



2009 Victorian Bushfires
Royal Commission

THE FIRES AND THE FIRE-RELATED DEATHS

FINAL REPORT VOLUME I

THE HON. BERNARD TEAGUE AO – CHAIRPERSON

RONALD MCLEOD AM – COMMISSIONER

SUSAN PASCOE AM – COMMISSIONER

ORDERED TO BE PRINTED

July 2010

By Authority

Government Printer for the State of Victoria

PP No. 332 – Session 2006–10

Parliament of Victoria
2009 Victorian Bushfires Royal Commission
ISBN 978-0-9807408-2-0
Published July 2010

Summary 978-0-9807408-1-3
Volume II 978-0-9807408-3-7
Volume III 978-0-9807408-4-4
Volume IV 978-0-9807408-5-1



2009 Victorian Bushfires
Royal Commission

Professor David de Kretser AC
Governor of Victoria
Government House
Melbourne 3004

Your Excellency

In accordance with the Letters Patent dated 16 February 2009, we have the honour of presenting to you the final report of the 2009 Victorian Bushfires Royal Commission.

It consists of four volumes and a summary:

- Volume I, *The Fires and the Fire-related Deaths*, describes the progress of the fires that burned in Victoria in January and February 2009 and summarises the results of the Commission's inquiries into the 173 associated deaths.
- Volume II, *Fire Preparation, Response and Recovery*, presents the Commission's conclusions and recommendations in connection with fire preparation, response and recovery.
- Volume III, *Establishment and Operation of the Commission*, describes how the Commission went about its work.
- Volume IV, *The Statements of Lay Witnesses*, presents the statements and associated materials of the 100 lay witnesses who shared with the Commission their experiences of the fires. As this volume contains some video footage, it is only available in an electronic version.

It has been a privilege to undertake this work. We hope that our findings and recommendations will help to ensure that we do not see a repetition of the tragedy of 7 February 2009.

Dated this 31st day of July 2010.

The Honourable Bernard Teague AO
Chairperson

Ronald McLeod AM
Commissioner

Susan Pascoe AM
Commissioner



PREFACE

The bushfires of Black Saturday, 7 February 2009, caused the death of 173 people. Black Saturday wrote itself into Victoria's history with record-breaking weather conditions and bushfires of a scale and ferocity that tested human endurance. The lives of many Victorians were changed forever, and many showed they are capable of deeds of great courage and compassion. Although some communities were physically destroyed, their members also displayed ingenuity, strength and resolve in the face of this calamity. There was also widespread devastation of considerable areas of the scenic forests and woodlands that form part of Victoria's natural heritage.

Eighteen months later, the landscape is healing, flora and fauna are returning, and individuals and communities are getting on with rebuilding their homes and lives. We acknowledge the losses—of family, friends, fellow citizens, homes, gardens, animals, and the many other things that people hold dear. We have seen the pain people have endured and continue to bear, and we know it will be a long road to full recovery for many. Bushfire is an intrinsic part of Victoria's landscape, and if time dims our memory we risk repeating the mistakes of the past. We need to learn from the experiences of Black Saturday and improve the way we prepare for and respond to bushfires.

The 2009 Victorian Bushfires Royal Commission was an important part of ensuring that those lessons are clearly defined and learnt. The Commission conducted an extensive investigation into the causes of, the preparation for, the response to and the impact of the fires that burned throughout Victoria in late January and February 2009. As Commissioners, we concentrated on gaining an understanding of precisely what took place and how the risks of such a tragedy recurring might be reduced.

In our deliberations we ensured that the voices of affected community members were heard. Our priority was to listen to people directly affected by the fires. We also ensured that the Commission's processes were firmly based in the community through open hearings (including in regional towns), web streaming so that people could listen to the hearings over the internet, public submissions, the participation of lay witnesses, the creation of the Black Saturday Gallery, and the participation of family and friends in hearings about people who died as a result of the fires. This access will continue: the Commission's website will remain active, and all the Commission's documentation will be available at the Public Records Office of Victoria.

This report is an important part of securing the memory of the fires. The first volume describes the origins and course of the 15 fires that wrought the greatest harm on 7 February and the response to them. It also tells the stories of the 173 people who died. Volume II looks at what lessons can be learnt from these experiences—how we can reduce the risk and impacts of fire and minimise fire-related loss of life in future. Volume III reports on the Commission's administration and processes. Volume IV reproduces the statements of the 100 lay witnesses who gave personal accounts of their experiences in the fires in late January and February and in their aftermath. The stories told by these people grounded our work. They continually reminded all at the Commission that bushfires deeply affect people and communities and that their needs and safety must be at the forefront of government policy.

The recommendations we make give priority to protecting human life, and they are designed to reflect the shared responsibility that governments, fire agencies, communities and individuals have for minimising the prospect of a tragedy of this scale ever happening again.

We offer this report to the Governor and the people of Victoria.

The Hon. Bernard Teague AO
Chairperson

Ronald McLeod AM
Commissioner

Susan Pascoe AM
Commissioner

**ELIZABETH THE SECOND BY THE GRACE OF GOD
QUEEN OF AUSTRALIA AND HER OTHER REALMS AND TERRITORIES,
QUEEN, HEAD OF THE COMMONWEALTH**

To The Honourable Bernard George Teague AO
Ronald Neville McLeod AM
Susan Mary Pascoe AM

GREETINGS:

WHEREAS:

- A. On Saturday 7 February 2009, the State of Victoria experienced the most devastating bushfires in its history, resulting in a catastrophic loss of life and public and private property.
- B. The State of Victoria is recognised as a region subject to a very high fire risk and has previously experienced extensive bushfires, most notably in 1939, 1944, 1969, 1977, 1983, 2003, 2005 and 2006.
- C. A range of inquiries conducted after those bushfires has led to the development of a coordinated State-wide approach to planning for, and responding to, bushfires and an extensive network of career and volunteer emergency services personnel.
- D. The weather conditions on 7 February were unprecedented in terms of high temperatures, low humidity and wind speeds, following years of drought. The conditions on that day also followed a heatwave and bushfires, including in Gippsland, in late January 2009.
- E. Over 4,000 fire service volunteers and career staff immediately responded to combat more than 300 fires across Victoria on 7 February and over 10,000 personnel were subsequently involved in the largest coordinated emergency response and community recovery operation in the State's history.
- F. The State acknowledges and commends the significant dedication and efforts of staff and volunteers in responding to this emergency in extremely difficult conditions.

