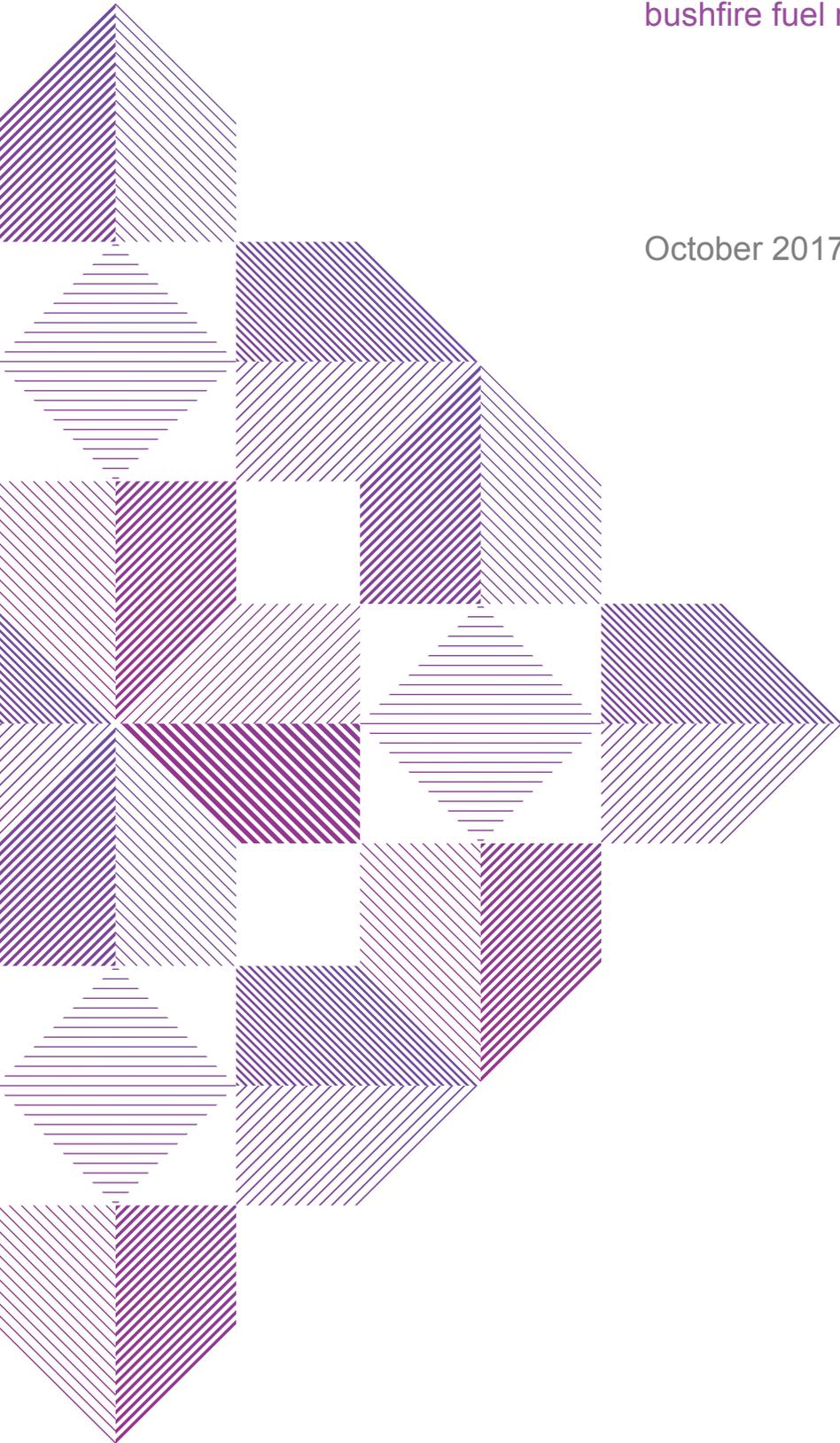


Annual Report

Implementation of recommendations on
bushfire fuel management

October 2017



Inspector-General for
Emergency Management



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Preface

This is the Inspector-General for Emergency Management's (IGEM) second, and final, annual progress report on the Victorian government's implementation of recommendations from IGEM's 2015 *Review of performance targets for bushfire fuel management on public land* and the 2015 *Independent Investigation of the Lancefield-Cobaw Fire*.

Significant reforms have been made to the way the Victorian Government and community manage risk from bushfire since the 2015 review and investigation.

The review and investigation made recommendations to the Department of Environment, Land, Water and Planning (DELWP) relating to the state's bushfire fuel management program. The recommendations supported the transition to a risk reduction target for fuel management and encouraged DELWP to encompass different forms of land tenure and alternative means of managing fuel.

In November 2015, government accepted all recommendations from the review and the investigation, embedding many aspects of the response in *Safer Together: A new approach to reducing the risk of bushfire in Victoria*. This new approach to reducing the risks of bushfire focuses on how effective actions are in reducing risk and seeks to combine the expertise of land and fire managers with local knowledge, underpinned by science and technology to deliver better outcomes for Victoria's bushfire-prone communities and environment.

IGEM is pleased to report that all recommendations from the review are now complete or have transitioned to business-as-usual. Importantly, this signals the completion of the move from a hectare-based fuel reduction target, to a risk reduction target.

One recommendation from the investigation is also complete and two remain ongoing. Work continues to develop a cross-tenure operating model and regional strategies for bushfire fuel management that consider alternative options for fuel management and bushfire risk.

Monitoring of the remaining recommendations will continue as part of IGEM's ongoing assurance activities, and will be reported as part of the annual summary of investigations into breaches of planned burn control lines.

IGEM commends collaboration between DELWP, the Country Fire Authority, Emergency Management Victoria and Parks Victoria, and communities, on the significant progress and commitment to reforming Victoria's land management practices.

Tony Pearce

Inspector-General for Emergency Management

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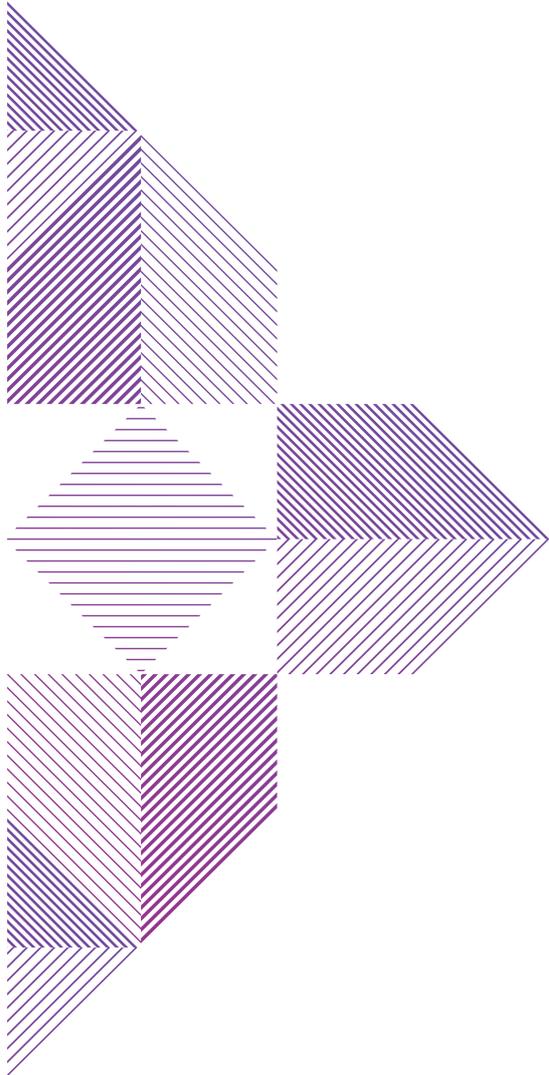
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Common terms

