State Emergency Management Plan, Storm Sub-plan

Edition 2.0

SES

VICTORIA
State Government

Acknowledgment of Traditional Owners

The Victoria State Emergency Service respectfully acknowledges the Traditional Owners of the land and waters. We pay our respects to Elders past, present and emerging, and are committed to working with Aboriginal and Torres Strait Islander communities to achieve a shared vision of safer and more resilient communities.

Authority

This plan has been endorsed by the State Crisis and Resilience Council (SCRC) as a sub-plan to the State Emergency Management Plan.

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Document information
Date of approval February 2022

Executive summary

Victoria State Emergency Service (VICSES) led the preparation of this State Emergency Management Plan (SEMP) – Storm Sub-plan.

This SEMP – Storm Sub-plan replaces the State Emergency Response Plan (SERP) – Storm Sub-plan published in May 2016. The plan was prepared with regard to the SEMP, and the Guidelines for Preparing State, Regional and Municipal Emergency Management Plans.

The plan acknowledges emerging risks arising from the significant storm events in June 2021 and October 2021. A comprehensive update of the plan will be completed in 2022 to integrate relevant findings from the current reviews into the June 2021 and October 2021 storms.

The plan includes provision of current and accurate information relating to:

- Any VICSES changes in organisation, agency roles and responsibilities.
- Evolution of the sector in relation to multi-agency and cross border arrangements.
- Operational response in a complex and multi-hazard environment that has impacted Victoria since the previous version published in 2016.
- Alignment with arrangements contained in the SEMP approved in October 2021.

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1. Introduction

1.1 Purpose

This plan outlines the Victorian arrangements for managing storm across all emergency management phases, and replaces the State Emergency Response Plan – Storm Sub-Plan Edition 1 published in May 2016.

The plan's purpose is to provide sources of information and to outline the arrangements for ensuring an integrated and coordinated approach to the State's management of storm events, to reduce the impact and consequences of these events on the community, infrastructure and services. This supports a comprehensive, integrated and coordinated approach and reflects a shared responsibility for storm related emergency management.

1.2 Objective

Victoria's state-level emergency risk assessment, Emergency Risks in Victoria, was published in 2020 and sets out Victoria's emergency risk profile. Storms were assessed as a state significant risk, meaning significant storms were assessed as being a critical and credible scenario for the State.

In alignment with the SEMP, this plan contextualises the current arrangements, roles and responsibilities for storm mitigation, preparedness, response (including relief) and recovery.

The Victoria State Emergency Service (VICSES) on behalf of the Emergency Management Commissioner (EMC) coordinated the development of this plan in conjunction with the following primary stakeholders:

- Department of Environment, Land, Water and Planning (DELWP).
- Bureau of Meteorology (BOM).
- Department of Health.
- Department of Families, Fairness and Housing (DFFH).
- Local Government Victoria.
- Municipal Association of Victoria.

Consultation was conducted with a range of other emergency management agencies.

1.3 Scope

Storms, in the context of this plan, include windstorms, dust storms, tornadoes, snowstorms, storm tides, and blizzards, as well as severe thunderstorms including hailstorms and heavy rain leading to flash flooding.

This plan acknowledges the often-concurrent emerging threats and consequences including epidemic thunderstorm asthma, coastal storm surges, and electricity, water, transport, and telecommunication service disruptions.

The scope of this plan includes:

- Description of potential risks and consequences of storms to the social, built, economic, and natural environments.
- The policy and programs in place to mitigate these risks before, during, and after a storm event.
- The positions with accountability and the agencies responsible for managing specific strategies.
- The multi-agency management arrangements at the national, state, regional and local levels.
- Links to sources of information where the reader can obtain further detail.

References are made to the SEMP where necessary to avoid duplication. It does not include detail about the operational activities of individual agencies.

1.4 Authorising environment

In 2018, amendments to the *Emergency Management Act 2013* (EM Act) were passed through parliament, requiring the Emergency Management Commissioner (EMC) to arrange for the preparation of a SEMP.

The SEMP provides for an integrated, coordinated, and comprehensive approach to emergency management at the state level. It contains provisions for the mitigation of, response to, and recovery from emergencies (before, during and after), and specifies the roles and responsibilities of agencies in relation to emergency management.

Under the EM Act, storms (or other natural events), are a Class 1 emergency. A Class 1 emergency is a major fire or any other major emergency where either the Country Fire Authority (CFA), Fire Rescue Victoria (FRV) or VICSES is the control agency.

The EM Act defines a major emergency as an event which:

- Is a large or complex emergency (however caused), which –
  - (i) Has potential to cause or is causing loss of life and extensive damage to property, infrastructure or the environment; or
  - (ii) Has the potential to have, or is having significant adverse consequences for the Victorian community or a part of the Victorian community; or
  - (iii) Requires the involvement of two or more agencies to respond to the emergency; or
- Is a Class 1 emergency.
- Is a Class 2 emergency.

This plan aligns with the SEMP and was prepared with regard to the *Guidelines for Preparing State, Regional and Municipal Emergency Management Plans;* and was endorsed by the State Crisis and Resilience Council (SCRC) on 17 February 2022. This plan was published and took effect 01 March 2022.

The following legislation, while not exhaustive, is the principal legislation for storms in Victoria:

- *Emergency Management Acts 1986 and 2013 (EM Act).*
- *Victoria State Emergency Service Act 2005.*
- *Essential Services Act 1958.*
- *Planning and Environment Act 1989.*
- *Local Government Act 1989.*
- *Meteorology Act 1955 (Commonwealth).*

1.5 Activation of the plan

The arrangements in this plan apply on a continuing basis and do not require activation.

1.6 Audience

This plan recognises that emergency management and supporting communities to be safer and more resilient, is the shared responsibility of all Victorians, not just the emergency management sector.

The audience for this plan comprises the Victorian Government and agencies within the emergency management sector, including business and community groups with a significant role in the mitigation of, response to, and recovery from storms.

1.7 Exercise and evaluation

This plan will be exercised within one year from the date of approval. The exercise will be evaluated and, where improvements to the emergency management arrangements in this plan are required, the plan will be amended, and a revised version issued.

Exercises will be conducted in accordance with the Australian Institute for Disaster Resilience (AIDR) Managing Exercises Handbook, available at via the AIDR website here.

1.8 Review

This plan is being reviewed in 2022, due to expected emergency management sector changes relevant to storm, including the delivery of the June 2021 Extreme Weather Review.

This plan will then be reviewed and updated at least every three years thereafter, with consideration given to earlier revisions as required to ensure the plan provides for a current, integrated, coordinated, and comprehensive approach to storm emergencies, and consideration of potential escalation of climate-related hazards.

Earlier reviews may be triggered by this plan being applied in a major emergency or exercise, or following a substantial change to relevant legislation or arrangements, including the SEMP.

1.9 How to read this plan

This plan should be read in conjunction with the SEMP. Due to the compounding consequences of storm, particularly in relation to flooding this plan should also be read in conjunction with the SEMP Flood Sub-plan.

Linkages and hyperlinks

This plan refers to a range of existing resources relating to storms, including documents and websites. This plan does not seek to duplicate the information contained in these resources, and instead provides links to where the reader can obtain further information.

For more operational or sensitive information a log-in may be required, such as for documents saved on the Emergency Management Common Operating Picture (EM-COP), including Joint Standard Operating Procedures (JSOPs).

Documents or resources that are referred to frequently throughout this plan (such as the SEMP) are not hyperlinked in each instance.

All hyperlinks were accurate at time of publication, and the currency of the linked content remains the responsibility of the host agency.

Consequence management

Secondary consequences for storms can be complex and compounding. The arrangements for managing consequences of storms are contained in relevant SEMP Sub-plans, including, but not limited to:

- SEMP Flood Sub-plan.
- State Health Emergency Response Plan.
- SEMP Energy Sub-plan.
- SEMP Public Transport Disruption Sub-plan.
- SEMP Bushfire Sub-plan.
- Roles and responsibilities outlined within the SEMP.

