

North East (Hume) Region

Emergency Response Plan



Storm Sub Plan

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This publication is intended to be consistent with the State Emergency Response Plan (SERP), published by Emergency Management Victoria in 2016.

Authorised by the Victoria State Emergency Service

168 Sturt Street, Southbank

An electronic version of the plan can be obtained at: <https://www.ses.vic.gov.au/em-sector/vicses-emergency-plans>

Version Control

North East (Hume) Region
Emergency Response Plan – Storm Sub-plan
Version 0.5, October 2018
Nature of amendment

Nature of amendment	Name	Date

North East (Hume) Region Emergency Response Plan – Storm Sub-plan Certification

This Emergency Response Plan – Storm Sub-plan deals with response to storm incidents within the Victoria State Emergency Service (VICSES) North East (Hume) Region area of responsibility.

For the purposes of multiagency clarity the naming protocol of 'North East (Hume) Region' has been applied to this document as the VICSES North East Region is referred to as Hume in EM COP. The Hume distribution list is selected for warnings and other situations where alternative naming applies.

The following plan is intended to provide the framework for the North East (Hume) Region to effectively and efficiently respond to future emergencies caused by storms. It will remain current until rescinded by authority of the VICSES Chief Officer Operations.

_____ Date: _____

Tim Wiebusch
Chief Officer Operations

This plan is produced by VICSES and has been adapted from the State Emergency Response Plan – Storm Sub-plan. All information contained in this plan is current at time of publication.

VICSES would like to acknowledge the significant contribution of key stakeholders to ensure the content contained within this plan is of a high quality to support response activities.

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State Emergency Management Priorities

The State Emergency Management Priorities are:

- **Protection and preservation of life 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 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.**

The Six C's

Arrangements in this Storm Sub-plan must be consistent with the 6 C's detailed in State and Regional Storm Emergency Plans and the MEMP. For further information, refer to Part 3 of the EMMV.

- **Command:** Overall direction of response activity in an emergency.
- **Control:** Internal direction of personnel and resources within an agency.
- **Coordination:** Bringing together agencies and resources to ensure effective preparation for response and recovery.
- **Consequence:** Management of the effect of emergencies on individuals, communities, infrastructure and the environment.
- **Communication:** Engagement and provision of information across agencies and proactively with the community around preparation, response and recovery in emergencies.
- **Community Connection:** Understanding and connecting with trusted networks, leaders and communities around resilience and decision making.

Note: If the storm event includes rain leading to flooding, this plan should be read in conjunction with the North East (Hume) Region Flood Emergency Response plan: ses.vic.gov.au/em-sector/vicses-emergency-plans

Table of Contents

North East (Hume) Region Emergency Response Plan – Storm Sub-plan Certification	3
State Emergency Management Priorities	4
The Six C's.....	4
Table of Contents.....	5
1. Introduction	7
1.1. Purpose.....	7
1.2. Objective	7
1.3. Scope.....	7
1.4. Authorising environment	7
1.5. Activation of the Plan	8
1.6. Audience	8
1.7. Linkages.....	8
1.7.1. Thunderstorm Asthma	10
1.8. Exercising and evaluation	10
1.9. Review	10
2. Storm Risk within the North East (Hume) Region	10
2.1. North East (Hume) Region description	10
2.2. Storm intelligence (before and during events, predictions and impacts).....	11
2.2.1. Managing and prioritising RFAs via 132 500 and 000	12
2.3. North East (Hume) Region storm risk and warnings	13
2.3.1. Storm definitions	13
2.3.2. Storm Warnings	13
2.3.3. Severe Weather and Severe Thunderstorms	14
Severe Thunderstorm Definition:.....	14
Very Dangerous Thunderstorm Definition:	14
2.3.4. Severe Thunderstorm Climatology	14
2.3.5. Severe Weather Climatology	14
Snow hazards.....	15
2.4. Regional VICSES and multiagency resources for storms	15
3. Consequences.....	15
3.1. Possible storm consequences including Business Continuity arrangements.....	15
VICSES Business Continuity Arrangements	16
3.1.1. Special considerations for Alpine areas.....	16
3.1.2. Cascading secondary consequences (including road access, agricultural impacts, etc.).....	16
3.2. Local storm history	16
Table 1: Tornado event history	17
Table 2: Lightning event history	18
Table 4: Wind storm event history	18
Table 5: Hail storm event history	19
Table 6: Snow/blizzard event history	19
Table 7: Very heavy rain/flash flood event history	19
Table 8: Dust storm events history	21
4. Community Resilience.....	21
4.1. Shared and Individual Responsibility for Action.....	21
4.2. Forecasting and Warning Services	22
4.2.1. Forecasting Services	22

4.3.	Municipal Storm Emergency Planning	22
4.4.	Community Engagement: The StormSafe program.....	22
4.5.	StormSafe household and business plans:	23
4.6.	Community safety advice, including for CALD communities and Alpine environments	23
5.	Managing a Storm event.....	23
5.1.	Roles and responsibilities	23
5.2.	Concept of Operations: (refer to VICSES Operations Management Manual V4 July 2018)	23
5.3.	Escalation and notification	24
5.4.	Strategic response planning	24
5.5.	Cross Border Arrangements	25
5.6.	North East (Hume) Region Control Centre (RCC).....	25
5.7.	Incident Control Centres (ICCs).....	26
5.8.	Divisional Command Points	26
5.9.	Possible resource requirements for storms in the North East (Hume) Region.....	27
	Glossary	28
	Attachments	29
	Attachment 1 – North East (Hume) Region Storm Scenarios	30
	Attachment 2 – North East (Hume) Region Resource List	32
	Attachment 3 – VICSES Unit Map.....	36
	Attachment 4 – General Response Boundaries Map	37
	Attachment 5 – IMT Readiness Levels – Storm (JSOP 2.03).....	38
	Attachment 6 – North East (Hume) Region ICC Footprint Map.....	41
	Attachment 7 - North East (Hume) Division Command Location Map	42
	Attachment 8 – Hail information.....	43
	Attachment 9 – Tornado information.....	44
	Attachment 10 – StormSafe CALD Resources	45
	Attachment 11 – Storm RFA Triage Priority Table	46
	Attachment 12 – Storm SMEACS briefing sample	47

1. Introduction

Storms are Victoria's most common emergency, and can happen anywhere, at any time of year. They are often accompanied by strong winds, large hailstones, flash flooding and lightning and can cause significant damage to homes, businesses, community infrastructure and the natural environment.

VICSES is the control agency for storms within the Victorian Emergency Management Arrangements.

Storms in the context of this plan include: wind, dust, tornados, snow/ blizzards, hail and severe thunderstorms, including lightning and heavy rain leading to flash flooding.

1.1. Purpose

The purpose of this plan is to provide strategic guidance for the effective and efficient emergency management of storm impacts in the North East (Hume) Region.

1.2. Objective

The objective of this North East (Hume) Region Emergency Response Plan – Storm Sub-plan is to outline the arrangements to ensure an integrated and coordinated approach to the management of storm events across the region, in order to reduce the impact and consequences of storm events on the community, business, tourism, infrastructure and services.

1.3. Scope

This North East (Hume) Region Emergency Response Plan – Storm Sub-plan includes:

- Description of potential risks and consequences of storms to the social, built, economic and natural environments within the Region.
- Region-specific emergency management arrangements for the management of storms.
- Links to sources of information where the reader can obtain further detail.

1.4. Authorising environment

The *Emergency Management Act* (1986 and 2013) is the empowering legislation for the management of emergencies in Victoria.

The Emergency Management Manual Victoria (EMMV) contains policy and planning documents for emergency management in Victoria, and provides details about the roles different organisations play in the emergency management arrangements.

The State Emergency Response Plan (Part 3, EMMV) identifies Victoria's organisational arrangements for managing the response to emergencies.

This North East (Hume) Region Emergency Response Plan will detail specific arrangements for the management of storm emergencies within the North East (Hume) Region.

This plan has been developed as a subordinate plan of the North East (Hume) Region Emergency Response Plan and the State Emergency Response Plan – Storm Sub-plan.

This plan has been shared with the North East (Hume) Regional Emergency Management Committee for comment, and approved by the VICSES Chief Officer Operations.



Other relevant legislation includes:

- *Victoria State Emergency Service Act 2005*
- *Essential Services Act 1958*
- *Planning and Environment Act 1989*
- *Local Government Act 1989*
- *Alpine Resorts (Management) Act 1997*

1.5. Activation of the Plan

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

Refer also to Attachment 5: The Storm Readiness and Activation Trigger Consideration Table (V 3.0 Sept 2017). This table provides guidance based on storm: prediction, actual behaviour, Requests for Assistance (RFAs), line of control and impacts and consequences.

1.6. Audience

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 management of the emergency.

Although the wider community is not the primary audience, community members may find the contents of this plan informative.

1.7. Linkages

This plan is a sub-plan of the State Emergency Response Plan – Storm Sub-plan and the North East (Hume) Region's Emergency Response Plan. It reflects current Victorian legislation, the arrangements in the State Emergency Response Plan, the strategic direction for emergency management in Victoria and the accepted State practice for managing emergencies.

The following storm-related documents are listed for easy location and guidance.

Storm Related: Resources, Hazard plans, JSOPs, VICSES SOPs or Policy Names	
Flood plan – State	State Emergency Response Plan – Flood Sub-plan
Flood plan – Region	North East (Hume) Region Flood Sub-Plan
Landslide Plan	State Emergency Landslide Hazard Plan
Camp site mapping	DELWP has developed mapping showing location, altitude, etc. for most known camping areas/camp sites across the region. Available as a layer in EM COP
Hazardous tree mapping	A map layer in EM COP indicates fire-damaged tree hazard layers in place in Alpine and other fire-affected areas
JSOP 2.03	Incident Management Team (IMT) readiness arrangements
JSOP 3.02	Incident naming – major emergencies
JSOP 3.03	Incident action planning including storm SMEACS
JSOP 8.03	Tree hazard (Bushfire Response)
SOP 08	Severe weather notification and activation process
SOP 09	Flood notification and activation process
SOP 019	Operations involving trees
SOP 024	Operations involving powerlines and conductors
SOP 028	VICSES vehicles entering floodwaters
SOP 029	Alpine search and rescue operations
SOP 032	Urban Search and Rescue (USAR) operations
SOP 039	Working safely at heights
SOP 041	Operations involving asbestos
SOP 071	Operations involving solar power and photovoltaic cells
Safety Alert 23	Electrical risks associated with solar arrays
Safety Alert 35	Ladder safety (securing of)
Safety Alert 37	Storm damaged tree operations
Safety Alert 44	Unauthorised tree felling
Policy 10.04	Flash Flood Warnings Policy
Policy 10.02	Local Knowledge
Policy 12.04	After Action Review Policy

Other arrangements for the management of secondary consequences of storms are contained in the following:

- For health response – State Health Emergency Response Plan (SHERP)
- For rescue – the Victorian Urban Search and Rescue Response Arrangement (USAR)

- Flood response – State Emergency Response Plan – Flood Sub-plan, and the North East (Hume) Region Emergency Response Plan – Flood Sub-plan. ses.vic.gov.au/em-sector/vicses-emergency-plans

1.7.1. Thunderstorm Asthma

While uncommon, Thunderstorm Asthma may also be associated with storm events as a result of high pollen counts and higher than normal levels of humidity. Thunderstorm Asthma arrangements are currently under development by the Department of Health and Human Services (DHHS) and the Environmental Protection Authority (EPA).

