



State Smoke Framework

November 2016

Version 3.0

**Working in conjunction
with Communities,
Government, Agencies
and Business**

The State Smoke Framework for managing significant smoke or emissions has been approved and endorsed by the following:

Authorised by:

_____ date _____

Craig Lapsley
Emergency Management Commissioner

_____ date _____

Professor Charles Guest
Chief Health Officer
Department of Health & Human Services

_____ date _____

Paul Stacchino
Acting Chief Officer
Metropolitan Fire and
Emergency Services Board

_____ date _____

Steven Warrington
Chief Officer
Country Fire Authority

_____ date _____

Stephanie Rotorangi
Chief Fire Officer
Department of Environment,
Land, Water and Planning

_____ date _____

Nial Finegan
Chief Executive Officer
Environment Protection Authority



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Introduction

Background

In March 2014, the Victorian Government established an independent Board of Inquiry to investigate and report on the circumstances of the Hazelwood Mine fire, the associated emergency response, and the support provided to affected communities.

The Inquiry produced 18 recommendations for consideration by the State of Victoria, 12 of which were directed at the State and 6 of which were directed at GDF Suez. One of the State recommendations identified the need for an integrated state smoke guide to manage the public health impacts from large-scale, significant and prolonged events that generate smoke and emissions.

In response to this recommendation, a State Smoke Framework was developed by Emergency Management Victoria (EMV), the Department of Health & Human Services (DHHS), the Metropolitan Fire Brigade (MFB), the Country Fire Authority (CFA), the Department of Environment, Land, Water and Planning (DELWP), and the Environment Protection Authority (EPA).

This is the third version of the State Smoke Framework (the Framework), a document that will be continually reviewed and updated to remain linked with other recommendations focussed on the State's processes for managing air quality, smoke and emissions from large-scale events. Standards, guidelines, strategies and tools developed under the Framework will also be regularly reviewed, including in response to significant or prolonged events that generate smoke or other emissions.¹

Why do we need a State Smoke Framework?

One of the key findings of the Inquiry into the Hazelwood Mine fire was the need for a more integrated approach to manage the short and long-term risks of smoke and other emissions.

The Framework provides an overarching structure that supports a more collaborative and coordinated approach to management across government departments, agencies, businesses and communities. It ensures that the Victorian government and industry are better able to work with communities before, during and after large-scale, extended and complex events that generate smoke and other emissions.

The health of first responders is also a key focus of the Framework, including associated standards and procedures.

Ultimately, the Framework contributes to the creation of confident, safe and resilient communities that have the information and knowledge to recognise potential hazards and know what to do when such an event occurs.

What is covered in the Framework?

The State Smoke Framework is a strategy for Victoria that identifies the types of events, tools and processes that facilitate coordinated planning, decision-making and management of significant or prolonged events that generate smoke or other emissions.

Events include smoke or emissions from extended bushfires, large-scale planned fuel reduction, peat fires, landfill and transfer station fires, open-cut coal mine fires, tyre fires, industrial and hazardous material fires, or emissions from chemical fires and spills.

¹ For example, in 2016 a review was conducted of the operational application of the State Smoke Framework to the Somerton refuse facility fire, which started on 20 November 2015. The review identified that future application of the Framework would be assisted by finalisation of agency procedures, development of systems to better manage atmospheric monitoring data, provision of training to emergency responders and incident/emergency management personnel and conducting multi-agency exercises focused on smoke management.

Purpose of the State Smoke Framework

The purpose of the Framework and associated planning is to:

- integrate Victoria's emergency management services and planning across the sector;
- respond to community concerns and manage the consequences of large, extended or complex events, including the public health impacts of exposure to smoke or emissions;
- recognise that each extended smoke event is unique, involving different air pollutants that may pose public health risks and specific community concerns; and
- identify potential smoke-related scenarios and the overarching arrangements for managing the impacts of smoke and other emissions on air quality and community health, particularly for events occurring close to populations.

The Framework complements and extends the current 'all communities all emergencies' approach, and also supports communication and community engagement activities.