- G. Notwithstanding the scale of these efforts, there was an unprecedented loss of life, extreme property damage, and major community trauma and displacement.
- H. The Governor of the State of Victoria, in the Commonwealth of Australia, by and with the advice of the Executive Council, has therefore deemed it to be expedient that a Commission should issue to you in the terms set out below.
- I. It is anticipated that in conducting Our Commission you will take into account the important role and functions of the Coroner, Victoria Police, the Director of Public Prosecutions and the Victorian Bushfire Reconstruction and Recovery Authority, and that you will consult with each of those persons or bodies to the extent that you consider appropriate in order to avoid the inquiries of Our Commission from interfering unnecessarily with the functions of those persons or bodies.

NOW THEREFORE the Governor of the State of Victoria, in the Commonwealth of Australia, by and with the advice of the Executive Council and acting pursuant to section 88B of the **Constitution Act 1975**, appoints and constitutes you

The Honourable Bernard George Teague AO
Ronald Neville McLeod AM
Susan Mary Pascoe AM

to be Our Commissioners

AND HEREBY APPOINTS The Honourable Bernard George Teague AO to be Chairperson of the Royal Commission.

FOR THE PURPOSE of inquiring into and reporting on the following matters:

1. The causes and circumstances of the bushfires which burned in various parts of Victoria in late January and in February 2009 (“2009 Bushfires”).
2. The preparation and planning by governments, emergency services, other entities, the community and households for bushfires in Victoria, including current laws, policies, practices, resources and strategies for the prevention,

identification, evaluation, management and communication of bushfire threats and risks.

3. All aspects of the response to the 2009 Bushfires, particularly measures taken to control the spread of the fires and measures taken to protect life and private and public property, including but not limited to:
 - (a) immediate management, response and recovery;
 - (b) resourcing, overall coordination and deployment; and
 - (c) equipment and communication systems.
4. The measures taken to prevent or minimise disruption to the supply of essential services such as power and water during the 2009 Bushfires.
5. Any other matters that you deem appropriate in relation to the 2009 Bushfires.

AND WE direct you to make such recommendations arising out of your inquiry as you consider appropriate, including recommendations for governments, emergency services, other entities and the community on:

6. The preparation and planning for future bushfire threats and risks, particularly the prevention of loss of life.
7. Land use planning and management, including urban and regional planning.
8. The fireproofing of housing and other buildings, including the materials used in construction.
9. The emergency response to bushfires.
10. Public communication and community advice systems and strategies.
11. Training, infrastructure, and overall resourcing needs.

AND WE do by these presents give and grant you full power and authority to call before you such person or persons as you shall judge likely to afford you any information upon the subject of this Our Commission, and to inquire of and concerning the premises by all other lawful ways and means whatsoever.

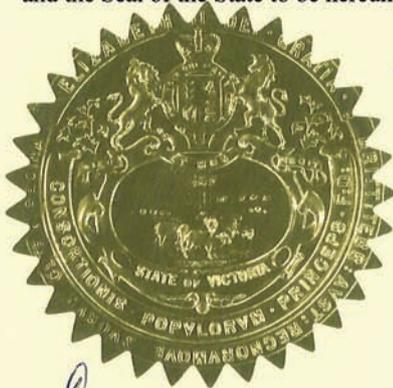
AND WE declare the powers of the Commission at the discretion of the Chairperson may, at any time, be exercised by one or more Commissioners.

AND WE will and command that this Our Commission shall continue in full force and virtue and that you shall and may from time to time and at every place or places proceed in the execution thereof, and of every matter and thing therein contained although the same be not continued from time to time by adjournment.

AND WE direct you to conduct your inquiry as expeditiously as possible and to furnish US with:

- (i) an interim report focusing on immediate actions that can be taken prior to the 2009-2010 fire season, by 17 August 2009; and
- (ii) a final report by 31 July 2010 or such later date as WE may be pleased to fix.

IN TESTIMONY WHEREOF WE have caused these Our Letters to be made Patent and the Seal of the State to be hereunder affixed.



WITNESS His Excellency Professor David de Kretser, Companion of the Order of Australia, Governor of Victoria and its dependencies in the Commonwealth of Australia at Melbourne this 16th day of February Two thousand and nine in the fifty-eighth year of Our reign.

Handwritten signature of David de Kretser in black ink.

By His Excellency's Command

Handwritten signature of the Premier of Victoria in blue ink.

Premier of Victoria

Entered on the record by me in the Register of Patents Book No 44 Page No 111 on the 16th day of February 2009.

Handwritten signature in blue ink.

