



2009 Victorian Bushfires  
Royal Commission

# FIRE PREPARATION, RESPONSE AND RECOVERY

FINAL REPORT VOLUME II  
PART ONE

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## A NOTE FOR READERS

The Commission is conscious of the wide interest in its report—not only in Victoria but elsewhere in Australia and internationally. Its readership will be broad and readers' interests will vary. Some chapters will be of keen interest to many, including people affected by the late January and February 2009 bushfires. Other chapters are directed at a more technical readership and might be of interest to academics or practitioners. Governments and their agencies will probably examine the entire report in detail, seeking to understand its implications for policy, operational practices and service delivery.

In view of this broad audience, the Commission tried to make its report as accessible as possible, without undue technicalities, and thus more easily read by the general public. Each chapter is designed to stand alone to help readers who might have more discrete interests. Such an approach inevitably results in some repetition. Each chapter's introductory remarks provide brief background information, describe the chapter's purpose, and summarise the essential position the Commission is advocating.

The report is available in hard-copy and digital form. The digital version contains links to the evidence for those interested in seeing additional detail about the material discussed (the transcript and exhibits) and submissions. The report was written with electronic production in mind, and this influenced decisions about matters such as the presentation of endnotes.

Following are some of the terms used in the report in the interests of consistency and simplicity:

- bunkers—when referring to personal bushfire shelters
- community refuges—rather than designated refuges
- bushfire shelters—rather than neighbourhood safer places, except where the current policy framework is being discussed
- roadblocks—rather than traffic management points
- code red days—rather than Code Red/Catastrophic days
- stay or go—to refer to Victoria's bushfire safety policy
- vulnerable people—incorporating groups such as young people, older people, the ill and the infirm.

Technical terms are, however, used if a direct reference is made to existing government policy or in a direct quote, to ensure that the meaning is conveyed accurately. Further, some of the terms used in this report differ from those used in the Commission's interim report. The decision to use different terminology is based on new evidence and a desire to simplify and clarify the language used.

The Commission recognises that a number of different terms are used to describe bushfires—for example, wildfire and megafire, as used in the United States. To ensure consistency and minimise confusion, this report uses the term 'bushfire' in all instances other than when referring to the name of a policy or report. The Commission also tends to use the words 'ferocious' and 'severe' to describe the type of fire that occurred on 7 February.

For simplicity, the Commission also uses the term 'wind change' generically when referring to the complex interaction between changes in the wind's direction and fire behaviour. Chapter 1 in Volume I discusses the impact of wind on fire behaviour and the nature of the wind change on Black Saturday.

Overall, the Commission did not reach a firm view about the appropriateness of using any of these terms beyond its final report, but it does note a preference for plain language. In Chapter 11 in Volume II the Commission expresses support for further work being done in order to identify the best words to use in public communications about bushfire.

Three other conventions applied in this report warrant mention. First, for consistency with fire agencies' use in bushfire warnings and other measurements of time, the 24-hour clock is used in the discussion of the fires in Part One of Volume I. Throughout the rest of the report the 12-hour clock is used to refer to time. Second, although metric measures are generally used in the report, imperial measures are used if they reflect more commonly understood terminology—for example, a quarter-acre block.

Third, readers should bear in mind that the Commission draws a distinction between 'State' and 'state'. The State refers generically to the mechanisms of the Victorian Government, including the departments and agencies that were collectively represented as parties before the Commission. In contrast, the state is used in reference to Victoria as a place or geographic entity.