Where necessary, VICSES has prepared Regional Storm Emergency Plans (RSEP), Municipal Storm Emergency Management Plans (MFEPs), and Municipal Flood and Storm Emergency Management Plans (MFSEPs).

Regional and Municipal Storm Emergency Plans can be found via the VICSES website.

In the case of a concurrent emergency (e.g. COVID-19 or an energy disruption), the arrangements detailed in this plan may need to be adjusted as required.

2. The emergency context

2.1 Risks

Storms in the context of this plan include windstorms, dust storms, tornadoes, snowstorms, blizzards, and storm tides, as well as severe thunderstorms including hailstorms and heavy rain leading to flash flooding.

This plan acknowledges the often concurrent emerging threats and consequences, including epidemic thunderstorm asthma, coastal storm surges, and electricity, water, transport and telecommunication service disruptions. Increases in mean sea level will continue to contribute to a significant increase in the risks associated with coastal storms and storm surge.

Severe weather events affecting land-based communities are generally divided into two broad categories:

- Severe thunderstorm events.
- Severe weather events not directly associated with severe thunderstorms, tropical cyclones or bushfires.

Research by BOM has found that the number of low-pressure systems across Victoria is decreasing in winter, and the average rainfall from each low or front is decreasing too. The number of thunderstorm days and thunderstorm related rainfall has increased in some regions in the warmer half of the year.

Intense, short duration rainfall events in Victoria are becoming more frequent and more intense, particularly in the warm season. Research by BOM and others suggests that short duration (e.g. hourly) events produced by thunderstorms could potentially increase in intensity by about 15 per cent per degree of global warming in Australia.

2.1.1 Severe thunderstorms

In Australia, a severe thunderstorm is defined by BOM as one that produces any of the following:

- Hailstones with a diameter of 2cm or more.
- Wind gusts of 90km/h or greater.
- Heavy rainfall leading to flash flooding.
- Tornados.

The types of hazardous phenomena from severe weather include land gales and squalls, heavy rain leading to flash flooding, and blizzards.

Figure 1 shows the monthly distribution of severe thunderstorm events according to the severe phenomenon observed. The graph shows that most severe thunderstorms occur between October and April.

January is the most active month for severe thunderstorms, followed by December, then November. The number of events when large hail or heavy rainfall is reported follows this overall trend closely with very few events during the winter months. Conversely, the number of tornado events is quite evenly distributed throughout the year. This could be because tornados can form in cold-air mass thunderstorms, as well as in warm-air mass super cell thunderstorms.

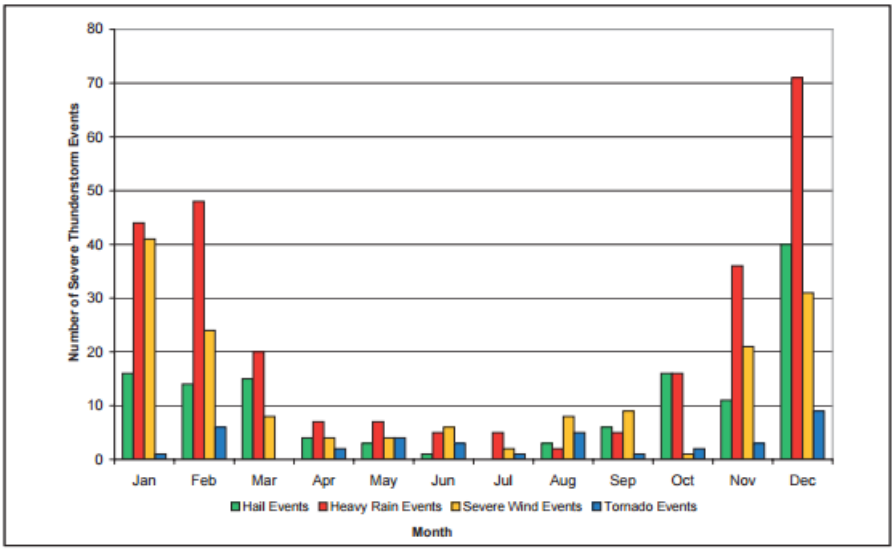

Figure 1- Monthly distribution of reported Severe Thunderstorm Events in Victoria - July 2000 to June 2010 (data provided by BOM)

The occurrence of severe thunderstorm events can also be stratified by time of day as shown in Figure 2. The graph indicates that although severe thunderstorms can occur at any time of the day or night, it is the afternoon and evening period when severe thunderstorms are more frequent.

Only about 10 per cent of thunderstorms are severe, but these account for approximately 90 percent of the damage produced by all thunderstorms. However, they all produce lightning which can cause death, injury, and damage. Individual thunderstorms are small-scale and short-lived phenomena - a thunderstorm is typically only about 10 km across, and is active for 30 minutes (approximately). At any one time there can be many thunderstorms affecting a district, only some of which may be severe. Not all locations highlighted in a warning will experience severe thunderstorms. The warning only indicates that some of the thunderstorms in the area are expected to be severe.

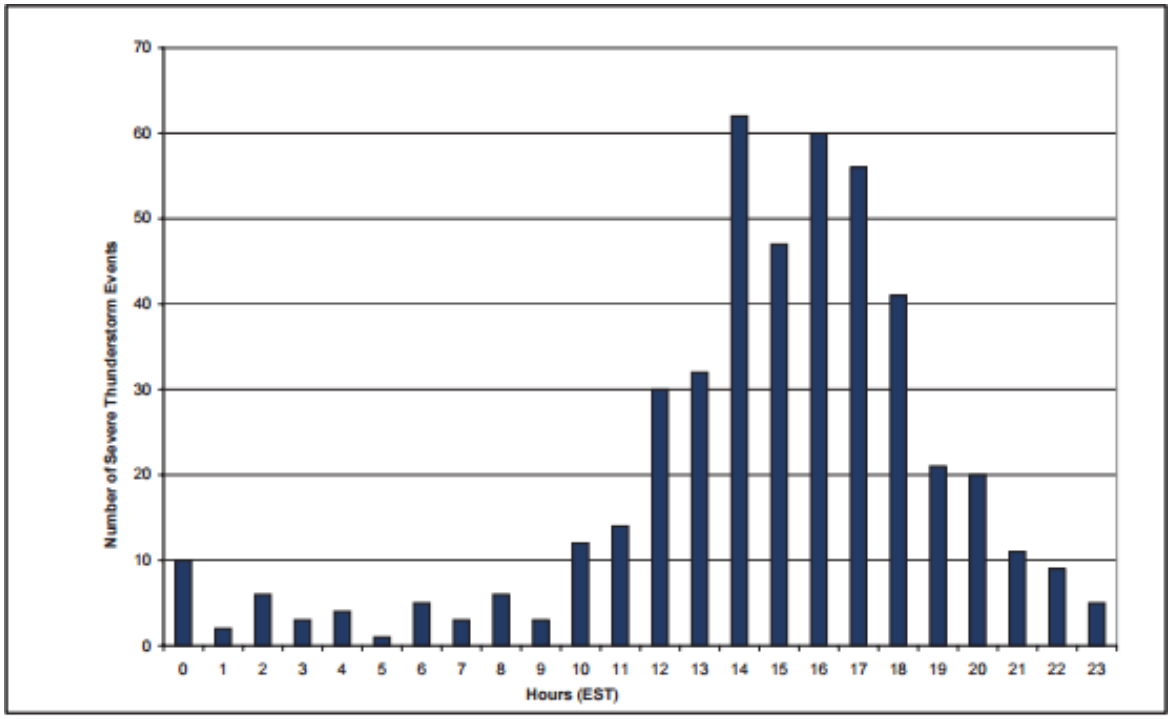

Figure 2 - Occurrence times of reported Severe Thunderstorm Events between July 2000 to June 2010 (data provided by BOM)

2.1.2 Severe weather

Typical weather patterns that can cause severe weather include:

- Recently decayed tropical cyclones moving into southern regions and sometimes interacting with cold fronts.
- East coast lows: Deep low-pressure systems that can form in the Tasman Sea and affect the Gippsland coast.
- Vigorous squally cold fronts.
- Strong pressure gradients, often due to cold fronts, causing land gales - particularly in exposed alpine regions.
- Distant tropical cyclones or deep southern low-pressure systems that can produce ocean swells that reach the Australian shores causing dangerous surf.
- Locally intense rainfall, particularly in susceptible areas that can cause flash flooding.