Secretary, Department of Premier and Cabinet



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

PREFACE	v–ix
A NOTE FOR READERS	xi
INTRODUCTION	xxiii–xxx
THE CONSEQUENCES OF THE FIRES	xxiii
BUSHFIRE IN THE CONTEXT OF AUSTRALIAN DISASTERS	xxiv
THE ROYAL COMMISSION	xxv
THE TERMS OF REFERENCE	xxv
COMPLETING THE TASK ON TIME	xxv
THE OUTPUTS OF THE COMMISSION	xxv
DRAWING TOGETHER THE INFORMATION	xxvi
THE FINAL REPORT	xxvii
GUIDING PRINCIPLES	xxvii
THE PROTECTION OF HUMAN LIFE	xxviii
SHARED RESPONSIBILITY	xxviii
PART ONE	
THE JANUARY–FEBRUARY 2009 FIRES	1–8
OVERVIEW	2
PREVIOUS SIGNIFICANT FIRES	2
JANUARY AND FEBRUARY 2009	3
THE NUMBER OF FIRES	4
FIRES THE COMMISSION EXAMINED	4
OTHER FIRES	5
THE RESPONSE TO THE FIRES	5
PRESENTATION OF INFORMATION	7
1 CONDITIONS ON 7 FEBRUARY	9–22
1.1 FACTORS AFFECTING FIRE BEHAVIOUR	10
1.1.1 CLIMATE AND WEATHER	10
1.1.2 TOPOGRAPHY	16
1.1.3 THE FUEL LOAD	16
1.1.4 FIRE BEHAVIOUR	16
1.2 WAS THE DAY UNPRECEDENTED? WERE THE FIRES?	17
2 ARRANGEMENTS ON 7 FEBRUARY	23–38
2.1 GOVERNMENT FIRE AGENCIES IN VICTORIA	24
2.1.1 THE COUNTRY FIRE AUTHORITY	24
2.1.2 THE DEPARTMENT OF SUSTAINABILITY AND ENVIRONMENT	26
2.1.3 THE METROPOLITAN FIRE AND EMERGENCY SERVICES BOARD	27

2.2	PRIVATE FIREFIGHTING UNITS	27
2.3	EMERGENCY MANAGEMENT	28
2.3.1	COMMONWEALTH ARRANGEMENTS	28
2.3.2	VICTORIAN ARRANGEMENTS	28
2.3.3	THE STATE LEVEL	30
2.3.4	THE REGIONAL LEVEL	30
2.4	INCIDENT MANAGEMENT	32
2.4.1	AIIMS	32
3	THE DELBURN FIRES	39–50
	OVERVIEW	40
3.1	SEQUENCE OF EVENTS	44
3.1.1	28 TO 30 JANUARY	44
3.1.2	31 JANUARY TO 3 FEBRUARY	46
3.1.3	7 FEBRUARY	48
3.2	CONCLUSIONS	49
4	THE BUNYIP FIRE	51–68
	OVERVIEW	52
4.1	SEQUENCE OF EVENTS	56
4.1.1	2 TO 6 FEBRUARY	56
4.1.2	7 FEBRUARY	58
4.1.3	AFTER 7 FEBRUARY	63
4.2	FUEL MANAGEMENT	64
4.3	FIREFIGHTER SAFETY	64
4.4	CONCLUSIONS	65
5	THE KILMORE EAST FIRE	69–92
	OVERVIEW	70
5.1	SEQUENCE OF EVENTS	74
5.1.1	PREPARATION	74
5.1.2	7 FEBRUARY	75
5.2	COMMUNICATIONS	84
5.3	WARNINGS	85
5.4	ROADBLOCKS	86
5.5	FUEL REDUCTION	86
5.6	CONCLUSIONS	87

6	THE HORSHAM FIRE	93–104
	OVERVIEW	94
	6.1 SEQUENCE OF EVENTS	98
	6.1.1 PREPARATION	98
	6.1.2 7 FEBRUARY	98
	6.2 ROADBLOCKS	102
	6.3 CONCLUSIONS	102
7	THE COLERAINE FIRE	105–116
	OVERVIEW	106
	7.1 SEQUENCE OF EVENTS	110
	7.1.1 PREPARATION	110
	7.1.2 7 FEBRUARY	110
	7.2 CONCLUSIONS	113
8	THE POMBORNEIT–WEERITE FIRE	117–126
	OVERVIEW	118
	8.1 SEQUENCE OF EVENTS	121
	8.1.1 PREPARATION	121
	8.1.2 7 FEBRUARY	121
	8.2 CONCLUSIONS	124
9	THE CHURCHILL FIRE	127–142
	OVERVIEW	128
	9.1 SEQUENCE OF EVENTS	132
	9.1.1 PREPARATION	132
	9.1.2 7 FEBRUARY	132
	9.1.3 AFTER 7 FEBRUARY	137
	9.2 INCIDENT MANAGEMENT	137
	9.2.1 PROTECTION OF CRITICAL INFRASTRUCTURE	139
	9.3 CONCLUSIONS	139
10	THE MURRINDINDI FIRE	143–168
	OVERVIEW	144
	10.1 SEQUENCE OF EVENTS	148
	10.1.1 PREPARATION	148
	10.1.2 7 FEBRUARY	149
	10.1.3 AFTER 7 FEBRUARY	159

10.2 FUEL MANAGEMENT	160
10.3 INCIDENT MANAGEMENT	160
10.4 EMERGENCY MANAGEMENT	161
10.4.1 WATER SUPPLY	162
10.4.2 ROADBLOCKS	162
10.4.3 COMMUNICATIONS	163
10.5 CONCLUSIONS	163
11 THE REDESDALE FIRE	169–180
OVERVIEW	170
11.1 SEQUENCE OF EVENTS	174
11.1.1 PREPARATION	174
11.1.2 7 FEBRUARY	174
11.2 CONCLUSIONS	177
12 THE NARRE WARREN AND UPPER FERNTREE GULLY FIRES	181–194
12.1 NARRE WARREN	188
OVERVIEW	188
12.1.1 SEQUENCE OF EVENTS	188
12.1.2 CONCLUSIONS	190
12.2 UPPER FERNTREE GULLY	191
OVERVIEW	191
12.2.1 SEQUENCE OF EVENTS	191
12.2.2 CONCLUSIONS	191
13 THE BENDIGO FIRE	195–208
OVERVIEW	196
13.1 SEQUENCE OF EVENTS	200
13.1.1 PREPARATION	200
13.1.2 7 FEBRUARY	200
13.2 CONCLUSIONS	205
14 THE BEECHWORTH–MUDGEGONGA FIRE	209–224
OVERVIEW	210
14.1 SEQUENCE OF EVENTS	214
14.1.1 BEFORE 7 FEBRUARY	214
14.1.2 7 FEBRUARY	214
14.1.3 8 FEBRUARY AND SUBSEQUENTLY	217

