

# Fundamentals of Extreme Weather and Floods

Edition 1



**Working in conjunction  
with communities,  
government, agencies  
and business**

This document has been endorsed by the State Control Team (SCT) on 15 August 2016, as a supplement to the Fundamentals of Emergency Management (Class 1 emergencies).



Authorised and published by the Victorian Government  
Melbourne August 2016

© Copyright State of Victoria 2016

You are free to re-use this work under a Creative Commons Attribution 4.0 licence, provided you credit the State of Victoria (Emergency Management Victoria) as author, indicate if changes were made and comply with the other licence terms. The licence does not apply to any images, photographs or branding, including Government logos.

This document is also available in Word and PDF format at [www.emv.vic.gov.au](http://www.emv.vic.gov.au)

Cover photo: Victoria State Emergency Service

Photos in this document supplied courtesy of CFA, DELWP, MFB, VICSES and EMV

# Contents

<b>1 Introduction</b>	<b>1</b>
1.1 Purpose	1
1.2 Scope	1
1.3 Audience	1
1.4 Document context	1
1.5 Review	2
<b>2 Principles of Emergency</b>	<b>3</b>
<b>3 State context</b>	<b>4</b>
3.1 Authorising environment and State Emergency Management Arrangements	4
3.2 State Emergency Management Priorities	5
3.3 Emergency risk management	5
3.3.1 Extreme weather climatology	6
3.3.2 River System	6
3.3.3 Floodplain Management	7
3.3.4 Flood Emergency Management	8
3.3.5 Total Flood Warning System (TFWS)	8
3.3.6 Levee management	9
3.3.7 Dam management	9
3.4 Agencies working together as one integrated team	10
3.5 Leadership and decision making	10
<b>4 Community resilience</b>	<b>11</b>
4.1 A 'Safer and More Resilient' community	11
4.2 Shared responsibility	11
4.3 Building Community Resilience	11
4.3.1 Understanding community risk	11
4.4 Building State capability and capacity	12
4.4.1 Capability	12
4.4.2 Capacity	12
4.5 State readiness to respond to emergencies	12
<b>5 Workplace Safety</b>	<b>13</b>
5.1 Safety is paramount	13
5.2 Agency Responsibility	13
5.3 Reporting and monitoring health and safety incidents	13
5.4 Individual Responsibility	13
5.5 Situational Awareness and Dynamic Risk Assessment	14
5.6 Health and Welfare	14

<b>6 Emergency Response Arrangements</b>	<b>15</b>
6.1 Concepts of Emergency Response	15
6.2 Tiers of Emergency Response Management	15
6.3 Command, Control and Coordination	16
6.3.1 Control	16
6.4 State Control Tier	16
6.5 Regional Control Tier	16
<b>7 Incident Management</b>	<b>17</b>
7.1 Australasian Inter-service Incident Management System (AIIMS)	17
7.2 Incident Control	17
7.3 Incident levels	17
7.4 Support for the Incident Controller	18
7.5 Control Facilities	18
7.6 Managing the Incident Response	18
7.6.1 Risks and priorities	18
7.6.2 Local knowledge	18
7.6.3 Incident strategies	19
7.7 Escalated Emergency Management Arrangements	19
7.8 Intelligence	20
7.8.1 Data Collection	20
7.8.2 Data Analysis	20
<b>8 Operational Communications</b>	<b>21</b>
<b>9 Community Safety During Emergencies</b>	<b>22</b>
9.1 Responsibility	22
9.2 Information and warnings	22
9.2.1 BoM Responsibilities	23
9.2.2 Melbourne Water Responsibilities	24
9.2.3 Water Storage Owners Responsibilities	24
9.2.4 VICSES Responsibilities	24
9.2.5 Issuing warnings	24
9.3 Community safety options	25
9.3.1 Shelter in place	25
9.3.2 Rescue	25
9.4 Evacuation	26
9.4.1 Isolated properties	26
9.5 Restricting access	26
9.6 Consequence management	26
9.7 Impact assessment	27

<b>10 Relief and Recovery</b>	<b>28</b>
10.1 Provision of relief	28
10.2 Integration of recovery	28
10.2.1 Transition to recovery	29
10.3 Recovery operations	29
<b>11 After An Emergency</b>	<b>30</b>
11.1 Demobilisation	30
11.2 Review and performance evaluation	30

## Figures and Tables

Figure 1 - Victorian Catchment Boundaries	7
Figure 2 - Components of the Total Flood Warning System	8
Table 1 - Transfer of Control	19
Table 2 - Warning Categories	25



# 1 Introduction

## 1.1 Purpose

This document outlines the principles underpinning the emergency management activities to manage severe weather phenomena such as, storm and flood by the emergency management agencies.

This is the first edition of this document, produced during a period of change within the Victorian emergency management sector.

## 1.2 Scope

In the context of this document the natural phenomena of extreme weather and flooding will be considered.

## 1.3 Audience

This document is intended to provide all levels of emergency management personnel with the guiding principles for the management of extreme weather and floods. It also provides community members with an understanding on how the agencies will work together in the management of such events.

## 1.4 Document context

This document is common doctrine that is developed by and for Country Fire Authority (CFA), Department of Environment, Land, Water and Planning (DELWP), Metropolitan Fire Brigade (MFB), Victoria State Emergency Service (VICSES) and Emergency Management Victoria (EMV). The intent of common doctrine is to ensure that operational activities are undertaken in a consistent manner and to aid the interoperability of the services. Common doctrine, including procedures, takes precedence over any agency doctrine. However, agencies may continue to issue agency specific doctrine to compliment common doctrine to cover any specific or unique agency requirements.