Specifically, the Framework will ensure:

- incident controllers, DHHS and EPA have the most accurate, timely and relevant information about air quality so that proactive and comprehensive assessments of potential public health risks associated with events in or near communities can be made;
- there are clear triggers for actions during an event for emergency services, agencies (such as the EPA and DHHS) and the community (including workplaces);
- agencies and personnel involved in the response to an incident have the capability (equipment and technical expertise) to undertake monitoring and produce meaningful data;
- public health messages are communicated so they convey clear, action-oriented information; and
- knowledge of different communities informs decisions about the delivery and preparation of information and monitoring how this is received.

Strategic intent of the State Smoke Framework

The Framework is designed to be consistent with the [Emergency Management Manual Victoria \(EMMV\)](#), which clearly identifies an incident controller's uppermost priority as protecting and preserving life.

This includes the:

- safety of emergency services personnel;
- safety of other responding agency personnel;
- safety of community members, including vulnerable community members and visitors/tourists located within the incident area; and
- issuing of community information and community warnings.

Governance

An Interdepartmental Working Group (IDC) oversees and coordinates the Government’s actions to implement the recommendations and affirmations in the Hazelwood Mine Fire Inquiry reports. The IDC has three working groups, one of which is the State Smoke Working Group, as detailed in Figure 2 below.

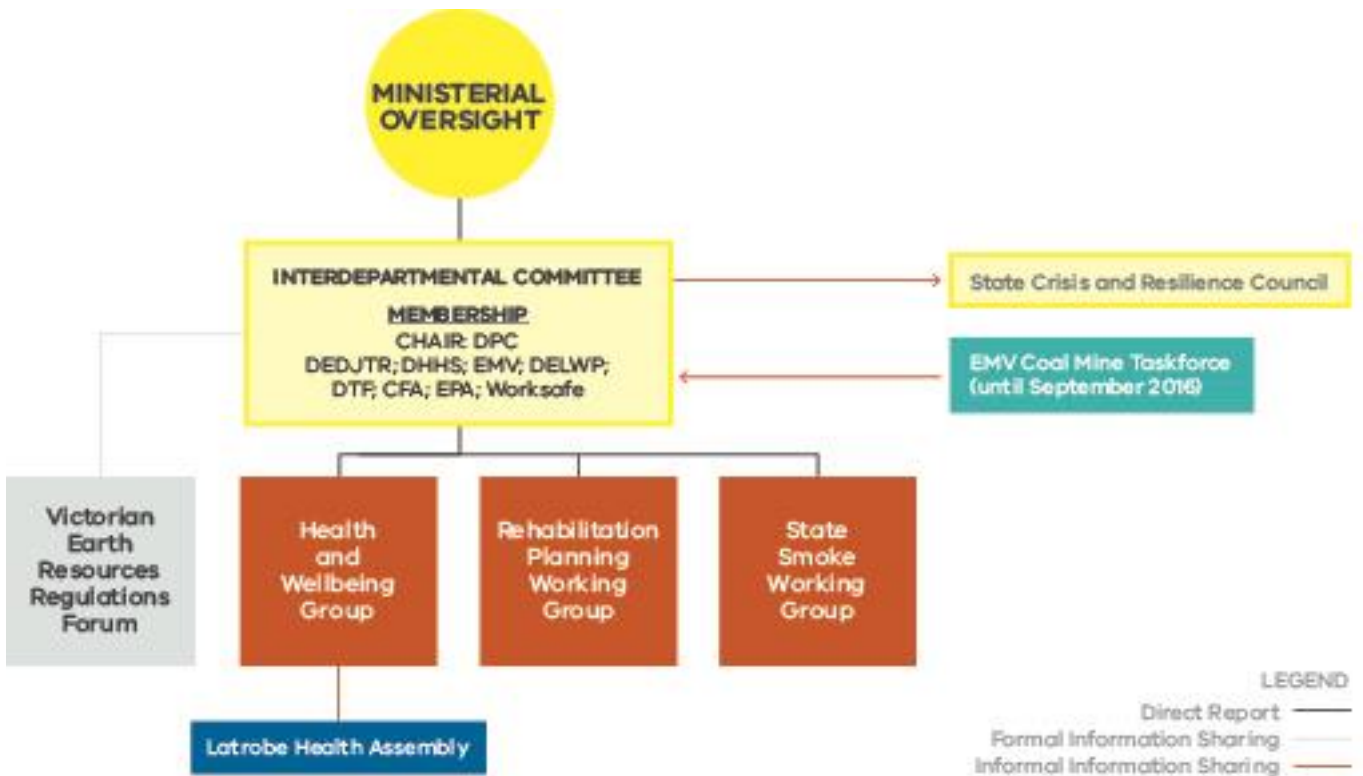


Figure 2: State Smoke Framework diagram

State Smoke Working Group

The State Smoke Working Group, co-chaired by DHHS and EMV, oversees and coordinates implementation of actions and deliverables relating to the State Smoke Framework. The State Smoke Working Group has representation from AV, the CFA, DELWP, the Department of Premier and Cabinet, the EPA, the MFB, WorkSafe and Victoria Police.

