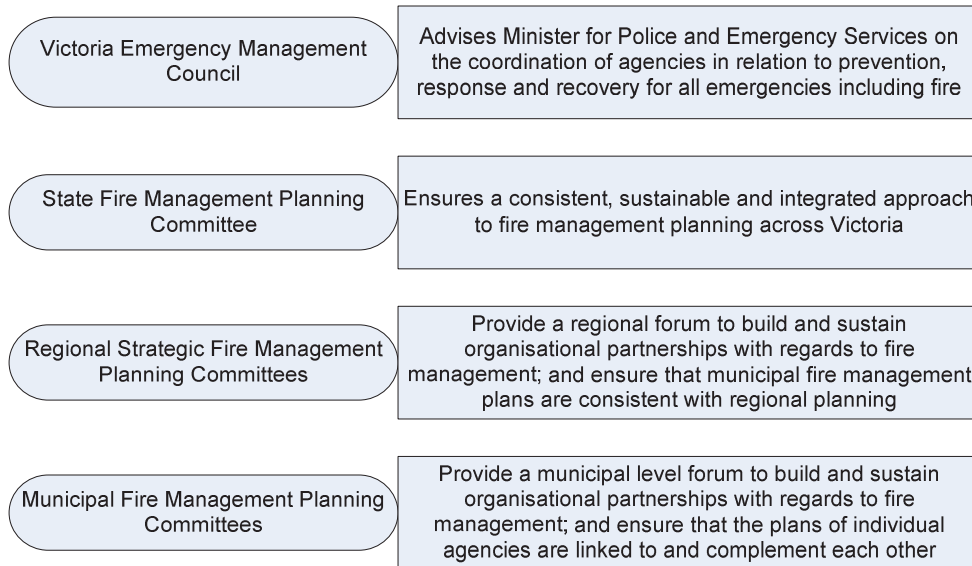


Figure 2. Committee hierarchy and purpose<sup>6</sup>  
 Source: Draft Hume Regional Strategic Fire Management Plan, 2010

The regional fire management plan sits within the context of State, organisational and municipal level plans, Figure 3. The regional plan informs decision making in organisations plans and programs and guides the coordination of activities through the Municipal Fire Management Plans.



Figure 3 State fire management planning, plan relationships

Figure 4 outlines a sample of the planning committee and organisational relationships.

The 2009 Victorian Bushfires Royal Commission, (VBRC), in its discussion of Victoria’s Bushfire Safety Policy, has endorsed the approach promoted by IFMP.

<sup>6</sup> Draft Hume Regional Strategic Fire Management Plan, Hume Regional Strategic Fire Management Planning Committee, 2010.

The investigation into the February 7<sup>th</sup> 2009 fires highlighted the opportunities provided through Integrated Fire Management Planning to improve the effectiveness and alignment of organisational, emergency and fire management planning.<sup>7</sup>

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<sup>7</sup> Victorian Bushfires Royal Commission Final Report Volume 2. Fire preparation, response and recovery, Victorian Bushfires Royal Commission, 2009.

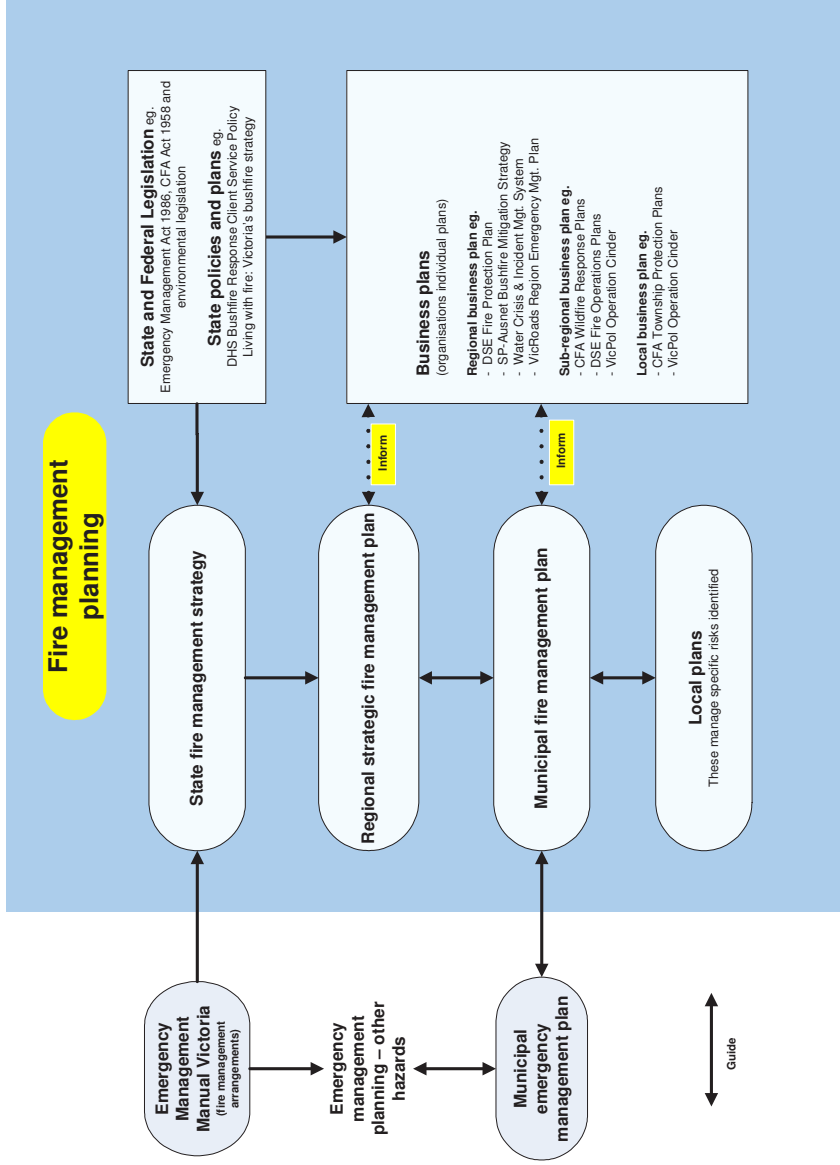


Figure 4. Indicative integrated fire planning relationships.<sup>8</sup>  
 Source: Draft Hume Regional Strategic Fire Management Plan, 2010

<sup>8</sup> Draft Hume Regional Strategic Fire Management Plan, Hume Regional Strategic Fire Management Planning Committee, 2010.

### ***Our Approach***

Emergency services will continue to rely on collaboration with many organisations during fire prevention, preparedness, response and recovery activities. The Loddon Mallee Regional Strategic Fire Management Planning Committee will continue to build these partnerships with the community and stakeholders in and outside the Region to:

- plan for the common future;
- effectively integrate plans developed collaboratively with stakeholders;
- build capability and capacity of fire services, business and the community;  
and
- constantly improve through measurement of fire management effectiveness.

This approach will improve our resilience to bushfire events and management of the Region's bushfire risks.

## Engagement and communications

The International Association of Public Participation framework (IAP2)<sup>9</sup> has been adopted by the State Fire Management Planning Committee to guide engagement with stakeholders in fire management planning. Public in this context includes organisations, agencies, authorities businesses and the general public.

The framework provides a hierarchy of engagement that is valuable in making clear the engagement commitment of the Committee in the development of this plan.

<b>Inform</b>	To provide the public with balanced and objective information to assist them in understanding the problems, alternatives, opportunities and/or solutions.
<b>Consult</b>	To obtain public feedback on analysis, alternatives and/or decisions.
<b>Involve</b>	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.
<b>Collaborate</b>	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution
<b>Empower</b>	To place final decision-making in the hands of the public

**Table 1. IAP2 engagement spectrum**  
**Source: International Association of Public Participation, 2010**

This hierarchy has been applied to the identified stakeholders for this plan.

Stakeholder level	Stakeholders	Engagement level
<b>Internal</b>	Loddon Mallee Regional Strategic Fire Management Planning Committee membership	Collaborate and empower
<b>Primary</b>	Member organisations of Loddon Mallee Regional Committee, State and Municipal Fire Management Planning Committees in Loddon Mallee	Empower
<b>Secondary</b>	Neighbouring fire management committees, emergency management committees and Regional Managers Forum	Involve
<b>Tertiary</b>	Organisations with values and assets that may be impacted by fire or fire management activities	Consult
<b>Interest group</b>	The broad community, interest groups and associations	Consult

**Table 2. Stakeholder engagement level for this plan**

<sup>9</sup> International Association for Public Participation (IAP2), [www.iap2.org.au](http://www.iap2.org.au)



The key engagement activities, and their indicative timeframes, in the development of the Loddon Mallee Regional Strategic Fire Management Plan are:

Activity	Stakeholders	Commence Date	Complete
Consult on the environmental scan	Regional Committee	June 2010	√
Involve in objective setting workshop	Regional Committee work group	Sept 2010	√
Consult on objectives, format, indicative content	Regional Committee work group	Oct 2010	√
Consult on draft plan	Regional Committee	Oct 2010	√
Inform of final draft plan content	Regional Committee Loddon Mallee	Dec 2010	√
Involve in the endorsement of the plan	Regional Committee member organisations	Feb 2011	√
Consult on the endorsed draft plan	Public and other Committees	March 2011	√
Consult on amended draft plan	Regional Committee	May 2011	√
Involve in the endorsement of amended final plan	Regional Committee member organisations	June 2011	√
Release final plan	Public and other Committees	September 2011	√

**Table 3. Engagement phases and activity for the delivery of the Loddon Mallee Regional Strategic Fire Management Plan**

During community consultation on the endorsed draft plan 17 comments were received from community and organisational stakeholders. Over 500 visits to the Draft plan on the Web were received from 269 unique users. All comments received were insightful and assisted in improving the plan. The feedback has included comment on biodiversity management, legislative and regulatory powers, refinement of fire prevention strategies, and changes in State policy. Some of these matters have, or will be, referred to technical specialists for advice or the relevant organisation for follow up action, or addressed through Municipal Fire Management Plans and local level plans.