This document is situated within the fundamental layer of doctrine, as a supplement to the Fundamentals of Emergency Management (Class 1 emergencies). The layout of this document reflects the sections which are in the Fundamentals of Emergency Management (Class 1 emergencies).

The references at the end of each section provide further information. Additional information can also be found in agency-specific doctrine.



## 1.5 Review

This document is current at the time of publishing and will be reviewed as required. It remains in effect until modified or terminated in writing.

## 2 Principles of Emergency

The principles within this document are consistent with the Principles contained in the Fundamentals of Emergency Management (Class 1 emergencies).

These principles are;

- Primacy of life
- Community centric
- Unified
- Progressive
- Risk driven
- Integrated and collaborative
- Flexible
- Communicating Information



# 3 State context

## 3.1 Authorising environment and State Emergency Management Arrangements

The *Emergency Management Act (1986 and 2013)* is the empowering legislation for the management of emergencies in Victoria. The Emergency Management Manual Victoria (EMMV) is the principal state document guiding the emergency management arrangements.

The State Emergency Response Plan (SERP) (EMMV Part 3) identifies the organisational arrangements for the response to all emergencies. The SERP Flood Sub-plan which includes the Management of flooding downstream of dams as an attachment, and the SERP Storm Sub-plan providing the arrangements for managing these types of emergencies.

In addition to the common emergency management and agency specific acts, there are a number of other Acts and Regulations that impose restriction on control and support agencies when working in extreme weather and flood events.

The functions of VICSES as described in the *Victoria State Emergency Service Act 2005 (Vic)* are to respond to floods and storms and their effects; and providing rescue services.

The *Water Act 1989 (Vic)* lists the floodplain management functions of Catchment Management Authorities and Melbourne Water. These functions include the determination of the extent and depth of floodwater; the development and implementation of plans; take any action necessary to minimise flooding and flood damage; and to provide advice about flooding and controls. Additional requirements relate to controlling works and structures on floodplains, although enforced through planning controls in planning schemes.

The *Meteorology Act 1955 (Cth)* contains the functions of the Bureau of Meteorology (BoM) including the issue of warnings of gales, storms and other weather conditions likely to endanger life or property, including weather conditions likely to give rise to floods or bushfires.

## 3.2 State Emergency Management Priorities

The State Emergency Management Priorities for extreme weather and floods are consistent with those described in the State Emergency Response Plan.

The State Emergency Management Priorities are:

- Protection and preservation of life is paramount. This includes:
  - Safety of emergency services personnel and
  - Safety of community members including vulnerable community members and visitors/tourists
- Issuing of community information and community warnings detailing incident information that is timely, relevant and tailored to assist community members make informed decisions about their safety
- Protection of critical infrastructure and community assets that support community resilience
- Protection of residential property as a place of primary residence
- Protection of assets supporting individual livelihoods and economic production that supports individual and community financial sustainability
- Protection of environmental and conservation assets that considers the cultural, biodiversity, and social values of the environment.

## 3.3 Emergency risk management

Emergency management involves managing the risk of emergency events on the community and its values. In order to manage risk we need to understand the hazard and its impacts.

In the context of this document, extreme weather includes phenomena associated with severe weather systems and severe thunderstorms such as;

- damaging and destructive winds
- heavy rainfall that may lead to flash flooding
- large hail
- tornados
- blizzards
- storm surge.

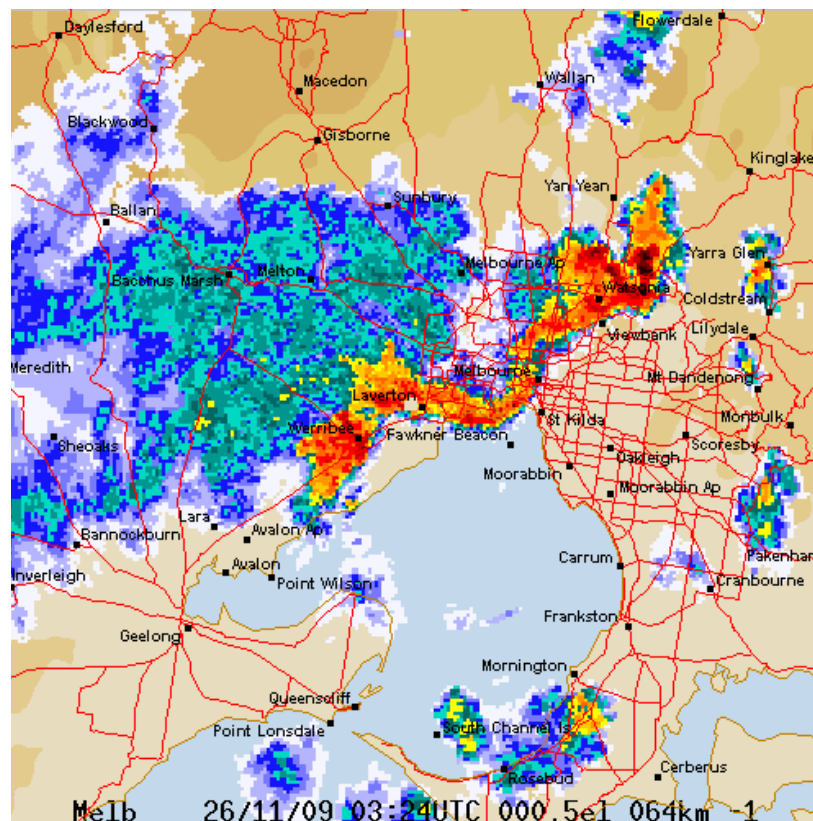
Flooding is generally categorised into two types; riverine and flash.