Bushfire Fuel Management Program	DELWP Bushfire Fuel Management Program on Public Land
Safer Together	<i>Safer Together: A new approach to reducing the risk of bushfire in Victoria</i> , November 2015
DELWP response	<i>Response to the recommendations of the independent investigation into the Lancefield-Cobaw fire</i> , November 2015
MER framework	Monitoring, Evaluation and Reporting Framework for Bushfire Management on Public Land
The Act	<i>Emergency Management Act 2013</i>
The code	<i>Code of Practice for Bushfire Management on Public Land</i> , 2012
The department	Department of Environment, Land, Water and Planning
The investigation	<i>Independent Investigation of the Lancefield-Cobaw Fire</i> , November 2015
The review	<i>Review of performance targets for bushfire fuel management on public land</i> , May 2015
IGEM's 2016 annual report	<i>Annual Report: Implementation of recommendations from IGEM's review of performance targets for bushfire fuel management on public land</i> , October 2016

Acronyms

AQA	Audit and Quality Assurance Framework
BoM	Bureau of Meteorology
BRCIM	Bushfires Royal Commission Implementation Monitor
BRL	Bushfire Risk Landscape
CBBM	Community-Based Bushfire Management
CFA	Country Fire Authority
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DELWP	Department of Environment, Land, Water and Planning
EMV	Emergency Management Victoria
EPA	Environment Protection Authority Victoria
FOP	Fire Operations Plan
GSS	Growth State Structure
IGEM	Inspector-General for Emergency Management
MFB	Metropolitan Fire and Emergency Services Board
PV	Parks Victoria
RSFMPC	Regional Strategic Fire Management Planning Committee
SAQH	Community Smoke, Air Quality and Health Standard
SBMP	Strategic Bushfire Management Plan
SFMP	State Fire Management Planning Committee
TFI	Tolerable Fire Interval
VBRC	Victorian Bushfires Royal Commission



Executive summary

This is the second and final annual progress report by the Inspector-General for Emergency Management (IGEM) on the Victorian Government's implementation of recommendations from IGEM's 2015 *Review of performance targets for bushfire fuel management on public land* (the review) and the 2015 *Independent Investigation of the Lancefield-Cobaw Fire* (the investigation).

The review and investigation made recommendations to Department of Environment, Land, Water and Planning (DELWP) on its bushfire fuel management program. The recommendations supported the transition to a risk reduction target for fuel management and encouraged DELWP to broaden its approach to consider different forms of land tenure and alternative means of managing fuel.

The Victorian Government accepted all recommendations from the review and the investigation and, in November 2015, released *Safer Together: A new approach to reducing the risk of bushfire in Victoria*. Much of the activity to address the recommendations from the review and the investigation is embedded in the Safer Together policy and program.

This report outlines progress towards those recommendations across the period August 2016 to August 2017. A summary of progress status is provided in tables 1 and 2 on the following pages.

IGEM considers that all recommendations arising from the review have been completed or the activity has transitioned to business-as-usual.

IGEM considers that one recommendation from the investigation has been completed and two remain ongoing. IGEM will continue to monitor the ongoing recommendations and report on them as part of its annual summary of investigations into breaches of planned burn control lines from 2018.

IGEM commends DELWP and partner agencies on the significant progress and continuing commitment to the reforms in bushfire risk management since the 2015 review and investigation.

Transition to risk reduction target

The most significant of recommendations from the review was for DELWP to move from a hectare-based fuel reduction target to a risk reduction approach where the most at-risk areas are prioritised for fuel reduction operations.

On 1 July 2016, DELWP introduced the risk reduction target to maintain bushfire risk at, or below, 70 per cent of Victoria's maximum bushfire risk. This recommendation was reported as complete in IGEM's 2016 annual report.

Since the introduction of the risk reduction target, DELWP, in partnership with the Country Fire Authority (CFA) and Emergency Management Victoria (EMV), has transitioned to this target through the Safer Together program as well as activity across the wider DELWP portfolio. In 2017, DELWP will report for the first time on progress towards the residual risk target rather than a hectare-based target.

The transition to a risk reduction target is supported by DELWP's increased capability, through its commitment to using the latest science, data and technology to ensure actions are targeted at reducing bushfire risk.

The transition to a risk reduction target was initially delivered through existing resources. Support from government for this transition has been provided through the 2017–18 Victorian Budget commitment of \$273.3 million for the 'Reducing Bushfire Risk' initiative. This will enable an expanded program of bushfire mitigation on public land and includes \$23.4 million for implementing the broader Safer Together policy approach.

Engagement with communities

Since the review, DELWP has established structures and processes to enable more effective community engagement.

The Community Based Bushfire Management (CBBM) process was developed to involve local communities in decision-making about fuel management. This includes a prioritisation process for identifying high priority communities for fire agencies to work with. The CBBM process was implemented by DELWP and CFA in 12 communities in 2016–17.

Alternative options for managing fuel and risk

The investigation recommended DELWP consider alternative options for both fuel management and management of broader landscape bushfire risk.

DELWP has made significant progress on the consideration of alternative options for managing landscape risk. Some progress has been made on embedding consideration of alternative options for fuel management.

Tenure-blind risk reduction

The investigation noted that bushfire risk spans multiple land tenures, both public and private, and the management of this risk is a shared responsibility between a number of emergency management organisations and the community. The investigation recommended DELWP adopt a 'tenure-blind' approach to fuel management and bushfire risk.

Safer Together commits to undertaking bushfire fuel management activities where they will most effectively reduce risk, regardless of land tenure. In line with this, DELWP has commenced work on options for a cross-tenure bushfire management operating model. Through consultation with partner agencies it was determined that development of a cross-tenure operating model required further work to assess the complexities and challenges associated with the current legislative environment and funding to build capacity within the CFA.

Supported by the 2017–18 Victorian Budget commitment, DELWP plans to implement a cross-tenure fuel management strategy for each region in 2017–18, subject to resolving current legislative issues.

Engagement with the sector

The investigation recommended DELWP engage with EMV on solutions to improving bushfire risk management. This collaboration has been evident across the year and is embedded in governance arrangements going forward. DELWP, CFA, EMV and Parks Victoria provide the strategic leadership of the reforms to bushfire risk management through ongoing representation on the Safer Together Leadership Group.

EMV and DELWP have collaborated to align the Safer Together approach with emergency management planning arrangements established under parts 5 and 6a of the *Emergency Management Manual Victoria*. These revised governance arrangements support the transition to a risk-based approach by ensuring that risks are addressed in the most appropriate way, and that actions arising from Strategic Bushfire Management Plans are implemented by relevant agencies.