The strategic priorities of the State Smoke Working Group are to:

- Provide the community with the information they need to take action to protect their health during significant or prolonged events that generate smoke or other emissions, and in doing so build knowledgeable and resilient communities.
- Build the skills and knowledge of responders to manage significant or prolonged events that generate smoke or other emissions and to manage safety and wellbeing, while protecting communities.
- Continue to build the capability to monitor air quality during these events to provide the best possible information to inform agency, industry and community action.
- Build the capability to predict the extent and impacts of smoke and other emissions to inform actions by agencies, industry and communities.

Structure of the State Smoke Framework

This is the third version of the Framework. It will continue to be informed by events and community needs and updated as the State develops tools and processes around air quality, smoke and emissions.

The diagram below represents the structure of the Framework and its components. It shows that a range of standards, guidelines, strategies and tools can be used for different scenarios (events) that generate smoke or emissions. These tools are designed to help guide the planning and management decisions of incident controllers and supporting agencies before, during and after an event. They also underpin activities that focus on the education and communication needs of responders and communities seeking direction, information and advice

New protocols, standards and guidelines will continue to be developed, particularly those that contextualise the risks posed by certain events requiring specific monitoring or analysis.

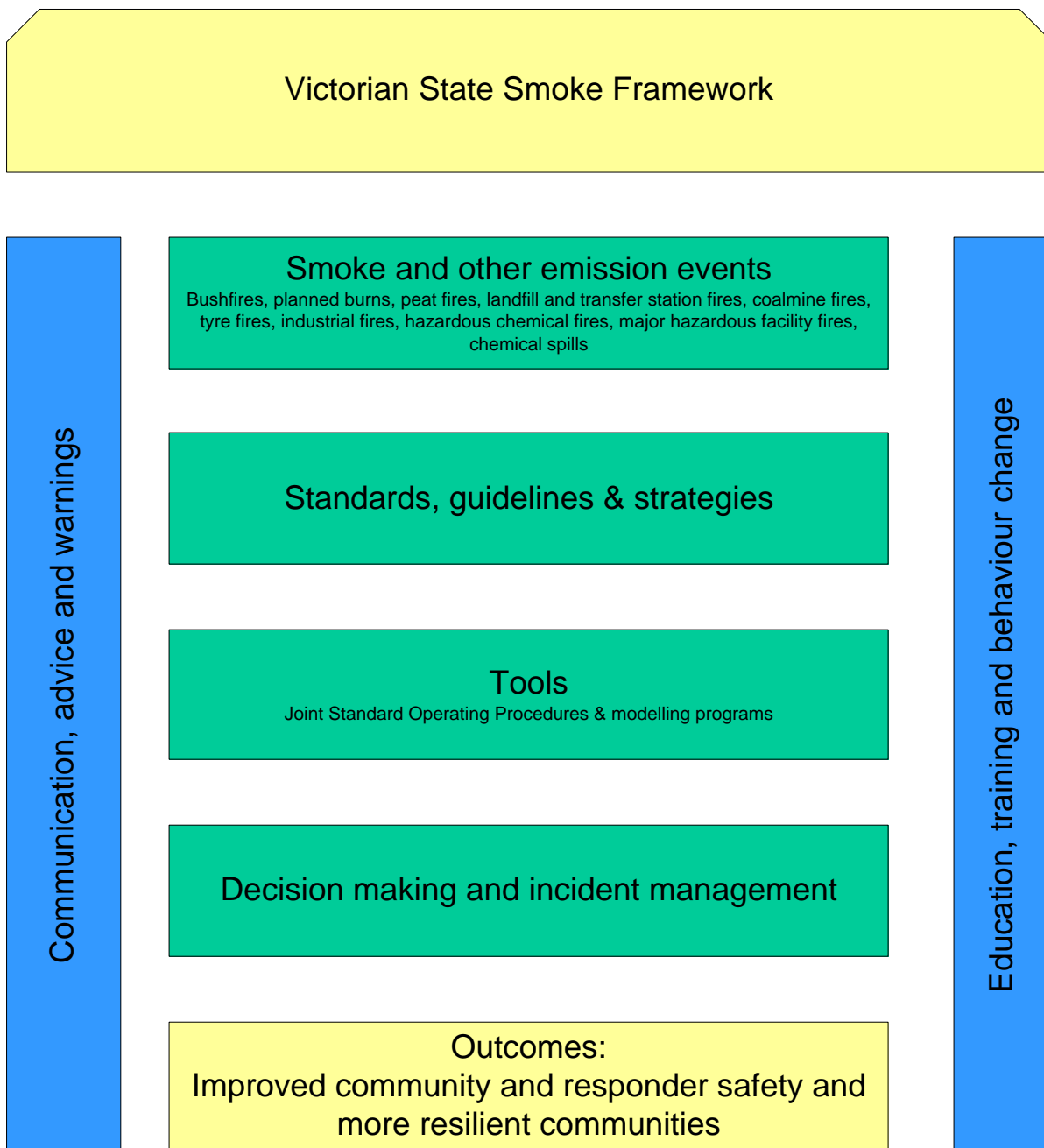


Figure 1: State Smoke Framework diagram

Smoke and other emission events

The Framework is focussed on significant or prolonged events that generate smoke or other emissions that may affect the health of communities. These events may include:

- Bushfires
- Planned burns
- Peat fires
- Landfill and transfer station fires
- Coal mine fires
- Tyre fires
- Industrial fires
- Hazardous chemical fires
- Major hazardous facility fires
- Chemical spills

The Framework recognises that some constituents in smoke, such as fine particles, will be generated during most fires and will generally be most useful in informing precautionary actions to protect community health. However different events may generate other constituents, which require consideration to inform advice. As a result, the Framework is based on a risk assessment and management approach, which broadly includes:

- **Identification of key hazards of concern for the fire or emission event.** This may include for example identification of chemical hazards (such as the products of combustion) or physical hazards (such as fine particles). Hazard identification is typically based on a review of the scientific literature and data gathered from previous fire events. Numerous national and international databases also inform this stage.
- **Application of relevant air quality values for community and occupational exposure to constituents in smoke and emissions.** Ambient (outdoor) air quality values exist for the air we breathe under normal day-to-day conditions. Such values are useful to inform pollution levels generally, however they are generally not applied to significant local emergency events. Rather, specific air quality values have been established for a range of contaminants that may be present in air as a result of emergency events, and are designed to protect the community from one-off or short term exposures. For example first responders work in shifts where exposure times can be managed, depending on the levels of smoke and other emissions in the air, they have workforce oversight, they have the opportunity to monitor personal exposure and have access to personal protective equipment. In comparison, these management options are not available for the general public. This is why health-based standards set to protect community health are different to standards set to protect first responders, also recognising the sensitive sub-populations in the community (such as children, older people and people with heart or lung conditions).
- **Implementation of risk management measures.** This includes monitoring for hazards of concern in smoke as a basis for comparing against established air quality values and providing corresponding advice to the community such as avoiding physical activity, sheltering indoors, temporarily relocating or evacuating.

Standards, guidelines and strategies

A number of standards and guidelines have been developed to date under the Framework to guide assessment and decision-making during smoke events. These include:

- Rapid Deployment of Air Quality Monitoring for Community Health Guideline (December 2015)
- Community Smoke, Air Quality and Health Standard (December 2015)
- Standard for managing Significant Community Exposures to Carbon Monoxide from Smoke (July 2015)

In addition to these newly developed standards and guidelines, a number of other guides are linked to the Framework, to provide support for decision making during outdoor hazardous atmospheres, including:

- Best Practice Approach to Shelter-in-Place (2011)
- Protective Action Decision Guide for Emergency Services during Outdoor Hazardous Atmospheres
- Protective Action Guide for Local Government and Industry during Outdoor Hazardous Atmospheres.