### 3.3.1 Extreme weather climatology

The most frequent type of extreme weather events are thunderstorms. Although severe thunderstorms can occur at any time, the potential is higher during September through to April.

Wind storms (land gale-force winds) associated with the passage of a cold front or intense low pressure systems across Victoria can occur at any time of year although are more common in the winter and spring months when intense low pressure systems and cold fronts are stronger.

On a seasonal basis, rainfall over the central and southwestern areas of Victoria is at a maximum in late winter and early spring. Flooding in Victoria is largely influenced by rainfall distribution and rainfall intensity and is commonly a winter-spring phenomenon in Victoria, associated with frequent low pressure systems and fronts. Some major flood events have occurred in the summer period, commonly associated with weather systems of tropical origin extending or moving south.



Source: Bureau of Meteorology

Blizzards are confined to alpine areas in Victoria and mainly occur during the winter and early spring months but can also occur in autumn. It does not have to be snowing to have blizzard conditions and the winds should be at least gale force (average 63km/h or more)

### 3.3.2 River System

The river systems in Victoria are divided into 29 catchments, with the Murray River falling under the jurisdiction of New South Wales government to the low water mark on the Victorian bank.



**Figure 1 - Victorian Catchment Boundaries**

### 3.3.3 Floodplain Management

DELWP is responsible for policy and oversight of floodplain risk management arrangements.

Floodplain Risk Management Planning is a subset of the community emergency risk management process focused on identifying and analysing flood risks; and evaluating and recommending appropriate flood risk treatment options. This is best achieved through a flood study, floodplain risk management study and a floodplain risk management plan to identify the flood risks and how these might be best managed. The State Floodplain Management Strategy - sets out the policy framework for managing floodplains in Victoria

Prevention activities cover both structural and non-structural measures. Structural measures have traditionally included flood mitigation works, such as levees, retarding basins, channel modifications and the structural or floor level modifications to buildings. Non-structural measures include land use planning, building controls, and community risk awareness programs.

Catchment Management Authorities (CMAs) and Melbourne Water have statutory functions under the *Water Act 1989* to manage waterways, floodplains and drainage.

Local government has a significant role to play in the administration of land use planning arrangements and flood mitigation at the local level.

### 3.3.4 Flood Emergency Management

Flood emergencies by their nature require a multi-agency response. Part 7 of the EMMV Emergency Management Agency Roles, identifies VICSES as the control agency for Flood Response.

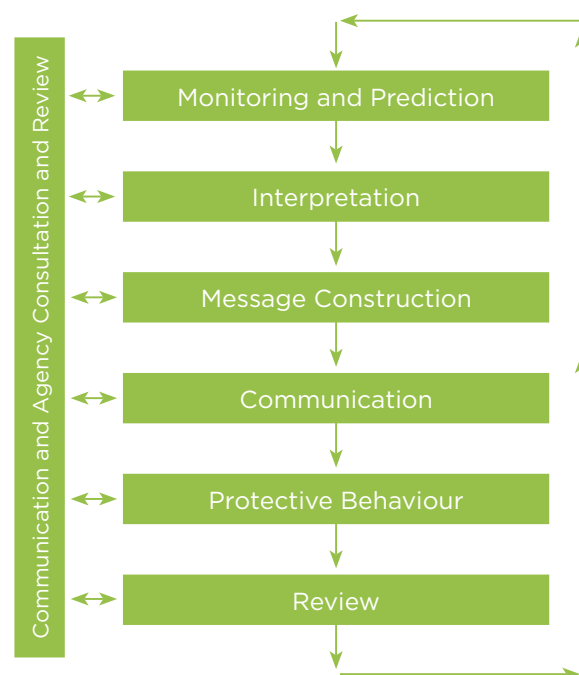
Flood emergency management brings together Whole-of-Victorian-Government resources and the community to take appropriate and timely action in relation to flood preparedness, response, relief and recovery.

### 3.3.5 Total Flood Warning System (TFWS)

The goal of flood warning is to help flood management agencies and the members of flood-prone communities to understand the nature of developing floods so that they can take action to mitigate their effects. To achieve this goal, flood warning systems are established and operated across the state.

A flood warning system is made up of a number of components which need be integrated if the system is to operate effectively. The components of the TFWS are:

- monitoring of rainfall and river flows that may lead to flooding
- prediction of flood severity and the time of onset of particular levels of flooding
- interpretation of the prediction to determine the likely flood impacts on the community
- construction of warning messages describing what is happening and will happen, the expected impact and what actions should be taken
- dissemination of warning messages
- response to the warnings by the agencies.



**Figure 2 - Components of the Total Flood Warning System**

Source: Australian Emergency Management Manual Series, Manual 21 Flood Warning



### 3.3.6 Levee management

There are many levee systems within Victoria and the design, operation and maintenance arrangements vary widely across the state. Some levees are formally maintained, but many are not, therefore, unless documented in emergency response plans, no reliance should be placed on levees that are not maintained. Where maintained levee managers are required keep the control agency informed of the levee status and be prepared to provide expert advice about the design and construction of their levee, and any concerns over its performance.