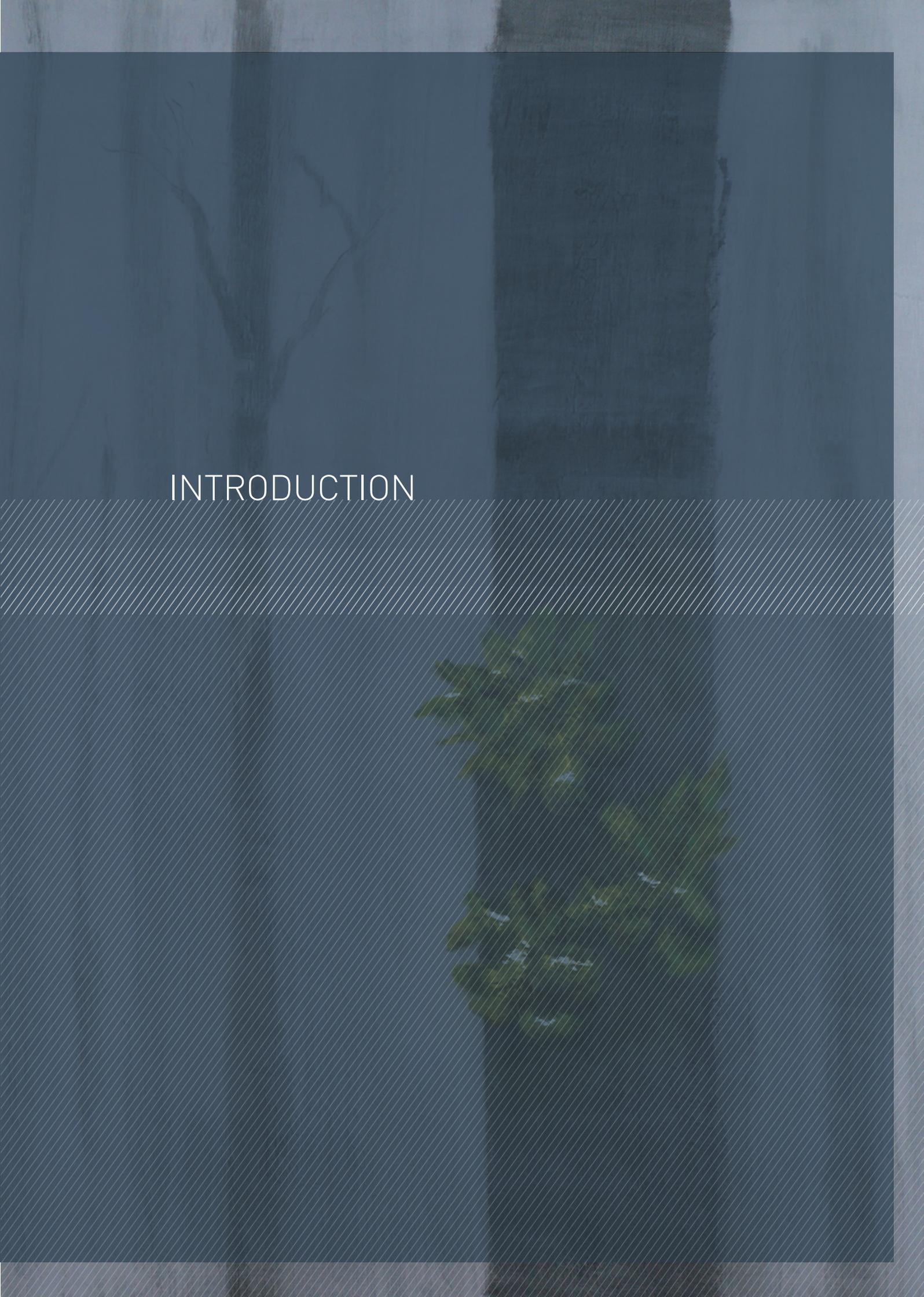
14.2	COORDINATION WITH THE MECC	219
14.3	THE IMPACT OF FUEL REDUCTION	220
14.4	WARNING THE PUBLIC	220
14.5	CONCLUSIONS	221
15	CONCLUSIONS	225–232
15.1	FIRE CAUSES	226
15.2	FIRE BEHAVIOUR	226
15.2.1	FUEL MANAGEMENT	226
15.2.2	THE WIND CHANGE	226
15.3	FIREFIGHTING EFFORTS	227
15.3.1	DETECTION, REPORTING AND FIRST ATTACK	227
15.3.2	AERIAL SUPPORT	227
15.3.3	FIREFIGHTER SAFETY	227
15.4	INCIDENT MANAGEMENT	227
15.4.1	AIIMS	227
15.4.2	PREPARATION AND RESOURCING	228
15.4.3	MANAGEMENT OF THE FIRES	228
15.5	COMMUNICATIONS	229
15.5.1	EMERGENCY CALLS	229
15.5.2	OPERATIONAL FIRE COMMUNICATIONS	230
15.5.3	OPERATIONAL POLICE COMMUNICATIONS	230
15.6	WARNINGS	230
15.7	EVACUATION AND RELOCATION	230
15.8	EMERGENCY MANAGEMENT	231
15.8.1	PLANNING AND PREPARATION	231
15.8.2	RESPONSE	231
15.8.3	ROADBLOCKS	231
15.9	INFORMATION SHARING	232
15.10	UTILITIES	232
PART TWO		
	THE PEOPLE WHO DIED	233–236
	OVERVIEW	234
	RATIONALE	234
	METHODOLOGY	234
	DEMOGRAPHIC FEATURES	235
	THE STRUCTURE OF THIS PART OF VOLUME I	235