Table 1: Recommendations of IGEM's Review of performance targets for bushfire fuel management on public land

REFERENCE	RECOMMENDATION	STATUS
IGEM Recommendation 1	IGEM recommends a risk reduction target as the most effective form of performance target for bushfire fuel management on public land to protect life and property and guide investments in fuel reduction burning.	Complete
IGEM Recommendation 2	In the event that government adopts a risk reduction target: a) DELWP transitions to this target through a defined program of activities and milestones. Effective transitioning will require DELWP to enhance its capacity and capability to implement risk-based planning and needs to be supported by appropriate performance measures and dedicated monitoring, evaluation and review. b) Government supports DELWP in making this transition.	Complete
IGEM Recommendation 3	IGEM recommends that DELWP: a) continue to develop and employ its capability to predict the smoke effects of planned burning, ensuring its planned burning processes remain consistent with the State Smoke Plan b) adopt performance measures to monitor the quality and effectiveness of community engagement activities c) continue to develop the reliability of its estimates of unit risk reduction costs. The availability of such estimates will be required to enable comparison and prioritisation of options for bushfire risk reduction across the areas of prevention, preparedness, response and recovery, and would involve contributions of other emergency management agencies.	Complete
IGEM Recommendation 4	IGEM recommends that: a) DELWP report clear, publicly accessible information on bushfire risk and ecosystem resilience, and report on the key activities required to achieve outcomes for the community in these areas b) DELWP's transition to the risk-based planning and performance measurement be supported by a program of internal and external reviews.	Complete

Table 2: Recommendations of the *Independent Investigation of the Lancefield-Cobaw Fire*, to be implemented as part of Safer Together

REFERENCE	RECOMMENDATION	STATUS
Lancefield Recommendation R1 (3.1.1.5)	The Department must adopt a tenure-blind approach to the management of bushfire risk including the planning of burns	Ongoing
Lancefield Recommendation R2 (3.1.1.6)	In broadening its focus the Department should consider planned burning as just one of many options in managing fuels, landscape risk, multiple tenures, diverse land uses and must incorporate community perspectives	Ongoing
Lancefield Recommendation R3 (3.1.1.7)	The Department should engage with EMV in seeking and implementing solutions to improving landscape scale bushfire risk management	Complete



Working together to reduce Victoria's bushfire risk (Image: DELWP)

1 Introduction

This is the second and final annual report by the Inspector-General for Emergency Management (IGEM) on the Victorian Government's implementation of recommendations from IGEM's 2015 *Review of performance targets for bushfire fuel management on public land* (the review).

The review included four recommendations relating to the Department of Environment, Land, Water and Planning (DELWP) Bushfire Fuel Management Program.

IGEM's most significant recommendation was for DELWP to move from a hectare-based fuel reduction target to a risk reduction approach where the most at-risk areas are prioritised for fuel reduction operations. The Victorian Government accepted all of IGEM's recommendations.

In November 2015, in response to the recommendations of the review and the 2015 *Independent Investigation of the Lancefield-Cobaw Fire* (the investigation), the Victorian Government released *Safer Together: A new approach to reducing the risk of bushfire in Victoria* (Safer Together).

Safer Together is a policy approach to bushfire management that considers the full range of options to manage bushfire risk across public and private land and across prevention, preparedness, response, and recovery activities. The Victorian Government's response to the review is embedded within Safer Together.

IGEM has monitored the implementation of the four recommendations from the review and three recommendations from the investigation that are being implemented as part of Safer Together.

IGEM will continue to monitor the remaining recommendations as part of ongoing assurance activity, reporting to government as part of the annual summary of investigations into breaches of planned burn control lines.



Lighting a reduction burn with a drip torch (Image: DELWP)

2 Background

Victorian Bushfires Royal Commission Recommendation 56

Following the 2009 Victorian bushfires, the Victorian Bushfires Royal Commission (VBRC) made a number of recommendations in relation to fuel management, including:

Recommendation 56:

“The State fund and commit to implementing a long-term program of prescribed burning based on an annual rolling target of 5 per cent minimum of public land” (VBRC 2010 Vol 2, p. 295).

Prescribed, or planned, burning is defined as the “controlled application of fire under specified environmental conditions to a predetermined area and at the time, intensity and rate of spread required to attain planned resource management objectives” (National Council for Fire and Emergency Services 2012).

The practice has a long history in Victoria, across Australia and internationally. It is considered the most efficient and effective approach for managing fuel hazard over large areas and is one activity in DELWP’s Bushfire Fuel Management Program on Public Land (Bushfire Fuel Management Program).

VBRC discussed the merits and limitations of a hectare-based performance target. The VBRC’s intent was to reduce risk to human life from bushfires and the five per cent planned burn target was considered to be commensurate with an acceptable risk reduction.

The five per cent target was equivalent to a threefold increase in the annual area burned. The VBRC also recognised that not all hectares were equal in terms of the potential risk reduction from planned burning (VBRC 2010 Vol 2, p. 294). At the time, there was not the capability to easily relate area burnt to risk reduced.

The Victorian Government agreed to implement Recommendation 56 and successive governments committed to a staged increase of planned burns using an annual hectare-based target. DELWP’s efforts to meet the target were noted by the Bushfires Royal Commission Implementation Monitor, however the VBRC’s recommended five per cent target was not achieved.

Bushfires Royal Commission Implementation Monitor

In 2010, the Victorian Government appointed Mr Neil Comrie AO APM as Bushfires Royal Commission Implementation Monitor (BRCIM) to monitor, review and report on the progress of agencies in carrying out the government’s response to the VBRC’s Final Report recommendations. In doing so, BRCIM considered the effectiveness of the methods used and the efficacy of their implementation.

In 2013, BRCIM concluded that the planned burning target of five per cent of public land was not achievable, affordable or sustainable and advocated that the government reconsider the hectare-based target in favour of a risk-based approach (BRCIM 2013).

In arriving at this position, BRCIM considered advances in DELWP’s capabilities since the VBRC made its recommendations (BRCIM 2014).

The Code of Practice for Bushfire Management on Public Land 2012

The intent of VBRC's Recommendation 56 was primarily the protection of human life. This continues to be one of the objectives of DELWP's Bushfire Fuel Management Program.

The *Code of Practice for Bushfire Management on Public Land 2012* (the code) sets the objectives for bushfire management on public land and supports DELWP in meeting its legislative responsibilities under the *Forests Act 1958*.

The code has two primary objectives:

- To minimise the impact of major bushfires on human life, communities, essential and community infrastructure, industries, the economy and the environment. Human life will be afforded priority over all other considerations.
- To maintain or improve the resilience of natural ecosystems and their ability to deliver services such as biodiversity, water, carbon storage and forest products.

Planned burning is the largest fuel reduction activity, by area, in DELWP's Bushfire Fuel Management Program. However it is only one approach to managing bushfire risk.

The suite of potential fuel management activities listed in the code also includes ploughing, mulching, herbicide application, chain rolling, grazing, mowing and slashing. Fuel management activities can reduce risk from bushfires, but they cannot eliminate it.

Review of performance targets for bushfire fuel management on public land (May 2015)

In February 2015, the then Minister for Environment, Climate Change and Water and the then Minister for Emergency Services requested IGEM to review the findings of the BRCIM in respect of hectare-based performance targets for fuel management on public land and DELWP's risk-based approach to bushfire management.