Criteria for a Severe Weather Warnings include:

- Sustained winds of gale force (63 km/h) or more.
- Wind gusts of 90 km/h or more.
- Very heavy rain that may lead to flash flooding.
- Abnormally high tides (or storm tides) expected to exceed highest astronomical tide.
- Unusually large surf waves expected to cause dangerous conditions on the coast.
- Widespread blizzards in alpine areas.

Further information regarding weather and weather warnings is provided at the BOM Weather Knowledge Centre.

The most frequent types of severe weather event that are not directly related to thunderstorms are windstorms (land gale force winds), associated with the passage of a cold front or intense low-pressure systems across Victoria.

Non-thunderstorm severe weather events are mostly a winter-spring phenomenon in Victoria, also associated with unusually frequent low-pressure systems and fronts. However, some major events have occurred in the warmer half of the year as systems of tropical origin extend or move south.

A blizzard is a violent and very cold wind which is loaded with snow, some of which has been raised from snow covered ground. 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). Blizzards are confined to alpine areas in Victoria and mainly occur during the winter and early spring months but can also occur in autumn.

2.2 Impacts and consequences

The direct impacts and consequences occur across a relatively small geographic area for severe thunderstorms, to large geographic areas for windstorms. The indirect impacts and consequence can extend to areas considerably beyond the directly impacted areas. This reflects that disruptions of infrastructure and/or services at specific locations can have flow on impacts to other locations/regions.

Storm, including hail, results in an annual average economic loss of $310m across Victoria. The June 2021 storm event gave rise to 26,000 insurance claims, totaling $230m.

As storms can occur anywhere across Victoria, all Victorians and visitors have an exposure to storm. Likewise, all built assets and infrastructure have an exposure to storm related impacts.

Research by BOM and others suggests that short duration (e.g. hourly) events produced by thunderstorms could potentially increase in intensity by about 15 per cent per degree of global warming in Australia.

Consequences of storms in Victoria vary, but may include:

- Loss of life or serious injury.
- Damage to or loss of:
  - Key infrastructure – road, rail, public buildings.
  - Essential services – power, gas, water, wastewater, telecommunications.
  - Private property including drinking water supplies (e.g. rainwater tanks) and septic systems.
  - Industry/business.
  - Agriculture – crop and livestock.
  - Environment.
- Public and environmental health risks such as:
  - Risks to food safety – especially during power outages.
  - Impacts to drinking water quality.
  - Carbon monoxide hazards from generators.

Recent damaging storms in Victoria

The appendix contains a summary of significant storms impacting Victoria from 2008 until 2021.

3. Managing storm emergencies

3.1 Emergency Management Priorities

The State Emergency Management Priorities that are outlined in the SEMP guide all decisions before, during, and after any emergency, and apply to all aspects of this plan.

The priorities are:

- Protection and preservation of life and relief of suffering is paramount. This includes:
  - Safety of emergency response personnel.
  - 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 to 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.

3.2 Shared responsibilities

The SEMP recognises that emergency management is the shared responsibility of all Victorians, not just the emergency management sector. The 'shared responsibility' approach seeks to ensure:

- The interests, values, and expectations of stakeholders in, or members of, communities are understood and considered.
- Ownership of the SEMP and responsibility for its implementation is broadly shared.

Examples in the context of storms include:

- Individuals being aware of their storm risk and following advice from emergency services when responding to warnings.
- Local governments and communities including storm risk within their community emergency risk assessment and mitigation activities.
- Industry and businesses planning for the risk of disruption, and ensuring arrangements are in place to maintain critical services, and assist communities where possible.
- Engaging with communities to:

- Plan the management of storm risk.
- Provide emergency information and storm warnings.
- Ensure an effective, well-coordinated response during storms.
- Recover and learn following a storm and build their resilience to future events.

Section 3.5.3 sets out community engagement for preparedness.

3.3 Roles and responsibilities

The SEMP details the roles and responsibilities for storm. Several primary roles are noted in the following.

3.3.1 State Crisis and Resilience Council

The State Crisis and Resilience Council (SCRC) is the peak crisis and emergency management body to the Victorian Government, and provides advice to ministers and relevant cabinet sub-committees. It is responsible for the development and implementation of whole of government emergency management policy and strategy. It does not make operational or tactical decisions.

3.3.2 Emergency Management Commissioner

Under the EM Act, the EMC has legislated management responsibilities across major emergencies. These include response coordination, ensuring effective control arrangements are established, and consequence management.

3.3.3 Victoria State Emergency Service

VICSES is the control agency for storm as defined in the roles and responsibilities section of the SEMP. Additional to the activities listed in the VICSES agency role statement in the SEMP, VICSES is also responsible for:

- Undertaking strategic planning for response.
- Provision of public information and warnings, including the provision of public safety advice to the community.
- Supporting Victoria Police with evacuations.
- Rescue of persons entrapped by collapsed structures.
- Protection of property from further damage.

3.3.4 Supporting agency roles and responsibilities

A range of government and non-government agencies/organisations have the skills, expertise, and/or resources to support storm emergency response, relief, and recovery.

These agencies include:

- Emergency Management Victoria (EMV).
- BOM.
- DELWP.
- Catchment Management Authorities.
- Water corporations.
- Municipal councils.
- Victoria Police.
- Department of Health.
- Department of Families, Fairness and Housing.

- Department of Jobs, Precincts and Regions (DJPR).
- CFA.
- FRV.
- Ambulance Victoria.
- Environment Protection Authority.
- Department of Transport (DOT).

Refer to the SEMP agency role statements for further details of the roles and responsibilities that support agencies may undertake across all the emergency management phases related to storm.

3.3.5 Emergency Management Teams

Emergency Management Teams can be activated for response at each tier as follows:

- State Emergency Management Team (SEMT).
- Regional Emergency Management Team (REMT).
- Incident Emergency Management Team (IEMT).

More detailed information on emergency management teams is outlined in the SEMP.

3.3.6 Emergency Management Planning Committees

Emergency Management Planning Committees operate at the regional and municipal tiers to guide mitigation and preparedness activities.

More detailed information on emergency management planning committees is outlined in the SEMP.

3.4 Mitigation

Mitigation activities for storm includes, but is not limited to:

- Key infrastructure compliance to engineering standards (Infrastructure standards/regulations)
- Drainage systems (drainage standards and strategy).
- Vegetation planning and management.
- Building compliance to engineering standards (planning and building standards/regulations).

Detailed information on the roles and responsibilities for mitigation activities are in the SEMP.

The following two sub-sections describe mitigation activities related to forecasting and warning for storm.

3.4.1 BOM forecasting and warning services

Forecasting services

BOM have a requirement under the Commonwealth *Meteorology Act 1955* (BOM Act) to warn the community and provide the following services to VICSES in support of the control agency roles.

Further information regarding weather and weather warnings is provided at the BOM Weather Knowledge Centre.

Severe Weather Intelligence Briefing

A Severe Weather Intelligence Briefing (SWIB) will be provided by the BOM to the VICSES. This is a five day outlook produced three times a week for severe weather events involving significant rain, hail, and wind, but excluding severe thunderstorms. The SWIB is available on EM-COP.

BOM tri-weekly teleconferences

As part of a partnership agreement, VICSES and BOM will conduct a 'Weather Outlook Teleconference' three times a week, with the purpose of briefing VICSES on the five to six day weather outlook, based on the SWIB, and where relevant the 'Thunderstorm Chart'. If significant weather is predicted, VICSES will implement the notification processes as detailed in Section 3.4.2.