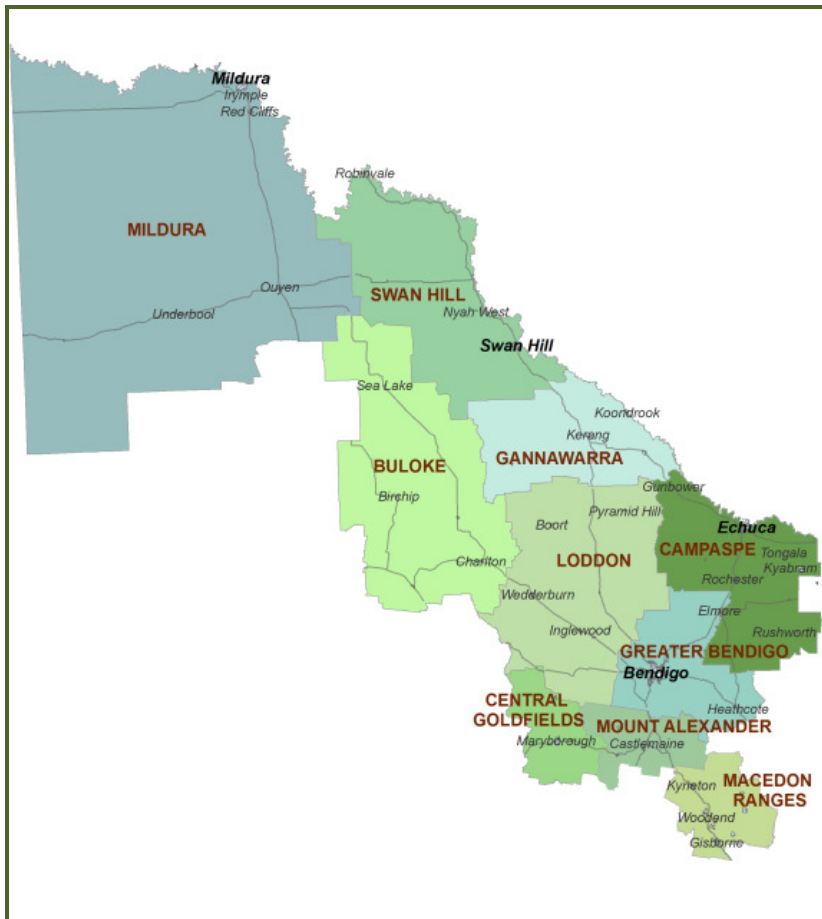
Key improvements included;

- The identification of actions to further support the management of biodiversity;
- Alternate sources of strategy to replace the, “White paper for land and biodiversity at a time of climate change.”;
- The identification of further actions to manage bushfire ignition;
- Reference to the role of future legislative and policy change across the natural, social and economic environments;
- The need to demonstrate greater clarity around the risk pyramid and the concepts of hazard, exposure and vulnerability; and
- Access to an updated fuel hazard level map and data set.
- Making reference to “local plans”, ie, Fire ecology, Response, Township Protection Plan, Landscape, Fire Operation Plan’s , Evacuation Plans.

## Environmental Scan

### *The Loddon Mallee Region*

The Loddon Mallee Region (the Region) encompasses ten municipalities and covers nearly 59,000km<sup>2</sup>, or approximately 26 per cent of the land area of the State of Victoria.



**Figure 5. The ten municipalities of the Loddon Mallee Region**  
 Source: Strategic Support Branch, Loddon Mallee Region, Department of Human Services (DHS)

Approximately 304,000 people live in the Region; the majority in the larger centres of Bendigo, Mildura, Swan Hill and Echuca. These larger centres continue to grow whilst smaller municipalities look to hold a steady population, which is also disproportionately aging. The Municipalities of Macedon Ranges, Mount Alexander and the City of Greater Bendigo are evolving into a popular growth area, (the Calder Corridor), and commuter community to Melbourne.<sup>10,11</sup>

<sup>10</sup> Loddon-Mallee Regional Strategic Plan, Northern Region, Regional Development Victoria, 2010.

In the Region, 1.4% or 4,252 people identify themselves as being Aboriginal or Torres Strait Islander and 4% speak a second language at home. English proficiency is high at 99.35%.<sup>12</sup>

The Loddon Mallee Region is dominated by the Murray and Loddon riverine plains, the Mallee forests in the far north west and the gold bearing Box-Ironbark forests in central Victoria. In the south of the Region, the Wombat Forest connects the Macedon Ranges and Mount Alexander Shires with Daylesford and Ballarat. Approximately 28% of the Loddon Mallee Region is public land and includes national parks, State forest and road and rail reserves. A large portion of these lands are managed as part of the State's Conservation Reserve System.

Approximately 71% of the Region is managed for agricultural purposes. The north, central and riverine areas are primarily agricultural. Agricultural areas are serviced by an extensive road, rail and silo network and support many food processing establishments. Large scale irrigation infrastructure exists adjacent to the Murray, Loddon and Campaspe Rivers. The future of irrigated agriculture will be subject to the Murray Darling Basin Commission investigations and is likely to be significantly affected by the changes in existing irrigation entitlements

Key industries in the Region include agriculture, food processing, retail, health, education, tourism and public administration.

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<sup>11</sup> Loddon-Mallee Regional Strategic Plan, Southern Region, Regional Development Victoria, 2010.

<sup>12</sup> Victorian Local Government Areas, 2009 Statistical Profile. Department of Human Services, 2009.

## ***Bushfire in the Loddon Mallee***

To develop appropriate strategies for fire management it is valuable to understand the risk of bushfire events in the Region. This risk is the product of the likelihood of an unmanageable bushfire occurring and its consequence to the community, economic and environmental values of the Region. A bushfire risk framework has been prepared (Annex B) to support decision making for fire management. Within this assessment framework we have described the characteristic of the bushfire hazard and how it relates to the exposure and vulnerability of the economic, social and environmental elements of the Loddon Mallee Region.

## ***Fire history***

The Loddon Mallee climate is traditionally hot and dry, and the Region has a history of bushfire. Large bushfires regularly occur in Mallee Parks and sometimes cross State borders. Large fires in the south of the Region are more often associated with extended drought periods.

The Macedon Ranges were severely impacted by the 1983 bushfires; Ravenswood in 1944 and Maryborough in 1985. During the February 7th fires of 2009, Bendigo and the Redesdale communities lost 72 homes and one life. Large bushfires between 10 000Ha and 200 000Ha can occur in Murray Sunset National Park and Big Desert Wilderness Park and sometimes cross State borders. In 2002 the “Big Desert Fire” burnt over 185 000 hectares of National Park in the Mallee, (see Annex B: Appendix 1).

Given the nature of fire fighting in Victoria, emergency service resources for response and recovery regularly provide mutual aid to other areas and occasionally interstate.

## ***Bushfire landscapes***

The Loddon Mallee has six key bushfire landscapes. Each landscape has unique characteristics which when combined with weather conditions of the day will determine how fires 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
Box and Ironbark forest and woodland	High to extreme	Undulating	Fuel/topography	Moderate/high
Tall (sclerophyll) forest	High to extreme	Undulating	Fuel/top/ plume	High
Urban	Low to high	Flat to undulating	Wind / fuel	Low

**Table 4. Bushfire landscapes of the Loddon Mallee**

### **Bushfire risk framework**

Within the Region the risk focus is on the likelihood and consequence of a bushfire impacting upon:

- the **community**, its income, values, social and domestic built structures, individuals and the vulnerable, being adversely impacted by bushfire beyond its desired level of resilience;
- the **economy**, its business entities, supply, infrastructure and human resource, being adversely impacted by bushfire beyond the desired level of resilience; and
- the **environment**, and its ecological processes, flora and fauna populations and products valued by society being adversely impacted by bushfire beyond the desired level of resilience.

**It is the primary assumption that on days when the Forest or Grassland Fire Danger Rating is Very High (FDI > 25), or greater, that bushfires become difficult to control and damage to property and injury may occur.**<sup>13</sup>

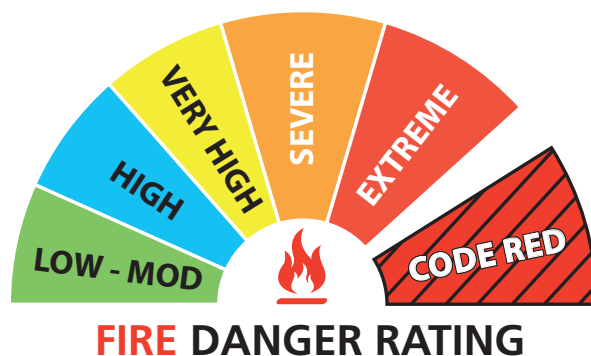


Figure 6 Fire danger rating

When considering risk in the natural hazard environment it is appropriate to use the three dimensional Hazard \* Exposure \* Vulnerability pyramid (Figure 6).

The developers of the risk pyramid have described risk as;

”Risk refers to the consequences of an event. ‘Risk’ is the probability of a loss, and this depends on three elements ,hazard, vulnerability and exposure. If any of these three elements in risk increases or decreases, then risk increases or decreases respectively”<sup>14</sup>. The risk pyramid aims to represent the three elements of risk in three dimensions, with the volume of the pyramid representing risk. Each edge of the pyramid is proportional to the three factors; hazard, vulnerability and elements

<sup>13</sup> Francis Hines, Kevin G Tolhurst, Andrew AG Wilson and Gregory J McCarthy, *Overall fuel hazard assessment guide* 4th edition July 2010 Fire and adaptive management report no. 82. Department of Sustainability and Environment, Melbourne, 2010.

<sup>14</sup> D. Crichton. *The Risk Triangle in Natural Disaster Management*. Tudor Rose, Leicester, UK, 1999.

exposed. The greater the contribution of one of the factors, the greater the volume and therefore risk.

$$\text{Risk} = \text{Hazard} * \text{Exposure} * \text{Vulnerability}^{15}$$

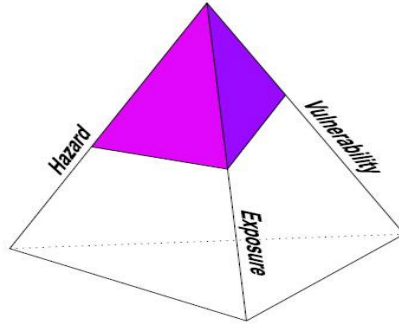


Figure 7. Hazard, exposure vulnerability pyramid

Further to this they have described the risk elements as:

A **natural hazard** is considered to be a specific natural event characterised by a certain magnitude and likelihood of occurrence. Common to all natural hazards is the uncertainty associated with both the hazards occurrence, the magnitude and the spatial extent of the hazard's impact.