IGEM was asked to recommend the form of performance target that best supported delivery of a fuel management program that met the intent of the VBRC recommendations and achieved the objectives in the code.

The review recommended a risk reduction target as the future form of performance target for DELWP's Bushfire Fuel Management Program. The review found that the existing hectare-based planned burning performance target did not effectively guide a fuel reduction program towards areas of highest risk reduction over the longer term. The review also outlined that a hectare-based target did not create incentives to pursue alternative forms of risk reduction where planned burning is not possible.

IGEM also provided a number of complementary recommendations in order to provide assurance to the community in transitioning to this form of performance target.

The review was published in May 2015 and is available on IGEM's website at www.igem.vic.gov.au.

Independent Investigation of the Lancefield-Cobaw Fire

On 30 September 2015, DELWP conducted a planned burn at Lancefield-Cobaw Croziers Track in the Macedon Ranges Shire – a standard practice in DELWP's Bushfire Fuel Management Program.

The burn later breached containment lines and, until contained on 13 October 2015, burned over 3000 hectares, destroying a number of dwellings, sheds, and many kilometres of fencing, and causing significant disruption for local communities.

At the Victorian Government's request, an independent investigation was conducted by Mr Murray Carter, Director of Western Australia's Office of Bushfire Risk Management. The investigation recommended improvements to DELWP's systems and processes that are crucial to the delivery of planned burning throughout Victoria.

DELWP accepted all 22 of the recommendations in the investigation report and made 10 additional commitments to improve delivery of the Bushfire Fuel Management Program.

Role of IGEM

IGEM's responsibilities under the *Emergency Management Act 2013* (the Act) are to:

- provide assurance to government and the community in respect of emergency management arrangements in Victoria
- foster continuous improvement of emergency management in Victoria.

IGEM's assurance activities are guided by the *Monitoring and Assurance Framework for Emergency Management* (the Framework), which provides the foundation for a coordinated and collaborative approach to sector-wide assurance.

Implementation monitoring is an integral part of the Framework to ensure that the lessons identified from emergencies, including recommendations and agreed actions, are implemented in a sustainable manner to make a lasting difference for Victorian communities.

Section 64(1)(ca) of the Act establishes that one of IGEM's functions is to, at the request of the Minister for Emergency Services, monitor and report on the implementation of recommendations arising from reports that relate to IGEM's functions.

Under this function, IGEM assumed responsibility for monitoring the implementation of the four recommendations from the review and three recommendations from the investigation that are being implemented as part of Safer Together.

IGEM will continue monitoring the implementation of ongoing recommendations until they have been completed.

Assurance principles

The Framework defines assurance as an expression or statement designed to increase the confidence of government and the community in the ability of the emergency management system to plan for, respond to and recover from emergencies.

The Framework articulates four principles to guide assurance activities performed in relation to the emergency management system in Victoria.

Table 3 below provides an overview of the principles IGEM has applied in preparing this annual progress report.

Table 3: Application of the four principles

PRINCIPLE	APPLICATION
Continuous improvement	The sector supports a culture of continuous improvement by: <ul style="list-style-type: none"> • sharing results of assurance activities and information on contemporary, better practice in emergency management • focusing on systems of work – and not individuals – to ensure that assurance is non-adversarial • understanding that the sector requires time, resources, and the opportunity to identify and implement sustainable solutions.
Collaboration and coordination	The sector works together, and with Victorian communities, to ensure a coordinated approach to assurance to reduce unnecessary duplication by leveraging shared information and systems.
Adding value	Assurance is proportionate and considers risk-based approaches. The results provide evidence-based, meaningful, and timely information for the sector, government and the community about the performance of the sector and opportunities for improvement.
Reducing burden	Assurance activities should be conducted in the most efficient way possible taking into account the need to not create unnecessary burden for organisations. Where possible, required information to support assurance activities should be acquired through existing organisational mechanisms and information already gathered through any existing monitoring or review process.

Key stakeholders

The monitored recommendations are directed at the Department of Environment, Land, Water and Planning (DELWP).

DELWP collaborated with a range of other organisations to progress the implementation of the recommendations, including:

- Country Fire Authority (CFA)
- Emergency Management Victoria (EMV)
- Parks Victoria (PV)
- VicForests
- Melbourne Water.

IGEM places a high priority on engagement with stakeholders. IGEM met with DELWP across the year to outline timelines, confirm communication arrangements, explain the implementation reporting process and provide guidance on evidence requirements.

IGEM acknowledges the high level of cooperation and support received from DELWP.

Information collection

In June 2017, IGEM formally requested implementation updates supported by documentary evidence of progress, such as policies, procedures, contracts, manuals, reports, guides and meeting minutes.

More than 90 documents were received from DELWP. All documents were stored securely and managed in accordance with IGEM's statutory confidentiality requirements in accordance with section 72 of the Act.

IGEM assessed the progress updates to determine their status, ensuring that updates were supported by evidence, and were consistent with forward commitments made in prior year reports to IGEM.

Where required, IGEM contacted or met with nominated representatives of DELWP to clarify information or request additional documentation.

Where possible, IGEM reviewed publicly available information such as reports, research papers, bushfire fuel management plans and websites, in order to corroborate evidence provided and reduce reporting requirements.

Analysis and reporting

IGEM monitors implementation of recommendations accepted by the Victorian Government by assessing progress against each recommendation.

IGEM seeks to reflect progress by departments and agencies to the fullest extent possible based on evidence provided to IGEM or publicly available. At times, if evidence is unavailable, IGEM may be limited in its capacity to report on the progress of actions.

This annual report provides IGEM's assessment for progress of implementation of the six recommendations reported as ongoing in IGEM's 2016 annual report.

Progress in relation to actions is reported for the period up to 11 August 2017. Following analysis of updates and other evidence, actions are assigned the implementation status of ongoing or complete (refer to Table 4 on the following page).

For each action, IGEM assigns a 'status'. Table 4 below describes the status that IGEM assigns for each action.

Table 4: Implementation status

STATUS	DESCRIPTION
Complete	Recommendation has been implemented as planned.
Ongoing	Recommendation is in progress and will continue to be monitored as part of IGEM's annual summary of investigations into breaches of planned burn control lines in 2018.

IGEM consulted with DELWP prior to the finalisation of the report.

3 Implementation progress

IGEM reported one recommendation as complete in the 2016 annual report.

Recommendation 1 of the review recommended a risk reduction target as the most effective form of performance target for bushfire fuel management on public land to protect life and property and guide investments in fuel reduction burning.

From 1 July 2016, DELWP's fuel management program has been guided by a risk reduction target, rather than a hectare-based target. This target is to maintain bushfire risk at or below 70 per cent of Victoria's maximum bushfire risk. This 70 per cent residual risk target means the impact of bushfires will be reduced by about a third compared to maximum fuel loads.

This section provides progress updates on the remaining recommendations of the review and investigation.

IGEM RECOMMENDATION 2

In the event that government adopts a risk reduction target:

- a. DELWP transitions to this target through a defined program of activities and milestones. Effective transitioning will require DELWP to enhance its capacity and capability to implement risk-based planning and needs to be supported by appropriate performance measures and dedicated monitoring, evaluation and review.
- b. Government supports DELWP in making this transition.