16 THE KILMORE EAST FIRE	237–296
16.1 ARTHURS CREEK	238
16.2 FLOWERDALE AND HAZELDENE	239
16.3 HUMEVALE	244
16.4 KINGLAKE	247
16.5 KINGLAKE WEST	258
16.6 REEDY CREEK	265
16.7 STRATH CREEK	266
16.8 ST ANDREWS	266
16.9 STRATHEWEN	276
16.10 STEELS CREEK	287
16.11 TOOLANGI	291
16.12 UPPER PLENTY	292
16.13 YARRA GLEN	295
17 THE CHURCHILL FIRE	297–304
18 THE MURRINDINDI FIRE	305–328
18.1 MARYSVILLE	306
18.2 NARBETHONG	324
18.3 CAMBARVILLE AND EILDON	327
19 THE BENDIGO FIRE	329–330
20 THE BEECHWORTH–MUDGEGONGA FIRE	331–332
21 THE LESSONS LEARNT	333–340
21.1 THE REVIEW OF FATALITIES	334
21.2 THEMES THE COMMISSION IDENTIFIED	335
21.2.1 PREPAREDNESS, AWARENESS AND KNOWLEDGE	336
21.2.2 HOUSE DEFENDABILITY	337
21.2.3 TRIGGERS, WARNINGS AND BEING TAKEN BY SURPRISE	337
21.2.4 THE WIND CHANGE	338
21.2.5 VULNERABLE PEOPLE	338
21.2.6 CONCLUDING REMARKS	338

APPENDIX A – ESTIMATED COSTS OF THE FIRES	342–346
MEASURING THE COSTS	342
ADDITIONAL RESPONSE COSTS	342
COSTS DIRECTLY ATTRIBUTABLE TO THE FIRES	343
DEATH AND INJURY	343
PROPERTY DAMAGE	343
LOSS OF NATIVE ANIMALS, LIVESTOCK AND CROPS	343
FOREST DESTRUCTION	343
RECOVERY	344
CARBON RELEASE	344
INFRASTRUCTURE DAMAGE	344
ROYAL COMMISSION AND VBRRA COSTS	345
CONCLUSION	345
APPENDIX B – FIRE IN SOUTHERN AUSTRALIA: A SUMMARY	347–349
APPENDIX C – FIRE IN VICTORIA: A SUMMARY	350–354
APPENDIX D – ELEMENTS OF A BUSHFIRE	355–356
APPENDIX E – MAP OF MOST HEAVILY IMPACTED AREAS	358–359
SHORTENED FORMS	360–361



Source: Courtesy of the *Herald & Weekly Times*.



INTRODUCTION



INTRODUCTION

I knew the fire front was coming. You could hear it, you could smell it, you could feel the heat coming up out of the valley ... I could hear a rushing, not a wind; it was different from a wind. It was a white noise you could call it almost ... like a pressure. If pressure could make a noise that is what it would sound like ...

The flames were right there. They would have been about 50 metres away. The flames were so high. They were the height of the trees and that again ... 300 feet high plus. There were big, swirling vortexes, just big, swirling masses of flames that would just burst and explode out of the ... tree tops.¹

These are the words of Mr Greg Weir from Churchill, who sheltered in a dam with his son while a firefront traversed his property on 7 February 2009.² His words echo the experiences and highlight the severity of the situations that confronted many of the people who faced the bushfires that burned in Victoria in late January and February 2009. Saturday 7 February, Black Saturday, has become part of Australian history—the day fire caused such grave harm to life, the environment, community and property in Victoria.

Immediately before 7 February people were warned that one of the most extreme fire danger days in Victoria's history was predicted, but many were still not prepared for the ferocity of the fires that eventuated.³ In the lead-up to the day the Premier of Victoria, the Hon. John Brumby MP, described the state as 'tinder dry', and the Country Fire Authority and the Department of Sustainability and Environment warned that forests and grasslands were considered to be the driest they had been since the Ash Wednesday fires of 1983.⁴

To exacerbate the situation, Victoria had endured one of its most severe and prolonged heatwaves during the final week of January 2009. The temperature in Melbourne was above 43°C for three consecutive days for the first time since records had been kept.⁵ The day of 7 February was forecast to reach temperatures in the low 40s, accompanied by strong winds. The weather pattern led the Chief Fire Officer of DSE to warn area fire managers that conditions lent themselves to a catastrophic event that could involve multiple fires.⁶

The situation forecast for 7 February was realised. Temperatures were nearing 40°C by 11.00 am in many areas and later climbed to the mid-40s. Many parts of the state endured record-breaking maximums—including Melbourne, which reached 46.4°C. Strong winds in the morning grew to storm force as the day progressed, and a wind change moved across the state during the afternoon, greatly intensifying the fires and the danger.⁷

THE CONSEQUENCES OF THE FIRES

The drought and weather conditions in Victoria during January and February 2009 magnified the potential consequences of any fires, particularly on very hot, dry, windy days, as demonstrated by the destruction wrought on 7 February, when the state's fire agencies and resources were stretched to their utmost.⁸ The Commission was informed that the CFA and DSE attended or patrolled 316 grass, scrub or forest fires on that day.⁹

The most shocking consequence of the fires was the death of 173 people. Left behind are families, friends and communities still trying to accept their loss. Accompanying this loss of life is the fires' impact on property and the infrastructure that supports communities. More than 2,000 homes were destroyed or damaged; thousands of structures and over 10,000 kilometres of fencing were destroyed; townships such as Marysville and Kinglake were almost obliterated.

The natural environment was heavily impacted. About 430,000 hectares of land were burnt in early 2009.¹⁰ Although the flora have begun to recover and fauna have begun to return, the environmental impact of the fires will take years to fully reveal itself—let alone be tempered.