During an incident the *Victoria State Emergency Service Act 2005* provides for personnel authorised by VICSES the power to construct, remove, or alter a levee and/ or remove debris where there is a reasonable belief that removal is required to protect life or property.<sup>1</sup>

### 3.3.7 Dam management

DELWP has a regulatory role in the safety of dams in Victoria. This includes dams categorised as farm dams, private dams and dams operated by water corporations, Parks Victoria and local government.

Dam owners and operators are responsible for the maintenance, operation and management of the dam.

Generally, large dams in Victoria are not designed or operated specifically for flood mitigation, although some flood mitigation is provided as a result of the flow being attenuated by the dam.

Only a small number of dams have spillway gates, providing the capability to make flow releases prior to or during flooding.

---

<sup>1</sup> These powers are due to commence in the latter half of 2016.

### 3.4 Agencies working together as one integrated team

The management of emergencies is a shared responsibility involving many organisations and people in the community. Although some organisations have specialist roles, emergency management is not something done by one single organisation or sector to, or for the rest of the community. Emergency Services work in conjunction with communities, government, agencies and business.

### 3.5 Leadership and decision making

The emergency management arrangements in Victoria acknowledge that, generally, the best decisions will be made by those closest to the incident. The concept of leadership and decision making supports an organisational culture where senior leaders are comfortable delegating decisions, and subordinate leaders accepting decision-making responsibility.

#### Further Information

- *Emergency Management Act (1986 and 2013)*
- *Meteorology Act 1955*
- *Victoria State Emergency Service Act 2005*
- *Water Act 1989*
- Emergency Management Manual Victoria
- State Emergency Response Plan Storm Sub-plan
- State Emergency Response Plan Flood Sub-plan
  - Management of flooding downstream of dams
- State Floodplain Management Strategy
- Australian Emergency Manual Series, Manual 21 Flood Warning

# 4 Community resilience

## 4.1 A 'Safer and More Resilient' community

Emergency Management agencies, consistent with the Fundamentals of Emergency Management (Class 1 emergencies), aim to support the State in building community resilience through the reduction of the impacts and consequences of extreme weather and flood events on the community.

## 4.2 Shared responsibility

All Victorians; individuals, communities, business and government have a responsibility for the preventing, planning, preparing, responding and recovering from extreme weather and flood events.

## 4.3 Building Community Resilience

Agencies work in partnership with communities and government and non-government organisations to build community resilience through programs that reduce the instance, severity of and consequences of emergencies.

The agencies support communities to take control and exercise greater autonomy in preventing, planning for, preparing for and recovering from emergencies. This involves the agencies listening, informing, educating and involving communities in a particular policy area or issue.

### 4.3.1 Understanding community risk

Catchment Management Authorities regularly undertake flood studies across the state to assist in the planning and prevention of flooding on communities. The outcomes of these studies inform flood protection and planning schemes.

To assist the community in understanding their risk and to support informed decision making, VICSES has developed a number of flood guides and emergency plans to explain local flood risks for at risk communities and provide advice on how to prepare for and respond to flood events.

## 4.4 Building State capability and capacity

The tools, systems and resources that support the agencies to manage extreme weather and flood emergencies build the states capability and capacity to manage these emergencies.

### 4.4.1 Capability

No one agency can manage a major emergency alone. In order to effectively manage the impacts of emergencies the agencies undertake a range of activities across the areas of mitigation, forecasting, monitoring, warnings, response, and recovery. These activities include common shared training programs and the procurement of specialist resources to support response personnel to safely and effectively manage the emergency.

### 4.4.2 Capacity

In order to respond to extreme weather and flood events the agencies have established a number of mechanisms to enhance the state's capacity.

These include;

- Contractual arrangements in order to access personnel from the private sector providing expertise, in flood hydrology, mapping and engineering, to support intelligence and operational decision making.
- Memorandums of Understanding have been established with NSW and SA to ensure that operational activity across the borders is managed in a unified and consistent manner.
- Use of local knowledge through the community observer networks established through VICSES and other local networks such as local government, CMAs, other agencies and community groups.
- Investment in the development of a flood intelligence platform and monitoring systems, assist in the gathering and collating data.

## 4.5 State readiness to respond to emergencies

Readiness arrangements for the State are scalable, adaptable, and based on risk. On a monthly basis BoM provide DELWP and VICSES risk assessment briefings on the rainfall outlook and flood potential. The outcomes from these briefings inform the readiness planning undertaken by these agencies.

### Further Information

- State Monthly Readiness Plan – Bushfire, Flood, Extreme Weather and Heat

# 5 Workplace Safety

## 5.1 Safety is paramount

The agencies are committed to achieving and maintaining the highest standards in protecting the health and safety of employees, volunteers and contractors. Consistent with the state emergency management priorities, the health and safety of agency personnel is paramount in all emergency management activities. All agencies and individuals are responsible to ensure that they maintain their safety at all times. Anywhere agency personnel operate, is considered a workplace for the purposes of the *Occupational Health and Safety Act 2004* (the OHS Act).