Arrangements in this plan have not been repeated from afore mentioned plans, unless necessary to ensure context and readability. All available VICSES Plans can be accessed at ses.vic.gov.au/em-sector/vicses-emergency-plans

1.8. Exercising and evaluation

This plan will be exercised within one year from the date of approval and once every three years thereafter as part of a phased cycle. Two North East (Hume) Region Storm Scenarios have been created to support this function, available in Attachment 1 – North East (Hume) Region Storm Scenario. 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 State Exercising Framework, including debriefs and a formal After Action Review (AAR).

Any operational activity in North East (Hume) Region requiring the management of a storm event will be regarded as an exercising of the plan. The event is to be evaluated and reviewed, as outlined above.

1.9. Review

This plan is current at the time of publication and remains in effect until modified, superseded or withdrawn.

This plan will be reviewed and updated every three years. Consideration will be given to an earlier revision if the plan has been applied in a major emergency or exercise, or following a substantial change to the relevant legislation or arrangements.

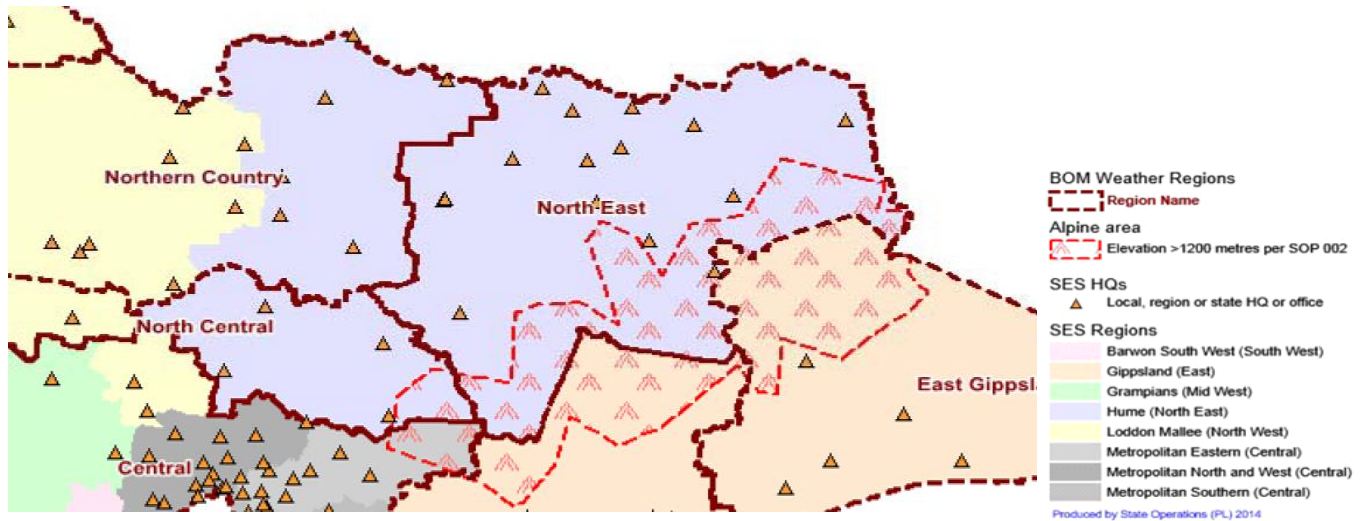
2. Storm Risk within the North East (Hume) Region

2.1. North East (Hume) Region description

The North East (Hume) Region extends over 40,000 square kilometres of north eastern Victoria. It contains many communities that are culturally diverse and is geographically varied, with landscapes and topography that range from crops to wilderness bushland reserves, to the flat or undulating plains of the north and west, to the mountains of the Alpine National Park (part of the Great Dividing Range) in the east and south. The northern boundary of the region is the Murray River and drains the entire course of several significant waterways including the Goulburn, Ovens, Broken, Kiewa and King rivers.

From the “Mountains to the Murray”, the North East/ Hume Region has a range of built and natural environments, rugged mountainous landscapes, a diverse economic and agricultural base, unique tourism (including ecotourism and adventure-based tourism) which can all be vulnerable to, and in some cases influence, storm behaviour (eg. orographic influence).

The VICSES North East (Hume) Region (see map below) includes four Bureau of Meteorology (BOM) weather districts (parts or all of): Northern Country, North East, North Central, and the Alpine area.

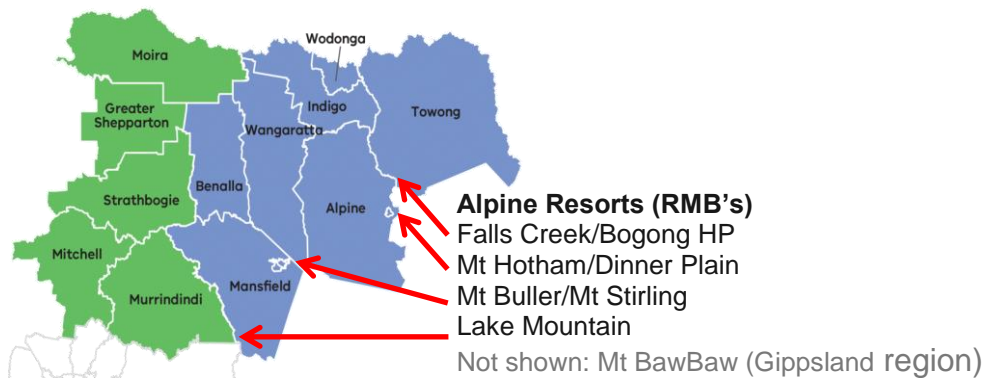


In the North East (Hume) Region, every Local Government Authority (LGA) has been affected by some kind of storm and especially prone are the unique environments and climates of the Alpine areas. The region contains twelve LGAs and four Alpine Resort Management Boards (ARMBs) – see map below.

LGAs: Alpine, Benalla, Greater Shepparton, Indigo, Mansfield, Mitchell (shared with Central Region), Moira, Murrindindi, Strathbogie, Towong, Wangaratta and Wodonga.

ARMBs: Mt Hotham, Falls Creek, Mt Buller/ Mt. Sterling and Lake Mountain (jointly managed by Southern ARMB and Murrindindi Shire).

Unlike other regions in provincial Victoria there is no single dominant major regional city, allowing large regional centres such as Wodonga, Wangaratta, Seymour and Shepparton to service surrounding communities. The impact of storms on such regional towns, their larger populations, clusters of local to federal infrastructure and community facilities, key transport links (eg. the Hume Freeway, Melbourne to Sydney rail line, etc.) can be significant. Likewise, the consequences of isolation in rural and remote communities can also be substantial, for example, lack of power or access, which can last for days or weeks. For power outage advice: <https://m.powercor.com.au/outage-map> or map layer in EM COP.



2.2. Storm intelligence (before and during events, predictions and impacts)

■ Intelligence:

- BOM: predictions/ forecasts and warnings at bom.gov.au/vic, WEBEX 1300 videoconference pre event (WEBEX in EM COP), Severe weather desk: 03 9669 4978/ 03 9669 1650, Senior Forecaster 1300 659 217.
- Regional readiness activities (as per JSOP 2.03), eg. briefings/ teleconferences (REMT, Units, etc.), pre-positioning of specialist teams/ resources.
- Other plans, eg. Municipal Emergency Management Plans (MEMPs).
- A SMEACS tailored for storm is sent to Units pre event (refer to sample Attachment 12, p.44).

- At the Incident Control Centre (ICC), tight liaison with the IMT Intelligence Section (or Planning if Intel not in place).
- EM COP collection of impacts, photos, etc.
- Social media for information on what the community is experiencing.
- **Local knowledge:** Incorporating local knowledge is vital to the success of the operation
 - Local VICSES and/ or CFA volunteers, inputs from local VICPOL members.
 - Appoint a Local Information Officer (LIO).
- **Community observers:** Are identified trusted local sources in addition to VICSES members. These include:
 - Leaders within CFA, or CFA ground observers.
 - Local police members.
 - Senior local government representatives.
 - Key community leaders.
 - Other established networks, eg. CMA groups.

2.2.1. Managing and prioritising RFAs via 132 500 and 000

- An RFA via 132 500 triggers VICSES Dispatch (ESTA) to issue a pager message for a VICSES unit to respond (attend the scene).
- Each RFA is entered into the VICSES Operational Incident Management System (OIMS) (IMS equivalent in CFA). It is essential to have OIMS operators at large incidents.
- Once multiple RFAs are received, they are triaged to ensure a coordinated response and appropriate allocation of resources. From IMS this may require each RFA to be checked by phone or ground crew reconnaissance.
- Effectively incorporating and triaging 000 calls for assistance at IMT or DIVCOM level is an acknowledged challenge.
- VICSES triages RFAs according to a priority table of 6 categories, ranging from Priority 1, threatened or entrapped persons, to Priority 6, render private property safe and provide protection from further damage. For more detail refer to the Prioritising Table found in Attachment 11.

Summary of RFAs and escalation. Refer Operations Management Manual, V4, July 2018 P.63:

Storm Readiness Activation Level	RFA's per UNIT	RFA's per REGION	Comments
Level 1 Local	1-5 Rural 1-10 urban		Community impact/ consequences may prompt escalation. Managed locally: UDO/RDO/RAC.
Level 2	20-30 Rural 60-75 Urban		Community impact/ consequences may prompt escalation. Managed locally or with ICP: UDO/RDO/RAC/RC. SAC/SDO monitoring.
Level 3A	20-30 Rural 60-75 Urban	60-100 Rural 200-250 Urban	Community impact/ consequences may prompt escalation. Managed from ICP(s). 3+ ICP's. RC in place RCC/SAC/SDO/ SCC.
Level 3B and above	30 + Rural 75 + Urban	100 + Rural 250 + Urban	Community impact/consequences may prompt escalation. Managed with one or more: ICP/SCP/DCP/ICC/RCC. RDO monitors incidents outside ICC and BAU.