It is extremely difficult to quantify the cost of a disaster like this, but the Commission considers the cost to probably be more than \$4 billion (see Appendix A).

This was one of Australia's worst natural disasters, and it will be many years before its effects dim. Governments, fire and emergency agencies, and all individuals can learn valuable lessons from those days, so that we might limit the chances of such destruction occurring again. Ms Jill Scherman's son, his girlfriend and his girlfriend's brother all died in the fire at Steels Creek. In a statement she read to the Commission Ms Scherman spoke of the need to learn from this experience:

The truth is that experience is costly. In the usual course of life you cannot gain experience without paying a price but in the experience of the many bushfire-affected families of this state and those in charge of the systems ... the price has been immeasurable ... It is tragic to pay the price for the experience and not learn the lesson.¹¹

BUSHFIRE IN THE CONTEXT OF AUSTRALIAN DISASTERS

Bushfire is one of several types of natural catastrophe that affect Australia. Cyclones, hail, severe storms and inland floods are also enormously damaging. The insurance industry's database of insured events associated with natural catastrophes—a database going back to 1967—has bushfire accounting for about 16 per cent of natural catastrophe losses in Australia and about 29 per cent of those in Victoria before 2009.¹² Looking beyond property losses, bushfires are the most hazardous type of disaster in Australia in terms of death and injury, accounting for almost 40 per cent of deaths and 57 per cent of injuries between 1967 and 1999.¹³ They are also likely to cost the community most dearly in resources devoted to their prevention and suppression.

The high bushfire risk in Victoria is the consequence of a combination of factors:

- *Vegetation and topography.* Victoria has substantial areas of highly flammable dry eucalypt forest, setting it apart from many other parts of Australia. Although there are 'more similarities than differences' between the forested regions of Victoria and the karri and jarrah forests of Western Australia, south-western Australia's topography is less extreme than that of Victoria.¹⁴
- *Climate.* Victoria's climatic pattern of a mild, moist winter and a dry, hot summer creates conditions conducive to bushfire, and this was exacerbated by protracted drought in the years preceding the 2009 fires.¹⁵ Hot, dry north-westerly winds produced by a high-pressure system over the Tasman Sea and a cold front approaching from the south-west have long characterised dangerous fire situations in south-eastern Australia.
- *Population patterns.* Population density is increasing in Victoria's bushfire-prone areas. The fastest growth in Melbourne's population is, and is likely to continue to be, in the six 'growth area' municipalities of Wyndham, Melton, Hume, Whittlesea, Cardinia and Casey, all of which are on the rural edge of the city. The population of regional Victoria is also growing and will continue to do so, especially in regional centres, coastal areas and 'tree change' locations, where people (often older members of the population) are moving out of the cities to live in attractive rural settings. Additionally, most of those who are migrating from Melbourne to regional areas have little experience of living with fire.¹⁶

Victoria shares some of these characteristics with fire-prone areas abroad. Greece and the United States experienced sustained drought before their most recent fires. Southern California is subject to recurring drought and explosive winds. Professor Stephen Pyne, an international expert on wildfire, told the Commission of a pattern in developed countries of recolonising rural landscapes with urban 'out-migration', resulting in changes in the flammability of those landscapes and the capacity to deal with the resulting fires. (California, for example, has 11.8 million homes located in the Wildland Urban Interface.) In Professor Pyne's opinion the south-eastern quadrant of Australia is a 'kind of fire flume. It is a unique sort of meteorological ... and biophysical arrangement in which very large fires are going to happen'.¹⁷

On the basis of the evidence presented, the Commission concluded that Victoria has a range of characteristics that predispose it to bushfires generally and to the occasional ferocious bushfire in particular. There are few other locations in the world with similar characteristics.

A number of observations can be made about the nature of fire in Victoria. Although each bushfire has its own characteristics, the majority of bushfire deaths have occurred in a small number of ferocious fires. These fires burn on days of high temperature and low relative humidity that are marked by strong and gusty winds from the north-west—that is, from the hot, arid inland of Australia. The strong winds spread the fire quickly, carry burning embers ahead of it, and cause the fire to become hotter by pushing the flames into unburnt fuel. At some point during the day a rapid change in wind direction often occurs. The wind remains strong but turns to come from the south-west, which alters the path of the fire and creates a much larger firefront, pushing the original flank sideways. Deaths occur in the fierce period before the wind change, but it is in the even fiercer period following the wind change that most deaths occur.¹⁸

THE ROYAL COMMISSION

In the days immediately following the 7 February 2009 fires the Victorian Government took action to respond to the disaster. A relief effort to deal with immediate needs was the first priority. But it was also plain that in the long term the community needed to understand how this tragedy had arisen and how to minimise the risk of a similar tragedy occurring in the future. On 9 February 2009 the Premier announced the State Government's intention to establish a royal commission. One week later the Hon. Bernard Teague AO, Susan Pascoe AM and Ronald McLeod AM were appointed as the Royal Commissioners.

The Governor of Victoria, Professor David de Kretser, issued the letters patent setting out the Royal Commission's terms of reference on 16 February 2009. The Commission began its work that day, giving priority to community engagement: between 18 March and 8 April it held 26 community consultations in fire-ravaged areas, seeking to learn about the experiences and concerns of individuals affected by the fires. A preliminary directions hearing was held on 20 April 2009, and the hearing of evidence began on 11 May 2009 and concluded on 27 May 2010.

THE TERMS OF REFERENCE

The Commission was given extremely broad terms of reference. It was asked to inquire into and report on the causes and circumstances of the fires that burned in late January and February 2009, the preparation and planning before the fires, all aspects of the response to the fires, measures taken relating to utilities, and any other matters considered appropriate. The letters patent directed the Commission to make such recommendations as it deemed appropriate relating to preparation and planning for further fire threats and risks, land-use planning and management, fireproofing of structures, emergency response, communication, training, infrastructure, and overall resourcing.