Severe Thunderstorm Forecast Chart

The Severe Thunderstorm Forecast Chart is issued at 11:30am each day of the year, and is valid for the rest of the day. The chart will indicate where thunderstorms are expected to develop, the chance of thunderstorms occurring, and where thunderstorms are expected to be severe. This chart assists VICSES with readiness level assessment for the current day. The Severe Thunderstorm Forecast Chart is updated at 4:00pm if a 'Severe Thunderstorm Likely' area has been delineated. Although the duty meteorologist will do their best to predict areas where severe thunderstorms are likely, they may develop outside of the 'Severe Thunderstorm Likely' area delineated on the Forecast Chart. The chart will not be updated to match the warnings issued in this circumstance. The Severe Thunderstorm Forecast Chart is available on EM-COP.

A Day 2 Severe Thunderstorm Forecast Chart is also issued, valid for the following 24 hours. It will be usually issued at midday, but this time may vary depending on the weather situation. The Day 2 Severe Thunderstorm Forecast Chart is available on EM-COP.

BOM warnings to the public

When a Severe Weather Warning or a Severe Thunderstorm Warning is issued or updated, BOM will inform the VICSES State Duty Officer (SDO). The SDO assesses the requirement to issue a community notification (See Section 3.4.2).

BOM Severe Weather Warnings

The responsibility for issuing a Severe Weather Warning lies with the BOM Senior Severe Weather Meteorologist. If the threat of severe weather has passed, the Severe Weather Warning will be cancelled.

BOM Severe Thunderstorm Warnings – Victoria (for weather districts)

As soon as a requirement for a Victorian Severe Thunderstorm Warning has been identified, BOM will prepare and issue the warning as quickly as possible in order to ensure the maximum lead-time.

Severe thunderstorm events are typically of a short term and local (small scale) nature, and as such Severe Thunderstorm Warnings have short lead-times and cover a small area (local government area) with a rapid update cycle.

The validity period of a Victorian Severe Thunderstorm Warning is normally around three hours and will be updated or cancelled as required. The warnings are issued for all parts of the state.

BOM Severe Thunderstorm Warnings – Melbourne area

The Severe Thunderstorm Warning - Melbourne area is a more detailed warning issued to the public, emergency services, and other organisations when severe thunderstorms are detected, or there is a high confidence they will develop in the Greater Melbourne area. These warnings depict and describe individual severe thunderstorm cells and rely heavily on a detailed analysis of radar data.

3.4.2 VICSES led agency and community notifications

Agency notifications

VICSES and BOM work in close partnership to ensure the timely notification of severe weather events in Victoria. VICSES implements a detailed notification process for severe weather events which is documented in the VICSES Standard Operating Procedures and in relevant emergency management sector JSOP.

All Severe Weather Warnings and Severe Thunderstorm Warnings will be provided directly from BOM to the VICSES SDO. Irrespective of issuing a warning, BOM should attempt to contact the VICSES

SDO whenever severe weather is imminent or has been observed.

When a Severe Thunderstorm Warning is upgraded to include the term 'This thunderstorm is very dangerous', BOM should contact the VICSES SDO and include this information and a statement to contact the BOM urgently regarding the warning.

Community notifications

VICSES seeks to meet the second state emergency management priority for the need to be proactive in early warnings to the community, regarding the potential for severe weather and its associated impacts.

VICSES leads the coordination of business rules that govern community notifications issued under the Australian Warning System (AWS) for storm. The business rules set triggers for the three warning levels, and are found on:

- Severe Weather and Thunderstorms: EMCOP – Library – IMT Toolbox – IMTTB – Public Information – EMCOP Business Rules – Severe Weather/Thunderstorm Business rules or here.
- Flash flooding: EMCOP – Library – IMT Toolbox – IMTTB – Public Information – EMCOP Business Rules – Flash Flood Business rules or here.

Further detail on the roles and responsibilities for community notifications for different storm events and readiness levels are outlined below.

Severe weather and severe thunderstorms

Readiness level (RL) are defined in Storm Readiness and Activations Triggers Considerations (refer to Activation – SCC Planned Activation at EMCOP – Library – State Control (SCC) – Procedure's – Activation-SCC Planned) (also see section 3.6.1 of this plan).

Severe weather and thunderstorm notifications are managed by the VICSES SDO and/or State Agency Commander (SAC) (because of the cross-border and often widespread nature of severe weather), but may be delegated to State Control Centre (SCC) Public Information Section.

Agency command (Readiness levels 1,2,3a):

- Issuer: SDO or Warnings and Advice Duty Officer (WADO) if time critical (note: WADO must be requested to issue community notification by SDO/SAC).
- Authorisation: SAC.

ICC/RCC/SCC activated (Readiness levels 3b, 4 & 5):

- Issuer: SCC Information and Warnings Officer (IWO)/SCC Public Information Officer (PIO)
- Authorisation: State Response Controller (SRC) or delegated to VICSES SAC).

Incident Control Centres (ICCs) and Regional Control Centre's (RCCs) do not issue EM-COP community notifications for severe weather and thunderstorm events, due to the cross-border and widespread nature of events. If the Incident Controller or Regional Controller (RC) believe an EM-COP community notification needs to be issued, contact the VICSES SAC who may determine that community notifications are managed at the incident tier by exception.

Figure 3 sets out the severe weather and severe thunderstorm community notifications issued by Victorian emergency management agencies and their alignment with BOM warnings.

Flash flooding

Refer to section 3.6.1 Readiness, of this plan.

VICSES flash flood community notifications are managed by VICSES Regional Duty Officers (RDOs) and/or Regional Agency Commanders (RACs) (because of the localised impacts), but may be delegated to the Public Information Section of relevant ICCs when activated.

Agency command (Readiness levels 1,2,3a):

- Issuer: VICSES RDO or WADO if time critical (WADO must be requested to issue community notification by RDO/RAC).
- Authorisation: VICSES RAC.

ICC/RCC/SCC activated (Readiness levels 3b, 4 & 5):

- Issuer: ICC Information and Warnings Officer (IWO)/ICC PIO.
- Authorisation: Incident Controller

Figure 4 sets out the flash flooding community notifications issued by Victorian emergency management agencies and their alignment with BOM warnings.