2.3. North East (Hume) Region storm risk and warnings

Storms are Victoria's most common emergency with hundreds of storms occurring each year.

- Storms can happen anywhere, at any time of year.
- Storms (whether severe or not) have the potential to result in loss of life.
- North East (Hume) Region is also prone to tornadoes.

Historically the North East (Hume) Region has experienced frequent, significant and varied types of storms resulting in:

- Loss of life, injuries (especially during wind-related events, and often in vulnerable locations, eg. camping locations).
- Destruction or damage to buildings (including roofs, solar panels), infrastructure (eg., power outages), the environment, including agriculture (especially wind, hail, lightning or heavy rainfall related storms).

Heavy rainfall can lead to flash flooding, overland flooding and riverine types of flooding. The last significant riverine flood events were: 2010, 2012 and 1993. For information on local riverine flooding, refer to the VICSES North East (Hume) Region Flood Response Plan: ses.vic.gov.au/em-sector/vicses-emergency-plans.

2.3.1. Storm definitions

Storms in the context of this plan include: wind, dust, tornados, snow storms, blizzards, hail and severe thunderstorms, including lightning and heavy rain leading to flash flooding.

Not all storms are "severe", are a risk to life, or produce damage, however those that can and do have specific naming and characteristic criteria.

Storm-related warnings are issued by BOM for weather events that may produce damaging and dangerous phenomena. These **do not include** warnings specifically for snow storms or dust storms (other than "raised dust") – refer to the table below for more information. A full version of this table is contained in the State Emergency Response Plan – Storm Sub-plan: ses.vic.gov.au/em-sector/vicses-emergency-plans.

Criteria for issuing Severe Thunderstorm Warnings and Severe Weather Warnings:

Weather Phenomenon	Severe Thunderstorm Warning: issued if phenomena caused by the thunderstorm	Severe Weather Warning: issued if the phenomena are not directly caused by severe thunderstorms and not covered by cyclone or fire weather warnings
Wind (Gusts)	Gusts 90 km/h or more	Gusts 90 km/h or more
Wind (average)		Widespread winds over land 63 km/h or more (Gale force)
Tornado	All tornadoes	
Snow storm	No warnings as such issued, other than snow down to XXX metres	
Dust	No warnings as such issued, other than "raised dust" as a secondary consequence	
Blizzard		Widespread blizzards in Alpine areas
Flash Flood	Heavy rainfall conducive to flash flooding or a reported flash flood	Heavy rainfall is conducive to flash flooding or a reported flash flood
Large Hail	Hail with size of at least 2 cm	

2.3.2. Storm Warnings

- Victorian BOM weather and VICSES storm warnings are issued via EM COP (Public Publisher) using the HUME distribution list. Vic Emergency is Victoria's combined distribution source

of emergency information, warnings and advice to communities, via the Vic Emergency website (emergency.vic.gov.au), the Vic Emergency app and the Vic Emergency Hotline (1800 226 226).

- A VICSES State Duty Officer (SDO), or on request, the State Control Centre (SCC) Warnings and Advice Duty Officer (WADO), or an operating Incident Control Centre (ICC) with appropriate approvals, can localise or tailor the BOM warnings as per the [VICSES SOP 008 Severe Weather Notification and Activation Process](#).

2.3.3. Severe Weather and Severe Thunderstorms

Severe Thunderstorm Definition:

In Australia, Severe thunderstorms are defined by BOM as those that produce any of the following attributes:

- Lightning.
- Hailstones with a diameter of 2cm or more.
- Damaging and destructive winds (between 52km/h and 102km/h) or greater.
- Flash flooding from heavy localised rain.
- Tornados.
- Wind Gusts of 90km/h or greater.
- Blizzard conditions: strong winds in conjunction with blowing or falling snow with an expected reduction in visibility to less than 200 metres.

Only about 10% of thunderstorms are severe, but these account for approximately 90% of the damage produced by all thunderstorms (and all thunderstorms produce lightning which can cause death, injury and damage).

For more about severe weather or thunderstorm warnings go to: bom.gov.au/weather-services/severe-weather-knowledge-centre/WarningsInformation_SW_SWW.shtml

For more about storms go to the BOM Storm Spotters Handbook: bom.gov.au/storm_spotters/handbook/foreword.shtml

Very Dangerous Thunderstorm Definition:

A Severe Thunderstorm Warning issued by BOM may be exceeded by a Very Dangerous Thunderstorm Warning.

A Very Dangerous Thunderstorm is defined as one that produces:

- Hailstones with a diameter of 5cm or more; and/or
- Wind gusts of 125km/h or greater.

2.3.4. Severe Thunderstorm Climatology

The most frequent types of severe weather events in the North East (Hume) Region that are not directly related to thunderstorms are wind storms (land gale force winds) associated with the passage of a cold front or intense low pressure systems crossing the region. These 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 and more common.

2.3.5. Severe Weather Climatology

Severe weather trends in the North East (Hume) Region of Victoria:

- Most severe thunderstorms occur between October and April.
- Although severe thunderstorms can occur at any time of the day or night, it is the afternoon and evening period when severe thunderstorms are most frequent.
- 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 due to the fact that tornados can form in cold-air mass thunderstorms as well as in warm-air mass super cell thunderstorms.

Other observed local impacts in the North East (Hume) Region:

- Orographic effect is the change in atmospheric conditions caused by a change in elevation, primarily due to mountains. Orographic precipitation, (rain, snow, etc.) is produced when moist air is lifted as it moves over a mountain range. As the air rises and cools, orographic clouds form and serve as the source of the precipitation, most of which falls upwind of the mountain ridge.
- Tornadoes frequently track across northern Victoria and along the Murray River.
- Victoria's section of the Great Dividing Range provides a "rain shadow-like" deflective effect on East Coast Lows that may affect the Gippsland (East) region.

Snow hazards

Snow can fall in alpine regions all year round.

- A blizzard (as per the BOM definition) is a violent and very cold wind which is loaded with snow, some of which has been raised from snow covered ground. Reduced visibility makes it easier to lose your bearings, even if you're familiar with the area. White-out conditions (uniform whiteness) in a snowy landscape can take away all reference points. It does not have to be snowing for there to be 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.
- Heavy snow (as per the BOM definition) creates reduced visibility of paths, signs and hazards, and makes travelling, navigation and/ or rescue difficult. Large snow accumulations may slip off rooftops, or cause trees or their limbs to fall. Impacts include increased risk of hypothermia (especially if snow combines with wind), increased risk of accidents due to compacted snow and ice on roads, and increased avalanche danger.

For more about snow safety go to: www.snowsafety.org.au.

2.4. Regional VICSES and multiagency resources for storms

Expert multi-agency resources may be accessed during operations through the Australasian Inter-Service Incident Management System (AIIMS) structure. This support is initiated/ accessed in the first instance by the VICSES RDO via the Regional Agency Commander (RAC) to the Hume Regional Emergency Management Team (REMT).

- A map of VICSES Unit boundaries is provided in Attachment 3 or accessible via EM-COP for registered users.
- A full list of VICSES and key multiagency North East (Hume) Region resources can be accessed in Attachment 2.

3. Consequences

3.1. Possible storm consequences including Business Continuity arrangements

The North East (Hume) Region has many communities (including tourists and campers) and locations prone to and vulnerable to storm events. These locations include areas where topography can also influence storm behaviour, such as known wind "hot spots" like Kilmore Gap, Lake Nillachootie and King Valley's wind funnelling effect, and in Alpine areas where wind effects are more pronounced due to the altitude.

The effects of storm on the community can include (but are not limited to):

- Loss of life, serious injury or other health impacts (including reaction to Thunderstorm Asthma).
- Damage to or loss of:
 - Key infrastructure – road, rail, public buildings.

- Essential services – power (mains and alternatives, eg. solar), potable water, sewage, gas, telecommunications, internet (for power outages go to <https://m.powercor.com.au/outage-map> or refer to the power outage map layer in EM COP).
- Private property.
- Industry/ business/ tourism (including ecotourism and major tourism events).
- Agriculture/Viticulture – livestock, crops, orchards, plantations, etc.
- Damage to the environment.
- Access and egress delays affecting emergency responders and community impacts such as evacuation.

VICSES Business Continuity Arrangements

In the event that the Regional Office or other VICSES facility is impacted by the emergency, each location has a Business Continuity Plan in place. Each plan details back up arrangements to maximise the potential to operate and respond as per normal (eg. generator to counteract power outages, fuel supplies, etc.). These plans can be located in HPRE, or hard copy at the Benalla RCC.

3.1.1. Special considerations for Alpine areas

- Add 10 km/hour to average winds or gusts predictions.
- Wind damage to buildings in Alpine areas is usually reduced by enhanced building codes which have strengthened most Alpine resort buildings.
- Alpine/resort roads can be significantly impacted by fallen trees, especially in fire-affected areas. A map layer in EM COP indicates fire damaged tree hazard layers in place in Alpine and other fire-damaged areas.

Refer also to Storm Readiness and Activation Trigger table in Attachment 5.

3.1.2. Cascading secondary consequences (including road access, agricultural impacts, etc.)

Significant community disruption can occur as a result of damage to essential infrastructure, which may lead to cascading secondary consequences.

For example, wind damage along roadside vegetation corridors can create access/ egress issues or road closures, while a loss of power may result in a loss of potable drinking water supply, sewage systems, telecommunications, traffic and railway crossing signals and disruption to critical supply chains (eg. dairy farm milking and milk collection).

Damage, landslides and flooding of road infrastructure may also result in isolation of properties and/or communities which can take days or weeks to restore in a major incident or in remote areas.

Information on building critical infrastructure resilience can be found in the State Emergency Response Plan – Storm Sub-plan. This is supported by the Victorian Critical Infrastructure Resilience Strategy available at emv.vic.gov.au/our-work/critical-infrastructure-resilience.

3.2. Local storm history

The following tables below provide information about historical storms within the North East (Hume) Region, sorted by type and chronological date, with fatalities listed in **red** (where known).

BOM's storm archive (bom.gov.au/australia/stormarchive/) and VICSES' records of recent events show the North East (Hume) Region to be very susceptible to severe storms, including tornadoes, large hail, flash flooding, severe winds and lightning. Though there are few dust storm events that have specifically impacted this region.

People in the open, under trees or camping, are statistically the most vulnerable to death due to storm.