Status

Complete

2a Transition to a risk reduction target

Since the introduction of the risk reduction target on 1 July 2016, DELWP, in partnership with CFA and EMV, has transitioned to this target through existing resourcing. This includes activities from the Safer Together program and the wider DELWP portfolio.

Under DELWP's risk-based approach, bushfire risk is measured for the whole of Victoria and at the scale of 'Bushfire Risk Landscapes' (BRLs). BRLs are geographical areas of Victoria grouped by similar bushfire behaviour at those locations. There are seven BRLs:

- Alpine and Greater Gippsland
- Alpine North East
- Barwon Otway
- East Central
- Mallee Murray Goulburn
- South Western
- West Central.

The Strategic Bushfire Management Plan (SBMP) for each BRL describes how risk will be reduced. Fire Operations Plans (FOPs) operationalise the SBMPs, providing detail about individual fuel treatments and the expected risk reduction resulting from implementation.

FOPs have played a significant role in DELWP's program of activity to transition to a risk reduction target. In 2016–17 each regional FOP outlined the planned fuel management works to meet the regional risk reduction objectives of strategic bushfire management planning. The regional FOPs and a list of scheduled works are available on DELWP's Forest Fire Management Victoria website (www.ffm.vic.gov.au).

DELWP's Chief Fire Officer issued a directive on the development of the annual three-year FOP cycle commencing 2017–18, reinforcing the 70 per cent residual risk target as the primary performance measure for planning fuel management. The directive also specified a minimum of 230,000 hectares statewide of fuel treatments to be identified in each year of the three-year FOP with a hectare distribution across districts and regions aligned to current bushfire risk landscape strategies.

As outlined in IGEM's 2016 annual report, DELWP scoped nine priority projects for 2016–17, intended to further support the transition to a risk reduction target.¹

One of these projects was for DELWP and CFA to develop a business case for further funding for risk reduction. DELWP advised this resulted in a commitment in the 2017–18 Victorian Budget of \$273.3 million over the next four years for the 'Reducing Bushfire Risk' initiative. This will enable an expanded program of bushfire mitigation on public land and includes \$23.4 million over two years for implementing the broader Safer Together policy approach.

DELWP advised it has increased its capability to implement risk-based planning through a commitment to using the latest science, data and technology to ensure actions are targeted at reducing bushfire risk. Examples of this enhanced capability include the following:

- DELWP reported to the December 2016 meeting of the Safer Together Leadership Group on its updated residual risk profiles, based on improvements in data and risk modelling. This includes updated data in the Phoenix RapidFire bushfire simulator and residual risk calculation process, updated fuel classification mapping and address points, and a new version of the Phoenix RapidFire software, which improves the characterisation of bushfire spread including enhancements to convection, spotting and ember density.
- The Community Based Bushfire Management (CBBM) process, described further under Recommendation 3, includes a prioritisation process for identifying high priority communities for fire agencies to work with. The prioritisation process combines bushfire risk modelling and consultation between DELWP and CFA staff and stakeholders to identify communities exposed to extreme, very high and high bushfire hazard.

Further reflecting this transition, DELWP advises its intention to report – for the first time – on progress towards residual risk targets rather than a hectare based target in the upcoming 2016–17 Fuel Management Report, available on its Forest Fire Management Victoria website (www.ffm.vic.gov.au).

The transition to a risk reduction approach is supported by DELWP's Monitoring, Evaluation and Reporting Framework for Bushfire Management on Public Land (MER framework). The application of this framework is described under IGEM Recommendation 4b.

FINDING

IGEM considers this recommendation is implemented as planned.

¹ Reporting on progress of these projects is provided under the relevant recommendations across this report.

2b Government support for the transition

The Victorian Government's policy commitment to the transition to a risk reduction target is outlined in Safer Together. The 2016–17 objective of using a risk reduction target to guide fuel management on public land has maintained bushfire risk at, or below, 70 per cent statewide.

This was achieved through a reprioritisation of existing resources and will be supported through the provision of additional funding over the next four years, as outlined under Recommendation 2a.

FINDING

IGEM considers this recommendation is implemented as planned.

IGEM RECOMMENDATION 3

IGEM recommends that DELWP:

- a. continue to develop and employ its capability to predict the smoke effects of planned burning, ensuring its planned burning processes remain consistent with the State Smoke Plan
- b. adopt performance measures to monitor the quality and effectiveness of community engagement activities
- c. continue to develop the reliability of its estimates of unit risk reduction costs. The availability of such estimates will be required to enable comparison and prioritisation of options for bushfire risk reduction across the areas of prevention, preparedness, response and recovery, and would involve contributions of other emergency management agencies.

Status

Complete

3a Smoke effects of planned burning

DELWP has continued to develop its capability to predict the movement and impact on the community of smoke from fuel management activities.

The key mechanism delivering this improved capability is DELWP's Predictive Services Framework.

The Predictive Services Framework is an initiative to provide intelligence to support the decisions made by emergency managers, Incident Management Teams and community members.

A key element of the Predictive Services Framework is the prediction of the smoke effects of fires, including planned burning. A Predictive Services project control board, comprising representatives of DELWP, CFA, MFB (Metropolitan Fire and Emergency Services Board) and EMV oversees the work associated with the development of smoke modelling capability in Victoria and reports to the State Smoke Working Group.

As part of the Predictive Services Framework, Forest Fire Management Victoria – comprising DELWP, Parks Victoria, VicForests and Melbourne Water personnel – began using a prototype of a Smoke and Chemical Transport model in April 2017.

Initially developed by Commonwealth Scientific and Industrial Research Organisation (CSIRO) in collaboration with the Bureau of Meteorology (BoM), this model enables emergency management professionals to predict the spread, dissipation and constituents of smoke from planned and unplanned fires. Based on smoke forecasts provided through the Smoke and Chemical Transport model, the Chief Fire Officer postponed some planned burns during autumn in 2017.

IGEM attended a demonstration of the Predictive Services Framework at the State Control Centre on 21 August 2017 and observed how the framework and model can estimate the movement and dispersal of smoke for DELWP's planned burns.

DELWP has advised IGEM the Smoke and Chemical Transport model is currently being used by planned burn coordinators in conjunction with fire behaviour analysts and meteorologists. This allows a more comprehensive consideration of potential smoke effects in the delivery of planned burning programs, as well as informing the deployment of Environment Protection Authority Victoria (EPA) air quality monitoring equipment.

DELWP will continue to develop the framework and model. Feedback from regional staff on accuracy and usability was collected in 2017 and will inform further improvements.

Integration of a broader range of data is planned across the next two years, to ensure monitoring and management of smoke meets all requirements of the Community Smoke, Air Quality and Health (SAQH) Standard. Further improvements may arise from a planned expanded trial of the model during the 2017–18 summer season.

IGEM will continue to monitor the development of the Predictive Services Framework through its annual progress reports on the implementation of Hazelwood Mine Fire Inquiry recommendations.

FINDING

IGEM considers this recommendation is implemented as planned.

3b Community engagement performance measures

The review identified the need for community engagement and involvement in decision-making for bushfire fuel management, and proposed that a series of measures would be required to provide an effective basis for continuous improvement of engagement activities.