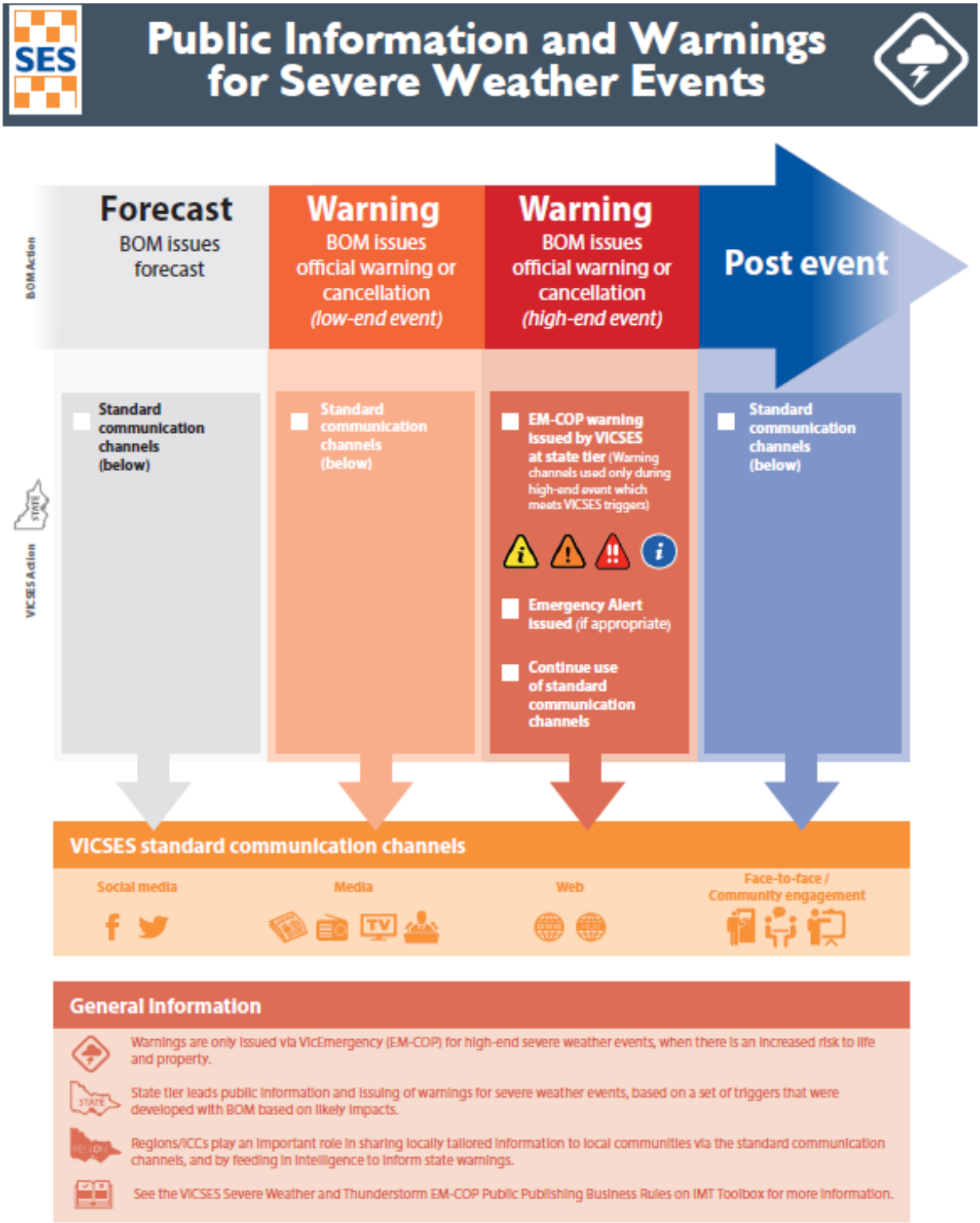

Figure 3: Severe weather community notification (2018)

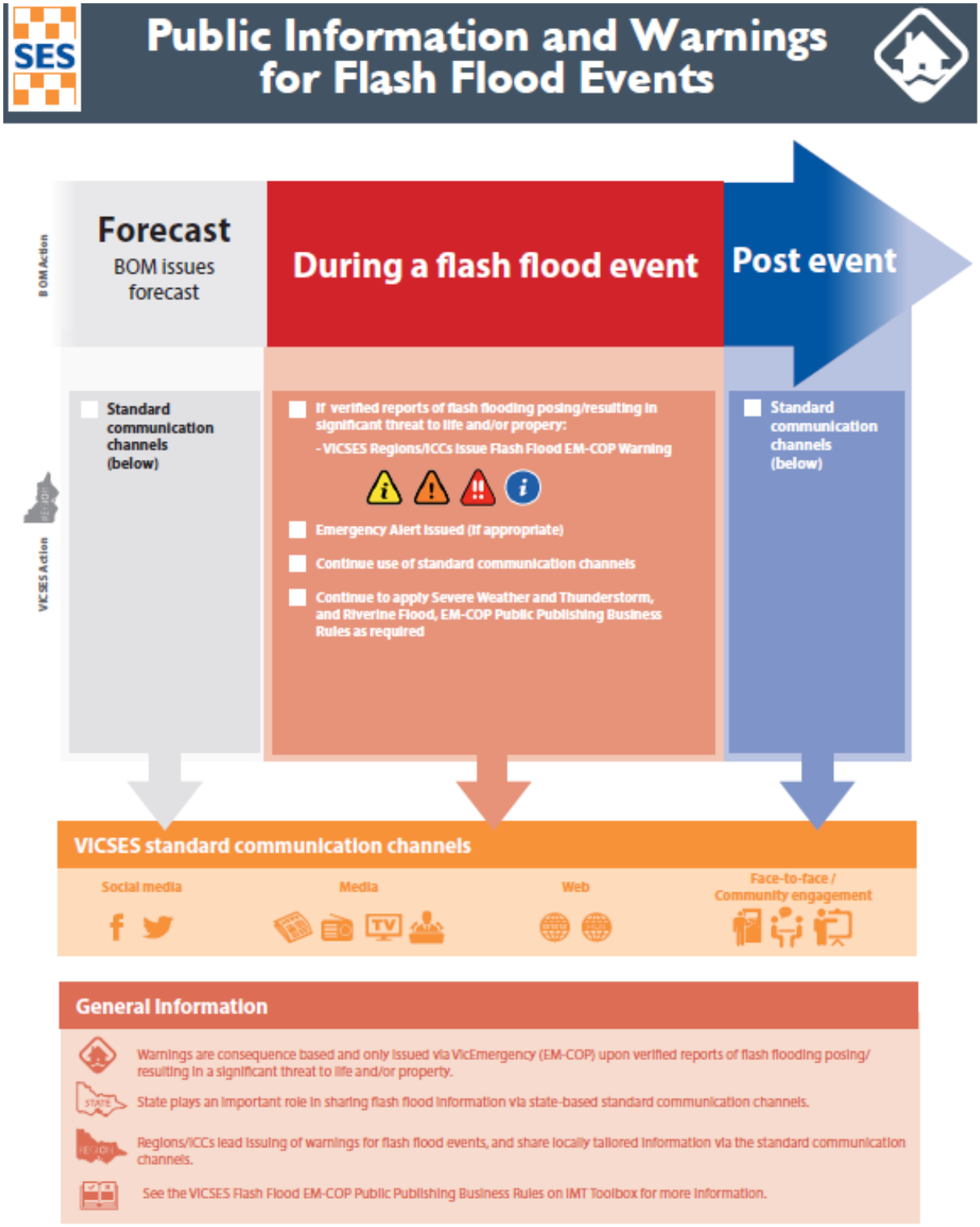

Figure 4: Flash flood community notification (2018)

3.4.3 VicEmergency and warning channels

VICSES use the state endorsed multi-hazard warning platform, EM-COP Public Publishing, to disseminate public information and warnings to the community via VicEmergency and its associated channels.

VicEmergency warning recipients include emergency broadcasters (i.e. commercial and ABC radio) who are required to re-disseminate warning information and sound the Standard Emergency Warning Signal (SEWS) if required, in accordance with the Emergency Broadcasting Practice Note and the agreed Memorandum of Understandings (MoU).

A range of approaches are used by VICSES to disseminate public information and warnings that are selected, based on the needs of the community and the nature of the event. Examples include:

- Door knocking for evacuation of a small area if time permits.
- Emergency Alert (EA) for urgent dissemination of warnings to telephones (including mobile phones) within a specific geographic location.

Adjoining states will be consulted over public information messages if impacts have occurred in a border area.

3.4.4 VicEmergency Hotline

Community members can call the VicEmergency Hotline (1800 226 226) to access emergency information during and after major incidents in Victoria, including flood events. It also offers information to help Victorians plan for and recover from emergencies.

The VicEmergency Hotline is staffed by operators from Monday to Friday 8:00am – 6:00pm, with opening times extended during significant emergency events. The hotline also features an automatic text to speech function, which ensures Victorians can access important emergency information outside of operator hours, at any time of the day or night, by entering their postcode.

The hotline is managed by the DELWP Customer Contact Centre. The VICSES SAC may, in consultation with the SRC, request enhanced readiness and staffing in anticipation of, or in response to, an emergency event. This may include extending the operating hours of the centre beyond standard arrangements, including weekends.

3.5 Preparedness

Preparing for storm events includes developing arrangements to ensure that resources and services needed to respond can be efficiently mobilised and deployed.

Preparedness activities include:

- Identifying and assessing the risk.
- Developing policy, arrangements, and plans.
- Ensuring adequate resources, systems, and processes are in place.
- Training response personnel, and educating stakeholders and potentially affected industries and communities.
- Maintaining and developing expertise.
- Conducting exercises.
- Evaluating preparedness and response activities.
- Ensuring the necessary relationships, formal and informal mechanisms are in place across government and industry to support community outcomes.