Table 1: Tornado event history

Tornado snapshot: Summary of local impacts: Sheds/homes/caravans destroyed, damaged/ unroofed; leaves stripped off trees/vineyards/orchards; significant asbestos exposures. Refer to Attachment 9, page 39: Tornado EF Enhanced Fujita Scale Information and Resources.		
Year / Fatalities	Locality impacted	Description
28 Mar 2018	Tolmie	8 homes damaged.
1 Nov 2015	Impacted areas: Nathalia, Strathmerton, Torrumbarry and Cobram	<ul style="list-style-type: none"> • An estimated EF2 tornado left a damage path approx. 45km long with wind-related damage reports in Nathalia, Strathmerton, Torrumbarry and Cobram. Homes were stripped of roofs and some were all but destroyed, deemed uninhabitable. • BOM noted “the tornado filmed (moving through Nathalia), corresponded to the inflexion point of the squall line on the radar” and “winds up to 130 km/h at 3500 ft along the back edge of that squall line.” • At Torrumbarry “trees were brought down and ripped tin roofing off one house, tearing away the battens to which it was attached.”
24 Jul 2015	Lake Hume tornado-waterspout	A waterspout was filmed on Lake Hume as a “tornadic” thunderstorm passed over the lake.
23 Feb 2015	Nathalia area	10 homes damaged.
21 Mar 2013 (Easter) Multiple injuries (>20)	Significantly impacted areas: Koonoomoo, Bundalong, (Mulwala NSW), Rutherglen, Euroa, Swanpool, Benalla and Mansfield	<ul style="list-style-type: none"> • A total of 7 tornadoes touched down • More than 20 people injured and taken to hospital, with two in a critical condition. • Wind gusts between 180-250 km/h cut a path of destruction. • VICSES received 150 RFAs for damage to properties, businesses and infrastructure. • One tornado rated at EF4 (believed to have been the most powerful tornado to have ever hit Victoria) struck the towns of Koonoomoo, Cobram, Barooga, Mulwala (NSW side of Yarrawonga), Yarrawonga, and Bundalong, followed by a second tornado from the same storm at Rutherglen between 6:50pm-8:30pm. Roofs were ripped off homes, caravans were upturned, Barooga Post Office was heavily damaged. • A tornado rated EF3 struck the towns of Tamleugh, Euroa and Swanpool. One petrol station was damaged at Euroa. • Further tornadoes touched down near Benalla (EF0), and two near Mansfield (EF0 and EF1).
9 Nov 2011	Bellbridge /Bethanga area (near Wodonga)	12 houses damaged, some with roofs blown off; trees uprooted.
26 Nov 2002	Myrtleford Wind event (possible Tornado)	It was reported that damage was consistent with that of an EF2 tornado. Buildings were damaged and a person was injured due to the collapse of a partially built house.
2000	Milawa	12 houses damaged, roof blown off church.
Sept 1989 1 fatality	Albury area (NSW) (Wodonga “sister” city)	Man killed by falling tree. Albury in darkness after \$2 million fire in substation.
1964	Numurkah	50 homes damaged.
26 Oct 1865 1 fatality Multiple injuries	Beechworth Wind event (possible Tornado)	Massive damage to Beechworth churches, school demolished, houses unroofed and objects thrown great distances. Man died inside a collapsed hut, numerous other injuries.

Table 2: Lightning event history

Lightning Snapshot: Summary of local impacts: Death/injury to humans and livestock (cattle, pigs, horses, sheep), lightning igniting significant bush/grassfires, building/infrastructure damage.		
Year / Fatalities	Locality impacted	Description
16 Mar 2009 1 fatality	Bright	Lightning struck tree at Bright pony club under which people were sheltering. One adult female died.
Dec 2006-Feb 2007	Alpine, Great Divide fires	Victoria's longest running bushfire (69 days). Caused by 87 confirmed lightning strikes. More than 1 million ha of land burnt. New Zealanders, Canadians and Americans joined more than 19,000 firefighters from across Australia to fight the blaze. The cost of the fire was more than \$200 million.
End 2003-early 2004	Upper Murray to the King Valley	Multiple lightning strikes result in 1 million ha Alpine "megafire."
1995 1 fatality	Yackandandah	Records indicate multiple significant lightning storms listed for Yackandandah over time, including causing a house fire.
1938 1 fatality	Yea	Child killed.

Table 4: Wind storm event history

Wind Storm snapshot: Summary of local impacts: Death/injury to humans, building damage ranging to complete destruction, significant infrastructure impacts (power and communications), agriculture/ horticulture/ viticulture impacts/damage/flattening.		
Year / Fatalities	Locality impacted	Description
Areas often subject to winds 100 km/h and over		Shepparton (156 km/h 2010), Mangalore (133 km/h, 1993), Yarrowonga (130 km/h 1997), Alexandra (128 km/h 1993,) and Mt Buller (128 km/h 2016). Multiple reports over 100 km/h: Broadford, Bullioh, Myrtleford, Tawonga, Corryong , Dookie, Benalla.
Feb 2018	Gundowering-Bright area	Multiple paraglider rescues after unexpected wind change.
Dec 2017 pre XMAS	Widespread windstorm throughout North East, particularly Cheshunt/King Valley	60,000 homes and businesses without power, telecoms, road and property access for several hours (to days/weeks) in King Valley/Cheshunt area. Many homes/buildings with roof damage, including caravan parks.
13 Feb 2013 2 fatalities	Harrietville (in active fire area)	A falling tree at 1530 struck a vehicle, killing two firefighters during a windstorm on the Harrietville-Alpine north area fire ground.
6-7 Mar 2010	Shepparton area	Winds around Shepparton 156 km/h. Major Storms in Melbourne and the North East (Hume) Region – major impact in Shepparton with path towards Alexandra. See 10 min documentary: youtube.com/watch?v=r0VvbGyi6E0
2010	Wangandary/Wangaratta	"Microburst."
9 Feb 2009 121 fatalities	"Black Saturday" bushfires: Kilmore Fire (Murrindindi/ Marysville) and the Beechworth Fire (Mudgegonga/ Kiewa V)	A series of bushfires that ignited when power lines were damaged/ made contact in high winds started the Kilmore East and Beechworth fires, resulting in 121 fatalities and 1280 homes damaged or destroyed. Class action claimed against electrical supplier. Significant infrastructure upgrades since.
2007	Mt Hotham	"Microburst."
1 Mar 2005	Wodonga	"Microburst," roofs blown off houses including motel. 230 RFAs. Major disruption including train derailment.
2003	Beechworth	"Supercell."
2000 1 fatality	Wodonga	A person was killed due to a branch breaking in strong winds.
Jun 1998 2 fatalities	Delvin's Bridge, Melba Highway	Gum tree fell across highway, killing driver and passenger. High winds for two days, rain softened soil.
1996 2 fatalities	Cobram	Strong winds caused branch to fall on people camping under trees.
1995	Corryong	23 homes damaged.

1995	Benalla	66 homes damaged, hospital damaged, no power to 1,000 homes.
1988 1 fatality	Yea – Marysville	Woman killed in Murrindindi area.
1980	Mooroopna	12 houses damaged.
1981	Shepparton	22 homes damaged.
Jan 1968 4 fatalities	Steavensons Falls Marysville	Four teenagers bush walking near the bottom of the Steavensons Waterfall killed by a large section of a mountain ash tree which fell during a wind storm.
Jan 1960 3 fatalities	Hume Weir	3 deaths after boat capsizes in strong winds. Tallangatta Hotel unroofed.

Table 5: Hail storm event history

Hail Storm snapshot: Summary of local impacts: Severe crop/orchard/vineyard damage, horse, cattle, sheep and goat losses. See Attachment 8, page 38 for hail resources. Only significant hail size listed.	
Locality impacted	Description
Tarrowingee	4.2 cm
St James	7 cm “baseball”
Kinglake	6 cm
Whorouly	7 cm
Mt Beauty	7 cm “fist size”
Tallangatta	4 cm “chicken egg”

Table 6: Snow/blizzard event history

Significant Snow/ blizzard snapshot: Summary of local impacts: fatalities and motor vehicle accidents.		
Year	Locality impacted	Description
10 to 13 Sept 2005 2 fatalities	Stanley, Beechworth area	Stanley, 7km south east of Beechworth, was blanketed in snow while heavy snowfalls in Beechworth lasted for about an hour from 3pm. Two people were killed when their car skidded off the icy Beechworth-Wangaratta Road at Black Springs about 6.20pm. Snow was also reported from Edi Upper in the King Valley, 365m above sea level.
19 July 2014 2 fatalities	Mt Bogong, Bogong High Plains (BHP)	Two snowboarders were swept to their deaths in the Victorian back country of the Mt Bogong High Plains.

Table 7: Very heavy rain/flash flood event history

Significant rain, storm, flash flood snapshot: Summary of local impacts: Drowning/ rescues/ injury to humans/ livestock, railway washed away, mudslides/ landslides/ debris flows.		
Year	Locality impacted	Description
2 Dec 2017	Euroa, Strathbogie Ranges	Statewide 250mm rainfall forecast within 24 hrs. 150mm had already fallen in many areas. 7.4 million people received SMS warning message. 190mm fell in Strathbogie Ranges (Mt Wombat). Homes flooded in Euroa, two rescues in Balmattum and Cathkin. Final days of Great Victorian Bike Ride cancelled.
Dec 2016	Harrietville - Mt Hotham	Flash flooding causing landslide. 178mm of heavy rain in recent bushfire area washed away a section of the Great Alpine Road (GAR, above Harrietville). GAR closed for repair for 6 weeks. Significant power outages.
18 Sep 2016	Toolamba near Shepparton	Two campers rescued after becoming stranded by rising Goulburn River floodwater; stuck inside their vehicle with two dogs. Rescued by locals. Emergency services withdrew due to the risk.
3 Jan 2016 1 fatality	Whiteheads Creek at Seymour	Slow moving storm resulted in 1.7m deep water at Delatite Road crossing. Man drowns even though crossing has flood warning indicators. Darkness likely concealed floodwater. 170 RFAs overnight including at Seymour, Wangaratta and Euroa.