Since the review, DELWP has established structures and processes to enable more effective community engagement. Some foundational work in building broad-based relationships with the community began through implementation of recommendations from the investigation.

In response to the investigation, DELWP developed a series of measures for assessing the quality and effectiveness of its engagement with community members. DELWP tested the effectiveness measures in two districts during June and July 2016.

DELWP advised IGEM the effectiveness measures were implemented on a trial basis during autumn 2017, and that as part of the season debriefs, regional and district planned burn teams are evaluating the data collected against measures set out in the fuel management engagement guidance.

During 2016–17, DELWP continued to develop and invest in a community relationship management system. In time, DELWP intends this system will form a fundamental part of engagement effectiveness monitoring as it will be the central collection and analysis point for all engagement data in the bushfire management portfolio.

The CBBM process was developed to involve local communities in decision-making about fuel management. As outlined under Recommendation 2a, the process includes a prioritisation process for identifying high priority communities for fire agencies to work with.

The CBBM process was implemented by DELWP and CFA in 12 communities during 2016–17. A preliminary review of implementation in the first six communities has identified ways to refine the design and implementation of the ongoing process. It also noted a high level of enthusiasm and commitment to the CBBM approach by agencies and communities throughout the six locations. Future evaluation will be incorporated into DELWP’s MER framework.

FINDING

IGEM considers this recommendation is implemented as planned.

3c Reliability of cost estimates

The review reported that DELWP had developed the capability to estimate the cost effectiveness of risk reduction from planned burning. The review found that improving the reliability of these cost estimates could inform fuel reduction strategies as well as facilitate comparisons with other ways to reduce bushfire risk.

DELWP has continued to develop this capacity across 2016–17, with a focus on improving systems and processes to more reliably record and forecast the cost of fuel management.

DELWP’s system for managing planned burns is called Fireweb. This system collects a range of data on the direct and indirect estimated actual costs of planned burns which is then used to build broader cost models.

To ensure this data is consistent and of good quality, DELWP has developed costing guidelines for use by District Managers, Fire Management Officers, Burns Controllers and Logistics Officers to track expenditure and accurately charge the burn costs. The information collected through this system during 2016–17 will be evaluated by DELWP in the second quarter of 2017–18 to determine how this approach is improving understanding of risk reduction cost.

DELWP also uses an optimiser tool to inform planned burning regional resource allocation decisions statewide. Using bushfire modelling information generated through Phoenix RapidFire, the optimiser tool models the linkages between funding, area treated by planned burning and bushfire risk reduction outcomes. The tool is used to investigate how the distribution of planned burning funding between different regions (bushfire risk landscapes) influences risk reduction and treated area, and is a means of more reliably estimating the unit risk reduction costs.

Phoenix RapidFire bushfire modelling and data updates made during 2016–17, as described in relation to Recommendation 2a above, will be used to update the optimisation tool in the second quarter of 2017–18.

DELWP anticipates that the improvements to the optimisation tool, combined with more accurate cost information collected through Fireweb and other systems, will improve the reliability of estimates of unit risk reduction costs.

To enable comparison with other strategies for bushfire risk reduction, in 2016–17 DELWP invested in research to assess the costs and benefits of a broad range of fire management options for reducing bushfire impacts and risk including initial suppression attack, planned burning on public and private land, fuel breaks, retrofitting homes and the construction of bunkers.

DELWP has advised IGEM that it intends to use the research data to inform decision-making about strategies across prevention, preparedness, response and recovery and will integrate into guidance documents for the 2017–18 strategic bushfire management planning process.

FINDING

IGEM considers this recommendation is implemented as planned.



Smoke modelling helps predict the smoke effects from fuel management activities (Image: Parks Victoria)

IGEM RECOMMENDATION 4

IGEM recommends that:

- a. DELWP report clear, publicly accessible information on bushfire risk and ecosystem resilience, and report on the key activities required to achieve outcomes for the community in these areas
- b. DELWP's transition to the risk-based planning and performance measurement be supported by a program of internal and external reviews.

Status

Complete

4a Public information on bushfire risk and ecosystem resilience

The review reported that communities are sensitive to bushfire risk and have a strong interest in the natural environments affected by fuel reduction. Many expressed a wish for greater transparency in decision-making and planning for fuel reduction.

IGEM reported that a focus on accountability through clear performance information and regular internal and external reviews would play an important role in maintaining community trust and confidence.

Across 2016–17, DELWP has published information on both bushfire risk and ecosystem resilience.

To understand the impact of fuel management on ecosystem resilience, DELWP measures and monitors the Tolerable Fire Interval (TFI) and the Growth State Structure (GSS) of areas its treats through the Bushfire Fuel Management Program.

TFIs are the minimum and maximum recommended time intervals between fire events for particular ecological vegetation classes. GSS relates to the different growth stages and habitats across landscapes. DELWP advises that it manages fuel to ensure there is a mix of growth stages in the landscape, and to protect important areas of older growth stages.

DELWP reports on these measures for public land across Victoria in its Fuel Management Report. In its 2015–16 Fuel Management Report published on its website in July 2017², DELWP depicts the status of public land vegetation in this context over the last 25 years, including the effect of major bushfires.

In this report DELWP explains its considerations in finding the right balance between minimising planned burning impacts on environmental values and managing bushfire risk to protect people, environment and property. The report provides clear explanations of the concept of residual risk and shows Victoria's residual risk profile from 1980 to 2019.

The report also includes metrics on:

- hectares treated
- ecosystem resilience
- fuel management
- costs
- community engagement
- monitoring and evaluation.

The 2016–17 Fuel Management Report is due for publication in October 2017.

² <https://www.ffm.vic.gov.au/monitoring-evaluating-and-reporting>

DELWP also publishes ecosystem resilience data on its Forest Fire Management Victoria website³, together with videos and interactive graphs at the statewide and risk landscape level.

IGEM considers that these two key reporting initiatives have transitioned to business-as-usual and will form an ongoing part of DELWP's fuel management program.

FINDING

IGEM considers this recommendation is implemented as planned.

4b Internal and external reviews

DELWP has undertaken a range of internal and external reviews across 2016–17, through its strategic bushfire management planning process and across the fuel management program.

The internal review program is delivered through the:

- MER framework
- Audit and Quality Assurance Framework for Bushfire Management (the AQA framework).

DELWP's MER framework guides long-term monitoring, evaluation, reporting and a continuous improvement program.⁴

IGEM's 2016 annual report stated that six regional MER plans had been developed under the MER framework. In 2016–17 the seventh and final regional plan was developed, for the Alpine and Greater Gippsland region. A draft of this plan was provided to IGEM and sets out how evaluation will be undertaken and data gathered to assess the:

- change as a result of the fuel management action, including changes to fuel levels
- effectiveness of the fuel management strategy, including how it reduced bushfire risk and met land management objectives
- compliance with key processes, including the application of risk assessments.

The scope of the MER framework is currently limited to the fuel management program on public land. As part of the implementation of Safer Together, DELWP proposes that the MER framework planning will expand to include strategies for bushfire prevention, preparedness, response and recovery across public and private land.

In July 2016, DELWP endorsed the Audit and Quality Assurance Framework for Bushfire Management, developed as part of DELWP's response to the investigation.