'**Elements exposed**' refers to the factors, such as people, buildings and networks, that are subject to the impact of specific hazard. Other elements...which are also exposed include the economy and the natural environment.

**Vulnerability** refers to the capacity of an element exposed during the impact of a hazard event. Definitions of vulnerability to natural hazards generally refer to the characteristics of an element exposed to a hazard - road, building, person, economy – that contributes to the capacity of that element to resist, cope with and recover from the impact of a natural hazard.

This expression for risk is specifically designed for identifying those at risk from natural hazards and is consistent with the ISO 31000, (Risk = Likelihood x Consequence). This format acknowledges the characteristics of the natural hazard risk environment where likelihood is relative to the exposure to the hazard, and consequence is relative to the vulnerability of those who are or what is, being impacted. Vulnerability is reliant on existing condition and the capability and capacity

<sup>15</sup> A Dwyer, C Zoppou, O Neilson, S Day and S Robers, Quantifying Social Vulnerability: A methodology for identifying those at risk to natural hazards, Geoscience Australia Record 2004/14, Commonwealth of Australia, 2004.

of those who may be impacted by the unique elements and characteristics of a bushfire.

Fuel hazard combined with the fire danger index level allows us to understand the likelihood that a fire will be contained within extended first attack, that is, within 400 hectares or by 8am the following day. Hines et al (2010) have identified this relationship and describe it in Figure 6. These fires are more likely to damage property, environmental and cultural values or injure people.

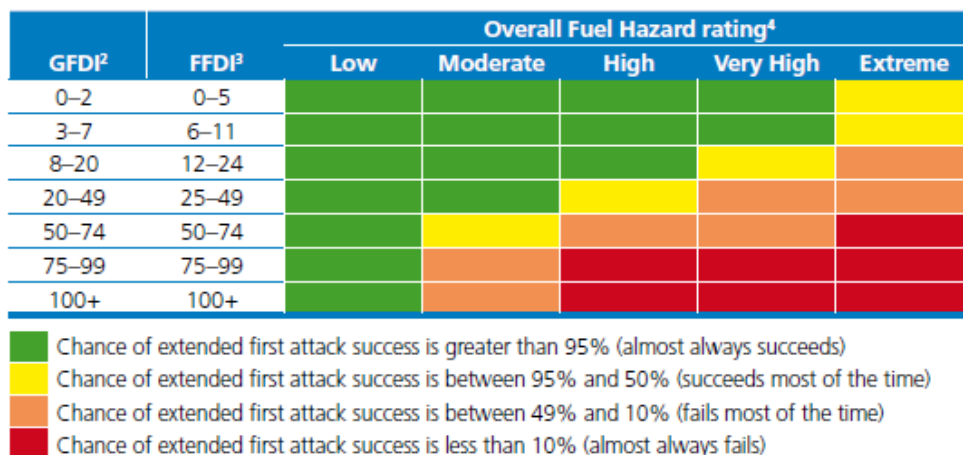


Figure 8. Chance of extended first attack success <sup>16</sup>

Historically the Loddon Mallee Region has a good record of containing fires at extended first attack and would be placed at the higher end of the success range. This reflects the distribution and amount of the fuel hazard, the consistent high level of preparedness of response organisations, the low influence of topography on fire development and the rapid access afforded to fire fighters by the existing road networks and forest structures.

The **bushfire risk framework** (see Annex B) describes the characteristic of the bushfire hazard and how it relates to the exposure and vulnerability of the economic, social and environmental elements of the Loddon Mallee Region.

The assessment has established relative rankings for municipalities within the Loddon Mallee Region using the following categories.

Likelihood of Grass fire - based on the history of ignition, number of days of Grass Fire Danger Rating greater than Very High, and the % of fuel hazard that is High, Very high or Extreme in the municipality, Annex B page 22;

Likelihood of Forest fire - based on the history of ignition, number of days of Forest Fire Danger Rating greater than Very High, and the % of fuel hazard that is High, Very high or Extreme in the municipality, Annex B page 22;

<sup>16</sup> Francis Hines, Kevin G Tolhurst, Andrew AG Wilson and Gregory J McCarthy, *Overall fuel hazard assessment guide* 4th edition July 2010 Fire and adaptive management report no. 82. Department of Sustainability and Environment, Melbourne, 2010.

Human Vulnerability - based on the barriers to capability building and levels of social connectedness across the preparedness, prevention, response and recovery spectrum, Annex B page 38 - 41;

Human settlement exposure - 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, Annex B page 23 - 26;

Industry and industry asset exposure - The extent of business and infrastructure assets rated Extreme or Very High that have been identified by the Victorian Fire Risk Register Assessment process, Annex B page 42 - 44;

Biodiversity risk - the extent of endangered and vulnerable Ecological Vegetation Classes in the municipality identified in the Office of Emergency Services Commissioner, Consequence of Loss Project, Annex B page 48;

Aboriginal Heritage risk - the extent of fire sensitive Aboriginal sites in the municipality identified in the Office of Emergency Services Commissioner, Consequence of Loss Project, Annex B page 52; and

Non-Aboriginal Heritage risk - the extent of sites listed on the Victorian Heritage register in the municipality identified in the Office of Emergency Services Commissioner, Consequence of Loss Project, Annex B page 53.

These rankings have been summarised in Table 5 and shown in the following Municipal summary. This method allows the comparison and addition across the categories to provide a ranking for each municipality.



LGA	Likelihood of Grass fire	Likelihood of Forest fire	Human Vulnerability	Human settlement exposure	Industry and industry asset exposure	Biodiversity risk	Aboriginal Heritage risk	Non-Aboriginal Heritage risk
Buloke Shire	3	3	9	9	9	3	5	10
Campaspe Shire	6	7	6	4	1	1	1	6
Central Goldfields Shire	6	7	1	7	6	6	9	4
Gannawarra Shire	3	3	4	8	7	1	3	9
City of Greater Bendigo	2	2	7	1	2	7	7	3
Loddon Shire	10	10	2	6	10	4	2	2
Macedon Ranges Shire	6	6	10	2	5	9	10	5
Rural City of Mildura	1	1	3	5	4	10	4	7
Mount Alexander Shire	6	7	8	3	3	8	8	1
Rural City Swan Hill	3	3	5	9	8	5	6	8

Table 5. Summary table of Loddon Mallee, Bushfire Likelihood, Vulnerability and Consequence rankings  
 Source: *Wildfire Asset Identification and Consequence Evaluation, Office of Emergency Services Commissioner, VFRR Dec 2010, DHS Local Government Areas Statistical Profiles 2009 based on ABS Census 2006 & Centrelink June Qtr 2009, Alcohol Drug Information System, Department of Health, Department of Community Development DPCD 2009, DSE fuel load data layer 2010, CSIRO 2005*

## ***Municipal summary***

### ***Buloke Shire***

The history of broad-scale agricultural use has changed the landscape significantly in the Buloke Shire. The higher than average likelihood for grass and forest fires reflects the long length of bushfire season of 147 days for the Municipality, (Table 6 Annex B). Buloke Shire has the lowest fuel hazard for the Region with 95.5 % of the Municipality rated Low or Moderate fuel hazard, (Figure 6 Annex B). The average ignition level for the Municipality is the lowest in the Region, (Table 2 Annex B), despite the number and ratio of Single Wire Earth Return power lines being the highest in the region by far.

The level of social connectedness in the Buloke Shire is the highest in the region and one of the highest in the State. The strength and connectedness of the community within Buloke Shire balances against a number of barriers to capability, providing for a resilient community, (Figure 13 Annex B).

Small and dispersed populations in the Shire means that there are few concentrations of Human settlement that may be impacted by a fire and the primary industries of agricultural are robust to fire events. The VFRR assessment for human settlement for the Municipality identified two sites of Extreme rating and 13 sites as Very High, (Table 14 Annex B). The history of land use change to broad-scale agriculture has altered the landscape significantly, affecting the fuel load distribution and biodiversity values. Endangered and Vulnerable EVC remnants of native vegetation on roadsides are particularly vulnerable to roadside fire management activities, (Table 28 Annex B). Moderate levels of fire sensitive Aboriginal artefacts are associated with riverine and lake systems, (Table 34 Annex B). Non-aboriginal cultural heritage registrations are the lowest in the Region, (Table 35 Annex B).

### ***Campaspe Shire***

The history of broad-scale agricultural use has changed the landscape significantly in the Campaspe Shire. Grassland vegetation is dominant with 92.3% of fuel hazard of the Municipality rated as Low or Moderate level, (Figure 6 Annex B). Ignitions though, are some of the highest in the Region, (Table 2 Annex B). These combined with the 127 day bushfire season, (Table 6 Annex B), means that the likelihood of grass and forest fires which persist beyond extended first attack falls into the average range.

Community connectedness and barriers to capability building are both average for the Region, (Figure 13 Annex B).

The abundance of Caravan Parks and settlements along the Murray River raises the number of Special Protection Sites (31) to carry the human settlement risk above the Regional average, (Table 14 Annex B). The VFRR assessment for the Municipality identified 23 sites of Extreme rating and 15 sites as Very High. A concentration of population within irrigated landscapes means that portion of the Municipality has a low number of human settlement exposures. The VFRR has identified a higher level of economic risk exposure to fire for the Municipality (Table 26 Annex B). This takes

into account Murray River aligned tourism projects, and the major electricity infrastructure that traverses the Municipality. Landscape change through agriculture has affected biodiversity values. Campaspe has the equal highest level of Endangered and Vulnerable EVC remnants of native vegetation in the Region, (Table 28 Annex B). Those on roadsides are particularly vulnerable to roadside fire management activities. Much of the vulnerable vegetation is made up of native grassland ecosystem. Fire sensitive Aboriginal artefacts, mostly associated with riverine and lake systems, are the highest in the Region, (Table 34 Annex B). These sites are particularly vulnerable to fire management activities in particular fuel reduction or ecological burning. Non-aboriginal cultural heritage registrations are average for the Region, (Table 35 Annex B).