		Mangalore 41mm, Nagambie 79mm.
Oct 2016	Bogong High Plains Road	Road closed due to numerous landslides.
Jul 2016	Harrierville	Complete loss of telephone communications.
Dec 2015	Ovens - Eurobin Flash flooding and landslide	After heavy rainfall (Eurobin 41.6mm in 30 min, Ovens 63mm in 30 min), landslide damaged three homes, with one deemed uninhabitable, and Great Alpine Road closed by significant debris flow. Catchment area also had recent fuel reductions works completed.
28 Sep 2011	Tolmie	Thunderstorms and heavy rain across Victoria. Tolmie weather station recorded the highest record of 101mm in a day
Jan- Feb 2011 1 fatality	Northern section of the Goulburn River, especially the Shepparton-Mooroopna area, Harston, Rutherglen	<p>The 2010-11 series of flood events were associated with the breakdown of El Niño conditions and the development of one of the strongest La Niña events observed since the late 1800's. In January 2011, most of Victoria was drenched with record rains and exceptional humidity. Severe thunderstorms developed over Victoria as a result of the tropical moisture associated with Tropical Cyclone Anthony and ex Tropical Cyclone Yasi (category 5). A persistent low pressure system and this tropical moisture resulted in over 150 rainfall stations across Victoria recording their wettest January ever, as well as record January daily rainfall (including areas of north-east Victoria where 140mm of rain fell in 20 minutes at Rutherglen). The North-West and Central regions were hardest hit. Approximately 1/3 of Victoria experienced some form of flooding or storm damage, resulting in enormous cost and disruption to regional, urban and rural communities. Across the state, an estimated \$6 billion was spent in damages.</p> <ul style="list-style-type: none"> • Main waterways affected in this region: the lower Goulburn River (especially In Shepparton and Mooroopna) and the Campaspe River running along the region's western border. • On 18 January, a police diver found the body of a boy who went missing on 17 January while playing on a raft in a flooded Goulburn River billabong. • Over 50 houses flooded and 500 houses were isolated due to Goulburn River flooding. • In Rutherglen, the Main Street flooded (flash flooding).
27 Nov 2010	Kilmore, Violet Town area	Flash flooding closed Hume Freeway.
4 - 7 Sept 2010	<p>See North East Region Flood sub plan for more detail</p> <p>Multiple communities and locations impacted along the Ovens, King, Kiewa, Goulburn and Broken Rivers, Seven and Castles Creek, and their many tributaries</p>	<ul style="list-style-type: none"> • The 2010-11 series of flood events were associated with the breakdown of El Niño (and drought) conditions and the development of one of the strongest La Niña events observed since the late 1800s. • In 2010 heavy rain fell in most regions of the state, particularly at higher altitudes of the North East/Hume region, flooding the upper reaches of many of Victoria's major rivers. Warm rain on a significant snowfall also increased the run off into the region's waterways increasing flood levels at a very rapid rate in some locations. • In North East Victoria, every main river basin north of the Great Dividing Range experienced major flooding and remains the next most significant flooding since 1993. • Highest Rainfall rate of 180mm (7.08") at Mt Buffalo over the weekend of 4-5 August 2010. • Several landslides in the Alps including Mt Hotham, Falls Creek and Mt Buller leaving hundreds of skiers stranded. • Mudslides in Mitta Valley after 210mm fell in 60 minutes.
2001	Gundowering, Eldorado	71.1mm in 30 minutes.
1995	Tallangatta Valley	270mm in 55 minutes.
1995	Benalla/Lurg	94mm 60 minutes.
1993	Mt Buffalo	212mm 24 hours.
1993	Benalla	100mm (163 points) in 20 minutes.
1992	Tallangatta Valley	150mm in 2 hours.

1992	Kilmore	Flash flooding flooded 30 houses.
1973 2 fatalities, and near misses	Whiteheads Creek, near Seymour	9" rain (approx. 220 mm) widespread across the local area. People washed away. One lady drowned, one army rescuer drowned. House washed away, many evacuations. Railway line damaged and part of hospital flooded.
1971	Kinglake	90mm in 45 minutes.
1961	Jamieson	238 points (84 mm) in 60 minutes. Flooding in main street, shops flooded.
1961	Wangaratta	75mm in 45 minutes.

Table 8: Dust storm events history

Dust Storm snapshot: Summary of local impacts: Restricted/ limited visibility; mostly a secondary characteristic of a strong wind event.	
Year	Locality impacted and description
1983 Feb	Melbourne and most of Victoria. This dust storm was a meteorological phenomenon that occurred during the afternoon of 8 February 1983. A strong but dry cold front crossed Victoria, preceded by hot, gusty northerly winds. The loose drought-affected topsoil in the Mallee and Wimmera was picked up by the wind and collected into a huge cloud of dust that heralded the cool change. Red soil, dust and sand from Central and South Eastern Australia was swept up in high winds and carried south-east throughout Victoria. The dust storm was one of the most dramatic consequences of the 1982-83 drought (El Nino year), at the time the worst in Australian history and is, in hindsight, viewed as a precursor to the Ash Wednesday bushfires which were to occur eight days later. The combined effect of drought and dust storm inflicted damage on the land that, according to the Victorian Farmers Federation would take up to 10 years and tens of millions of dollars to repair. The exact weather pattern that had caused the dust storm was repeated one week later (Ash Wednesday bushfire).
2018 Feb	Parts of Melbourne and Victoria. A strong cold front moved across Victoria. A haze descended on parts of Melbourne as strong winds whipped up dust and downed trees, causing power outages, building damage and public transport delays. No significant damage to North East reported.
1960 Jan	Hume Weir (Lake Hume): Dust storm with 20m visibility.

4. Community Resilience

4.1. Shared and Individual Responsibility for Action

The National Strategy for Disaster Resilience, developed by the Council of Australian Governments (COAG), provides high-level guidance on disaster management to agencies with a role in emergency management. Foremost in the Strategy is the principle of all of society taking responsibility for preparing for disasters.

Examples in the context of storms include:

- Individuals being aware of their storm risk, and following advice from emergency services when preparing for and responding to warnings.
- Local governments and communities including storm risk within their Community Emergency Risk Assessment (CERA) activities, including consideration within emergency management planning and land use planning.
- Industry and businesses planning for the risk of disruption, and ensuring arrangements are in place to maintain critical services, and assist communities where possible.
- Government agencies undertaking:
 - Risk assessments to gain an appreciation of storm risk.
 - Engaging with the community regarding storm risk.
 - Working with communities to plan the management of storm risk.
 - Providing emergency information and storm warnings.
 - Ensuring an effective, well-coordinated response during storms.

- Helping communities to recover and learn following a storm and to build their resilience to future events.

VICSES has developed a Community Resilience Strategy and delivers programs to at-risk communities to provide information on what to do before, during and after storms. Information can be found at ses.vic.gov.au/get-ready.

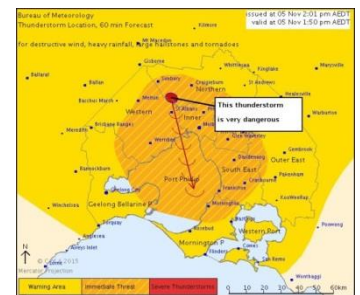
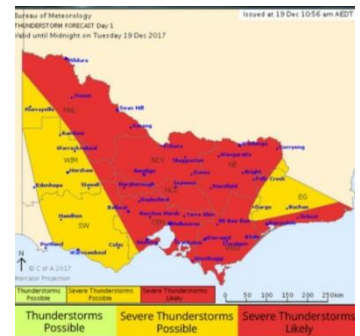
4.2. Forecasting and Warning Services

4.2.1. Forecasting Services

BOM has a requirement under the *Meteorology Act 1955* to warn the community and provide the following services to VICSES. These services are outlined in detail in the State Emergency Response Plan – Storm Sub-plan, available at: ses.vic.gov.au/em-sector/vices-emergency-plans.

BOM's storm warning products:

- **Severe Weather Outlook** – Five-day outlook.
- **Severe Thunderstorm Forecast Chart** – Thunderstorm forecast issued at 11:30am each day indicating the chance of thunderstorms (outside storm season). A Day 2 forecast will usually be issued at midday during “thunderstorm season” (October to April).
- **Severe Weather Warnings** – Issued when severe weather is expected to affect land-based communities within 6-24 hours and one or more of the following applies:
 - It is not directly the result of severe thunderstorms.
 - It is not covered by tropical cyclone or fire weather warnings.
 - Severe Weather is already occurring and a warning is not already current.
- **Severe Thunderstorm Warning** – Issued whenever there is sufficient meteorological evidence to suggest that severe thunderstorm development is likely, or when a severe thunderstorm has already developed and a warning is not already current.



4.3. Municipal Storm Emergency Planning

Where storm is identified through the emergency risk management process as a high priority to a community, the Victoria State Emergency Service will provide advice and support to the Municipal Emergency Management Planning Committee (MEMPC) to ensure the Municipal Emergency Management Plan (MEMPC) contains at a minimum, arrangements for the response to a storm event based on all-hazards and all-agency response.

4.4. Community Engagement: The StormSafe program

The StormSafe program engages with the community to raise awareness of the dangers of severe weather and communicate some simple, useful actions they can take for their own safety and that of their property.

Some of the major causes of preventable damage, injury or death during a storm are the result of:

- Tree branches, trampolines, outdoor furniture or other loose items such as roof tiles becoming flying projectiles in strong winds.
- Powerlines damaged, causing power outages and/ or electrical dangers.
- Flooding due to blocked drains, spouting and/ or downpipes.
- People taking shelter in cars, caravans and tents can be injured or killed while parked under trees and overhanging branches.
- For information about snow safety go to: snowsafe.org.au/.

Community engagement programs to build resilience for storm are conducted in accordance with the VICSES Community Resilience Strategy, as outlined in Section 4.1 Shared and Individual Responsibility for Action.

Since 2007, The North East (Hume) Region has developed and delivered a range of programs to achieve the goals outlined in the VICSES Community Resilience Strategy and delivered StormSafe/ StormSmart programs (StormSmart refers to the VICSES pilot iteration of the StormSafe program delivered in the Wodonga area) to known storm risk communities to provide information on what to do before, during and after storms. More information can be found at ses.vic.gov.au/get-ready.

The North East (Hume) Region community engagement StormSafe strategy involves, but is not limited to:

- Community and local knowledge consultation and engagement.
- Regular unit/ regional/ state activities and events to reinforce the risk message.
- Participation in multi-agency hazard education activities.
- Participation in community-led emergency planning.
- Building resilience and capacity within communities.

StormSafe does not cover snow safety. For information on snow safety go to: snowsafe.org.au/.

4.5. StormSafe household and business plans:

The Emergency Management Commissioner advises that every household and business should have a written emergency plan and an emergency kit (including torch, radio, batteries, etc.). Information on the development of household and business plans and emergency kits can be found at ses.vic.gov.au/get-ready. Engagement tools (including Powerpoint presentations, planning toolkits and posters) are also available on the VICSES Hub (intranet).

The North East (Hume) Region also supports local Caravan Park and tourism operators and owners to prepare for emergencies by supporting use of the online emergency planning tool, available at ses.vic.gov.au/get-ready/caravan-park-information.

4.6. Community safety advice, including for CALD communities and Alpine environments

VICSES provides advice to community before, during and after storms in the form of key safety messages, which includes advice for safe evacuation where necessary. A full list of community safety advice messages can be viewed on EM-COP in the IMT Toolbox: <https://files-em.em.vic.gov.au/IMT-Toolbox/PubInf/MediaTools/VICSES-HazardKeyMessages-February2018.pdf>.