COMPLETING THE TASK ON TIME

The task set for the Commission was substantial. With a time frame of 18 months and very broad terms of reference, reporting on time was always going to be difficult. The Commission resolved early on that its efforts should be directed at completing its task with the highest integrity and quality, on time and within budget, and with a strong focus on community engagement.

The protection of human life, the safety of communities, and mitigating the destruction caused by future bushfires received greatest attention. These priorities guided the Commission in its analysis, in the collection of evidence, and in the writing of its reports and recommendations.

THE OUTPUTS OF THE COMMISSION

The Commission produced two interim reports and a final report:

- The first interim report was released on 17 August 2009. It contained 51 recommendations focused on immediate actions that could be taken before the 2009–10 fire season.
- On 24 November 2009 the Commission released a second interim report. That report contained seven recommendations focused on urgent matters to do with the construction of buildings (including bunkers) in bushfire-prone areas.
- This final report represents the culmination of the Commission's work. It describes what happened during late January and February 2009; analyses and makes recommendations in relation to the changes needed if we are to reduce the risk, and the consequences, of similar disasters in the future; and describes how the Commission performed its task.

The interim reports and the final report should be regarded as one body of work.

The Commission also produced a number of papers:

- a discussion paper on insurance and the fire services levy, for which it sought industry and community submissions
- a paper on the costs of the fires, for the parties' comment
- several internal papers that were tendered into evidence, covering bunkers, shelter in situ and evacuation policies in the United States and Canada, and building and planning policies in Australia.

One indirect result of the Commission's work has been the continuing public commentary. Discussion of the events of late January and February 2009 has been an important part of understanding what happened and what needs to be done. The continuing debate was facilitated by the Commission's principle of accessibility, whereby most transcripts, exhibits and submissions were made publicly available, open hearings were usually held, and the hearings were usually webstreamed. The media also covered the public hearings extensively and helped the community remain well informed. The 26 community consultations the Commission held in March and April 2009 are an example of this engagement.

DRAWING TOGETHER THE INFORMATION

Owing to the considerable size of its task, the array of subjects that warranted consideration, and the varying experiences that needed to be incorporated, the Commission drew evidence from a wide range of sources.

During the 18-month term of its work it did the following:

- heard from 434 witnesses, including 100 lay witnesses, over 155 days
- held regional hearings in three locations
- convened and directed two expert panels
- accepted the tender of more than 1,000 exhibits
- produced 20,767 pages of transcript.

Further, the Commission gathered background information from several sources:

- Almost 1,700 public submissions
- information provided in 26 community consultations in 14 communities and with 1,250 people attending
- internal research.

The Commission's task of drawing together conclusions and developing recommendations on the basis of this evidence was facilitated by many. The Commission thanks all who were involved for their cooperation, assistance and diligence. Particular gratitude goes to the witnesses, who often had to recall terrible events, and to those who took the time to prepare and send in submissions.

In preparing its final report the Commission chose not to constrain government with unduly prescriptive recommendations. This approach differs from the very detailed one adopted in submissions by counsel assisting and the parties.¹⁹ Those submissions were a valuable resource for the Commission and will remain an excellent reference for people interested in greater detail. The Commission chose a less prescriptive approach, however, in order to reduce the risk of narrowing policy makers' vision, and it framed its recommendations in terms of clear outcomes. Despite most of the recommendations being cast in broad terms, in some cases, where more technical matters are discussed, a degree of specificity was necessary. The Commission has proposed that its recommendations be monitored in two ways: as part of the regular reports of departments in the annual budget papers, and as an independent audit of attainment reported to the people of Victoria after two years on 31 July 2012. This approach has the potential to give rise to more enduring change.

To complement the recommendations, the Commission also makes many observations in the text of the report, suggesting the type of action the State Government (and others) should take to deal with matters that warrant further attention. The Commission hopes that, in responding to the report, the Government attaches to these suggestions the same weight it accords the primary recommendations.

Similarly, the State should continue to develop and improve bushfire policy, proceeding with other initiatives the Commission might not have considered but that are consistent with the new directions embodied in the main themes of this report.

THE FINAL REPORT

The Commission's final report consists of a summary document and four volumes. Volume I describes the weather conditions and fire behaviour on 7 February and the organisational arrangements that applied on the day. Following that is a detailed discussion of each fire the Commission analysed. These chapters describe the run of the fire in question, the immediate response to the fire, and the fire's effects. Volume I also contains accounts of the circumstances of the deaths of the 173 people who died as a result of the fires on 7 February. The overall conclusions to be drawn from the fire chapters and the lessons learned from the fire-related deaths are discussed in Chapters 15 and 21 respectively.

Volume II contains the Commission's recommendations and provides detailed discussion of the areas where reform is needed if performance and safety are to improve. Reducing the risk and impact of bushfire calls for much more than simply responding to fires when they occur. Adequate preparation and planning are essential. The Commission makes recommendations about how government and the community should better prepare for bushfires. There is also consideration of the policy and institutional factors that need to apply if Victoria is to be well equipped to deal with future bushfires—including the structure of fire agencies, building and land-use planning, land and fuel management, and the adequacy of research and review, so that operational policies and practices are based on the best possible information.

Volume III describes the conduct of the Commission—its establishment, administration, organisational structure, administrative and legal processes, management of finances and information systems, and how it went about its work. The Commission was guided by the principles of openness and accessibility, transparency and probity, efficiency and value for money, and innovation and high standards of professional practice. Volume III describes how these principles were upheld by the Commission being innovative in the way it did its work and engaging extensively with the community. Also discussed is how the Commission managed its work in order to ensure its reports were delivered on time.

Volume IV is an electronic volume that collates the statements of the lay witnesses who described their experience of the fires during the Commission's public hearings. These witnesses were an important part of the Commission's work, giving an 'on the ground' perspective and real-life examples of how fire policies and emergency procedures affect individuals and communities. It provides insights into people's preparation for fire and how they reacted to the conditions of Black Saturday and serves as a constant reminder of the impacts of the fires on individuals, families and communities.