# CONTENTS

## PART ONE

### A NOTE FOR READERS

iii

### INTRODUCTION

xvi–xix

#### THE IMPLICATIONS FOR POLICY REFORM

xvi

##### THE RURAL–URBAN INTERFACE

xvi

##### CLIMATE CHANGE

xvi

#### STRUCTURE OF THIS VOLUME

xvii

## 1 VICTORIA'S BUSHFIRE SAFETY POLICY

1–68

### 1.1 STAYING OR GOING

3

### 1.2 THE POLICY AT 7 FEBRUARY

4

#### 1.2.1 THE EMPIRICAL BASIS FOR THE STAY OR GO POLICY

5

#### 1.2.2 COMMUNITY EDUCATION

6

### 1.3 LESSONS BEFORE 7 FEBRUARY

7

### 1.4 LESSONS FROM 7 FEBRUARY

8

#### 1.4.1 WHAT PEOPLE DID

10

#### 1.4.2 THE PEOPLE WHO LEFT

10

#### 1.4.3 THE PEOPLE WHO STAYED

14

#### 1.4.4 VULNERABLE PEOPLE

17

#### 1.4.5 BUSHFIRE AWARENESS AND KNOWLEDGE

17

#### 1.4.6 PREPARATION AND PLANNING

19

#### 1.4.7 PLACES OF SHELTER

19

#### 1.4.8 THE PSYCHOLOGICAL IMPACT

21

### 1.5 CHANGES SINCE 7 FEBRUARY

22

#### 1.5.1 THE STAY OR GO POLICY

22

#### 1.5.2 INFORMATION AND WARNINGS

25

#### 1.5.3 EMERGENCY CALLS

28

#### 1.5.4 EVACUATION AND REFUGE

28

### 1.6 TOWARDS A BETTER BUSHFIRE SAFETY POLICY

31

#### 1.6.1 EVERY FIRE IS DIFFERENT

31

#### 1.6.2 HUMAN BEHAVIOUR VARIES

32

#### 1.6.3 ADVICE AND LOCAL PLANNING ARE CRUCIAL

32

### 1.7 THE REVISED POLICY FRAMEWORK

32

### 1.8 BEFORE A BUSHFIRE

34

#### 1.8.1 BUILDING ON THE STRENGTHS OF THE EXISTING POLICY: LEAVING EARLY

34

#### 1.8.2 CONTINUING COMMUNITY ADVICE AND ENGAGEMENT

34

#### 1.8.3 CRUCIAL KNOWLEDGE

35

1.8.4	LOCAL PLANNING FOR BUSHFIRE SAFETY	37
1.8.5	INDIVIDUAL PLANNING AND PREPARATION	41
1.8.6	IDENTIFICATION AND DEVELOPMENT OF SHELTER OPTIONS	42
1.8.7	PLANNING FOR EVACUATION	48
<b>1.9</b>	<b>DURING A BUSHFIRE</b>	<b>50</b>
1.9.1	WARNINGS ON SPECIFIC BUSHFIRE THREATS	50
1.9.2	EMERGENCY EVACUATION	52
1.9.3	STAY AND DEFEND	53
1.9.4	THE BLACK SATURDAY UPGRADE	54
<b>1.10</b>	<b>AFTER A BUSHFIRE</b>	<b>54</b>
1.10.1	GATHERING INFORMATION AND RESEARCH	54
1.10.2	MONITORING AND REVIEW	54
<b>1.11</b>	<b>THE BIGGER PICTURE</b>	<b>55</b>
1.11.1	SCHOOL EDUCATION	55
1.11.2	REMEMBERING	56
<b>2</b>	<b>EMERGENCY AND INCIDENT MANAGEMENT</b>	<b>69–110</b>
<b>2.1</b>	<b>PRIMARY CONCERNS</b>	<b>70</b>
<b>2.2</b>	<b>PREPARATION AND PLANNING</b>	<b>71</b>
2.2.1	PREPARATIONS FOR 7 FEBRUARY	71
2.2.2	PLANNING FOR JOINT INCIDENT MANAGEMENT TEAMS	72
<b>2.3</b>	<b>LEADERSHIP AND COMMAND</b>	<b>73</b>
2.3.1	PRIMARY FUNCTIONS OF EMERGENCY MANAGEMENT: COMMAND, CONTROL AND COORDINATION	73
2.3.2	THE PRIMARY POSITIONS ON 7 FEBRUARY	74
2.3.3	THE MAIN FACILITIES AND FUNCTIONS ON 7 FEBRUARY	75
2.3.4	CONTROL AT THE STATE LEVEL	75
2.3.5	THE FUNDAMENTAL RESPONSIBILITY OF THOSE IN COMMAND	78
2.3.6	CHIEF OFFICERS	79
2.3.7	VICTORIA POLICE	82
2.3.8	THE CHIEF COMMISSIONER OF POLICE	83
<b>2.4</b>	<b>THE MINISTER AND EMERGENCY MANAGEMENT</b>	<b>84</b>
2.4.1	ROLE OF THE MINISTER	84
2.4.2	KEEPING THE MINISTER INFORMED	85
<b>2.5</b>	<b>A STATE OF DISASTER</b>	<b>86</b>
2.5.1	LACK OF ADVICE	86