### ***Central Goldfields Shire***

The history of mixed land use; including agriculture, gold mining and forestry, provides for a mixed landscape of public and private land in Central Goldfields Shire. The Municipality is at or below average for both forest and grass fire likelihood for the Region. This reflects the relatively short length of the fire season, (Table 6 Annex B), and the historically low number of ignitions, (Table 2 Annex B). The level of fuel load across the Municipality is average for the Region with 23.1% of the Municipality having fuel loads rated as High, Very High or Extreme, (Figure 6 Annex B).

Community members of Central Goldfields are assessed as being the most vulnerable in the Region by a significant margin. This Municipality will need concentrated support to build capability for fire management and recovery following any significant fire event. The Municipality is at the highest level for both the barriers to capability building and social (dis)connectedness measures, (Figure 13 Annex B).

The number of Human settlements rated as Extreme (18) or Very High (seven) by the VFRR process is just below average for the Region, (Table 14 Annex B). Whilst the number of economic exposures were seen as below average, a number of businesses critical to the economic wellbeing of the Municipality are in that list, (Table 26 Annex B). The Municipality is just below the regional average for percentage of Vulnerable and Endangered EVC's, (Table 28 Annex B), and has a low number of fire sensitive indigenous records, (Table 34 Annex B). The goldfields of the area and its gold era towns include a relatively high number of Heritage Register records, (Table 35 Annex B).

### ***Gannawarra Shire***

The higher than average likelihood for grass and forest fires reflects the long length of the bushfire season, (147 days) (Table 6, Annex B) for the Municipality. The distribution of fuel load across the Municipality is closely aligned to land use. Within the Municipality, 90% of the fuel load is rated as Low or Moderate levels. The remaining 10% having fuel loads rated as High, Very High or Extreme is associated with riverine forest, wetlands and roadsides, (Figure 6 Annex B).

The barriers to capability building are higher than average for the Region whilst the connectedness of the community is around the average for the Region, (Figure 13 Annex B).

The low level of population and the role of the irrigated landscape mean that the level of exposure of Human settlements is Low. The VFRR assessment for the Municipality identified seven sites of Extreme rating and 15 sites as Very High, (Table 14 Annex B). Economic exposure is below the average for the Region and reflects the electricity infrastructure that traverses the Municipality, (Table 26 Annex B). The history of broad-scale agricultural use has changed the landscape significantly in the Gannawarra Shire. Gannawarra has the equal highest level of Endangered and Vulnerable EVC remnants of native vegetation in the Region, (Table 28 Annex B) Those on roadsides are particularly vulnerable to roadside fire management activities. Much of the vulnerable vegetation is made up of native grassland ecosystem. Fire sensitive Aboriginal artefacts, mostly associated with riverine and lake systems, are the highest in the Region, (Table 34 Annex B). These sites are particularly vulnerable to fire management activities such as fuel reduction or ecological burning. Non-aboriginal cultural heritage registrations are low, (Table 35 Annex B).

### ***City of Greater Bendigo***

The history of mixed land use; including agriculture, gold mining and forestry, provides for a mixed landscape of public and private land in the City of Greater Bendigo, (COGB). The City is the largest in the Region with a population of more than 100 000 persons. The Municipality has been assessed as High ranking for grass and forest fire likelihood. This reflects the historical levels of ignition which are nearly double any other municipality of the region, (Table 2 Annex B). Only 3% of these ignitions are known to be of natural origin. Fuel levels of High, Very High or Extreme make up 32% of the Municipality; which is the second highest in the Region, (Figure 6 Annex B). The Municipality has an average length fire season of 126 days, (Table 6 Annex B).

The City of Greater Bendigo is below average for vulnerability, with low levels of barrier to capability. Given its size there are identifiable population pockets where barriers are high and vulnerable communities are focused. Lower social connectedness scores also reflect the large population, (Figure 13 Annex B).

COGB is the highest ranked in the Region for Human settlement exposure through VFRR, (Table 14 Annex B). The large population and the arrangement of the hazard across the Municipality mean 80 communities and special fire protection sites are rated Extreme or Very High. The City is also rated as High in the VFRR for economic assets exposure, (Table 26 Annex B). The Municipality is below average for the region in the amount of Vulnerable or Endangered EVC's, (Table 28 Annex B), and the number of fire sensitive Aboriginal artefact areas, (Table 34 Annex B). The goldfields of the area and its gold era towns include a relatively high number of Heritage Register records, (Table 35 Annex B).

### ***Loddon Shire***

The history of broad-scale agricultural use has changed the landscape significantly in the Loddon Shire, particularly in the north of the Municipality. Loddon Shire has the lowest rankings for grass and forest fire likelihood. This is reflected in the historically low level of ignitions, (Table 2 Annex B), low fuel levels and average bushfire season length of 126 days weeks, (Table 6 Annex B). Fuel levels of High, Very High or Extreme make up 10.1% of the Municipality, (Figure 6 Annex B).

Loddon Shire's barriers to capability building are the second highest in the Region almost equal to that of Central Goldfields. In contrast, Loddon Shires level of community and social connectedness is the third highest in the Region, but not enough to lower the overall level of vulnerability in the Municipality, (Figure 13 Annex B).

Loddon is ranked average in the Region for Human settlement exposure, (Table 14 Annex B). The small population and the arrangement of the hazard across the Municipality mean 22 communities and special fire protection sites are rated Extreme or Very High by the VFRR. Most of the communities identified by VFRR are in the south and west of the Municipality. The predominantly agricultural landscape has an average economic exposure, (Table 26 Annex B). The Municipality is below average for the region in the amount of Vulnerable or Endangered EVC's, (Table 28 Annex B), and the number of fire sensitive Aboriginal artefact areas, (Table 34 Annex B). The goldfields of the area and its gold era towns include a relatively high number of Heritage Register records, (Table 28 Annex B).

### ***Macedon Ranges Shire***

Macedon Ranges has below average rankings for grass and forest fire likelihood. This reflects the shortest bushfire season, 98 days, in the Region and the relatively low number of days with Fire Danger Indices greater than 25; that is nine days for forest and 39 days for grass, (Table 6 Annex B). Macedon Ranges Shire history of high quality grazing and forest products has influenced the arrangement of fuel hazard in the Municipality. Fuel hazard levels of High, Very High or Extreme, accounts for 22.1% of area of the Municipality, (Figure 6 Annex B). Uncommonly, most of this fuel hazard is Extreme rating. Grassland hazard levels are generally rated Moderate. Historical ignition levels are High in the Municipality, with on average of 95 ignitions per year, (Table 2 Annex B). On average, 11 of these are naturally occurring. This number is second only to Mildura in the Region and reflects summer storm patterns around the Great Divide.

Macedon Ranges is the least vulnerable community in the Region, with the lowest levels of barrier to capability. An above average social connectedness score supports the low vulnerability assessment, (Figure 13 Annex B).

The large population and density of occupation, along with the arrangement of the hazard across the municipality mean 24 communities and 39 special fire protection sites are rated Extreme or Very High by the VFRR, (Table 14 Annex B). Most of these are in the Extreme category. The VFRR assessment identified 30 economic assets that were considered at Extreme or Very High Risk which is average ranking for economic exposure in the Region, (Table 26 Annex B). The Municipality is rated Low for the Region in the amount of Vulnerable or Endangered EVC's, (Table 28 Annex B), and the number of fire sensitive Aboriginal artefact areas, (Table 34 Annex B). The Municipality has an average ranking for Heritage Register records, (Table 35 Annex B).

### ***Rural City of Mildura***

The Rural City of Mildura has the highest rankings in the region for grass and forest fire likelihood. This reflects the high historical levels of ignition, 105 per year, of which

14 (13%) are naturally occurring, (Table 2 Annex B). Fuel levels, of High or greater, make up 46%, or more than 10,000 square kilometres, of the Municipality, (Figure 6 Annex B). This percentage is the highest by far both in percentage and area in the Region. Most of this hazard is within the large tracts of public land. The Municipality has a long bushfire season, where its grassland fire danger index of greater than 25, accounts for nearly 150 days of the year and the Forest FDI of greater than 25, occurs on nearly 80 days per year, (Table 6 Annex B).

The City is above average for vulnerability, with high levels of barrier to capability and lower social connectedness scores. The town of Mildura has a large population which exhibits variations in the range and extent of social vulnerability, (Figure13 Annex B).

The Rural City of Mildura is ranked average for Human settlement exposure. (Table 14 Annex B). The small rural population and the arrangement of the hazard across the Municipality mean only 22 communities and special fire protection sites are rated Extreme or Very High. The ranking for economic exposure is average and mainly reflects the electricity infrastructure that traverses the Municipality, (Table 26 Annex B). The Municipality ranks lowest in the Region in the percentage of Vulnerable or Endangered EVC's, (Table 28 Annex B), but given the size of the vegetated landscape it also has the highest land area containing these classes. The Municipality is above average for the number of fire sensitive Aboriginal artefact, (Table 34 Annex B) areas and below average for the number of Heritage Register records, (Table 35 Annex B).

### ***Mount Alexander Shire***

Mount Alexander has below average rankings for grass and forest fire likelihood within the Region. This reflects a shorter fire season, (Table 6 Annex B) and the relatively low number of days with Fire Danger Indices greater than 25. Fuel hazard greater than High, accounts for nearly 30% of the Municipality, (Figure 6 Annex B). Historical ignition levels are below average in the Region, with an average of 53 ignitions per year, (Table 2 Annex B). On average, only six of these are naturally occurring.

Mount Alexander has a Low rating for community vulnerability in the Region. The Municipality is ranked fourth lowest for barriers to capability and second only to Buloke in social connectivity, (Figure13 Annex B).

The dispersed nature and density of occupation, along with the arrangement of the hazard across the Municipality means 13 communities and 31 special fire protection sites are rated Extreme or Very High by VFRR, (Table14 Annex B). Most of these are in the Extreme category. The VFRR ranking for economic exposure is average and mainly reflects the light industry and commercial assets that are distributed through the Municipality, (Table 26 Annex B). The Municipality is rated Low for the Region in the amount of Vulnerable or Endangered EVC's, (Table 28 Annex B), and the number of fire sensitive Aboriginal artefact areas, (Table 34 Annex B). The goldfields heritage of the area and its gold era towns are of international standing and hence the Municipality has the highest number of Heritage Register records in the Region, (Table 28 Annex B).