The AQA framework serves as an overarching guide to promote a structured and consistent means of attaining quality assurance across bushfire management activities with a focus on continuous improvement.

Developed by external consultants, this framework sets out a rolling four-year plan of internal audits conducted by outsourced providers and operational quality and assurance reviews, conducted by a person or team within DELWP who is independent of the process being examined.

The first internal audit was conducted during June and July 2017 and considers governance and accountability with a focus on planned burning. Two further audits of bushfire management – on operational quality assurance and risk management – are planned across the remainder of 2017.

³ <https://www.ffm.vic.gov.au>

⁴ <https://www.ffm.vic.gov.au/monitoring-evaluating-and-reporting>

In addition to the program of internal audits, DELWP's AQA framework also delivered new internal review capability within operational teams across 2016–17, through a Planned Burn Observation and Feedback Program. In February 2017, Victoria's Chief Fire Officer advised Assistant Chief Fire Officers of these new quality assurance arrangements, which included:

- a role within the State Planned Burn Coordination team to review all Burn Plans and provide daily feedback on good practice, learnings and issues identified at State, Region, District and Burn Officer In Charge level
- two field-based observers to attend and observe the implementation of burns and give immediate feedback about the safety, effectiveness and efficiency of delivery to the Burn Officer In Charge.

In addition to the MER and AQA frameworks, DELWP undertook an internal review of the strategic bushfire management planning process to improve adherence to ISO31000 risk management standards, address relevant recommendations, apply continuous improvement opportunities and expand into multi-agency strategic planning. As a result, a new regional strategic bushfire management planning process has been developed and includes:

- a standard risk register, based on the National Emergency Risk Management Guidelines
- a standard technical methods template for capturing community values, risks and decision-making
- a toolbox to guide planners through the planning process
- a quality assurance function
- monitoring, evaluation and reporting requirements.

This program of internal reviews has been complemented by the external review functions provided by IGEM. In November 2016, IGEM published its first annual *Summary of investigations into breaches of planned burn control lines (1 January 2016 to 30 June 2016)*.⁵

IGEM provides ongoing oversight by managing the prompt investigation and reporting of breaches of control lines by planned burns conducted by the DELWP.

IGEM is monitoring how lessons are shared among personnel involved in planned burning delivery, and DELWP's continuing work to address and embed these lessons into the planned burn program. IGEM will provide its 2017 summary of investigations into breaches of planned burn control lines to government in November 2017.

FINDING

IGEM considers this recommendation is implemented as planned.

⁵ <http://www.igem.vic.gov.au/home/reports+and+publications/reports/summary+of+planned+burns+investigations+january+to+june+2016>



Motion-sensing cameras will help determine how planned burning can impact wildlife (Image: DELWP)

LANCEFIELD RECOMMENDATION R1 (3.1.1.5)

The Department must adopt a tenure-blind approach to the management of bushfire risk including the planning of burns

Status

Ongoing

The review noted that bushfire risk spans multiple land tenures, both public and private, and the management of this risk is a shared responsibility between a number of emergency management organisations and the community. The practice of planned burning on public land takes place in this broader context, while DELWP's legislative responsibility extended only to public land.

The investigation noted that the planned burn in the Cobaw State Forest was in a heavily vegetated broader landscape consisting of multiple land tenures, private forest and farm land, and a network of road reserves under different jurisdictions.

The investigation identified the importance of considering fuels across public and private land, and a full range of bushfire management options. Failure to do this effectively was found to have been a problem in management of the Lancefield-Cobaw planned burn and a significant source of community frustration.

Safer Together commits to undertaking bushfire fuel management activities where they will most effectively reduce risk, regardless of land tenure.

DELWP has commenced work on options for a cross-tenure bushfire management operating model. Its 2016–17 Safer Together project milestones outline that this project will provide the guidance and business processes required in order to deliver cross-tenure landscape-scale, strategic fuel management plans.

Through consultation with partner agencies, DELWP determined that the development of a cross-tenure operating model required further work to assess the complexities and challenges associated with the current legislative environment and funding to build capacity within the CFA. These barriers have yet to be addressed. The project to develop a cross-tenure operating model has been deferred to 2017–18 and will be re-scoped.

Although the operating model has not yet been developed, DELWP has advised IGEM that 21 cross-tenure fuel reduction burns were piloted during 2016–17, supported by long-standing strong relationships between agencies at a local level. Ongoing evaluation of these and other cross-tenure burns through DELWP and CFA debrief processes will inform the requirements of the operating model.

The 2017–18 Victorian Budget commitment of \$23.4 million over two years towards implementation of the Safer Together approach will provide resources to support DELWP’s delivery of a tenure-blind approach. The funding will support the development of a resourcing model, joint fire operations plans and risk-based approaches for landscape planning.

Supported by this funding commitment, DELWP has advised IGEM that a cross-tenure strategic bushfire management plan (with the initial focus on fuel management) strategy for each region will begin 2017–18, subject to resolving current legislative issues.

IGEM considers this recommendation will be complete when cross-tenure operating model and regional strategies are completed and supported by the necessary resources, capability and policy and legislative frameworks.

FINDING

IGEM considers that this action is progressing satisfactorily and will continue to monitor its implementation.

LANCEFIELD RECOMMENDATION R2 (3.1.1.6)

In broadening its focus the Department should consider planned burning as just one of many options in managing fuels, landscape risk, multiple tenures, diverse land uses and must incorporate community perspectives

Status	Ongoing
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The investigation noted that planned burning is only one approach to managing bushfire risk. Fuel management activities can reduce risk of bushfires but they cannot eliminate it. The investigation also noted that bushfire risk can be reduced through activities other than fuel management, such as land use planning controls, community education, suppression strategies and availability of fire refuges or evacuations in the event of a bushfire.

DELWP has made significant progress on the consideration of alternative options for managing landscape risk. Some progress has been made on embedding consideration of alternative options for fuel management.

The code includes non-burn strategies such as ploughing, mulching, herbicide application, chain rolling, grazing, mowing and slashing. However, planned burning remains the largest fuel reduction activity in the DELWP Bushfire Fuel Management Program.

DELWP policies and tools acknowledge that a range of fuel management and risk reduction strategies are available to planners. In April 2017, DELWP developed a draft technical methods template for use in strategic bushfire management planning. The template provides the opportunity to list and consider various strategies and does not limit them to planned burns.

IGEM reviewed all seven SBMPs to assess the extent that options other than planned burns were considered in managing fuel and landscape risk. All SBMPs indicated that that planned burning was the primary fuel management technique and did not plan any alternative strategies.

All SBMPs did include a range of non-burn options to reduce the overall bushfire risk in their landscape.

IGEM also reviewed a number of regional FOPs that operationalise the SBMPs. Again, in each FOP that IGEM reviewed, planned burning remains the primary option in managing fuels. Non-burn fuel treatments such as the maintenance and construction of fire control lines, fire access tracks, fuel breaks, fire infrastructure and other fuel management activities support the planned burning program, but are not planned as an alternative to planned burning.

This recommendation makes clear that these alternative options must also consider community perspectives.