The risk management approach aligns with the SEMP and outcomes and objectives of the Sendai Framework for Disaster Risk Reduction 2015–2030 and the National Disaster Risk Reduction Framework. At the state level, EMV is responsible for coordinating the state-wide emergency risk assessment published in the Emergency Risks in Victoria Report.

3.5.1 Regional storm emergency planning

Where storm is identified through the Regional Emergency Management Planning Committee's (REMPC) Regional Emergency Risk Assessment (RERA) as a high risk to a region, VICSES will provide advice and support to the REMPC to ensure the Regional Emergency Management Plan (REMP) contains at a minimum arrangement for the response to a storm event based on all-hazards and all-agency response.

Regional Storm Emergency Plans (RSEP) or Regional Flood and Storm Emergency Plans (RFSEP) are prepared by VICSES for regions as warranted by the assessed storm risk. In some cases, the REMPC may adopt the prepared storm plan as a sub-plan or complementary plan to its REMP.

3.5.2 Municipal storm emergency planning

Where storm is identified through the Community Emergency Risk Assessment (CERA) as a high risk to a community, VICSES will provide advice and support to the Municipal Emergency Management Planning Committee (MEMPC) to ensure the Municipal Emergency Management Plan (MEMP) contains at a minimum, arrangements based on an all-hazards and all-agency response to storm.

Municipal Storm Emergency Plans (MSEP) or Municipal Flood and Storm Emergency Plans (MFSEP) are prepared by VICSES for municipalities as warranted by the assessed storm risk. In some cases, the MEMPC may adopt the prepared storm plan as a sub-plan or complementary plan to its MEMP.

3.5.3 Community preparedness

VICSES has developed a Community Resilience Strategy Renewal 2019-22. A key and measurable outcome of the strategy is to increase the level of interest, and support behaviour change within communities, so they are more aware, informed and prepared for emergencies by supporting them to understand their risk, and the relevance of taking action before, during and after emergencies. Information can be found via the VICSES website.

Community preparedness material for storm can also be found via the VICSES website.

3.6 Response

3.6.1 Readiness

Advice to VICSES of a pending severe weather event will be provided by either the BOM Regional Forecasting Centre or the SCC Weather Service. The Severe Weather Intelligence Briefing provides guidance on readiness and activations. See Section 3.4.1 for details for BOM forecasting and warning services.

The VICSES Chief Officer Operations (COO) is responsible for notifying the EMC (in accordance with JSOP 3.16 Significant Event Notification). The EMC can assist through the SCC to notify the State Coordination Team and the SEMT.

VICSES Flood Readiness and Activation Triggers Considerations employ the following six level readiness framework for notification and escalation arrangements in responding to floods. Readiness levels RL3 (B), RL4 and RL 5 correspond to the Very High, Severe, and Extreme, respectively as defined in JSOP2.03. Refer to Figure 5.

Readiness Level	RL 1 Low to Moderate	RL 2 High	RL 3(A) Very High	RL 3 (B) VERY HIGH	RL 4 SEVERE	RL 5 EXTREME
Operations	VICSES Managed			Multi Agency (JSOP02.03)		

Figure 5: VICSES Storm Readiness and Activation Levels

When advice from BOM indicates a storm event with RL1, RL2, RL3A aligning characteristics, the VICSES COO or SAC consults with RACs to establish commensurate control and command arrangements, and advise the relevant partner agencies.

When advice from BOM indicates a storm event with RL3B and above aligning characteristics, the VICSES COO or SAC consults with the SRC and the EMC to establish commensurate control and command arrangements in accordance with SEMP and JSOP2.03.

Section 3.4.2 sets out the processes for agency notifications in readiness.

3.6.2 Concept of operations

Readiness level 1,2 & 3A – VICSES managed

The VICSES Operations Management Manual (OMM) articulates the operational management structures and systems used by VICSES in the management of its command and control responsibilities under the *Victoria State Emergency Service Act 2005* (VICSES Act) for floods, storm, earthquake, tsunami, landslide and rescue to ensure effective and efficient management of operations.

The OOM should be read in conjunction with other VICSES doctrine including state, regional and local plans, SOPs, policies and approved Joint Doctrine.

The OMM is available to VICSES members on the VICSES Hub. Please contact VICSES SAC if required.

Readiness Level 3B, 4 & 5 – JSOP2.03 Very High, Severe and Extreme

Readiness levels RL3 (B), RL4 and RL 5 correspond to the very High, Severe, and Extreme respectively, as defined in JSOP2.03.

For these readiness levels, the SRC exercises control in accordance with the SEMP. Refer to SEMP for guidance on concept of operations when the SRC exercises control.

Refer to JSOP2.03 for the default ICC footprints for storm.

3.6.3 SRC readiness, response and relief considerations

When the readiness triggers for RL3b or above are likely to be met or are met, the SRC can consult with the VICSES SAC to assure the following considerations are made:

- Establishing the control structure for managing the event.
- Confirming agencies at all tiers are activated and appropriate arrangements are in place.
- Providing consistent emergency warnings and information to the community.
- **Confirming agencies with call taking responsibilities, including Emergency Services Telecommunications Authority (ESTA), have resources in place and back up.**
- **Confirm positioning of flood fescue resources and command as required.**
- Implementation of evacuation and emergency relief plans.
- Identifying the likely consequences of the storm event and any interdependencies that may affect planning.
- Confirming agencies have adequate resources in place to fulfil their responsibilities and are planning for sustainment and surge capacity, including identification of need for inter-state assistance.
- Identifying mass gatherings and large public events that maybe at-risk, and arrangements to ensure the safety of individuals attending.
- Positioning of Emergency Management Liaison Officers from key support agencies to the SCC and RCCs, where appropriate.
- Ensure that arrangements are in place for initial impact assessment data to be collected and then incorporated into the operational response
- Arranging for regular meetings of the state, regional and incident Emergency Management Teams.
- Providing whole-of-government situation reports to relevant government ministers.

The above consideration regarding ESTA capacity is bolded to emphasis its' importance in storm events. Storm events can generate a large number of requests for assistance necessitating significant uplift in call taking capacity.

The above consideration regarding flood rescue capability is bolded to emphasis its' importance in flood events.

3.6.4 Cross jurisdictional arrangements

The cross jurisdictional arrangements to support operational response to storm events are underpinned by national and inter-state agreements, including:

- Arrangement for Interstate Assistance (AIA) which provides the national governing arrangements for deployments and support.
- Inter-state MoU between VICSES and South Australia SES and New South Wales SES respectively, which detail arrangements for cross jurisdictional response within 40km of the state boundaries.
- Local arrangements are also detailed in VICSES regional plans.

3.6.5 Initial impact assessment

The Incident Controller is responsible for initiating and managing Initial Impact Assessment (IIA). The aim of IIA is to capture, during the initial 48 hours of an emergency, the nature and scale of the storm impact on people, community infrastructure, and the economic, natural and built environments, in order that emergency relief and early recovery activities can commence.

IIA typically begins in the first 24-48 hours of an emergency event and is focused on the collation of immediate impact data. IIA is a preliminary assessment generally from visual inspection undertaken by response agencies, assisting in determining the scale and impact of the storm impact emergency on people, community infrastructure, and the economic, natural, and built environments.

IIA provides early information to assist in the prioritisation of immediate needs of individuals and communities, requirements of Secondary Impact Assessments and supports commencement of emergency relief and early recovery activities. To ensure the expedient collection of information, the Incident Controller may task personnel from any response agency to collect relevant information.

The EMC is responsible for ensuring the coordination, collection, collation and reporting of incident data and impact assessment processes as required. All agencies have a responsibility to assist the EMC with the IIA process as per the SEMP and the relevant impact assessment guidelines available on EM-COP.

The data from IIAs is used to identify where to focus early recovery activities (including secondary impact assessments).

3.6.6 Evacuation

AIDR's Evacuation Planning Handbook defines evacuation as a risk management strategy that may be used to reduce loss of life or lessen the effects of an emergency on a community, prior to the onset of, or during, an emergency. It involves the planned movement of people threatened by a hazard to a safer location and, typically, their eventual safe and timely return. For an evacuation to be effective, it should be appropriately planned and implemented.