<b>2.6</b>	<b>USING AIIMS AND WHAT CAN BE IMPROVED</b>	<b>87</b>
2.6.1	CONTROL OF INCIDENTS	88
2.6.2	THE INFORMATION UNIT	88
2.6.3	THE DEPUTY INCIDENT CONTROLLER	89
2.6.4	LOCAL KNOWLEDGE	90
<b>2.7</b>	<b>INFORMATION SHARING ON 7 FEBRUARY</b>	<b>91</b>
2.7.1	INFORMATION SHARING: INCIDENT ACTION PLANS	91
2.7.2	INCIDENT ACTION PLANS: THE WAY AHEAD	93
<b>2.8</b>	<b>AGENCY INTEGRATION</b>	<b>94</b>
2.8.1	THE INTEGRATED EMERGENCY COORDINATION CENTRE	94
2.8.2	A LACK OF INTEGRATED SYSTEMS	94
<b>2.9</b>	<b>FACILITIES FOR INCIDENT MANAGEMENT AND COORDINATION</b>	<b>97</b>
2.9.1	INCIDENT CONTROL CENTRES	97
2.9.2	MUNICIPAL EMERGENCY COORDINATION CENTRES	97
2.9.3	LEVEL 3 INCIDENT CONTROLLERS	98
2.9.4	VOLUNTEERS	99
2.9.5	TRAINEES	100
<b>2.10</b>	<b>ROADBLOCKS DURING THE 2009 VICTORIAN BUSHFIRES</b>	<b>101</b>
2.10.1	PREVIOUS CORONIAL FINDINGS	101
2.10.2	THE 2006 GUIDELINES	101
2.10.3	THE NEW GUIDELINES	102
2.10.4	THE CORONER	104
<b>3</b>	<b>FIREGROUND RESPONSE</b>	<b>111–146</b>
<b>3.1</b>	<b>INITIAL ATTACK</b>	<b>112</b>
3.1.1	FACTORS THAT DETERMINE THE SUCCESS OF INITIAL ATTACK	112
<b>3.2</b>	<b>RESOURCES AND SYSTEMS</b>	<b>113</b>
3.2.1	AERIAL FIREFIGHTING	113
3.2.2	PRIVATE FIREFIGHTING RESOURCES	118
3.2.3	FIRE DETECTION AND INTELLIGENCE	119
3.2.4	INFORMATION TECHNOLOGY	120
3.2.5	RESOURCE MANAGEMENT AND TRACKING	122
3.2.6	COMMUNICATION TOOLS	124
3.2.7	WATER AND ELECTRICITY	131
<b>3.3</b>	<b>PEOPLE</b>	<b>132</b>
3.3.1	FIREFIGHTERS' SAFETY AND WELFARE	132
3.3.2	VOLUNTEERS	137

<b>4</b>	<b>ELECTRICITY-CAUSED FIRE</b>	<b>147–186</b>
4.1	HISTORY OF ELECTRICITY-CAUSED IGNITIONS	148
4.2	THE ELECTRICITY DISTRIBUTION NETWORK	149
4.3	AGEING INFRASTRUCTURE	151
4.3.1	CONDUCTORS	151
4.3.2	INSULATORS	152
4.3.3	POLES	152
4.3.4	TIE WIRES	152
4.3.5	THE SWER NETWORK	153
4.4	REPLACEMENT OPTIONS	154
4.4.1	UNDERGROUND CABLE	154
4.4.2	AERIAL BUNDLED CABLE	154
4.4.3	AGE-BASED REPLACEMENT WITH EXISTING TECHNOLOGY	155
4.5	FUNDING THE REPLACEMENT OF THE DISTRIBUTION NETWORK	156
4.5.1	THE ECONOMIC REGULATORY REGIME AND SAFETY	158
4.5.2	A 'TRIGGER EVENT' LEADING THE AER TO ADJUST ITS DISTRIBUTION DETERMINATION	158
4.5.3	A GOVERNMENT CONTRIBUTION TO THE NEW NETWORK	158
4.6	INTERIM MEASURES	159
4.6.1	ASSET INSPECTION	159
4.6.2	HAZARD TREES	165
4.6.3	SETTINGS AND OPERATION OF PROTECTIVE DEVICES ON TOTAL FIRE BAN DAYS	167
4.6.4	OTHER DEVICES FOR LIMITING FIRE RISK	173
4.7	ENERGY SAFE VICTORIA	175
4.7.1	A WEAK REGULATOR	176
<b>5</b>	<b>DELIBERATELY LIT BUSHFIRES</b>	<b>187–198</b>
5.1	DEFINING AND RECORDING DELIBERATE FIRE-SETTING	188
5.2	THE EXTENT AND NATURE OF THE PROBLEM	188
5.2.1	HOT SPOTS AND PEAK TIMES	189
5.2.2	WHO DELIBERATELY LIGHTS FIRES?	189
5.2.3	FIREFIGHTERS	191
5.3	APPLYING CRIME PREVENTION TECHNIQUES TO DELIBERATELY LIT BUSHFIRES	191
5.3.1	A MULTI-FACETED APPROACH	193
5.4	THE VICTORIA POLICE APPROACH TO ARSON	194
5.5	NATIONAL INITIATIVES	196
5.6	EVALUATION	197
	<b>SHORTENED FORMS</b>	<b>200–202</b>
	<b>GLOSSARY</b>	<b>203–211</b>