### ***Rural City of Swan Hill***

Broad-scale agricultural use has changed the landscape significantly affecting the fuel load distribution and biodiversity values. The Municipality has a long bushfire season, where its grassland fire danger index of greater than 25, accounts for nearly 150 days of the year and the Forest FDI of greater than 25, occurs on nearly 80 days per year, (Table 6 Annex B). The higher than average likelihood for grass and forest fires reflects this long length of bushfire season. Fuel hazard levels though are generally Low, with 88.7% rated Low or Moderate, (Figure 6 Annex B). Historical ignition levels are low, (Table 2 Annex B).

The strength and connectedness of the community within the Municipality offsets a number of barriers to capability, leading to an average measure of vulnerability. (Figure 13 Annex B).

The small and dispersed nature of populations in the Shire means that there are few concentrations of Human settlement that may be impacted by a fire. The VFRR assessment for the Municipality identified seven sites of Extreme rating and 14 sites as Very High, (Table 14 Annex B). Endangered and Vulnerable EVC remnants of native vegetation on roadsides are particularly vulnerable to roadside fire management activities, (Table 28 Annex B). Average levels of fire sensitive Aboriginal artefacts are associated with riverine and lake systems, (Table 34 Annex B). Non-aboriginal cultural heritage registrations are the second lowest in the region, (Table 35 Annex B).

## ***Deductions for the future***

This strategy will provide direction and support for the fire management in the Loddon Mallee Region for the next 10 years. In order to do so it is necessary to understand and anticipate the future directions, trends and challenges to be planned for. An environmental scan of the Loddon Mallee, (see Annex A), has enabled the preparation of key deductions about the future.

### ***Human***

The human environment encompasses the anticipated distribution, trends and needs of the human demographic of the Loddon Mallee. These deductions may be enhanced or varied through the application of future social policy or legislative change, hence the need to monitor the trends, assumptions and actions for ongoing relevance.

## **Projected population change**

### **Deductions for the future**

- Projected population in the Region will increase from 316175 in 2009 to 370655 in 2026. The 1% per year population increase for the Region will be concentrated in the Calder growth corridor. Increase in population will come from natural regional increase, Melbourne expansion (lifestyle and economic) and overseas migration.
- Increase in population in other municipalities will concentrate on the larger centres where services and life style opportunities prevail such as Mildura, Swan Hill and Echuca.
- The numbers of people available and willing to participate in the volunteer based fire service model will change and concentrate in higher population locations.
- Greater focus will be placed on community education and ownership of risk and treatments than on further building response capability.
- Transient and additional numbers of skilled people will continue to service the agricultural industry and may increase in middle size service communities.
- Municipal ability to maintain service levels and meet community expectations will continue to be challenged in cases where the population, and therefore the rate base, is static or declining.



## Age

### Deductions for the future

- Aging populations, as described in Figure 9, and their social service and health networks will require greater support in preparing for, responding to and recovering from bushfires.
- Aging populations will have strong life skills, bushfire experiences and increasing free time in which to share them.
- The capacity to sustain the volunteer model in some aging communities will be affected. New volunteer and brigade models will evolve.
- Arrangements will be developed to protect children from bushfire in private and public places and in transit.

## Disadvantage

### Deductions for the future

- Disadvantage may increase in rural areas over time as the water industry adjusts and irrigation infrastructure is either modernized or decommissioned.
- Disadvantage will decrease in those communities that build employment for the young or sit within commuter belts for larger regional centres.
- Agriculturally reliant areas will become more prone to situational disadvantage if climate change predictions are realised as more regular drought episodes.
- Aging populations will lead to greater disadvantage as communities become more reliant on social and economic support from government agencies and health needs increase.
- Knowledge that can directly inform and build effective treatments for the disadvantaged will be developed. Program design will need to consider the unique attributes of the disadvantaged in preparing for, responding to and recovering from fire events.

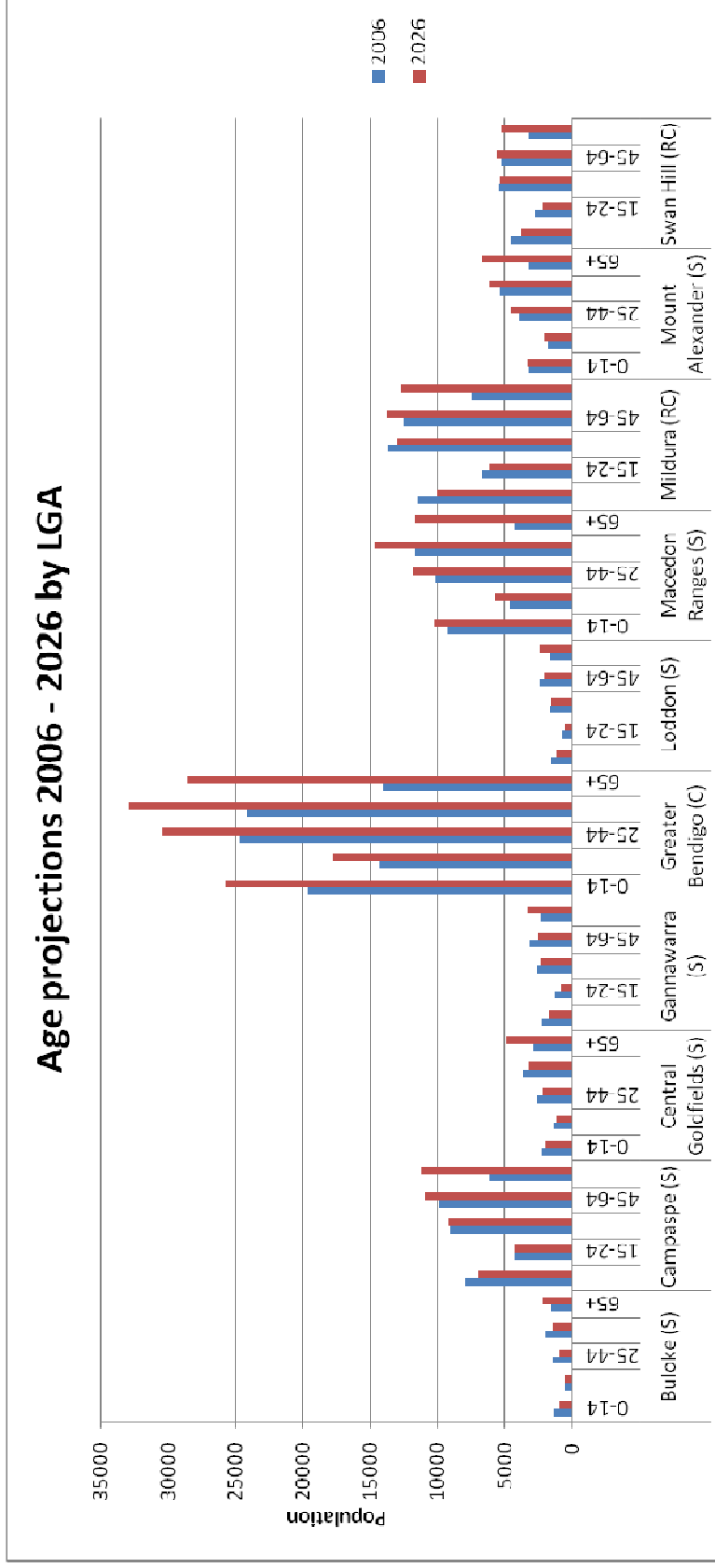


Figure 9. Age projections for the Loddon Mallee 2006 to 2026 by municipality and age span  
 Source: Service Planning, Department of Human Services (DHS)

## Health and wellbeing

### Deductions for the future

- Those in the community with a profound or severe disability (measured as “core activity need for assistance”, by the ABS), will grow, particularly in communities with aging populations. Community members and health support providers will require programs that specifically satisfy the health needs of this group during preparedness for, response to and recovery from fires.
- Mental health clients and support services will require programs that specifically satisfy their unique mental health need during preparedness for, response to and recovery from fires.
- Drug dependent and heavy alcohol users, will require programs that satisfy their unique need during preparedness for, prevention of, response to and recovery from fires.
- Asthma and heart condition community members and health response providers will require programs that specifically satisfy the health need during preparedness for, response to and recovery from fires.

## Culture and language

### Deductions for the future

- New language communities will continue to emerge and find homes in the Loddon Mallee particularly in food production and food manufacturing industries. New language communities will come from countries of the middle-east and the horn of Africa.
- The presence of transient workers with Agriculture visas from Pacific Islands and extended tourist visa backpackers will continue; additional workers will come from Asian countries such as Indonesia, Vietnam, China and South Korea.
- New and economic arrivals with high English proficiency will seek homes in Melbourne commuter areas.
- Humanitarian and immigrant community members will require programs that specifically satisfy their language and cultural need during preparedness for, response to and recovery from fires.
- Building on the example of the cooperative management arrangement for Nyah Forest, public land managers will collaborate with indigenous communities in environmental and cultural application of fire.

### ***Built environment***

The deductions for the future for the built environment have strong linkages to population change and changes in the economic environments. These deductions may be enhanced or varied through the application of future social policy or legislative change, hence the need to monitor the trends, assumptions and actions for ongoing relevance

### **Land Use**

#### **Deductions for the Future**

- Demand will continue for residential land use in the growth areas of the Region such as Mildura, Echuca and the Calder growth corridor.
- New planning criteria and land use studies will develop as a result of the VBRC.
- Public land identified within the Victorian Environmental Assessment Council (VEAC) Redgum Forests Investigation will be transferred to National Park Act status and managed for natural and cultural purposes.