## 5.2 Agency Responsibility

Agencies have undertaken risk assessment (job safety analysis) to formulate the systems of work for tasks that may be undertaken during these types of events, to ensure the safety of agency personnel and those affected by their activities.

To support working safely in extreme weather and flood environments, agencies have tailored training material to inform agency personnel of the risk they may face.

## 5.3 Reporting and monitoring health and safety incidents

Reporting and monitoring health and safety incidents is consistent with the Fundamentals of Emergency Management (Class 1 emergencies).

## 5.4 Individual Responsibility

Emergency response and associated activities are inherently dangerous and agency personnel may face hazards despite the systems or controls put in place. In order to maintain personal safety, agency personnel need to use their knowledge, skills, training and experience to manage their own safety and communicate safety issues to others.

Agency personnel have a responsibility to ensure that they work in accordance to agency systems of work, and ensure their actions do not result in unacceptable risk to themselves, their co-workers or the community.

## 5.5 Situational Awareness and Dynamic Risk Assessment

Personnel are trained to monitor their surroundings, maintain situational awareness and to use a dynamic risk assessment process to address hazards in the workplace.

When operating in extreme weather and flood environments agency personnel need to constantly be undertaking a dynamic risk assessment (DRA) to ensure that they maintain their safety.

There are a number of significant risks agency personnel need to consider when operating in extreme weather or flood environments, these include;

- Where a 'very dangerous' severe thunderstorm warning has been issued, agency personnel should consider ceasing response to all non-life threatening events outdoors and take shelter.
- Where lightning is occurring, agency personnel need to limit unnecessary work that may be affected by lightning strikes.
- Agency personnel need to consider the risk of tree hazard and other debris within their area of operation, this includes the potential for landslide across roads.
- Responders should not attempt to drive through floodwater unless a DRA has been undertaken and suitable risk management controls are in place.
- Personnel need to avoid entering water flowing at a pace of walking speed or above, unless appropriately trained and equipped to work in these environments.
- Floodwater is toxic, agency personnel should attempt to reduce contact with floodwater, where possible. If contact is made appropriate decontamination methods need to be used.

## 5.6 Health and Welfare

Agencies have a range of mechanisms in place to manage the health, safety and welfare of their personnel during operational activity and normal business. Systems, procedures and guidelines are established to manage the various aspects of health and welfare.

### Further Information

- *Occupational Health and Safety Act 2004*
- SOP J3.04 – Incident Safety Officer – Class 1 emergencies
- SOP J3.11 – Red Flag Warnings
- SOP J8.01 – OH&S Incident Response – Class 1 emergencies
- SOP J8.02 – Dynamic Risk Assessment
- Safe Work Australia, Code of Practice: How to manage work health and safety risks, 2011

# 6 Emergency Response Arrangements

## 6.1 Concepts of Emergency Response

The concepts of emergency response are taken directly from the emergency response concepts applying to all hazards, found in the Fundamentals of Emergency Management (Class 1 emergencies)

## 6.2 Tiers of Emergency Response Management

Victorian emergency response management operates at the following three tiers:

- incident
- region
- state.

Ordinarily, the three tiers of emergency response management are applied when managing extreme weather and flood events. Depending on the scale and nature of the event a regional tier may not be established.

More information can be found in the Fundamentals of Emergency Management (Class 1 emergencies).



## 6.3 Command, Control and Coordination

Victoria bases its emergency response arrangement on the management functions of command, control and coordination. Further detail can be found in the Fundamentals of Emergency Management (Class 1 emergencies).

### 6.3.1 Control

VICSES will assume overall control of the response to storm and flood incidents. Other agencies will be requested to support operations as detailed in state arrangement. Control and coordination of an incident shall be carried out at the lowest effective level and in accordance with the State Emergency Response Plan (EMMV Part 3).

#### Management of flooding downstream of dams

DELWP are the designated control agency for the management of dam safety incidents, these events are management through the Class 2 emergency arrangements.

Where riverine flooding is already in the landscape or where significant community consequences are like to result from a dam safety incident then VICSES will be designated as the control agency, and manage as a Class 1 emergency.

## 6.4 State Control Tier

The arrangements for the State tier are applied consistent with the Fundamentals of Emergency Management (Class 1 emergencies).

## 6.5 Regional Control Tier

The arrangements for the Regional tier are applied consistent with the Fundamentals of Emergency Management (Class 1 emergencies).

#### Further Information

- Emergency Management Manual Victoria
  - Part 3: State Emergency Response Plan
- SOP J3.08 – Appointment of Regional and Level 3 Incident Controllers
- SOP J3.14 – Control of Class 1 emergencies
- SOP J3.15 – Transfer of Control and IMT Relocation for Class 1 emergencies
- Australasian Inter-service Incident Management System 4th Edition

# 7 Incident Management

## 7.1 Australasian Inter-service Incident Management System (AIIMS)

The agencies apply the principles of the Australasian Inter-service Incident Management System (AIIMS) to manage all incidents. AIIMS uses the following principles to manage incidents:

- flexibility
- management by objectives
- functional management
- span of control
- unity of command.

AIIMS provides a structure and process of delegation to ensure that all vital management and information functions are adequately performed. AIIMS is an adaptable and scalable system, which expands to the extent that is required for the size and complexity of an incident.

The AIIMS arrangements for extreme weather and flood events are applied consistent with the Fundamentals of Emergency Management (Class 1 emergencies).