## PART TWO

### A NOTE FOR READERS

iii

### CONTENTS

v–xiii

<b>6</b>	<b>PLANNING AND BUILDING</b>	<b>213–276</b>
6.1	BUILDING SURVIVAL IN THE 2009 VICTORIAN BUSHFIRES	216
6.2	MAPPING BUSHFIRE RISK	217
6.2.1	BUSHFIRE-PRONE AREAS	218
6.2.2	THE WILDFIRE MANAGEMENT OVERLAY	219
6.2.3	INTEGRATED, CENTRALISED MAPPING	222
6.2.4	MAPPING CRITERIA	223
6.2.5	A SINGLE SITE-ASSESSMENT METHODOLOGY	223
6.3	REGULATION OF LAND-USE PLANNING	224
6.3.1	URBAN GROWTH	226
6.3.2	SETTLEMENT PATTERNS	227
6.3.3	SMALL RURAL LOTS	227
6.3.4	A BUSHFIRE-PRONE ZONE?	228
6.4	THE VICTORIA PLANNING PROVISIONS: BUSHFIRE RISK MANAGEMENT	229
6.4.1	CLAUSE 15.07: PROTECTION FROM WILDFIRE	229
6.4.2	LOCAL PLANNING POLICIES	231
6.4.3	CLAUSE 44.06: WILDFIRE MANAGEMENT OVERLAY	231
6.4.4	THE CFA AS A REFERRAL AUTHORITY	237
6.5	VEGETATION CONSERVATION	240
6.5.1	CLAUSE 15.09: CONSERVATION OF NATIVE FLORA AND FAUNA	241
6.5.2	CLAUSE 52.17: NATIVE VEGETATION	242
6.5.3	CLAUSE 52.43: THE 10/30 RULE	243
6.5.4	ENVIRONMENTAL AND LANDSCAPE OVERLAYS	243
6.6	BALANCING THE CONSERVATION OF NATIVE VEGETATION AND THE MANAGEMENT OF BUSHFIRE RISK	244
6.6.1	THE 10/30 RULE: BIODIVERSITY CONCERNS	244
6.6.2	CONSIDERATION OF BUSHFIRE HAZARD BY THE DEPARTMENT OF SUSTAINABILITY AND ENVIRONMENT	245
6.6.3	NATIVE VEGETATION OFFSETS	245
6.6.4	BIODIVERSITY MAPPING	246
6.6.5	FIRE-RESISTANT VEGETATION	246
6.7	LOCAL PLANNING SCHEMES	247
6.8	HIGH-RISK AREAS	249

<b>6.9</b>	<b>BUILDING REGULATION</b>	<b>252</b>
6.9.1	AS 3959: CONSTRUCTION OF BUILDINGS IN BUSHFIRE-PRONE AREAS	254
6.9.2	REVISION OF AS 3959-1999	254
6.9.3	PUBLICATION AND ADOPTION OF AS 3959-2009	255
6.9.4	ACCESS TO THE BUILDING CODE OF AUSTRALIA AND AUSTRALIAN STANDARDS	256
6.9.5	AS 3959-2009	257
<b>6.10</b>	<b>BUSHFIRE BUNKERS</b>	<b>262</b>
<b>6.11</b>	<b>BUSHFIRE SPRINKLERS</b>	<b>262</b>
<b>6.12</b>	<b>RETROFITTING OF BUILDINGS</b>	<b>263</b>
<b>6.13</b>	<b>ENFORCEMENT AND MAINTENANCE OF PLANNING AND BUILDING CONDITIONS</b>	<b>264</b>
6.13.1	PLANNING PERMIT CONDITIONS	264
6.13.2	BUILDING MAINTENANCE	265
6.13.3	CHECKS AT THE POINT OF SALE	266
<b>6.14</b>	<b>MUNICIPAL FIRE PREVENTION</b>	<b>267</b>
<b>6.15</b>	<b>EDUCATION AND TRAINING</b>	<b>267</b>
<b>7</b>	<b>LAND AND FUEL MANAGEMENT</b>	<b>277–320</b>
<b>7.1</b>	<b>THE EXPERT PANEL</b>	<b>279</b>
<b>7.2</b>	<b>THE IMPACT OF PRESCRIBED BURNING ON BUSHFIRE</b>	<b>280</b>
7.2.1	EFFECTIVENESS OF PRESCRIBED BURNING	280
<b>7.3</b>	<b>LEARNING FROM OTHERS</b>	<b>284</b>
7.3.1	WESTERN AUSTRALIA	284
7.3.2	THE US FOREST SERVICE	286
7.3.3	NEW SOUTH WALES	288
<b>7.4</b>	<b>PRESCRIBED BURNING IN VICTORIA</b>	<b>288</b>
7.4.1	THE PAST	289
7.4.2	THE PRESENT	291
7.4.3	TARGETS	292
7.4.4	COSTS	295
7.4.5	FIRE ECOLOGY	296
7.4.6	THE CODE OF PRACTICE	298
<b>7.5</b>	<b>FUEL BREAKS</b>	<b>304</b>
7.5.1	VICTORIA PLANNING PROVISIONS EXEMPTIONS	304
7.5.2	THE PRO FORMA OFFER	305
<b>7.6</b>	<b>ROADSIDE CLEARING</b>	<b>305</b>
7.6.1	MANAGEMENT OF ROADS	306
7.6.2	THE OBLIGATION TO REDUCE BUSHFIRE RISK	306
7.6.3	THE OBLIGATION TO PROTECT THE ENVIRONMENT	306