Multilingual key storm safety messages are also available on the VICSES website at ses.vic.gov.au/web/www/get-ready/other-languages. Refer to Attachment 10 for the English sample version.

The alpine region can be hazardous for inexperienced or careless visitors. SnowSafe provides essential information on how to safely enjoy the Alpine environment through planning and preparation. For more about snow safety go to: <http://snowsafe.org.au/>.

5. Managing a Storm event

5.1. Roles and responsibilities

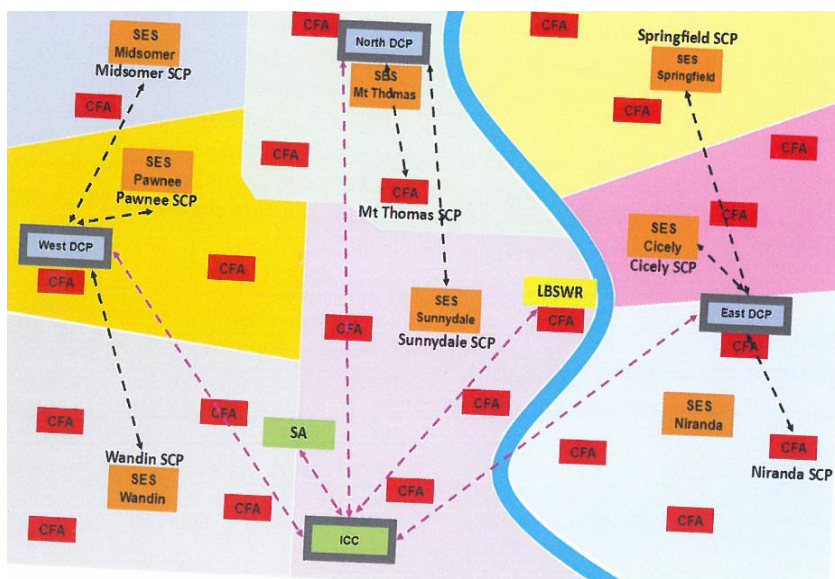
The State Emergency Response Plan – Storm Sub-plan details the roles and responsibilities of the agencies involved in storm response.

5.2. Concept of Operations: (refer to VICSES Operations Management Manual V4 July 2018)

The State Emergency Response Plan – Storm Sub-plan and the Storm Readiness and Activation Trigger Considerations details the Concept of Operations for a multi-agency response to storm (see P. 36).

- Depending on storm predictions, a readiness IMT may be in place at an ICC location as per Table 9 (see P.26).

- The Incident Controller (IC) with the IMT will determine the operational make up of a storm response based on the unique situation presented by each storm scenario. This will include the need for possible activation of:
 - **Divisional Command Points (DCP)** as per Table 10 (see P. 27). These are based around a municipality/ local VICSES unit footprint.
 - **Sector Command Points (SCP)**, established based on the impacts and tasking of SME knowledge, safest work practices, skills and equipment.
 - **Taskforces** made up of mixed agency crews and equipment to ensure most efficient and effective response. For example, after a significant windstorm, if there are multiple roof-damaged buildings and significant trees down on roads. Image from VICSES Operations Management Manual 2018, P.113
 - **Sample tasking**, for example, VICSES crews will be tasked with the rooftop safety tasks, while CFA crews will be deployed to cut up the fallen tree jobs. DELWP or council tree arborists to cut down any damaged/ hazardous trees, etc.
 - **Staging Areas (SA)** to support the Incident or a Division or both.



5.3. Escalation and notification

BOM publishes Severe Weather and Severe Thunderstorm Warnings, as detailed in Section 4.2 Storm Forecast and Warning Service, on its public website (bom.gov.au) and provides them to pre-identified agencies, organisations and media outlets, including **Vic Emergency**, and VICSES at both State and regional level via pager and email warning messages.

Upon receipt of a Severe Weather or Severe Thunderstorm Warning, North East (Hume) Region:

- Regional Duty Officers (RDOs) will acknowledge the pager message to the SDO.
- Notify the North East (Hume) Regional Agency Commander (RAC) to:
- Notify the North East (Hume) Regional Controller and/or North East (Hume) Region Emergency Management Team members for storm response, and any relevant Units.
- Notify Units: In the North East (Hume) Region, this can include the distribution of a Storm SMEACS tailored for the scenario.

The escalation and notification process for storm response is operationalised within VICSES SOP 008 – Severe Weather Notification and Activation Process.

5.4. Strategic response planning

The following actions are the responsibility of VICSES at the North East (Hume) Region and State tiers. Responsibility for these actions may transition to the North East (Hume) Regional Controller to support multi-agency response when significant impacts caused by a storm event occur. Associated storm readiness levels and ICC footprints can be accessed within JSOP 2.03 Incident Management Team (IMT) Readiness Arrangements or the VICSES Storm Readiness and Activation Trigger Considerations (v3.0), also available via Attachment 5 – IMT Readiness Levels – Storm.

On receipt of advice from BOM of the potential for storm activity, the RAC will undertake strategic level planning in anticipation of an event, in alignment with VICSES severe weather triggers. Key considerations will include:

- Establishing the control structure for managing the event.

- Supporting consistent emergency warnings and provision of information to the community.
- Preparations for possible evacuations including implementation of evacuation and emergency relief plans and identification of evacuation points.
- Confirming agencies at all tiers are activated and appropriate arrangements are in place.
- 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 may be at risk, and arrangements to ensure the safety of individuals attending. In the North East (Hume) Region, mass gathering/ event information is available from the Hume REMT 7-day Readiness Plan in EM COP: <http://files.em.vic.gov.au/OpFac/HUM/HUM-Plans.htm?v=1>.
- Confirming agencies with call-taking responsibilities (such as 132 500 or 1800 226 226) have resources in place and backup arrangements to cope with the expected call load.
- Positioning of Emergency Management Liaison Officers (EMLOs) from key support agencies to North East (Hume) Region Control Centres (RCCs), where appropriate.
- Arranging for regular meetings of the North East (Hume) Region Emergency Management Teams (REMTs) and Incident Emergency Management Teams (IEMTs).
- Providing situation reports to the State Control Team (SCT).

5.5. Cross Border Arrangements

Within Victoria: Intrastate cross border arrangements exist with all VICSES regions.

Cross border arrangements with NSWSES: Cross border arrangements exist with NSWSES, supported by a Memorandum of Understanding (MoU) that outlines how VICSES will request assistance from the NSWSES as follows:

- In the case of an event within the immediate border area, the relevant VICSES Regional Manager or delegate will request from the NSWSES Murray Region Controller or delegate such support as is required and notify the VICSES State Duty Officer.
- In the case of an event within Victoria but outside the immediate border area the VICSES Chief Officer Operations or delegate will request from NSWSES Commissioner or Delegate such additional support as is required.

In relation to a storm event along the Murray River, effective liaison and joint “cross border” community messaging is essential. This should be facilitated by regular communication with NSWSES, including the Hume REMT. ICCs that are managing storms along the Murray River should request a NSWSES Murray Region EMLO.

5.6. North East (Hume) Region Control Centre (RCC)

The North East (Hume) Regional Control Centre at the DEWLP Office, located at 89 Sydney Road, Benalla, has been pre-determined as the most suitable facility for the establishment of a RCC for the management of storm events.

5.7. Incident Control Centres (ICCs)

Table 9: ICC locations that have been pre-determined for storm response

Location	LGA/ARMB within ICC footprint
Benalla ICC, VICSES facility 64 Sydney Road, Benalla 03 9256 9650	All LGAs and ARMBs (Alpine Resort Management Boards) within North East (Hume) Region.
Wangaratta ICC, CFA facility 1 Ely Street, Wangaratta 03 5720 2300	Alpine, Indigo and Wangaratta. Mt Hotham and Falls Creek.
Wodonga ICC, CFA facility 55 Moorefield Park Drive, Wodonga West 02 6043 4400	Wodonga, Indigo and Towong.
Shepparton ICC, CFA facility 195-205 Numurkah Road, Shepparton 03 5833 2400	Benalla , Greater Shepparton, Mansfield, Moira. Mt Buller/ Mt. Sterling. ARMB
Seymour ICC, CFA facility 36 McIntyre Street, Seymour 03 5735 3100	Mitchell, Murrindindi and Strathbogie. Lake Mountain (jointly managed by Southern ARMB and Murrindindi Shire).

A map of these ICC footprints is also available online via EM-COP.

5.8. Divisional Command Points

Table 10: Facilities suitable for use as Divisional Command Points (DCPs) for storms

Facility Location	VICSES units within footprint	Local Government / ARMB Areas
Benalla, VICSES LHQ 03 9256 7309 benalla.dcp@ses.vic.gov.au	Benalla and Mansfield	Benalla, Mansfield and Mt Buller/ Mt. Sterling ARMB.
Bright, CFA 03 5755 0000 lcfbrig.ops@cfa.vic.gov.au	Bright, Myrtleford and Falls Creek	Alpine, Mt Hotham ARMB and Falls Creek ARMB.
Euroa, VICSES LHQ 03 5795 2768 euroa.dcp@ses.vic.gov.au	Euroa, Seymour, Alexandra and Kilmore	Strathbogie, Murrindindi, Mitchell and Lake Mountain (jointly managed by Southern ARMB and Murrindindi Shire).
Numurkah, CFA 03 5862 1687 lcfnkah.ops@cfa.vic.gov.au	Numurkah	Moira.
Seymour, CFA 03 5792 1143 lcfseym.ops@cfa.vic.gov.au	Seymour	Mitchell.
Shepparton, SAR 03 5831 8511 Shepparton.dcp@ses.vic.gov.au	Shepparton Search and Rescue (SAR)	Greater Shepparton.
Tatura, VICSES LHQ 03 5824 1910 Tatura.dcp@ses.vic.gov.au	Tatura and Murchison	Greater Shepparton.
Wangaratta Sth (current) 03 5725 7415 lcfkrat.ops@cfa.vic.gov.au	Wangaratta, Myrtleford and Bright	Wangaratta and Alpine.
Wangaratta (new), VICSES LHQ *under construction*	Wangaratta, Myrtleford and Bright	Wangaratta and Alpine.
Wodonga, VICSES LHQ 02 6024 3300 Wodonga.dcp@ses.vic.gov.au	Wodonga, Chiltern, Rutherglen, Corryong, Tallangatta and Mitta Mitta	Wodonga, Indigo and Towong.

Yackandandah, VICSES LHQ 02 6071 1911 Yackandandah.dcp@ses.vic.gov.au	Yackandandah, Beechworth, Bright, Myrtleford and Tallangatta	Indigo and Towong.
Yarrowonga, VICSES LHQ 03 5744 1933 Yarrowonga.dcp@ses.vic.gov.au	Yarrowonga and Cobram	Moirā.
Yea, CFA 03 5797 2492 lcfyaaa.ops@cfa.vic.gov.au	Alexandra, Marysville and Kinglake	Murrindindi and Lake Mountain (jointly managed by Southern ARMB and Murrindindi Shire).