Further detail on the development of standards and guidelines referenced above is included in the *Hazelwood Mine Fire Inquiry: Victorian Government Implementation Plan* (the Implementation Plan, June 2016). The Implementation Plan also includes details of the development of related strategies, including a state-wide approach to detection, analysis and monitoring during significant or prolonged events that generate smoke or emissions.

Tools

A number of tools have also been developed under the State Smoke Framework to support the operational implementation of standards and guidelines, and to ensure coordinated actions between agencies during events that generate smoke and emissions. These include the following Joint Standard Operating Procedures (JSOPs):

- JSOP 3.18 Incident Deployment of Air Quality Monitoring for Community Health (September 2016)
- JSOP 3.19 Managing Significant Community Exposures to Fine Particles from Smoke (December 2015)
- JSOP 3.20 Managing Significant Community Exposures to Carbon Monoxide from Smoke (December 2015)

Plume modelling tools have also been developed and are linked to the Framework, including an atmospheric modelling integration tool (ARGOS) to assist first responders in the decision-making process. This tool provides a more accurate prediction of plume behaviour when compared to the ALOHA plume modelling tool currently accessed by all areas of fire services.

Further detail on the development of these tools is included in the Implementation Plan.

Decision-making and incident management

The Framework standards, guidelines, strategies and tools will help inform the complex decision-making around the management of various events. This includes considering the indirect impacts on communities not immediately affected by an incident or the results of an incident attack strategy deployed to resolve the issue.

Education, training and behaviour change

Training tools have also been developed under the Framework to enable agency staff and the emergency services workforce to understand the purpose of the standards, guidelines and tools, the value they provide when applied appropriately to different scenarios, and how they are used at an operational level. Training will continue to be an important ongoing focus to ensure a successful and coordinated approach to managing events that generate smoke or other emissions and that may pose risks to first responders and the community.

Community education activities are also progressively being developed to ensure greater understanding about the risks from these events, what to look out for and what to do during an event.

Communication, advice and warnings

The application of the Framework's standards, guidelines and tools will provide an enhanced understanding of the impact of incidents on communities and the workforce. It will also help shape the way information is communicated so that workers and the community clearly understand how to be safe, prepared and understand what to do before, during and after an incident.

Outcomes

Under the Framework, the community and emergency workforce will be provided with clear, consistent information, which is based on validated intelligence and data. This will not only help enhance planning across the sector, but will ensure that communities and first responders are safe and resilient.

State Smoke Working Group forward work program

In addition to the standards, guidelines and tools detailed above, the State Smoke Working Group has also developed a number of detailed forward work plans², under the following four key theme areas:

- Air Quality and Public Education
- Training and safety
- Detection, analysis and monitoring
- Predictive services

Examples of priority actions under these themes are:

- delivery of a State Smoke Framework community engagement strategy implementation plan
- development of an ongoing training plan for Incident Controllers and first responders including implementation of health monitoring for first responders when attending events that generate significant smoke or other emissions
- the development of a Detection, Analysis and Monitoring Plan for Victoria for smoke incidents
- establishing an information technology and mapping solution to support toxic plume prediction

² The previous versions of the State Smoke Framework contained actions that were primarily as a result of the Hazelwood Coal Mine Fire Inquiry recommendations and were included in the work plan of the State Smoke Working Group to ensure agency co-ordination and collaboration on their implementation. The status of the actions was resolved at a State Smoke Working Group workshop on 12 September 2016 and are formally reported in the *Hazelwood Mine Fire Inquiry: Victorian Government Implementation Plan*. The annual Work Plan of the State Smoke Working Group includes any ongoing or yet to be completed actions relevant to Inquiry recommendations, and other actions considered by the State Smoke Working Group as important for the ongoing state-wide collaborative effort in planning and managing the response to events that generate significant smoke or emissions events.

Glossary

ALOHA	Plume modelling tool
ARGOS	Atmospheric plume modelling integration tool
AV	Ambulance Victoria
CFA	Country Fire Authority
DELWP	Department of Environment, Land, Water and Planning
DHHS	Department of Health and Human Services
EMC	Emergency Management Commissioner
EMMV	Emergency Management Manual Victoria
EMV	Emergency Management Victoria
EPA	Environment Protection Authority
MFB	Metropolitan Fire Brigade