7.6.4	COMPLEXITY AND COMPETING OBJECTIVES	308
7.6.5	MANAGEMENT OF FIRE RISK BY COUNCILS	308
7.6.6	VICROADS AND MANAGEMENT OF FIRE RISK	309
7.6.7	THE CFA AND ROADSIDE WORKS	310
7.6.8	ROAD SAFETY DURING FIRES	311
7.6.9	ROADSIDE VEGETATION AND FIRE BEHAVIOUR	312
7.6.10	FIREWOOD	313
<b>8</b>	<b>RELIEF AND RECOVERY</b>	<b>321–350</b>
8.1	PLANNING	324
8.2	PREPARATION FOR RELIEF AND RECOVERY	326
8.3	DURING AND AFTER THE FIRES	326
8.3.1	FIRST AID	327
8.3.2	WELFARE CHECKS	328
8.4	COUNCIL RELIEF AND RECOVERY CENTRES	329
8.5	INFORMAL RELIEF CENTRES AND COMMUNITY INITIATIVES	330
8.6	NATIONAL REGISTRATION AND INQUIRY SYSTEM	332
8.7	COMMONWEALTH SUPPORT FOR RECOVERY	333
8.8	VICTORIAN BUSHFIRE RECONSTRUCTION AND RECOVERY AUTHORITY	334
8.9	TRAUMA	336
8.9.1	LONG-TERM EFFECTS OF TRAUMA	337
8.10	COMMUNITY	338
8.11	INSURANCE AND RECOVERY	339
8.12	OTHER RECOVERY ISSUES	341
8.12.1	ENVIRONMENT	341
8.12.2	FODDER	343
8.12.3	ANIMALS	344
8.13	THE FUTURE	345
<b>9</b>	<b>SHARED RESPONSIBILITY</b>	<b>351–358</b>
9.1	THE COMMISSION'S VIEW	352
9.2	STATE AGENCIES AND MUNICIPAL COUNCILS	352
9.3	INDIVIDUALS	353
9.4	HOUSEHOLDS	354
9.5	COMMUNITIES	354
9.6	COMPLACENCY	354
9.7	COMMUNITY MEMORY	355
9.8	DECISION MAKING	356



<b>10 ORGANISATIONAL STRUCTURE</b>	<b>359–390</b>
<b>10.1 CURRENT ARRANGEMENTS</b>	<b>360</b>
10.1.1 THE COUNTRY FIRE AUTHORITY	360
10.1.2 THE DEPARTMENT OF SUSTAINABILITY AND ENVIRONMENT	361
10.1.3 THE METROPOLITAN FIRE BRIGADE	363
10.1.4 OTHER BODIES AND COORDINATION ARRANGEMENTS	363
10.1.5 INTEROPERABILITY	364
<b>10.2 THE NEED FOR OPERATIONAL IMPROVEMENT AND REFORM</b>	<b>365</b>
10.2.1 OPERATIONAL SHORTCOMINGS	365
10.2.2 GOVERNANCE, POLICY AND LEGISLATIVE MATTERS	367
10.2.3 OTHER CONSIDERATIONS	368
<b>10.3 OPTIONS FOR CHANGE: PROPOSALS TO THE COMMISSION</b>	<b>369</b>
10.3.1 THE STATE'S POSITION	370
10.3.2 OTHER VIEWS	371
<b>10.4 OTHER MODELS AND PAST REVIEWS</b>	<b>371</b>
10.4.1 THE SITUATION INTERSTATE	371
10.4.2 THE SITUATION IN THE UNITED STATES	372
10.4.3 PREVIOUS REVIEWS	372
10.4.4 LACK OF CONSENSUS	373
<b>10.5 THE COMMISSION'S VIEW</b>	<b>373</b>
10.5.1 PROMOTING OPERATIONAL IMPROVEMENT AND REFORM	375
10.5.2 BETTER MANAGEMENT OF LEVEL 3 FIRES	375
10.5.3 ACCOMMODATING THE POTENTIAL FOR FUTURE CHANGE	375
10.5.4 THE PROPOSED COURSE: A FIRE COMMISSIONER FOR VICTORIA	375
10.5.5 THE EXISTING FIRE AGENCIES	377
<b>10.6 IMPLICATIONS OF THE NEW STRUCTURE</b>	<b>379</b>
10.6.1 POSITIONS	379
10.6.2 BOUNDARY CHANGES	380
<b>10.7 FUNDING AND THE FIRE SERVICES LEVY</b>	<b>381</b>
10.7.1 INEQUITY	382
10.7.2 LACK OF TRANSPARENCY	384
10.7.3 CONCLUSION	384