### **Housing**

#### **Deductions for the future**

- The proportion of house numbers compliant with contemporary building standards and conditions will increase as new housing is built.
- The vulnerability to fire of housing stock will increase in some areas as homes age and the level of maintenance decreases.
- Housing growth in the Calder growth corridor will increase the most. These are municipalities with the greatest proportion of native vegetation and highest fuel loads other than the Mallee. These municipalities have the shorter fire danger periods in the Region.
- In order to make appropriate risk management decisions it will be critical to develop understanding of house insurance levels across the region.
- The number of abandoned and vacant houses with absentee landlords will continue to increase in some areas.
- Cheaper housing may attract people to areas with decreasing populations. Government housing density policy will encourage greater concentrations of housing in urban environments.
- New residents to the Region's communities will need fire management support and education.
- Rental tenancy occupations will continue to be high in urban centres and rental opportunities will increase in rural areas as the current resident population decreases. Programs or strategies that consider the fire management needs of landlords and rental tenants will need to be developed.

## **Business and Commercial**

### **Deductions for the future**

- The vulnerability to fire of commercial properties will increase in some areas as properties age and the level of maintenance decreases.
- The number of abandoned and vacant commercial properties with absentee landlords will continue to increase in some areas.
- Rural farming businesses will make business risk management decisions on the protection of vulnerable assets such as fencing and shedding.
- Some agriculture businesses will shift from irrigation to broad-acre activity as water industry adjustment takes effect.

## **Industrial**

### **Deductions for the future**

- Some water industry assets will need to be retired or modernised and landscape rehabilitated.
- Water pipeline systems will need to provide a greater portion of water access for fire fighting.
- Changes in the management of electricity distribution lines may take effect as a result of the VBRC.
- Industrial land use on the edge of communities in interface precincts will continue. These sites will require specific planning to manage the potential of multiple hazard events where bushfires generate complex industrial or chemical fires.

## **Economy**

The Regional economy is directly linked to the sustainability and prosperity of communities and individuals in the Loddon Mallee Region. These deductions may be enhanced or varied through the application of “markets”, future economic policy or legislative change, hence the need to monitor the trends, assumptions and actions for ongoing relevance.

## **Employment**

### **Deductions for the future**

- Communities reliant on single employers or industries for economic and social sustainability are more vulnerable from adverse fire impacts.
- The opportunity will emerge to build mutually beneficial partnerships with community development organisations working with unemployed, particularly the young, and volunteer fire services.
- Programs may need to be developed that specifically satisfy the needs of the unemployed during preparedness for, response to and recovery from fires.

## **Agriculture**

### **Deductions for future**

- The area of irrigated landscape may reduce markedly through retirement identified in the Murray Darling Basin Authority planning, and the Northern and Western Regional Sustainable Water Strategies.
- Small and medium sized towns linked to irrigation based production, in particular dairy and wine, may lose employment and population as industries are reduced. The distribution of the agriculture population and the agricultural support industry may vary with water adjustment.
- Changes in land use and industry technology will provide the opportunity to build a new generation of volunteer participants. The next generation of farmers will identify opportunities in changed land use.
- There may be significant investment in landscape rehabilitation. The “rehabilitation” industry is human resource intensive and provides complementary skills for the volunteer model of fire suppression.
- Businesses with high value products and production systems will need to consider how best to manage adverse fire impacts.
- The consequences of changed environmental water regimes will require to be monitored for change in “fuel” availability and arrangement.

- The dry land agriculture sector may expand with new operators seeking opportunities. Other land areas may be retired in upper and lower catchment locations and re-vegetated to tackle salinity and improve biodiversity values.
- The incidence of specialised and high value products will increase to satisfy the gourmet and niche markets.

## **Tourism**

### **Deductions for future**

- Managers, organisers and the emergency services of high value tourism locations and events, such as Echuca Port and Swan Hill Pioneer Settlement, Murray River camping, Southern 80 water ski race, Goldfields rural bed and breakfasts, Mount Macedon Regional Park and Cross will need to consider how best to manage fire risk.
- The Goldfields area will see increased promotion for European heritage values as it seeks world heritage listing. Successful listing will see increases in international visitation.
- The Murray River public land area will see increased promotion for natural and Aboriginal cultural values as its public land status changes to National Park.
- Programs will be further developed that specifically satisfy the needs of visitors and the tourism industry during preparedness for, response to and recovery from fires.

## **Service industries**

### **Deductions for the future**

- The health services will become an increasing portion of the economy as the population ages and the health and aged care industry expands.
- Special fire protection consideration of retail and municipal level service centres will be required to ensure they continue as to the focus of community life in small townships.
- Programs will need to be developed that specifically satisfy the education, health and aged industry needs, during preparedness for, response to and recovery from fires.
- Partnerships between fire and education network service providers will build community capacity in fire management skills.
- The continued existence of services in small towns will be at risk in the case of loss of infrastructure due to fire and population decline.

## **Manufacturing and industry**

### **Deductions for the future**

- Owners of high value products and production systems and niche industries will need to manage risks from adverse fire impacts.
- Communities reliant on a small number of employers or industries for economic and social sustainability will need to manage risk from fire impacts.
- Consideration will need to be given to fire planning for industrial estates on the interface with rural or forested land.

## **Emerging or expanded economies**

### **Deductions for the future**

- Fire planning criteria, standards and design will need to be developed that allow for an alternate power generation industry.
- Opportunities may arise for those involved in managing the risk of fire to take advantage of new technologies as they are introduced to the Region.
- The new economies may provide an opportunity for additions to the volunteers base in the Region.

## **Settlement**

### **Deductions for the future**

- Rural land use and settlement will change in areas subject to, and in line with, the Murray Darling Basin Authority planning.
- Changes in the management of planning for settlement will take effect as a result of the VBRC.
- The Calder corridor of Macedon Ranges, Mount Alexander and City of Greater Bendigo will continue to see increased settlement in interface areas. Smaller towns and villages within commuter distance of Melbourne and Bendigo and its new satellites will grow. This will include demand for lifestyle properties in rural locations.
- Population distribution may change to reflect the water system routes of the new water pipeline infrastructure by concentrating the population around high value water enterprises.
- New populations will emerge in land change and “rehabilitation” areas.
- Demand for affordable housing close to transport corridors to South Australia and Melbourne will grow, as will lifestyle settlement close to the Murray River.
- A sustainable level of potential volunteers will continue in development areas on transport routes, water pipelines, the south of the Region and along the Murray River. This provides the opportunity to build volunteer resources where they reside and increase mobile support to remoter communities.



- Change in land use from irrigation land to dry land agriculture and the creation of vegetation plantings for landscape rehabilitation or crop may increase the area of land considered to be more susceptible to grass and bushfires.
- The expansion of the number of interface properties, which are of greater risk from bushfires, will generate the need to build skills and capability in community level and individual fire management planning.

## **Transport**

### **Deductions for the future**

- Programs will be developed that specifically satisfy the aspects of private and public transport on rail and road, during preparedness for, response to and recovery from fires.
- Changes in the management of roadsides and transport routes will take effect as a result of the VBRC. Road managers will give special consideration to the strategies for road corridors where high intensity fires may occur and establish condition and standards in their Road Management Plans.
- Managers of essential infrastructure associated with airfields will need to ensure protection from bushfire.
- Rail managers will maintain and integrate vegetation management with neighbouring plans.

## **Communication**

### **Deductions for the future**

- Digitally based capability building and emergency communication strategies need to explicitly acknowledge their limitations and build parallel programs that specifically satisfy the gap needs during preparedness for, response to and recovery from fires.
- The establishment of the National Broadband Network, or an alternate, will lead to some improvement in internet service along transport corridors in the Region. Internet services will extend slowly and may be limited in take up by service level availability, economic or personal capability or social limitations.
- The mobile telephone system, services and applications will extend in the future to supplement the existing mobile telephone system.
- Fire Service communication strategies will need to allow for the development of redundant and alternate communication modes using fixed line, (optical fibre network), radio microwave and satellite systems.
- The protection of and access to emergency service communications networks will be managed as a priority.

## ***The Environment***

The environmental scan links to the anticipated influence of climate, the role of water and the history of land use in the Loddon Mallee. These deductions may be enhanced or varied through the application of future environmental policy or legislative change, hence the need to monitor the trends, assumptions and actions for ongoing relevance.

## **Biodiversity**

### **Deductions for the future**

- Fire ecology planning knowledge and skills will develop across the public and private landscape.
- Local ecosystems will come under pressure from increasing human population densities particularly in the south of the Region.
- The Murray River, its tributaries, lakes and wetlands will receive a greater allocation of water for environmental purposes increasing ground moisture and vegetation volumes. The consequences of changed environmental water regimes will need to be monitored for possible changes in “fuel” availability and arrangement.
- Change in water allocation may provide opportunities for inclusion of seasonally wet areas in strategic fuel breaks.
- Landscape rehabilitation will increase the area of land with forest type vegetations.
- Planning for landscape rehabilitation will need to consider bushfire risks.

## **Water**

### **Deductions for the future**

- Water use and distribution will change in areas subject to, and in line with Murray Darling Basin Authority planning.
- Water will increase in value as a commodity and become more intensely managed.
- Water supply will continue to be subject to drought events and the effects of climate.
- The distribution and availability of water will effect the population distribution and the economy of the region.
- The environmental application of water may change the amount and availability of fuel hazards where it is applied.

## Climate

### Deductions for the future

- On average the fire danger period (bushfires season) will become longer. The Melbourne synopsis for Macedon Ranges will extend the fire season by up to 6 weeks with the season period extending from mid March to late April by 2050.
- The Mildura area average annual accumulated FFDI is currently 5898. This could increase 3-8% by 2020 and 7-21% by 2050.
- The Bendigo area average annual accumulated FFDI is currently 2854. This could increase 3-8% by 2020 and 8-23% by 2050.
- The Melbourne (Macedon Ranges) average annual accumulated FFDI is currently 2121. This could increase 3-8% by 2020 and 8-22% by 2050.
- The number of FFDI days, with Very High or Extreme ratings, when fires are difficult to control, will increase across all locations.
- The number of GFDI days with Very High or Extreme ratings, when fires are difficult to control, will increase across all locations.
- Possible earlier starts to fire seasons may arise from a predicted reduction in spring rains. Spring rain provides much of the run off for static water supply from dams and water points. The use of piped and transported water will be more common.
- The Region is susceptible to severe and extended drought events which reduce fuel levels in grass and forests and readily available water supply.
- In drought periods heavier forest fuel locations will become more available and more susceptible to plume driven bushfire events.
- Agriculture industry becomes highly susceptible to adverse fire events.
- The capacity of rural communities to support volunteerism will decline.