## 7.2 Incident Control

The incident control arrangements of appointing a single agency to control response activities, and a single person responsible for the overall management of an incident, are applied consistent with the Fundamentals of Emergency Management (Class 1 emergencies).

## 7.3 Incident levels

The classification of an incident is based on the size, scale and risks of the incident and the resources needed to manage it. This classification allows the agencies to communicate the complexity of the incident and scale the response to suit the incident.

The incident levels, 1, 2, and 3 are applied consistent with the Fundamentals of Emergency Management (Class 1 emergencies).

## 7.4 Support for the Incident Controller

The support for the Incident controller is consistent with the Fundamentals of Emergency Management (Class 1 emergencies).

When established the intelligence section supports the incident controller through providing technical specialists. These specialists may include flood analyst, water services, and technical advice such as engineers or hydrologists.

## 7.5 Control Facilities

A range of static or mobile facilities support the line of control by providing the appropriate physical and technical infrastructure. These facilities may also be activated in anticipation of an incident to monitor the situation.

More information regarding control facilities and infrastructure can be found in the Fundamentals of Emergency Management (Class 1 emergencies).

## 7.6 Managing the Incident Response

This section contains considerations additional to those found in the Fundamentals of Emergency Management (Class 1 emergencies) related to managing specific extreme weather and flood scenarios.

### 7.6.1 Risks and priorities

The identification and management of risks at an incident level is applied consistent with the Fundamentals of Emergency Management (Class 1 emergencies).

During normal operations, emergency services respond to Requests For Assistance (RFA) in the priority order in which they are received. In the event that a large number of RFAs are received, a process of triaging may be utilised to further prioritise the tasking of emergency personnel.

When triaging is activated, the decision on the prioritisation of tasking will be guided by the State Emergency Management Priorities.

### 7.6.2 Local knowledge

There are a range of information sources available to emergency services before, during and after incidents. Information sources many include local knowledge obtained from trusted sources such as community members and organisations. Local knowledge information can provide valuable local information about incidents on how they have or may evolve.

Community observer networks have been established by VICSES in areas where existing networks are not available, and the need for local knowledge has been identified. VICSES also works with other organisations and agencies to access local knowledge through existing networks. Where these network arrangements exist, they are documented within Municipal Flood Emergency Plans.

### 7.6.3 Incident strategies

The Incident Controllers employ offensive, defensive or a combination of these strategies in the management and resolution of an incident.

Due to the nature and type of extreme weather and flood events, incident controllers rely significantly on defensive strategies being employed to resolve the incident. Defensive strategies fall into the broad categories of protection, rescue and render safe.

Extreme weather cannot be prevented; incident strategies post impact focus toward managing the consequences rather than preventing the cause.

## 7.7 Escalated Emergency Management Arrangements

Triggers for transfer of control from day to day operations to a control facilities are defined as follows;

PHENOMENON	ICC	RCC	SCC
Severe Weather	As outlined in Regional Storm Plan	<ul style="list-style-type: none"><li>• Predicted high-end event; or</li><li>• Activation of an ICC</li></ul>	<ul style="list-style-type: none"><li>• Predicted high-end event; or</li><li>• Activation of an ICC</li></ul>
Severe Thunderstorms	As outlined in Regional Storm Plan	<ul style="list-style-type: none"><li>• Predicted high-end event; or</li><li>• Activation of an ICC</li></ul>	<ul style="list-style-type: none"><li>• Predicted high-end event; or</li><li>• Activation of an ICC</li></ul>
Very Dangerous Severe Thunderstorms	As outlined in Regional Storm Plan	<ul style="list-style-type: none"><li>• Occurrence of very dangerous thunderstorm; or</li><li>• Activation of level 3 ICC</li></ul>	<ul style="list-style-type: none"><li>• Occurrence of very dangerous thunderstorm; or</li><li>• Activation of level 3 ICC</li></ul>
Flood	<ul style="list-style-type: none"><li>• Potential or actual widespread flooding across a catchment; or</li><li>• Moderate-major flood warning issued, with community consequences; or</li><li>• Risk of significant dam failure</li></ul>	<ul style="list-style-type: none"><li>• Potential or actual widespread flooding across multiple catchments; or</li><li>• Activation of a level 3 ICC; or</li><li>• Risk of significant dam failure</li></ul>	<ul style="list-style-type: none"><li>• Potential or actual widespread moderate-major flooding across multiple catchments; or</li><li>• Activation of level 3 ICC; or</li><li>• Risk of significant dam failure</li></ul>

**Table 1 - Transfer of Control**

## 7.8 Intelligence

The existence and development of intelligence supports emergency services to determine the most appropriate course of action to resolve the incident.

Flood intelligence enables an incident management team to determine, the likely impacts, what actions will need to be taken by agencies and what information and advice should be provided to community members.

VICSES works closely with CMAs, DELWP, other agencies and trusted local sources, as appropriate, to ensure available sources of flood intelligence are utilised. Flood Emergency Plans are the key source of flood information this is complemented with realtime data and monitoring.

### 7.8.1 Data Collection

In partnership, DELWP, CMAs, VICSES and municipalities coordinate the collection, collation, analysis, interpretation and dissemination of post-flood extent and survey levels, and ensure that relevant information is available through the impact assessment process.

Stream gauges and other equipment utilised for flood warning services are maintained and repaired by Regional Water Monitoring Partnerships managed by DELWP.