<b>11 RESEARCH AND EVALUATION</b>	<b>391–400</b>
<b>11.1 BUSHFIRE RESEARCH IN AUSTRALIA</b>	<b>392</b>
11.1.1 THE BUSHFIRE COOPERATIVE RESEARCH CENTRE	393
11.1.2 OTHER RESEARCH INSTITUTIONS	393
<b>11.2 RESEARCH GAPS AND PRIORITIES</b>	<b>394</b>
<b>11.3 CHALLENGES</b>	<b>395</b>
11.3.1 LONG-TERM, SECURE FUNDING	395
11.3.2 CHANGING THE RESEARCH AGENDA	395
11.3.3 BALANCING PURE AND APPLIED RESEARCH	396
11.3.4 COORDINATING AND DEVELOPING PRIORITIES FOR BUSHFIRE RESEARCH	397
<b>11.4 A PROPOSED MODEL FOR FUTURE RESEARCH</b>	<b>397</b>
<b>11.5 EVALUATION AND CONTINUING POLICY DEVELOPMENT</b>	<b>398</b>
 <b>12 MONITORING IMPLEMENTATION</b>	 <b>401–406</b>
<b>12.1 THE ROYAL COMMISSION</b>	<b>402</b>
<b>12.2 THE INTERIM REPORTS</b>	<b>402</b>
12.2.1 IMPLEMENTATION	402
<b>12.3 THE FINAL REPORT</b>	<b>404</b>
12.3.1 FACILITATING AND MONITORING IMPLEMENTATION	404
12.3.2 CONTINUING IMPLEMENTATION AND EVALUATION	405
 <b>APPENDIX A</b>	 <b>408</b>
GOVERNMENT POLICY CHANGES SINCE 7 FEBRUARY 2009	
 <b>APPENDIX B</b>	 <b>409–414</b>
PLANNING AND BUILDING REGULATORY FRAMEWORKS	
 <b>APPENDIX C</b>	 <b>415–417</b>
THE MUNICIPAL FRAMEWORK	
 <b>SHORTENED FORMS</b>	 <b>418–420</b>
 <b>GLOSSARY</b>	 <b>421–429</b>





The image features a close-up of a tree trunk with rough, textured bark. A semi-transparent blue overlay covers the entire image. A horizontal band across the middle of the image contains a pattern of fine, parallel white diagonal lines. The word "INTRODUCTION" is centered within this band in a white, sans-serif font.

# INTRODUCTION



## INTRODUCTION

It is imperative that the Victorian community learn from the experience of 7 February 2009. Government regulation, policies and procedures need to change so they better recognise the risk of death from ferocious bushfires and work to substantially mitigate that risk. Individuals and communities need to better understand bushfire and be more active in preparing for and responding to fire. It is only through a joint effort between government and citizens—an effort giving priority to saving lives—that the risk of repeating Black Saturday can be reduced.

Volume II of the Commission's final report builds on the material in Volume I, which describes the progress of the fires and the circumstances of the deaths of the 173 people who died as a result of the 7 February fires. Volume II develops the main themes that were identified, analyses the lessons learnt, and makes recommendations on what can be done to reduce the risk and impact of future fires. It also considers policy, regulatory and organisational matters related to bushfire safety.

## THE IMPLICATIONS FOR POLICY REFORM

Although the fires of January–February 2009 were catastrophic, they were not the first fires to gravely affect the State of Victoria. The outcome of these fires, however—especially the loss of life—surpassed that of past fires. Nevertheless, it would be a mistake to treat these fires as unprecedented or a ‘one-off’ event unlikely to be repeated and thus ignore the lessons to be learnt.

Fires are part of the Australian environment, and the states in the south-east of the continent are most at risk. It is possible, too, that the risks associated with bushfires are increasing as a result of population changes at the rural–urban interface and the probable impacts of climate change.<sup>1</sup>

### THE RURAL–URBAN INTERFACE

The rural–urban interface is where the suburbs meet the bush—‘where human habitation sits alongside areas of vegetation’—and is an area particularly at risk of bushfires caused by humans, including fires that are deliberately lit.<sup>2</sup>

The six fastest growing municipalities in Melbourne—Wyndham, Melton, Hume, Whittlesea, Cardinia and the City of Casey—are all at the rural–urban interface, and between 2006 and 2026 their population is projected to increase by 200,000.<sup>3</sup> Population growth in areas close to bushland increases the risk of fires starting and makes the potential consequences of fire more severe.<sup>4</sup>

Substantial population growth is also expected in many other parts of Victoria, among them regional centres, coastal areas, rural areas around Melbourne, alpine areas and along the Murray River.<sup>5</sup>

Although the population is projected to increase in these areas, communities’ capacity to respond to bushfires will not necessarily increase at the same rate.<sup>6</sup> There are two main reasons for this:

- People who move from Melbourne to rural and regional areas typically have little or no bushfire awareness.
- Population change is expected to lead to an increased proportion of older Victorians—that is, Victorians aged 60 years and older—living in rural areas.