As mentioned under IGEM Recommendation 3b, DELWP developed the CBBM process was developed to involve local communities in decision-making about fuel management. This includes a prioritisation process for identifying high risk communities for fire agencies to work with. The CBBM process was implemented by DELWP and CFA in 12 communities during 2016–17. DELWP's preliminary review of implementation in the first six communities has identified ways to refine the design and implementation of the ongoing process.

FINDING

IGEM considers that this action is progressing satisfactorily and will continue to monitor its implementation.



Bushfire risk spans multiple land tenures, both public and private (Image: Parks Victoria)

LANCEFIELD RECOMMENDATION R3 (3.1.1.7)

The Department should engage with EMV in seeking and implementing solutions to improving landscape scale bushfire risk management

Status

Complete

In seeking and implementing solutions to improving bushfire risk management, DELWP engages with EMV through:

- EMV’s membership of the DELWP-led Safer Together Leadership Group, which is accountable for the overall strategic leadership of the program’s implementation.
- DELWP’s membership of the EMV-led multi-agency State Fire Management Planning Committee, which is responsible for providing direction and support to implement integrated fire management planning at regional and municipal levels.
- DELWP’s membership of the project control board of the EMV-led Victorian fire strategy, previously known as the Victorian bushfire management strategy.

As outlined in this report, bushfire risk is measured for the whole of Victoria and at the scale of Bushfire Risk Landscapes – seven geographical areas of Victoria grouped by similar bushfire behaviour at those locations.

EMV’s Emergency Management Planning Unit and DELWP’s Fire and Emergency Management Planning Unit have worked together to align the Safer Together approach with the emergency management planning arrangements under parts 5 and 6a of the *Emergency Management Manual Victoria*.

This has resulted in revised governance arrangements with Victoria’s State Fire Management Planning Committee (SFMPC) endorsing linkages between the Safer Together program, SFMPC and Regional Strategic Fire Management Planning Committees (RSFMPCs).

RSFMPCs will oversee the planning process undertaken by joint CFA, DELWP, PV and local government teams and will endorse the strategies created. The revised governance supports the transition to a risk-based approach by ensuring that risks are dealt with in the most appropriate way, and that actions arising from SBMPs are implemented by the relevant agency.

IGEM considers that these governance arrangements will embed engagement with EMV on landscape scale bushfire risk management and transition this engagement to business-as-usual.

FINDING

IGEM considers this recommendation is implemented as planned.

4 Concluding remarks

IGEM commends the significant progress and continuing commitment to the reforms of bushfire risk management since the 2015 review and investigation.

IGEM considers that all recommendations arising from the review have either been completed during 2016–17 or the activity has transitioned to business-as-usual.

IGEM considers that one recommendation from the investigation has been completed and two remain ongoing. IGEM will continue to monitor the ongoing recommendations and report on them as part of its annual summary of investigations into breaches of planned burn control lines from 2018.

Much of the work undertaken to address these recommendations builds on DELWP's advances in capability in recent years, including its capability to measure risk and effectiveness of planned burns in reducing risk.

Work continues to develop a cross-tenure operating model and regional strategies for bushfire fuel management, with particular focus on addressing the complexities relating to resources, capability, policy frameworks and legislation.

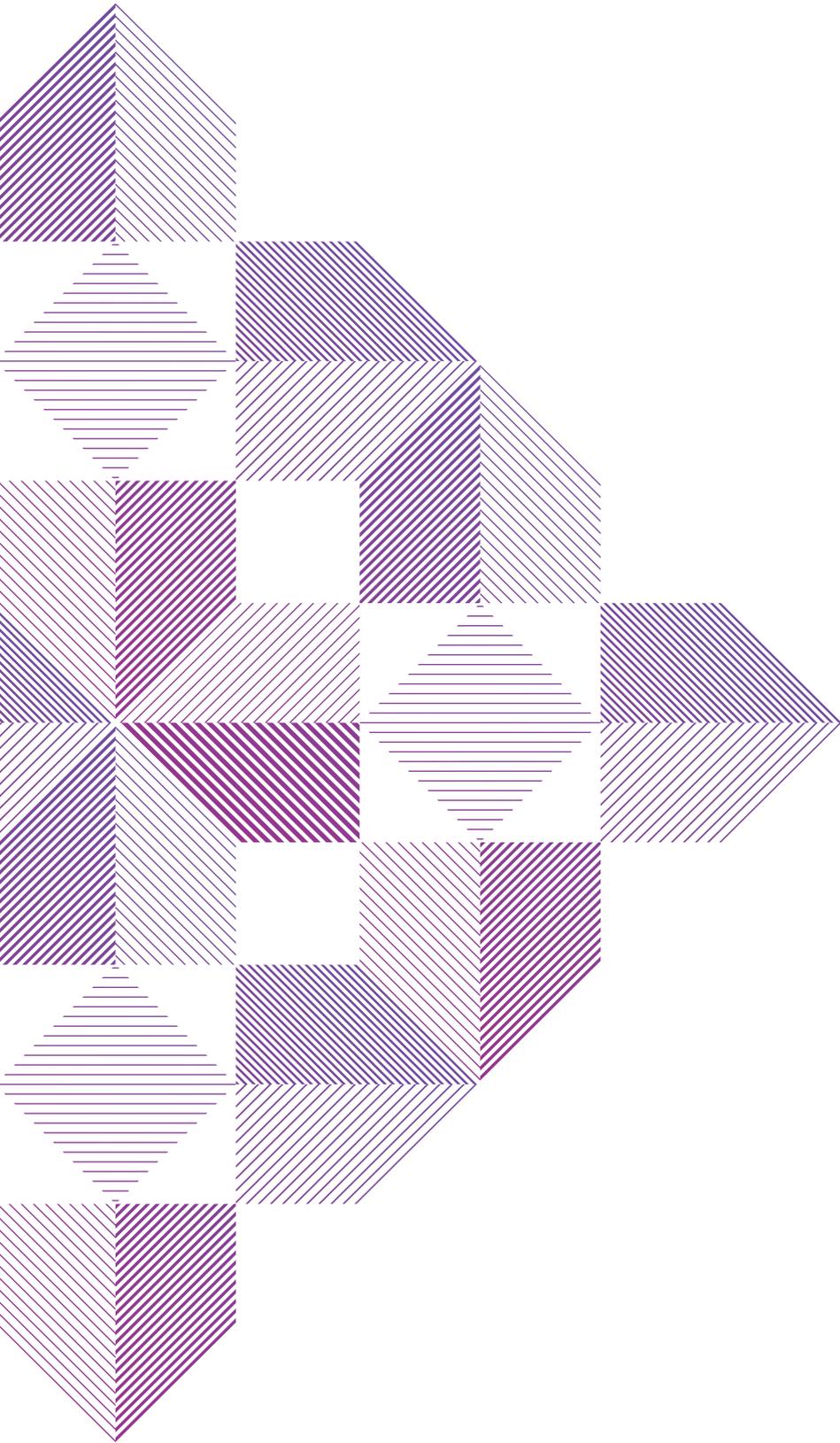
IGEM commends the partnership between DELWP, CFA, EMV and Parks Victoria in implementing the Safer Together approach to reducing bushfire risk in Victoria.



Fire management is one of the tools used to protect the endangered Raymond Island Spider Orchid (Image: DELWP)

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Inspector-General for
Emergency Management