### 7.8.2 Data Analysis

VICSES has entered into agreements with a number of engineering consulting firms to deliver technical services to support the intelligence unit during operations. These agreements include water engineering (capable of providing flood intelligence) and geotechnical engineers (capable of providing advice on levees and dams).

#### Further Information

- Emergency Management Manual Victoria
  - Part 3: State Emergency Response Plan
- Emergency Management Team Arrangements (EMV, 2014)
- State Emergency Response Plan Storm Sub-plan
- State Emergency Response Plan Flood Sub-plan
  - Management of flooding downstream of dams
- SOP J3.03 – Incident Action Planning
- SOP J3.04 – Incident Safety Officer – Class 1 emergencies
- SOP J3.08 – Appointment of Regional and Level 3 Incident Controllers
- SOP J3.09 – Resource Request Process
- SOP J3.15 – Transfer of Control and IMT Relocation for Class 1 emergencies

# 8 Operational Communications

Operational communications are applied during extreme weather and flood events are consistent with the Fundamentals of Emergency Management (Class 1 emergencies).



## Further Information

- SOP J2.02 – Incident Communications Plans and Emergency Alerting System (Paging)/ Radio Use During Periods of High Activity
- SOP J3.06 – Incident Briefings
- SOP J3.11 – Red Flag Warnings
- SOP J3.16 – Significant Event Notification
- SOP J8.01 – OH&S Incident Response – Class 1 emergencies

# 9 Community Safety During Emergencies

## 9.1 Responsibility

Consistent with Fundamentals of Emergency Management (Class 1 emergencies), the incident controller is responsible to take action to minimise the impact of an emergency and protect the community.

## 9.2 Information and warnings

Warnings for extreme weather events are provided by the BoM, Melbourne Water and VICSES.

Principles applied in the provision of public information and warnings shall be consistent with the concepts outlined in the Victoria Emergency Warning Protocol and Total Flood Warning System.

Warnings will be issued where predictions are available. In the case where there is no or limited prediction information available, warnings will only be issued based on local knowledge and/or advice from the Incident Emergency Management Team (IEMT)

In the event that the incident crosses the border, warnings and information will be issued in conjunction with the control agency of the neighbouring state.

Under the BOM Service Level Specification for Flood Forecasting and Warning Services for Victoria the Bureau flood forecasting and warning services is confined to dealing with riverine flooding where typical rain-to-flood times are six hours or more. Flash flooding (rain-to-flood times less than six hours) and flooding caused by elevated sea levels are not covered, nor are the weather forecasting and other services the Bureau provides that contribute to the flood forecasting and warning Service, including Severe Thunderstorm and other Weather Warnings, provision of radar data and rainfall forecasts.

The responsibility for flood modelling and prediction services for the Melbourne Metropolitan catchment rests with Melbourne Water.



### 9.2.1 BoM Responsibilities

BOM are required under the *Meteorology Act 1955 (Cth)*, S6.1c for the issue of warnings of gales, storms and other weather conditions likely to endanger life or property, including weather conditions likely to give rise to floods or bushfires.

The official forecasts and warnings for extreme weather and flood events are issued using the following areas

- River basins (Flood Watches)
- Key locations on rivers and creeks (Flood Warnings)
- Land and coastal forecast districts (Severe Weather and Severe Thunderstorm Warnings)

The BOM provide forecasts for predicted levels or flood class levels (minor, moderate and major) for some locations in Victoria. Not all flood risk locations across Victoria are covered by this level of service.

The BOM service level standards (SLS) define the nature and type of warnings provided for various locations across the state. Prediction locations are categorised into the following types; forecast, data and information. The prediction type may be quantitative, qualitative or generalised and includes height and timing information where available.

## 9.2.2 Melbourne Water Responsibilities

Melbourne Water acts as a flood prediction and warning agency for Greater Melbourne Metropolitan catchments and provides flood forecasts to the BOM who disseminate official forecasts and warnings

## 9.2.3 Water Storage Owners Responsibilities

Water storage owners are required to provide information to the downstream community where increased flows from the water storage are expected. In the instance that the increased flow will be at or above the minor flood warning level the water storage owner is required to advise BOM in order for flood warnings to be issued.

## 9.2.4 VICSES Responsibilities

VICSES has a duty to ensure timely issue of warnings and information to the community

### 9.2.4.1 Flood

VICSES will issue warnings for flood events on advice of a BoM flood prediction. These warnings contain information such as current flood situation, likely future flood consequences, actions required to protect life and property, how to access further information about flooding and how to obtain emergency assistance.

### 9.2.4.2 Storm

VICSES will issue warnings with enhanced community actions and advice, where this adds value to the BOM warning and prediction, and/ or the potential for large scale community consequences are foreseen. Where possible local input will be sought to inform messages issued to the community.

### 9.2.4.3 Dam

In the instance of dam incidents that have the potential to have community consequences VICSES will support DELWP in providing warning and/ or advice to the community.

## 9.2.5 Issuing warnings

There are a variety of methods that agencies use to disseminate warnings, and multiple formats should be utilised where possible to allow maximum reach to the affected community.

In the initial stages of some emergencies there may be little or no opportunity to provide a warning. In extreme weather events the warning issued by the BOM may be assessed as the most appropriate warning, with no supplementary warning issued by the control agency.

The following table describes the linkages between the alert category and the types of extreme weather and flood warnings issued by VICSES.