Both these demographic factors could affect the ‘levels of direct participation by individual community members in volunteer fire brigades, and ... the personal resources available to individuals and households to prepare for and protect themselves against bushfire’.<sup>7</sup>

### CLIMATE CHANGE

To augment its understanding of climate change and the potential impacts on bushfire prevalence in Australia, the Commission invited Mr Kevin Hennessy to give evidence before it. Mr Hennessy has been a Principal Research Scientist with CSIRO since 1987 and has expertise in the development of Australian climate change projections. In 2007, as a member of the UN Intergovernmental Panel on Climate Change, he was among the recipients of the

Nobel Peace Prize.<sup>8</sup> The evidence Mr Hennessy presented to the Commission was based on peer-reviewed literature and was not contested by the parties in the hearings.<sup>9</sup> The Commission therefore used this evidence as the basis for its conclusions, which are also consistent with the views of the State of Victoria and of Australia's leading climate science agencies.

The Victorian Government has acknowledged that climate change is one of the 'greatest challenges facing Victoria, Australia and the global community', and the Premier, the Hon. John Brumby MP, has stated that his Government is 'committed to meeting the climate change challenge and committed to driving down greenhouse gas emissions'.<sup>10</sup> In November 2009 the Premier asked the Victorian Parliament to accept 'the overwhelming scientific consensus that human activity is causing global warming' and urged 'effective action to reduce greenhouse gas emissions and mitigate the effects of climate change'.<sup>11</sup> The Government's position is supported by both the Bureau of Meteorology and CSIRO, which recognise that climate change is likely to magnify the factors associated with bushfire risk.<sup>12</sup>

Bushfire risk and bushfires' severity are greater with higher temperatures, higher wind speeds, lower humidity and extended periods of drought. Meteorological data show that Australia's average annual temperatures have increased by 0.9°C since 1910, most of this increase occurring since 1950. In south-east Australia rainfall has decreased.<sup>13</sup>

Since 1973 droughts have become more intense as a consequence of the warmer average temperatures and decreased rainfall.<sup>14</sup> An analysis of Forest Fire Danger Index data for a range of sites in Victoria from 1974 to 2003 shows an upward trend in the rating associated with an increase in the number of days of very high and extreme fire danger.<sup>15</sup>

Climate change is also likely to increase the risk of heatwaves, hot days and dry conditions in Victoria, contributing to increased fire risk with time.<sup>16</sup> In a report prepared for the Commission, Mr Hennessy stated:

Climate scientists have looked very closely at natural external forcing factors that have affected climate over the 20th century. Through these studies, they have been able to determine that none of these natural processes can explain the sustained rise in global temperature that has been observed. Rather, changes due to natural forcing have been superimposed on a background warming trend, and it is very likely that most of the observed global warming since the mid 20th century is due to anthropogenic increases in greenhouse gases.<sup>17</sup>

In its formal hearings the Commission took limited evidence on the subject of climate change because it was persuaded by Mr Hennessy's conclusions, which, as noted, are consistent with the opinions of the Bureau of Meteorology and CSIRO, Australia's leading climate science agencies. The Commission is aware of debate in the scientific community about the causes of climate change, but it did not see value in entering this debate when the Bureau of Meteorology and CSIRO, as well as Victoria and the Commonwealth, have concluded—as have the Commissioners themselves—that climate change is affecting the Australian environment and its weather patterns.

## STRUCTURE OF THIS VOLUME

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State, Commonwealth and local government policy and regulation and their response to bushfire, the activities of emergency services, and the actions of individuals and communities are the subject of this volume, which also presents the Commission's recommendations in relation to those areas.

The Commission recommends a major review of the policy framework for supporting members of the Victorian community in maintaining a safe lifestyle despite the occasional occurrence of serious bushfires. It examined the systems and structures needed to ensure that government, emergency services agencies and individuals make informed, effective decisions in connection with bushfires in such a way as to minimise loss of life and other damage. These matters are discussed in Chapter 1, 'Victoria's bushfire safety policy', Chapter 2, 'Emergency and incident management', and Chapter 3, 'Fireground response'.

The risk of fires starting should be reduced wherever possible. The evidence on the 15 fires the Commission examined makes it clear that most of these fires started as a direct or indirect result of human activity. The failure of electricity assets and fires that are suspected of being either deliberately or accidentally lit were the most common causes. The Commission discusses and makes recommendations in relation to how the incidence of such fires might be reduced in Chapter 4, 'Electricity-caused fires', and Chapter 5, 'Deliberately lit fires'.

The Commission also looked at ways of limiting the loss of human life caused by bushfires and reducing exposure to and the intensity of fires when they do break out. Recommendations in this regard are presented in Chapter 6, 'Planning and building', and Chapter 7, 'Land and fuel management'.