## Vision and objectives

### *Aspirations for the future*

#### **Vision**

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.

#### **Outcomes sought**

Over the next 10 to 15 years this Regional Strategic Fire Management Plan will assist the fire management community in its planning, implementation and continuous improvement of fire management activities in order to achieve the following outcomes.

A Healthier Environment is one which has:

- a healthy natural environment that supports the ecological and social needs of the Loddon Mallee, and
- resilient ecosystems with a balance of fire use for ecological and protection purposes.

Safer Communities which:

- are communities consisting of agencies, the public and private sectors, able to prepare for the realistic fire risks of the Region and able to respond and recover effectively;
- are resilient communities able to absorb the social, structural and psychological impacts of bushfires;
- are communities where vulnerable members are supported by those with skills and knowledge, in an equitable manner, to prepare, respond and recover from bushfires;
- are communities where the bushfire risk is understood, accepted by risk holders and managed collaboratively and responsibly;
- possess a common understanding with fire management organisations of what effective fire management is; and
- displays decision making across all sectors based on the best evidence available.

A prosperous economy is one in which:

- settlement is made safer by appropriate development planning;
- the resilience of vulnerable business and industries to fire is established and continuously improved;
- fire management is responsive to industry development, adaptation and adjustment;
- a sustainable fire response service is partnered with communication, water and power suppliers; and
- fires generate minimum disruption to essential services.

A cohesive fire management system is one that builds synergy by:

- planning for the common future,
- effectively integrating plans developed collaboratively with stakeholders,
- cooperating to build the capability and capacity of fire services, business and the community; and
- constantly improving through measurement of fire management effectiveness as a result of:
  - aligning inputs;
  - measuring the outputs; and
  - analysing their contribution to the common outcomes (which leads to continuous improvement).

The positive response from the fire management community will generate improvement in;

- synergy of activity and investment,
- cooperation and collaboration in planning, implementation and review,
- effectiveness of risk management treatments, and
- learning, knowledge and understanding by the fire, public and private sectors.

## Fire Management Strategy

Bushfires are indiscriminate in whom they affect. Individuals, families, communities of type and place, business, industries, government services are all impacted in different ways, degrees and timeframes. The strength of IFMP is the risk based approach to the development of a landscape view which it brings to fire management. Annex A, "The Environmental Scan for the Loddon Mallee" and Annex B "Bushfire risk framework for the Loddon Mallee Region", are the key evidence and context in which the Strategies will apply.

Within the Loddon Mallee, the risk based approach considers likelihood and consequence of loss and damage caused by bushfire to:

- **The economy**, its business entities, infrastructure and human resource being adversely impacted by bushfire beyond its resilience.
- **The environment**, and its ecological processes, flora and fauna populations and products valued by society being adversely impacted by bushfire beyond its resilience.
- **The community**, its income, values, social and domestic built structures, individuals and particularly the vulnerable being adversely impacted by bushfire beyond its resilience.

And the ability of:

- **The fire management system**, its planning implementation and improvement activities to satisfy the fire management need gap between potential impact and level of resilience.

With this in mind the Committee has identified the following four key strategies.

1. Building resilience.
2. Learning and improvement.
3. Enhanced partnerships.
4. The management and treatment of risk.

These strategies will improve and sustain our communities, economy and the environment over the next 10 years.

## ***Building Resilience***

Bushfire is a natural part of the Loddon Mallee landscape and will continue to be so. The occurrence of bushfires is likely to increase and we will be regularly impacted upon somewhere across the Region. The challenge is to maintain community continuity when adverse events occur.

The key to an early return to “business as usual” is building resilience of the individual, communities, business, industry, the economies and the environment to the likely adverse impacts of bushfires in their location. Resilience can be built through capability and capacity programs to assist the preservation of life, minimisation of injury and minimisation of property damage which are the key indicators for successful recovery from emergency events.

### **Objective**

*We will improve the resilience of the Region and close the gap between exposure and vulnerability by:*

- Building the capacity and capabilities of individual, communities, business, industry the economies and the environment to prepare, respond and recover from bushfire events.
- Recognising the diverse range and varying capabilities required across the PRRR spectrum.
- Reducing the vulnerability of important power, access, communication and water supply infrastructure in order to:
  - Sustain response activities, and
  - Return services after an event.
- Sustaining our natural environments through the appropriate application of fire for ecological purposes and minimise the inappropriate use of fire.

In doing so we will:

- Build capability and knowledge through:
  - Education,
  - Training, and
  - Exercise;
- Plan for *all aspects* of recovery as follows:
  - Economic/business;
  - Psychological;
  - Social; and
  - Environment (ecosystems);

- Build on and use existing programs/systems and networks to build resilience;
- Acknowledge, identify and support those with special needs in society;
- Identify and support those industries and businesses that are vulnerable to bushfire and/or are major contributors to the sustainability and prosperity of communities; and
- Monitor and measure to build learning and leading to continuous improvement.



### Building resilience activities

Activities	<1	1-5	5-10	Lead	Participate
<p>1.1</p> <p>Develop a program to build community and individual fire management planning and application skills; awareness, decision making, planning, ecology, evacuation, house protection and recovery. To include residents, visitors and tourists.</p>		√	√	CFA	Regional Strategic Fire Management Planning Committee, Emergency Response Planning Committee, Regional Recovery Committee
<p>1.2</p> <p>Identify and support community members with special needs in building appropriate fire management planning and application skills.</p> <p>Key sectors are</p> <ul style="list-style-type: none"> <li>• Health <ul style="list-style-type: none"> <li>○ the supported aged and infirm,</li> <li>○ the disabled,</li> <li>○ the mentally ill,</li> <li>○ those suffering addictions; and</li> <li>○ those suffering poor health which may be exacerbated by fire and smoke from bushfires.</li> </ul> </li> <li>• The elderly and children</li> <li>• Low English language or concept comprehension</li> </ul>		√	√	DHS	Dep. Health, Local Government, DPCD, VicPol, DEECD, CFA, DPI
<p>1.3</p> <p>Focus is awareness, decision making, planning, evacuation, house protection, recovery</p> <p>Improve preparedness of communities and industries which are vulnerable to the impacts of bushfire by developing recovery plans which include specific strategies for:</p> <ul style="list-style-type: none"> <li>• Economy</li> <li>• Health</li> <li>• Social</li> <li>• The environment</li> <li>• Essential services.</li> </ul>		√	√	DHS	Regional Recovery Committee, Municipal Recovery Committee, Local Government, DPI, RDV, Department of Health, Catchment Management Authorities, DSE, Utilities, DEECD
<p>1.4</p> <p>Align business continuity plans of essential services of power, water supply and communications and transport to response plans</p>		√		Regional Emergency Planning Committee	Local Government, DSE, CFA, DHS, DPI, Power Companies, Water Companies, Communication suppliers
<p>1.5</p> <p>Align business continuity plans of essential services of power, water supply and communications and transport to recovery plans</p>		√	√	Regional Recovery Committee	Municipal recovery committees, DHS Power Companies, Water Companies, Communication suppliers
<p>1.6</p> <p>Identify and support business and industry community members who are vulnerable to bushfire by building appropriate fire management and business continuity plans</p>		√		LMFR committee	CFA, Local Government
<p>1.7</p> <p>Establish alternate emergency (warnings) communication mediums to fill internet and mobile telephone low service quality or application areas</p>		√		Regional Emergency Planning	CFA, OESC

					Committee	
1.8	Establish alternate community education and information communication mediums to fill internet and mobile telephone low service quality or application areas	√	√		CFA	CFA, DSE, Local Government, Communications suppliers
1.9	Support the role of domestic insurance as part of integrated personal response and recovery plans		√		DHS	State Government Local Government, CFA, DHS
1.10	Develop fire ecology strategies and techniques that enhance biodiversity resilience at landscape, population and species levels		√		DSE	CMA's, Local Government and PV

**Table 6. Building resilience activities**

## ***Learning and Improvement***

A learning and improvement culture enables Government, organisations and the community to track the intention of plans, programs and activities and the effectiveness of their implementation. Adjustments and improvements can be made through regular feedback loops.

### **Objective**

*Build a learning and improvement culture that expands knowledge and increases capability of those involved in fire management and the broader society by:*

- Improving the understanding of bushfire risk and vulnerability (exposure), by those who manage fire services and those who will be affected by the impacts of fire and the strategies that are in place to manage the fire impacts.
- Improving the effectiveness and clarity of planning through monitoring improvement and review of plans, their assumptions, application and effectiveness at delivering the proposed fire management outcomes.
- Using evidence based risk assessments to support decision making by those at risk.
- Improving quality, effectiveness and integration of plans through incorporation of SMART measurable objectives which are structured to support integration and continuous improvement.