GUIDING PRINCIPLES

In its inquiries and when formulating its recommendations the Commission was guided by two overarching principles—the protection of human life and shared responsibility. Government's primary objective should be to maximise the safety and wellbeing of the citizens it represents, so the Commission placed the protection of human life at the forefront of its deliberations. In addition, no single group can ensure that communities are safe from the ravages of bushfires in all circumstances: this responsibility is shared by all levels of government and by fire agencies, communities and individuals, all of whom need to be very well informed and do more to prepare for and respond to fire in their environment.

THE PROTECTION OF HUMAN LIFE

The great loss of life and the widespread destruction of property were what prompted Premier Brumby to establish the Commission. It is fitting therefore that the protection of human life is paramount in all the Commission's recommendations. This notion of protection of human life being paramount has implications for the balance that is struck between competing community objectives. In the context of bushfires, ensuring the protection of human life means that sometimes compromises will need to be made with people's freedom to choose where they want to live or the existence of pristine environments close to townships.

It is not always possible to maintain an untouched environment whilst ensuring safety. Decisions must be made about whether a defensible space should be cleared around homes and communities in areas of high bushfire risk or whether the environmental values in these areas are such that prohibitions on dwellings should be applied in order to maintain adequate levels of public safety.

Recognising the obligation to protect human life has implications for the trade-offs that are made in areas such as planning and building regulation, fuel management, environmental conservation, and other government policies provided to support communities at risk of bushfire. This principle is reflected in the Commission's approach to its recommendations.

SHARED RESPONSIBILITY

The concept of shared responsibility recognises that individuals, fire authorities and all levels of government are responsible for preparing for fire and improving people's safety. The Commission recognises the role authorities and the state play in minimising the risk of and damage caused by bushfires, as well as the role of government leadership in determining policy and legislative settings. Individuals also play an important part in protecting their own lives through keeping themselves well informed and well prepared.

A long-term goal of Victorian bushfire policy and legislative frameworks should be to build strong, proactive communities that understand bushfire risk and make sound decisions about how they will manage and respond to those risks. This goal brings with it roles for individuals, agencies and the government.

Individuals should be encouraged, to the extent of their capabilities, to make their own preparations to protect themselves and their communities from bushfire. For example, before the bushfire season all capable individuals should ensure that the defensible space around their home is well maintained, and on days of high bushfire risk they should closely monitor the media and other sources of information for reports of fire.

Agencies should educate, prepare and help protect individuals by ensuring that they have access to the information needed to make sound decisions—particularly in relation to their suitability. It is also vital that agencies provide accurate and prompt warnings that are easy for the public to understand.

The role of government is to create the legislative foundation, fund fire services, facilitate community education and support, and provide essential infrastructure and local support to help communities stay safe.

In developing its recommendations the Commission kept these principles foremost in its thinking.

-
- 1 Exhibit 429 – Statement of Weir (SUMM.044.002.3841_R) at 3846_R–3847_R
 - 2 Exhibit 429 – Statement of Weir (SUMM.044.002.3841_R) at 3846_R–3847_R
 - 3 Exhibit 11 – Statement of Esplin, Attachment 58 (WIT.005.001.2358)
 - 4 Exhibit 11 – Statement of Esplin, Attachment 61 (WIT.005.001.2361), Attachment 76 (WIT.005.001.2383)
 - 5 Exhibit 22 – Statement of Williams (WIT.013.001.0002) [24]–[25]; Williams T724:22–T724:24
 - 6 Exhibit 130 – Statement of Waller (WIT.3024.001.0073) [13]; Exhibit 6 – Statement of Waller, Annexure 39 (WIT.002.001.0832); Exhibit 22 – Overview of the Meteorological Aspects of the Victorian fires (WIT.013.002.0001) at 0071
 - 7 Exhibit 22 – Statement of Williams (WIT.013.001.0002) [29]–[33]
 - 8 Exhibit 786 – Statement of Clow (WIT.3004.034.0004) [7], Annexure 3 (WIT.3004.034.0016); Exhibit 787 – Further Statement of Fogarty (WIT.3024.005.0253) [19]
 - 9 Exhibit 931 – Statement of Armytage (WIT.3003.002.0001) [139]
 - 10 Exhibit 843 – Statement of Robertson, Annexure 8 (WIT.3003.001.0257) at 0266–0267
 - 11 Scherman T20150:10–T20150:18
 - 12 Exhibit 779 – Report of Whittle (WIT.7539.001.0001_R) at 0003_R
 - 13 Exhibit 989 – Economic Costs of Natural Disasters In Australia, Chapter 3 – Estimating the Costs (RSCH.016.001.0052) at 0079–0082
 - 14 Sneeuwjagt T14970:31–T14971:7, T14971:31–T14972:10
 - 15 Exhibit 145 – Bushfire Weather in Southeast Australia: Recent Trends and Projected Climate Change Impacts (TEN.056.001.0001) at 0051; Esplin T513:27–T513:29
 - 16 Exhibit 931 – Statement of Armytage (WIT.3003.002.0001) at [29]–[32]
 - 17 Exhibit 896 – Statement of Streblow, Attachment 3 (TEN.264.001.0080) at 0100; Pyne T18436:3–T18436:8, T18438:25–T18439:2, T18440:12–T18440:18
 - 18 See Appendix B and Appendix C of this volume; see also Exhibit 546 – Report of Investigation and Inquests into a Wildfire and the Deaths of Five Firefighters at Linton on 2 December 1998 (TEN.132.001.0001) at 0049, 0563–0564
 - 19 The role of counsel assisting and the parties is discussed in Chapter 1, Volume III



XXX

Source: Exhibit 43 – Statement of Glassford, Attachment CG-1 (WIT.028.001.0008_R) at 0088_R.