Evacuation is a scalable activity in that it may be applied to individuals, a house, a street, a large facility (i.e. school or hospital), a suburb, a town or a large area of the state. Where an area is identified (by means of local knowledge, prior history of a higher risk of evacuation, etc.) as requiring a specific detailed evacuation plan, consideration should be made to include this plan as part of the respective MEMP.

The Incident Controller is responsible for making a decision as to whether evacuation is a safe option for communities and individuals. In making this decision the IC may seek advice from other agencies or communities, as detailed in JSOP03.12 – Evacuation for Major Emergencies and Evacuation Guidelines.

3.6.7 Energy, communications, water and transport disruptions

Storms can disrupt energy, communications, water (potable and waste), agriculture/dairy industries, and transport services.

Refer to SEMP Roles and Responsibilities for details on restoration of services resulting from storm in various settings.

Refer to SEMP for details of coordination arrangements related to restoration of services.

3.6.8 Health response and epidemic thunderstorm asthma

During a storm event, the Department of Health has a support function to coordinate the health response and works to minimise the impacts on individuals, communities, public health and the health system.

The State Health Emergency Response Plan (SHERP) outlines the arrangements for coordinating the health and medical response to emergencies. The State Health Emergency Response Plan is a sub-plan of SEMP.

The Department of Health State Health Agency Commander and State Health Coordinator are responsible for directing health resources. The State Health Commander (Ambulance Victoria) is responsible for directing the pre-hospital response in an emergency. Both roles are represented on the SEMT.

Storms have the potential to affect electricity supplies across the state, and in some instances lead to widespread and prolonged power outages impacting many people. Some of the most vulnerable people during such outages are life support customers including ventilator dependent customers, who rely on electricity for medical reasons. The Department of Health works with many partners to facilitate support for these groups during widespread and prolonged power outages, in recognition of their unique vulnerability to this type of event.

The Department of Health also administers Victoria's safe drinking water regulatory framework, which requires water businesses to have emergency management arrangements and procedures for dealing with an incident, event, or emergency that may adversely affect the quality or safety of drinking water or result in water being supplied that poses a risk to human health. The Department of Health is also the control agency for drinking water contamination.

Since the November 2016 epidemic thunderstorm asthma event, the department has worked closely with a wide range of stakeholders to develop and implement a comprehensive Epidemic Thunderstorm Asthma Program to minimise the impact that any future events may have on the community and the Victorian health system. In part, the program includes:

- A public health campaign to raise awareness of thunderstorm asthma, help the community prepare for the grass pollen season, and improve asthma and hay fever management.
- A Victorian epidemic thunderstorm asthma risk forecasting system, which operates between 1 October and 31 December and combines the forecasting of a certain type of thunderstorm and forecasting of grass pollen levels across Victoria.
- Resources and training for health professionals – including expert clinical guidelines to identify and manage those at increased risk.
- A real-time Health Emergency Monitoring System, ensuring quick recognition and better manage a surge in demand on our health services.
- Revised State Health Emergency Response Arrangements to improve how planning, communication and working with health services during emergencies and better meet community health needs.

In response to mass fatalities, Victoria Police will manage the disaster victim identification process and will administer the handling and investigation of deceased persons and their subsequent removal on behalf of the State Coroner (Refer to SEMP Roles and Responsibilities – Table 8).

3.6.9 Animal welfare

Storm events may result in significant displacement or other welfare issues for livestock, companion animals and wildlife.

The SEMP Roles and Responsibilities defines DELWP as the control agency for wildlife welfare arising from a declared emergency and DJPR as the support agency for welfare of livestock and companion animals.

3.6.10 Relief

Emergency relief involves the provision of essential needs to individuals, families, and communities during and in the immediate aftermath of an emergency. The relief needs of individuals, families, and communities will be complex and specific to each incident. However, there are several overarching relief priorities for storm emergencies which are:

- Provision of need-based assistance for the immediate health and wellbeing of individuals and communities.

- Planned and timely access to restore critical infrastructure (including transport infrastructure, water (potable and waste), power, and telecommunications).
- Planned and timely return of communities to storm impacted areas to minimise further physical and psychological harm.
- Provision of timely, relevant, and tailored relief information to assist community members to make informed decisions.
- Effective and efficient state, region/incident and local relief coordination arrangements.

Refer to the SEMP for the relief responsibilities of the Incident Controller, Regional Controller and the SRC.

In line with the SEMP Roles and Responsibilities, relief coordination operates at both tier and functional activity levels. Tier level coordination is as follows:

- Local – Municipal councils are responsible for coordinating relief at a local level.
- Regional – DFFH will coordinate relief at the regional level.
- State – EMV will coordinate relief arrangements at the state level.

Several agencies, government departments, and non-government organisations have responsibility for coordinating or providing direct assistance to individuals, families, and communities or indirect assistance through the resupply of essential goods or services to communities isolated in an emergency. State leads are identified in the SEMP Relief Services and Co-ordination table.

3.6.11 Debris removal and cleanup

Refer to SEMP Roles and Responsibilities for details on debris removal and clean up resulting from storm in various settings.

3.6.12 Management of spontaneous volunteers

Refer to SEMP Roles and Responsibilities Table 14 for details on management of spontaneous volunteers.

3.7 Recovery

3.7.1 Transition to recovery

The SEMP specifies the arrangements for the coordinated planning and management of transition from response to recovery in Victoria.

Transition plans should be developed collaboratively between Incident Controllers and Regional Controllers, and Recovery Coordinators/Managers at the relevant tiers with appropriate and agreed resources both prior to and post transition. The community must receive continuous services during the transition.

An important component is a seamless transition of communications, where recovery messaging should be integrated with response information as early as possible to facilitate a smooth transition to recovery, alongside other components required for effective transition to recovery.

Key concepts guiding transition include:

- Coordination of transition from response (including relief) to recovery in partnership with the lead recovery agency, and in consultation with other agencies affected by the transition.
- Seamless transition of information, impact data and consequence planning.
- Continuity of emergency management for individuals and community.

- Integration of recovery within the IMT – supporting knowledge management into recovery (this is an opportunity to more broadly discuss municipal presence in the IMT that supports this concept).

Transition from response to recovery is not always a clearly defined step. For storms impacting on a large geographic area, there may be a legitimate need to instigate recovery in some areas whilst the response phase is still in operation. This is a phased transition to recovery. The teams at the relevant incident, regional and state tiers should agree on the timing and phasing of the transition, the activities required and who is responsible.

3.7.2 Environments

Recovery is undertaken across four environments, social, economic, built and natural, that provide a framework within which recovery can be planned, reported, monitored and evaluated. The environments and their areas of activity can be adapted to meet the needs of people and communities affected.

3.7.3 Coordination

Recovery activities will be undertaken in accordance with the SEMP, and will commence during the response phase. As such, high levels of understanding and cooperation are required between response and recovery organisations at each operational tier (state, regional, municipal).

The response function will continue at least until the following conditions are met:

- All rescues have been accomplished.
- All injured have been attended to.
- Displaced people have been provided with shelter, and essential services.

Recovery coordination responsibilities are outlined in the Roles and Responsibilities section of the SEMP and include:

- For state recovery coordination: Bushfire Recovery Victoria.
- For regional recovery coordination: Bushfire Recovery Victoria.
- For municipal recovery coordination: Municipal councils.