### Learning and Improvement activities

Activities		<1	1-5	5-10	Lead	Participate
2.1	Prepare a monitoring, evaluation, reporting and improvement plan (MERI) for fire management in the Region.	√			LMR committee.	Regional Committee member organisations
2.2	Build on VFRR and prepare consistent and verifiable bushfire risk hazard and vulnerability data suitable for use in municipal fire management plans and organisational and individual planning.		√		LMR committee.	Regional Committee member organisations
2.3	Participate in improvement audits of Municipal Fire Management Plans.		√		CFA	Municipal Committee members
2.4	Adapt programs and organisational plans in response to organisational and municipal level audits.		√	√	LMR committee.	Regional Committee member organisations
2.5	Establish community skills, knowledge and needs benchmark.		√		LMR committee.	Regional Committee member organisations
2.6	Establish business and service organisation skills, knowledge and needs benchmark.		√		LMR committee.	Regional Committee member organisations
2.7	Establish fire and emergency service skills, knowledge and needs benchmark.		√		LMR committee.	Regional Committee member organisations
2.8	Establish skill and capability building strategies and plans for emergency services, business and individuals.		√		LMR committee.	Regional Committee member organisations
2.9	Build fire planning skills (including community engagement) in the region by the application of integrated fire management planning principles and practices and the sharing of those with others.	√	√		LMR committee.	Regional Committee member organisations
2.10	Encourage the use of technical and community education sector to deliver community education in relation to fire.		√		CFA	DEECD
2.11	Build fire communication skills in the tourism sector.		√		CFA	PV, Local Government
2.12	Build fire awareness skills in the overseas agricultural visa groups.		√		CFA	DPI
2.13	Encourage the use of aligned SMART objectives in organisational plans and programs in order to achieve continuous improvement.		√	√	LMR committee.	Regional Committee member organisations

2.14	Undertake monitoring, evaluation, reporting and improvement activities in line with MERI plan.	✓		LMR committee.	Regional Committee member organisations
2.15	Incorporate fire management learnings into Emergency Management Planning.	✓		VicPol	VicSES, Local Government, DHS
2.16	Establish a Region rewards program to recognise improvement and act as a conduit to the State program.	✓		LMR committee.	Regional Committee member organisations
2.17	Review Loddon Mallee Regional Strategic Fire Management Plan.	✓	✓	LMR committee.	Regional Committee member organisations
2.18	Review Bushfire Risk Framework and Environmental Scan as ABS census update information becomes available.	✓	✓	LMR committee.	Regional Committee member organisations
2.19	Establish collaborative and consistent data collection on fire causes and share information on a regular basis.	✓		CFA	DSE, CFA, Regional Committee

**Table 7. Learning and improvement activities**

## ***Enhance partnerships***

How we as a community prepare for, respond to and recover from bushfires, will be directly affected by the degree to which we work together. The State Committee has adopted the IAP2 framework as a core principle to support this cooperation and to assist in the formal and informal partnerships on which fire planning relies.

Whilst the Regional Committee brings together the key stakeholders in fire management, it is understood that each of the Committee members has further networks and stakeholders with whom they partner to deliver or receive fire management activities. These further partnerships are themselves vertical and horizontal and of a formal or informal nature. It is these extended interactions that create the fire planning network.

Fire management, be it preparedness response or recovery, has a different application to different sectors of society. It is the smooth integration of planning and the efficient transition between implementation phases and roles which will reduce the risks associated with fire management when an event occurs. Integrated fire management planning aims to achieve this by involving those who have a role in planning for fire management, or are impacted by fires, in the fire planning process.

### **Objectives**

*We will develop sustainable partnerships to support fire management across the region by:*

- Engaging with those most affected by fire in the development of fire plans;
- Building on existing partnerships, relationships and communication systems;
- Building common communication partnerships and platforms around preparedness, response and recovery;
- Engaging with community, business and government sectors to develop a better understanding of community needs for and expectations of fire management;
- Monitoring and improving the effectiveness of engagement and communications activities; and
- Supporting the ongoing role of the Regional and Municipal Fire Management Planning Committees and their integration with Regional Recovery and Response Committees.

**Enhancing partnerships activities**

Activities		<1	1 -5	5-10	Lead	Participate
3.1	Committee members participate in the Regional Strategic Fire Management Planning Committee's activities and partnerships.	√	√	√	LMR committee.	Regional Committee member organisation
3.2	Collaborate with neighbouring Regional Fire Management Planning Committees and other Loddon Mallee Emergency Management Planning Committees.	√	√	√	LMR committee.	Hume, Gramplains and North and Western RSFMP's, Loddon Mallee Regional Emergency Response Planning Committee and Loddon Mallee Regional Recovery Committee
3.3	Transition the 10 Loddon Mallee Municipal Fire Prevention Committees to Municipal Fire Management Planning Committees.	√			CFA	Local Government, VicSES
3.4	Engage with the affected organisations and communities to gather input to Loddon Mallee Regional Strategic Fire Management Plan.	√			LMR committee.	Regional Committee member organisation
3.5	Establish partnerships between at risk organisations, communities and individuals through Municipal Fire Management Plan and Local plan development.		√		Local government	Regional Committee member organisation
3.6	Engage with the affected organisations and communities to gather input to the Loddon Mallee Region's Municipal Fire Management Plans and Local plans.	√			MFMP	Municipal Committee member organisation
3.7	Develop a joint communication strategy for fire management during the preparedness, response and recovery phases.		√		CFA	DSE, VicPol, DHS,
3.8	Monitor and report the extent and effectiveness of fire related engagement and communication within the Loddon Mallee Region.		√	√	LMR committee	DSE, CFA, Local Government
3.9	Prepare information products that support the understanding of IFMP purpose, direction and activities.	√			LMR committee.	Regional Committee member organisation
3.10	Support the established partnerships with indigenous communities which uses fire for cultural and environmental purposes.		√		Parks Victoria	DSE, Local Government, AAV, CFA
3.11	Establish partnerships to monitor improve and share knowledge on fire ecology and environmental management.		√	√	DSE	CMA's, Local Government, CFA, Vic Roads, PV and rail companies
3.12	Establish a fire prevention partnership across the region to reduce the incidence of human caused fires.		√	√	CFA	DSE, PV, Local Government, Vic roads, Rail Companies

**Table 8. Enhancing partnerships activities**





## ***The management and treatment of risk***

Risk in bushfire management arises due to various causes: the fire management planning process and its implementation; the fire events and hazards and their management; and individual and the organisational capability and capacity of those involved.

Essential to fire management and its risk assessment is an understanding of the characteristic of the hazard and how it relates to the exposure and vulnerability of the economic, social and environmental elements of the Loddon Mallee Region.

### **Objective**

*We will generate synergy and effectiveness in the treatment of the risk by:*

- Managing our risks with the best knowledge and expertise that we have and targeting our research to fill our knowledge gaps;
- Managing our risk and identifying our opportunities in a manner consistent with the international standard for risk management ISO 31000;
- Collaborating in the analysis of risk using consistent tools and data;
- Sharing our knowledge and understanding of the risk implications and risk acceptance;
- Coordinating and collaborating in aligning risk treatments;
- Building on existing risk treatments where these are assessed as appropriate;
- Monitoring the effectiveness of the risk treatments in addressing the identified risks; and
- Participating in and exercising planning initiatives.

### The management and treatment of risk

	Activities	<1	1 -5	5-10	Lead	Participate
4.1	Develop fuel management strategies that take account of their impact on the environment, industry, health, community safety and community values.		√	√	DSE	CFA, Local Government, RDV, Department of Health, Catchment Management Authorities, DSE, Utilities, DEECD
4.2	Support collaboration and coordination in risk treatments through Municipal Fire Management Plans.		√		LMR com	Regional Committee member organisation
4.3	Incorporate the monitoring of risk treatment effectiveness into the MERI plan for the Region.		√		LMR com	
4.4	Participate and promote where possible, the further development and application of risk management tools, including house ignition likelihood tool, Phoenix mapping tool, VFRR, community vulnerability mapping.	√	√		LMR com	Regional Committee member organisation
4.5	Develop research and development activities to fill knowledge gaps particularly in the social environment.		√		DHS	Local government, DPCD,
4.6	Engage with communities, industry and the Government sector to build collaboration in the treatment of identified risks.		√		LMR com	MFMP
4.7	Seek funding for treatment of risk in a collaborative manner.		√		LMR com	
4.8	Share risk knowledge and data between organisations on the internal IFMP web portal.		√		LMR com	Regional Committee member organisation
4.9	Share information on risk with the community, business and government sectors on the IFMP website.		√		LMR com	Regional Committee member organisation
4.10	Review the risk assumptions for fire management planning on an annual basis.		√	√	LMR com	Regional Committee member organisation
4.11	Promote the application of bushfire risk management in the consideration of planning, change and development activities in the LMR. With particular reference to <ul style="list-style-type: none"> <li>• Calder corridor settlement</li> <li>• Catchment wide biodiversity/ rehabilitation plans</li> <li>• Water industry adjustments</li> </ul>		√	√	DPCD	RDV, Local Government, DSE, CFA, DPI, Water Companies, Power Companies

	Activities	<1	1-5	5-10	Lead	Participate
	<ul style="list-style-type: none"> <li>Solar power industry</li> </ul>					
4.12	Build capability and capacity with fire management organisations in the application of risk management principles and process.		√	√	VicSES	Regional Committee member organisations
4.13	Support and assist local government to align municipal planning scheme with bushfire risk (including municipal strategic statement).	√	√		DPCD	Local Government, DSE, CFA
4.14	Align urban and bushfire risk assessment by identifying business and industrial locations where bushfire becomes the ignition source for chemical or other hazardous materials.		√		CFA	Local Government
4.15	Identify and develop strategies for communities with low water security for fire fighting purposes.		√		DSE	Water corporations, CFA, Local Government
4.16	Establish collaborative fire prevention education strategies and programs for high risk and vulnerable communities.		√	√	CFA	Local Government, DHS, DPI, DSE, PV, DPCD, Power companies
4.17	Align Road Management Plans of Vic Roads, DSE and Local Government with roadside treatment and evacuation plans		√		Vic Roads	DSE, Local Government, VicPol, CFA

Table 9. The management and treatment of risk activities

## **Monitoring and review**

In accordance with the state IFMP Framework, this Regional Plan has a 10 year life span and a five year review period. The Regional Fire Management Planning Committee will monitor the performance of this plan in line with its Monitoring, Evaluation, Reporting and Improvement Plan (MERI) (action 2.1). The MERI plan will need to accommodate the unique relationships that exist between the Strategic direction established by this Plan and the delivery of activities by organisations and their coordination through the Municipal Fire Management Planning Committees.

The Committee will report the outcomes of this monitoring and the five year review to the organisations represented on the Regional Committee, the Municipal Fire Management Planning Committees, the community and the State Fire Management Planning Committee.

This Plan will be audited as per instructions of the State Fire Management Planning Committee.

## References - Strategy, Annex A & Annex B

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## **Annexes**

- Annex A. Environmental Scan for the Loddon Mallee Region – Annex A to the Loddon Mallee Regional Strategic Fire Management Plan**
  
- Annex B. Bushfire risk framework for the Loddon Mallee Region – Annex B to the Loddon Mallee Regional Strategic Fire Management Plan**
  
- Annex C. Glossary of terms and sources used in the Loddon Mallee Regional Strategic Fire Management Plan and Annexes – Annex C to the Loddon Mallee Regional Strategic Fire Management Plan**