Chapter 8, 'Relief and recovery', discusses helping people recover from the impacts of fires. The Commission is mindful that recovery is a long process and, because this process has a long way to go in the case of the January–February 2009 fires, it is too soon to evaluate the entire recovery program. The Commission focused instead on the response immediately after the fires and how government might later assess and improve its long-term recovery strategies.

The Commission also recognised the need to look at priorities in the long term, with a view to creating an environment in which individuals, communities and fire agencies all give more emphasis to community safety, using the experience of and lessons learnt from the Black Saturday fires. These matters are discussed in Chapter 9, 'Shared responsibility', Chapter 10, 'Organisational structure', and Chapter 11, 'Research and evaluation'.

Finally, the Commission acknowledges that all governments, and particularly the State of Victoria, have made a considerable number of changes to bushfire policies and approaches since 7 February. The State's decision to have its response to the recommendations made in the Commission's interim report independently reviewed by Mr Neil Comrie, former Chief Commissioner of Victoria Police, is commended.

From now, though, there will no longer be a royal commission to automatically keep a focus on implementing reform. In the light of the experience of past bushfire inquiries—when many recommendations have been only partially implemented or not implemented at all and moves for reform have lost their momentum with the passage of time—in Chapter 12, 'Monitoring and implementation', the Commission outlines a framework for ensuring that government agencies' progress in implementing the Commission's recommendations is reported on, independently and transparently, to government and the community.

While dealing with a complex and varied range of topics in this volume, the Commission strove to ensure consistency and coherence throughout the analysis and recommendations. As noted in the introduction to the Commission's entire report (see Volume I), the recommendations are framed broadly and their rationale is detailed in the surrounding text. Readers wanting to probe further into evidence that was presented to the Commission and the views of parties who appeared before it are encouraged to read the transcript of hearings, the submissions of counsel assisting and the responses from the parties. This material will be available on the Commission's website for 12 months and after that will be available through the website of the Department of Premier and Cabinet.

The recommendations and suggestions the Commission makes in Volume II are formulated against the background of the types of fires that ravaged Victoria on 7 February. Those fires were as ferocious as any that had previously beset the state. As a consequence, the Commission was particularly focused on identifying the changes that are needed to better prepare the State for dealing with similar circumstances when they next occur.

Not all the recommendations have equal relevance to the preparation for and response to bushfires of lesser intensity. The Commission expects that the State and its agencies will sensibly reflect the thrust of what is proposed in a way that graduates the implementation of change so as to maximise its relevance to different bushfire circumstances.

The Commission considers that adoption of its recommendations will strengthen the fire agencies' capacity to deal with a wider range of bushfire possibilities than were envisaged by the previous operational arrangements and practices. If this does occur the overall capabilities of the agencies will expand and community protection will improve.

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- 1 Exhibit 708 – Hansen Report (EXP.021.001.0001) [4.1]–[4.2], [5.1]–[5.2]
  - 2 Exhibit 383 – Statement of Muller, Attachment 2 (WIT.077.001.0008) at 0022
  - 3 Exhibit 931 – Statement of Armytage (WIT.3003.002.0001) [31], Attachment 3 (WIT.3003.002.0076) at 0079
  - 4 Exhibit 383 – Statement of Muller, Attachment 2 (WIT.077.001.0008) at 0022
  - 5 Exhibit 931 – Statement of Armytage, Attachment 3 (WIT.3003.002.0076) at 0079
  - 6 Exhibit 931 – Statement of Armytage (WIT.3003.002.0001) [32]
  - 7 Exhibit 931 – Statement of Armytage (WIT.3003.002.0001) [32]; Exhibit 383 – Statement of Muller, Attachment 2 (WIT.077.001.0008) at 0022
  - 8 Exhibit 222 – Curriculum Vitae – Kevin Hennessy (EXP.006.001.0038) at 0038
  - 9 Hennessy T6776:18–T6776:22. The hearings and the role of the parties is discussed in Volume III
  - 10 Victoria, *Parliamentary Debates*, Legislative Assembly, 25 November 2009, 4140 (Mr John Brumby)
  - 11 Victoria, *Parliamentary Debates*, Legislative Assembly, 25 November 2009, 4140 (Mr John Brumby)
  - 12 Exhibit 145 – Climate Change Impacts on Fire-Weather in South-East Australia (TEN.055.001.0001)
  - 13 Exhibit 222 – Climate Change and the 2009 Bushfires (EXP.006.001.0001) at 0018–0019
  - 14 Exhibit 222 – Climate Change and the 2009 Bushfires (EXP.006.001.0001) at 0020
  - 15 Exhibit 145 – Climate Change Impacts on Fire-Weather in South-East Australia (TEN.055.001.0001) at 0005, 0024, 0028–0029
  - 16 Exhibit 222 – Climate Change and the 2009 Bushfires (EXP.006.001.0001) at 0025, 0028
  - 17 Exhibit 222 – Climate Change and the 2009 Bushfires (EXP.006.001.0001) at 0015