Appendix

Recent damaging storms in Victoria

Date	Event	Location	Details
2 April 2008	Dust storm	Western Victoria	○ Strong northerly winds developed across central and western Victoria. Maximum wind gusts at Dunns Hill of 115 km/h. ○ Areas of raised dust from the western half of the state, with visibility down to 200m in some places. ○ Flying vegetation and debris caused major disruption to Melbourne traffic and public transport systems, and extensive damage to the electricity distribution network. Lanes were closed on the Westgate Bridge with wind gusts close to 120 km/h.
6 March 2010	Hailstorm	South-eastern suburbs	○ Severe thunderstorms developed to the northwest of the Melbourne bringing isolated severe wind gusts. ○ Flash flooding was widespread, and hailstones measuring 2-10cm caused damage to homes and buildings mainly in the Knox area. ○ VICSES received 7,500 requests for assistance. insurance claims exceeded $1 billion. ○ Historically, the only comparable report of such large hail in Melbourne was from 14 November 1901 when "an egg-shaped mass of ice (was) picked up in Victoria Parade (that) had dimensions 7 cm x 4.5 cm x 4 cm." ○ http://www.bom.gov.au/climate/current/month/vic/archive/201003.summary.shtml
4 February 2011	Flash flooding and damaging winds	State-wide	○ Severe thunderstorms developed over Victoria as a result of the tropical moisture associated with Tropical Cyclone Anthony and ex Tropical Cyclone Yasi, extending from central Australia, through Mildura, Melbourne, and on to north-eastern Tasmania. ○ The extremely high humidity levels resulted in record daily and multi-day rainfall totals to areas of north-east and south-east Victoria. ○ A damaging microburst caused damage west of Melbourne at Laverton, with wind speed strengthened from calm to 131km per hour in six minutes, causing damage to vegetation and

			structures within an area of approximately one square kilometer. ○ VICSES received more than 6000 requests for assistance (RFAs).
28 September 2011	Electrical and thunderstorms	State-wide	○ Thunderstorms and heavy rain occurred across Victoria. Melbourne recorded its wettest September day with more than 48 mm of rain falling in the city in the 24 hours. ○ Electrical storms disrupted flights and public transport and left tens of thousands of homes without power. ○ Hail caused significant crop damage in the Mildura area. ○ The Tolmie weather station recorded the highest record of 101mm in a day.
25 December 2011	Hailstorms and tornadoes	Western suburbs	○ Thousands of homes were damaged when thunderstorms swept across Melbourne, bringing flash flooding and hail. ○ Over a seven-hour period up to five long-lived supercells (very severe long lasting thunderstorm cells) moved eastwards across Melbourne. ○ The northern suburbs of Eltham, Broadmeadows, and Keilor were among the worst hit. There were reports of two tornadoes in Fiskville and Melton - in some place's cars were upended. ○ VICSES received more than 4200 RFAs, and insurance payments exceeded $700 million.
21 March 2013	Tornadoes	North-east Victoria	○ At least 20 people were injured and taken to hospital, with two in a critical condition, after two tornadoes with wind gusts between 180 and 250 km/h cut a path of destruction across Victoria's north-east. ○ VICSES received 150 calls for assistance when the tornadoes hit the towns of Yarrawonga, Mulwala, Bundalong, Rutherglen and Euroa, causing damage to properties, businesses and infrastructure.
25 September – 1 October 2013	Windstorms	State-wide	○ A series of strong windstorms affected most parts of Victoria for several days. ○ Gusts of up to 142 km/h were recorded, putting the strength of the storms into the range of Category 1 tropical cyclones. ○ VICSES received over 3,600 calls for assistance. ○ Apart from fallen trees damaging cars and houses, power outages affected many thousands of premises.
27 January 2016	Windstorms and flash flooding	Geelong and North-western suburbs	○ Severe thunderstorms impacted the Geelong area with isolated heavy rainfall, high winds, hail, and flash flooding. ○ Rainfall at Avalon and was determined to be a one-in-100-year event, with 72mm falling in a short period of time and rain at Geelong, a one in 50-year event. ○ Flash flooding required significant multi-agency response at incident, region, and state levels. ○ VICSES and CFA responded to more than 350 RFAs during the afternoon of Wednesday 27 January and morning of Thursday 28 January. ○ Eighteen people were rescued from their cars, while a man was struck by lightning in Highton. Significantly, no lives were lost.

			○ The storm caused significant damage to over 300 properties, including impact to 213 residences, 18 schools, 5 early learning centres, and 74 council-owned buildings. ○ The storm damaged essential assets, including road, drains, and other infrastructure. It also led to outages of the mobile phone and electricity networks. ○ A total of 35 residential properties were designated as uninhabitable due to storm damage.
21 November 2016	Epidemic thunderstorm asthma	State-wide	○ A severe thunderstorm impacted the Mallee, South West Region, Wimmera, Northern Country, Geelong and Melbourne with damaging winds, heavy rainfall and large hailstones. ○ The ESTA received a moderate surge in calls, answering 532 calls. However, the storm passed quickly, and BOM stated the storm was unremarkable. ○ From 6pm that night, ESTA experienced an increase in calls numbering at 510 calls within an hour to 7pm. During the 12 hours to 6am on 22nd November 2016, 2,332 calls were received requesting Ambulance Victoria to attend for a medical emergency. ○ From 7pm on the 12th of November 2016, hospital emergency departments experienced unprecedented demand, estimated by some hospitals to be an increase of 50%, particularly in Melbourne's west and north. This continued into the 22nd of November 2016, and resulted in the deaths of 9 people.
January 2020	Severe thunderstorms and flash flooding	State-wide	○ Severe thunderstorms in the afternoon on the 15th of January brought heavy rainfall, flash flooding and damaging winds to central Victoria and parts of Melbourne. ○ Severe thunderstorms developed again on the 19th of January over central and eastern Victoria, bringing heavy rainfall and giant hail (up to 5.5cm in diameter in Glen Iris, in the southeast of Greater Melbourne). ○ Widespread rainfall on the 20th and the 22nd helped reduce the number of uncontained bushfires in the state's east. ○ Strong northerly winds brought dust from northwest Victoria to the southern parts of the state – it came down with rain, and coated surfaces with a layer of dust and coloured the Yarra River brown. ○ High temperatures and humidity fuelled thunderstorms that developed on the 31st of January over southwestern Victoria, generating strong winds. The strongest wind gust in the state this January of 146 km/h, was recorded at Fawkner Beacon on the 31st. ○ Strong winds associated with a thunderstorm which developed near Colac in the afternoon of the 31st led to several transmission towers being knocked to the ground.

7 December 2020	Tornado	Horsham	○ An EF1 tornado (with peak gusts of 138-178 km/h) was reported at Horsham in western Victoria on the 7th of December. ○ Strong winds downed trees, damaged roofs and windows, scattering debris across roads, and cut the power supply to many houses.
10 June 2021	Windstorms and flash flooding	State-wide	○ Many sites in south-east Victoria received more than 100mm of rain in the 24 hours on the 10th and 11th leading to flooding in low-lying areas. ○ The Traralgon Creek caused major flooding in Traralgon, with evacuation messages issued for parts of the town. ○ Moderate to major storm warnings were also issued on the 10th and 11th of June for the Latrobe River at Thoms Bridge, the Tanjil River at Tanjil Junction, along the Thomson River near Sale, along parts of the Macalister and Morwell Rivers, and for the Yarra River at Yarra Glen. ○ More than 330,000 homes and businesses in Victoria were affected by power outages as the strong sustained winds with gusts exceeding 100 km/h, brought down trees and powerlines. Many roads were closed due to flooding and due to downed trees and power lines. ○ VICSES responded to more than 9,000 requests for help, mostly for fallen trees, building damage and storms.
October 2021	Windstorms and flash flooding	State-wide	○ Heavy rainfall/thunderstorm on the 3rd of October caused flash flooding in St Arnaud, forcing residents to leave their houses. ○ 3 to 4cm of hail was reported at Nagambie (north of Melbourne) on the 6th of October, associated with a severe thunderstorm. ○ Snow on the Victorian alps was recorded on the 14th of October, following the passage of a strong cold front. ○ Strong and gusty winds were observed both ahead of, and behind the cold front that crossed Victoria on the 14th. VICSES responded to more than 300 RFAs, mostly for fallen trees, and hundreds of homes were left without power. ○ The strongest wind gust in the state this month of130 km/h, was recorded at the Wilsons Promontory Lighthouse on both the 14th and 15th of October ○ More than 750,000 homes and businesses in Victoria were affected by power outages, with 526,000 customers off supply at the peak of the event.