Further facilities suitable for use as DCPs for storms are available from CFA. CFA's Local Command Facilities (LCFs) are equipped to DCP standard.

For a map of these DCPs see Attachment 7 –Division Command Location Map.

5.9. Possible resource requirements for storms in the North East (Hume) Region

Resources available for significant storm events are detailed in Attachment 2 – North East (Hume) Region Resource List.

Resource requirements for significant storm activity within each ICC footprint are not prescriptive and will be allocated as required.

Refer to the Victorian Emergency Management Operations Handbook available at emv.vic.gov.au/publications for agreed resourcing levels, and JSOP 3.09 – Resource Request Process at <http://files.em.vic.gov.au/JSOP/EMV-JSOP.htm> for guidance on how to place resources requests.

Glossary

AIIMS	Australasian Inter-Service Incident Management System
ASAS	Alpine Search and Survival
BOM	Bureau of Meteorology
CFA	Country Fire Authority
DCP	Divisional Command Points
DELWP	Department of Environment, Land, Water and Planning
DHHS	Department of Health and Human Services
DoJ	Department of Justice
EF	Enhanced Fujita Tornado rating scale
EMLO	Emergency Management Liaison Officer
EMMV	Emergency Management Manual Victoria
EMV	Emergency Management Victoria
EMT	Emergency Management Team
EPA	Environment Protection Authority
ESTA	Emergency Services Telecommunications Authority
ICC	Incident Control Centre
IEMT	Incident Emergency Management Team
IMT	Incident Management Team
JSOP	Joint Standard Operating Procedure
LGA	Local Government Authority
LHQ	Local Headquarters
MFB	Metropolitan Fire Brigade
MEMP	Municipal Emergency Management Plan
RAC	Regional Agency Commander
RC	Regional Controller
RCC	Regional Control Centre
RDO	Regional Duty Officer
REMPC	
REMT	Regional Emergency Management Team
SAC	State Agency Commander
SCC	State Control Centre
SCOT	State Coordination Team
SCT	State Control Team
SDO	State Duty Officer
SEMT	State Emergency Management Team
SERP	State Emergency Response Plan
SOP	Standard Operating Procedure
SWRT	Swift Water Rescue
USAR	Urban Search and Rescue
VICSES	Victoria State Emergency Service
VICPOL	Victoria Police

Attachments

Attachment 1 – North East (Hume) Region Storm Scenarios

Two North East (Hume) Region storm scenarios have been developed to support periodic training requirements (outlined in section 1.8).

These scenarios are based on actual storm events experienced in the North East (Hume) Region and aim to provide an opportunity to practice/ exercise anecdotal and/ or known storm impacts based on historic events, and provide an indication of the possible resource requirements and associated gaps for operational response.

Scenario 1 : A tornado in North East’s “Tornado Alley”, the Murray River corridor

- It is the 3rd June, 3 pm, the end of a school day and a tornado has just touched down in Rutherglen.
- BOM has advised an EF 1 tornado with winds around 160 km/hr is moving north west to south east and has already impacted Rutherglen. It has so far resulted in roof damage/ unroofing of 30 houses in addition to the Star Hotel. It has blown away many shop front verandas and partially destroyed the Rutherglen Pie shop in the Main Street.
- A semi-trailer has been blown over on the Murray Valley Highway near the town roundabout with a load of live chickens, which are now spread over 500m and closing the road in all directions.
- Power is out in many areas. People are not able to call 000 or 132 500 for help, and powerlines are down and still sparking on the footpath outside the supermarket.
- The local aged care facility has no water pressure, heating, lighting or cooking.
- Damage has been reported to the windows at the secondary school and a winery’s vineyard is completely flattened on the corner of Booth Street and Howlong Road, Rutherglen.
- Eye witnesses have reported that the tornado continued moving towards the Rutherglen Racecourse reserve, defoliating and snapping off many trees along the golf course.
- An ambulance has been called to the golf course where a golfer is reported to have been killed after being hit by flying debris.

Scenario 2: A Snow Story

For better understanding of snow scenarios go to: snowsafe.org.au, Snow Hazard information P.14, Alpine considerations P.15.

- Snow began falling in Alpine areas late yesterday behind a fast moving cold front, then descended to progressively lower levels overnight into today as temperatures approached zero over much of southern Victoria. Mt Hotham's -6.7°C appears to have set a new record low maximum temperature. By this morning, snow was falling over many parts of Victoria, with falls even reported at sea level at Lorne and the Gippsland Lakes.
- Early this morning, the snow dusting turned to snow showers and blizzards with heavy falls moving into the northeast of the state. Roads became treacherous with melting snow and black ice causing many minor collisions, and trees buckling under the weight of the snow, cutting powerlines in many areas.
- The Wooragee Primary School had 16-18cm of snow on the ground by the 9am bell. The school has been closed as the heavy snow came down soon after students had arrived, sparking fears that 120 students from outlying areas would not be able to get home at the end of the day if the conditions continue.
- The community of Stanley, 7km south east of Beechworth, is blanketed in white after heavy snow started falling to the ground just after lunch. VICPOL has also reported heavy snow falls in Beechworth lasting for over an hour, however the latest situation report indicates conditions to be easing off now, just before 3pm.
- Many local roads have deep snow cover and all school buses are delayed due to snow over roads with no snow chains available.
- Traffic on the Beechworth to Wangaratta Road is jammed back past Black Springs with many cars and buses stranded in deep snowfalls. There have been reports of vehicles skidding off the road and an unknown number of people trapped in a rolled over vehicle.

- Snow was also reported in Edi Upper in the King Valley, and in many other areas down to 365m above sea level.
- On Beechworth's northern side, several cars and an ambulance taking an injured VICSES volunteer to Wodonga Hospital are trapped in blizzard conditions, fallen trees and debris over the Beechworth to Wodonga Road.
- VICPOL has just confirmed that two people have been killed when their car slid off the icy Beechworth-Wangaratta Road at Black Springs about 3.30pm, while others remain trapped.

Scenario Resource Requirements

The tables in Attachment 2 provide a list of North East (Hume) Region resources that have been identified to support operational response to a significant storm event, as outlined in the scenarios above.

Resources listed are those that would be required at the peak of an event, and would represent the resources of all agencies with responsibilities under the State Emergency Response Plan – Storm Sub-plan.

Additional regional REMPC multi-agency resources may be accessed during operations through the AIIMS structure and escalated to State as required.

For such storm events, Divisional Command locations can be found on pages 26-27. Pre-planned ICCs and RCCs (DELWP Benalla L3) have been determined for response, and their boundaries are represented in Attachment 7.

Attachment 2 – North East (Hume) Region Resource List

The tables below outline the resources available for response held by the 25 operational North East (Hume) Region VICSES units.

See relevant Municipal Flood Emergency Plan for more detail and the VICSES Unit map in Attachment 3.

All requests for such resources should be made via the relevant RAC.

Table 11: Specialised equipment/ resources

Core Capability	Human Resources	Equipment
Aerial observations		Drone/ unmanned aerial vehicle or rotary aircraft
Impact Assessment Teams	MFB Impact Assessment Teams	Drone
USAR Rescue Teams	Cat 2 teams from Melbourne	USAR trailer from VICSES Benalla Regional Office
North East (Hume) Technical Rescue Teams	Local VICSES and CFA teams	Technical Rescue POD based in Wangaratta CFA fire station
Swift Water Rescue (in water)	Swift Water Rescue Team (SWRT) from VicPol or MFB	Rescue boats
Sandbag filling teams	Department of Justice work crews, CFA/ DELWP strike teams/taskforces	VICSES sandbag filling machines

Table 12: VICSES North East (Hume) Region unit vehicles and equipment (excludes Shepparton Search and Rescue)

VICSES unit	Primary vehicle/s	Support vehicle/s	4WDs	Boats	Trailers
Alexandra	Primary Rescue	-	4WD x 2	Rescue Boat	Storm Trailer
Beechworth	Primary Rescue	-	4WD	-	Storm Trailer
Benalla	Primary Rescue	Storm/rescue support	4WD x 2	Rescue Boat x2	Storm Trailer
Bright	Primary Rescue	-	4WD x 2	-	Storm Trailer x2
Chiltern	-	-	4WD x 2	-	Storm Trailer
Cobram	Primary Rescue	-	4WD	Rescue Boat	Storm Trailer
Corryong	Primary Rescue	-	4WD	-	Storm Trailer
Euroa	Primary Rescue	-	4WD x 2	-	Storm Trailer
Falls Creek	-	-	4WD	-	-
Kilmore	Primary Rescue	Storm/rescue support	4WD x 2	-	-
Kinglake	Primary Rescue	Storm/rescue support	4WD x 2	-	Storm Trailer
Mansfield	Primary Rescue	-	4WD x 2	Rescue Boat	Storm Trailer
Marysville	Primary Rescue	-	4WD x 2	-	Storm Trailer
Mitta Mitta	Primary Rescue	-	4WD	-	Storm Trailer
Murchison	Primary Rescue	-	4WD	-	Storm Trailer
Myrtleford	Primary Rescue	-	4WD	-	Storm Trailer
Numurkah	Primary Rescue	Storm/rescue support	4WD	Rescue Boat	-
Rutherglen	Primary Rescue	-	4WD	-	Storm Trailer
Seymour	Primary Rescue	-	4WD x 2	Rescue Boat x2	Storm Trailer

Tallangatta	Primary Rescue	-	4WD x 2	Rescue Boat x2	Storm Trailer
Tatura	Primary Rescue	-	4WD x 2	Rescue Boat	Storm Trailer
Wangaratta	Primary Rescue	Storm/rescue support	4WD	Rescue Boat	Storm Trailer
Wodonga	Primary Rescue	Storm/rescue support	4WD x 1 and Van (12 seater)	Rescue Boat x2	Storm Trailer
Yackandandah	-	Storm/rescue support	4WD x 1	-	-
Yarrowonga	Primary Rescue	-	4WD x 2	Rescue Boat x2	Storm Trailer

VICSES region strategic resources and composite teams available:

- 1 x Field Operation Vehicle (located at VICSES Benalla Regional Office).
- 1 x Logistics Truck (with staging area or base camp equipment, located at VICSES Benalla Regional Office).
- 5 x Lighting Towers (located at Seymour, Benalla, Chiltern, Marysville and Tatura VICSES unit headquarters).
- 7 x Snow Mobiles (based at Falls Creek Unit).
- 1 x Sandbag Filling Trailer (based at Myrtleford Unit).
- 1 x USAR Trailer (located at VICSES Benalla Regional Office).
- 1 x High Angle Rescue Cache (based at Bright Unit headquarters).
- 1x Technical Rescue POD (based at Wangaratta Fire Station).
- Land Based SWRT (contactable via Pager Group: 230525).
- Alpine Search and Survival (ASAS) Team (contactable via Pager Group: 224460).
- Technical Rescue Team (contactable via Pager Group: 230877).