ALERT LEVEL	STORM	FLOOD	DAM
Advice	** Severe Weather **Severe Thunderstorm	Flood Watch	Dam Incident
Watch and Act		Flood (no flood class level) Minor Flood Moderate Flood	Dam Emergency
Emergency Warning	Very Dangerous Severe Thunderstorm	Major Flood Prepare to Evacuate Evacuate Immediately	Prepare to Evacuate Evacuate Immediately

\*\* Issuing messages relating to Severe Weather and Severe Thunderstorm Warnings is at the discretion of the Incident Controller/State Agency Commander or delegated representative.

**Table 2 - Warning Categories**

## 9.3 Community safety options

Community members respond to the threat of an emergency in a variety of ways. A range of safety options, both personal and communal, are required to support their responses.

The range of safety options available should be appropriate to the local circumstances and identified in local plans. Not all safety options will be available in all circumstances, and some options will be more viable for some groups than for others.

### 9.3.1 Shelter in place

Shelter-in-place may be indicated where it is considered that the process of evacuation poses a greater risk to life than that remaining in-situ.

Where indicated, if taking shelter in flash flood environments, people are advised to take shelter in the highest point such as, within a building.

### 9.3.2 Rescue

Rescue activities should be seen as an option of last resort, as they place emergency responders into high risk environments. Rescue should only be undertaken by trained personnel.

In flood environments, rescue needs to be considered when planning for evacuation or shelter-in-place is being undertaken.

## 9.4 Evacuation

Evacuation is a risk management strategy which may be used as a means of mitigating the effects of an emergency or disaster on a community. It involves the movement of people to a safer location.

Flood evacuation plans exist as part of Municipal Flood Emergency Plan in some high risk communities.

Evacuation is conducted in line with the SOP J3.12 Evacuation, and the Evacuation Guidelines.

Levees are primarily a mechanism for the protection of property, not life. No levee is flood proof. Where there is potential for levee over-topping or a levee breach, a decision to evacuate needs to be considered.

### 9.4.1 Isolated properties

Isolation of properties can often occur in flood events. Where possible, people should be encouraged to relocate from their property prior to any threat of isolation, as isolation is not without risk.

## 9.5 Restricting access

Agencies may restrict the access into the incident area to maintain the safety of personnel and community members; and to protect the incident area.

## 9.6 Consequence management

The State aims to achieve a safer and more resilient community through reducing the consequences of emergency events on the community and its values. Incident Controllers are responsible for identifying the broader risks and consequences of the emergency and putting in place processes to manage these.

The following outline potential consequences of extreme weather and flood on the state;

- Substantial damage or demand to the continuity to electricity supplies
- Sustained or widespread critical telecommunication outage
- Large scale or wide spread evacuation
- Major disruption to transport infrastructure significantly affecting passenger and freight operations
- Major economic cost to State
- Significant loss of water supply for a large community or regional area
- Significant loss and damage to environment
- Residual water in the landscape after flood peaks increase risks to human health, community wellbeing and the functioning of regional economies



## 9.7 Impact assessment

Impact assessment will be conducted consistent with the Fundamentals of Emergency Management (Class 1 emergency).

### Further Information

- Emergency Management Manual Victoria
  - Part 3: State Emergency Response Plan
  - Part 4: State Emergency Relief and Recovery Plan
  - Part 8: Appendix 9 Evacuation Guidelines
- Victorian Warning Protocol
- Emergency Relief Handbook (DHHS / Red Cross, 2014)
- Emergency Management Team Arrangements (EMV, 2014)
- Traffic Management Guidelines
- Impact Assessment Guidelines
- SOP J3.10 – Traffic Management
- SOP J3.11 – Red Flag Warnings
- SOP J3.12 – Evacuation

# 10 Relief and Recovery

## 10.1 Provision of relief

The provision of relief is applied consistent with Fundamentals of Emergency Management (Class 1 emergencies). However during flood events there may be a requirement to focus on the delivery of essential supplies to community members who may be isolated or have chosen to remain with their property.

## 10.2 Integration of recovery

The integration of recovery services into the response to an incident is consistent with the Fundamentals of Emergency Management (Class 1 emergencies).



### 10.2.1 Transition to recovery

Due to the potential prolonged nature of flood events, an Incident Controller may consider the requirement to transition part of an incident area to recovery agencies, before the response has concluded.

This transition needs to be planned and agreed between the control and recovery agencies.

## 10.3 Recovery operations

Recovery operations are consistent with the Fundamentals of Emergency Management (Class 1 emergencies).

#### Further Information

- Emergency Management Manual Victoria
  - Part 4: State Emergency Relief and Recovery Plan
- Emergency Relief Handbook (DHHS/Red Cross, 2014)

# 11 After An Emergency

## 11.1 Demobilisation

Consistent with Fundamentals of Emergency Management (Class 1 emergencies) the removal of response agencies from an incident area is undertaken in a planned and considered way.

Consideration needs to be given for the decontamination and maintenance of vehicles, equipment and clothing, which has been in contact with floodwater. Specific arrangements have been established for the environmentally responsible disposal of sandbags.

## 11.2 Review and performance evaluation

Supporting continuous improvement, performance evaluation and reviews form part of every emergency response. The review and performance evaluations are applied consistent with Fundamentals of Emergency Management (Class 1 emergencies).

### Further Information

- State-wide Guideline - Sandbags
- SOP J12.01 - Real Time Performance Monitoring