CFA, DELWP, Shepparton Search and Rescue (and some LGA's) maintain specialist resources that can be utilised by VICSES during storm response, relief and recovery, including:

- IMT personnel.
- Chainsaw Crews.
- Arborists.
- Initial Impact Assessment Teams, Ground Observers.
- Base Camp Facilities and Base Camp Teams.
- Staging Area Resources and Teams.
- Health Monitoring Units.

Contact the relevant agency RDO to request and/or access these support resources.

Sandbags

The NE (Hume) Region holds strategic reserves (caches) of sandbags at the following locations which can be utilised in a variety of emergency situations.

VICSES also maintains small community sandbag caches; these are listed in the relevant MFEPs.

The figures below refer to approximate amounts stored subject to refurbishment after an event.

Table 13: Sandbag cache locations and approx. quantities

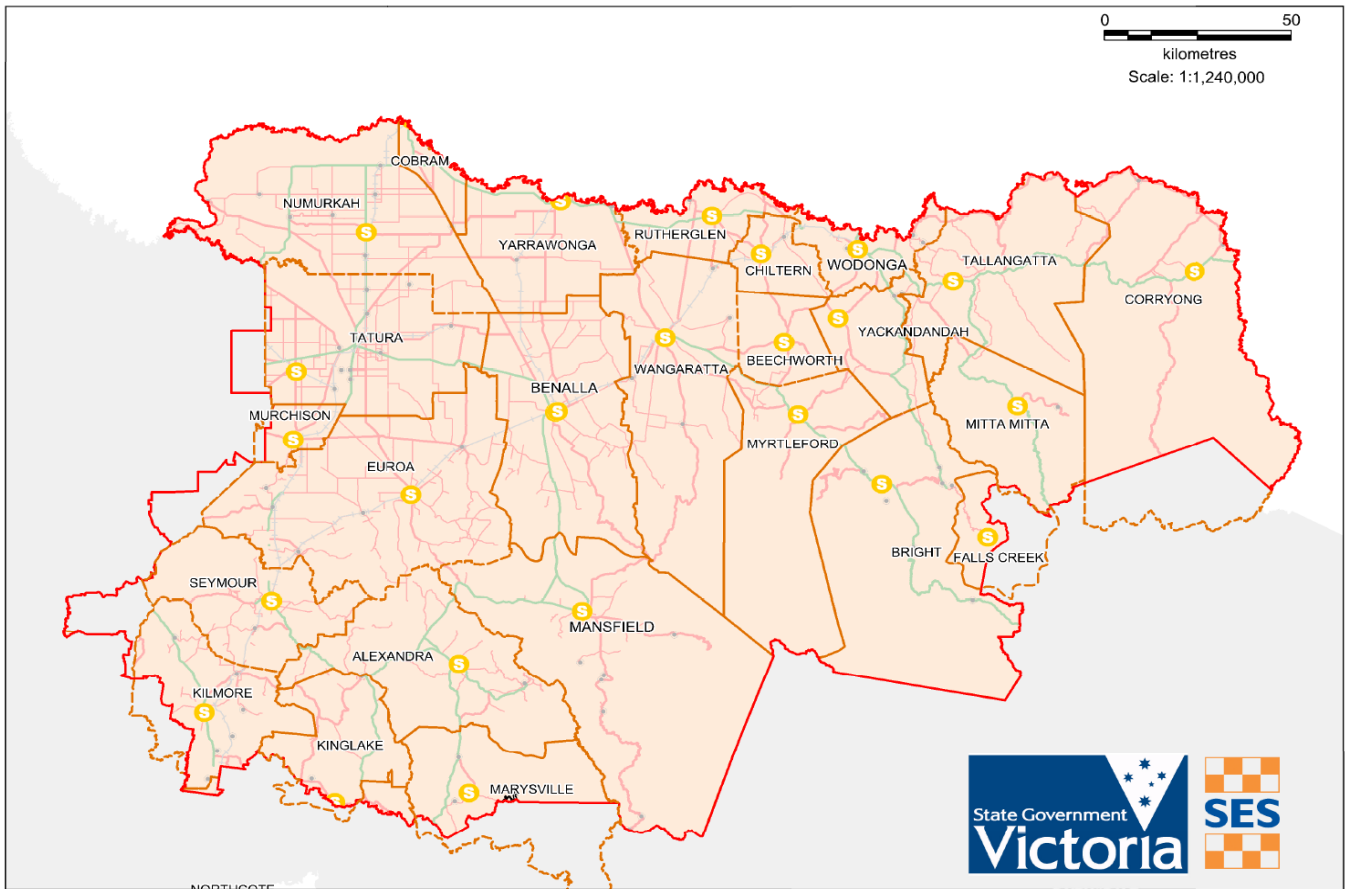
Unit Name	Primary Contact Person	Approx Quantities available (individual sandbags)
Alexandra	VICSES Regional Duty Officer	2,500
Beechworth	VICSES Regional Duty Officer	3,000
Benalla	VICSES Regional Duty Officer	9,000
Bright	VICSES Regional Duty Officer	5,000
Chiltern	VICSES Regional Duty Officer	350
Cobram	VICSES Regional Duty Officer	1,500
Corryong	VICSES Regional Duty Officer	100
Euroa	VICSES Regional Duty Officer	8,000
Falls Creek	VICSES Regional Duty Officer	100
Kilmore	VICSES Regional Duty Officer	2,000
Kinglake	VICSES Regional Duty Officer	500
Mansfield	VICSES Regional Duty Officer	1,000
Marysville	VICSES Regional Duty Officer	500
Mitta Mitta	VICSES Regional Duty Officer	50
Murchison	VICSES Regional Duty Officer	2,000
Myrtleford	VICSES Regional Duty Officer	10,000
Numurkah	VICSES Regional Duty Officer	10,000
Rutherglen	VICSES Regional Duty Officer	3,000
Seymour	VICSES Regional Duty Officer	15,000
Shepp SAR	VICSES Regional Duty Officer	5,000
Tallangatta	VICSES Regional Duty Officer	2,500
Tatura	VICSES Regional Duty Officer	2,500
Wangaratta	VICSES Regional Duty Officer	6,000
Wodonga	VICSES Regional Duty Officer	8,000
Yackandandah	VICSES Regional Duty Officer	2,000
Yarrawonga	VICSES Regional Duty Officer	8,000
Wodonga CFA ICC	CFA Duty Officer	32,000
Nathalia Council Works Depot	Moira Shire MERO	10,000
NE RHQ	VICSES Regional Duty Officer	80,000

Table 14: Sand supplies are available from the following suppliers in the region

Company Name	Address	24hr Access	BH Number	Contact Name	AH Number	Approx Quant. on site	Supplier location
Bedrock Garden Supplies	2 Rose Street, Alexandra VIC 3714	YES	03 5772 1911	David Leary	0447 788 018	30m ³	Alexandra
Beechworth Sand & Soil	1617 Diffey Road, Beechworth VIC 3747	YES	03 5728 3193	Evan Taylor	0419 266 771	10m ³	Beechworth
Green 'n' Grow	139 Grant Drive Benalla Vic 3672	Up To 8pm	03 5762 2296	Christine Carter	0417 350 110	30m ³	Benalla
Adornato Sand & Gravel Supplies	Numurkah Rd, Shepparton VIC 3632	YES	03 5831 4392	Ross Adornato	0418 334 683	600m	Murchison
							Numurkah

							Tatura
							Shepp SAR
							Cobram
Wodonga Sand and Soil	162 Victoria Cross Parade, Wodonga VIC 3690	YES	02 6056 3355	Michael Cheshire	0407 789 005	20m ³	Wodonga
							Tallangatta
							Chiltern
							Corryong
							Mitta Mitta
							Rutherglen
							Yackandandah
Mawsons	110-112 Wimble Street Seymour 3661	YES	03 5799 2355	Darren Crook	0427 048 955	100m ³	Seymour
							Euroa
Northern Garden Supplies	30 Willowmavin Rd, Kilmore VIC 3764	YES	03 5781 1588	Claude Pannunzio	0427 788 393	100m ³	Kilmore
							Kinglake
							Marysville
McPhersons Earthmoving Contractors	17 McGeehan Crt, Myrtleford VIC 3737	YES	03 5752 2333	Craig McPherson	0427 326 897	50m ³	Bright
							Myrtleford
Toil and Soil Garden Supplies	2/14 Provis St, Wangaratta VIC 3677	YES	03 5722 2220	John Gollin	0429 945 509	TBC	Wangaratta
J W & R P Payne - Sand and Soil	6 Lucan St, Mulwala NSW 2647	YES	03 5744 3800	John Payne	0428 576 423	1000m ³	Yarrowong a
Alpine Garden Supplies	261 Dead Horse Ln, Mansfield VIC 3722	YES	03 5775 2924	Ben Kipping	0400 877 582	10m ³	Mansfield

Attachment 3 – VICSES Unit Map



Attachment 4 – General Response Boundaries Map

For the response boundary for each individual North East (Hume) VICSES Unit go to:
<https://hub.ses.vic.gov.au/my-state/operations/general-response-boundaries>

During a significant event, these response boundary limitations do not generally apply.

Attachment 5 – IMT Readiness Levels – Storm (JSOP 2.03)

JSOP 2.03 – Incident Management Team (IMT) Readiness Arrangements

Schedule 5

IMT Readiness Levels – Storm

To determine the readiness level required, more than 50% of an ICC footprint is predicted to experience one or more of the prevailing weather behaviours, generally the primary ICC will be placed in readiness. The location of the ICC will be determined based on the forecast risk. The RC may vary the actual number, distribution and level of an IMT from this schedule in order to manage local risks, as per section 15 of this JSOP.

IMTs should be in place as advised by the Regional Controller (RC) based on the risk, indicatively 2 hours before the predicted impact of the forecast in the ICC footprint.

Where an IMT manages more than one ICC footprint, the RC in consultation with the State Response Controller (SRC) will determine if another location should be used by the IMT based on risk and consistent with the Regional Storm Response Plan and the SES Readiness and Activation considerations. Operational IMTs can be used for readiness, if they have the capacity to manage new emergencies in the initial stages.

In addition to this schedule, the SRC may request a RC to form a Reserve IMT for deployment within a region or to support another region.

In consultation with the SRC, a RC will advise when an IMT can deactivate or stand down the preparedness level.



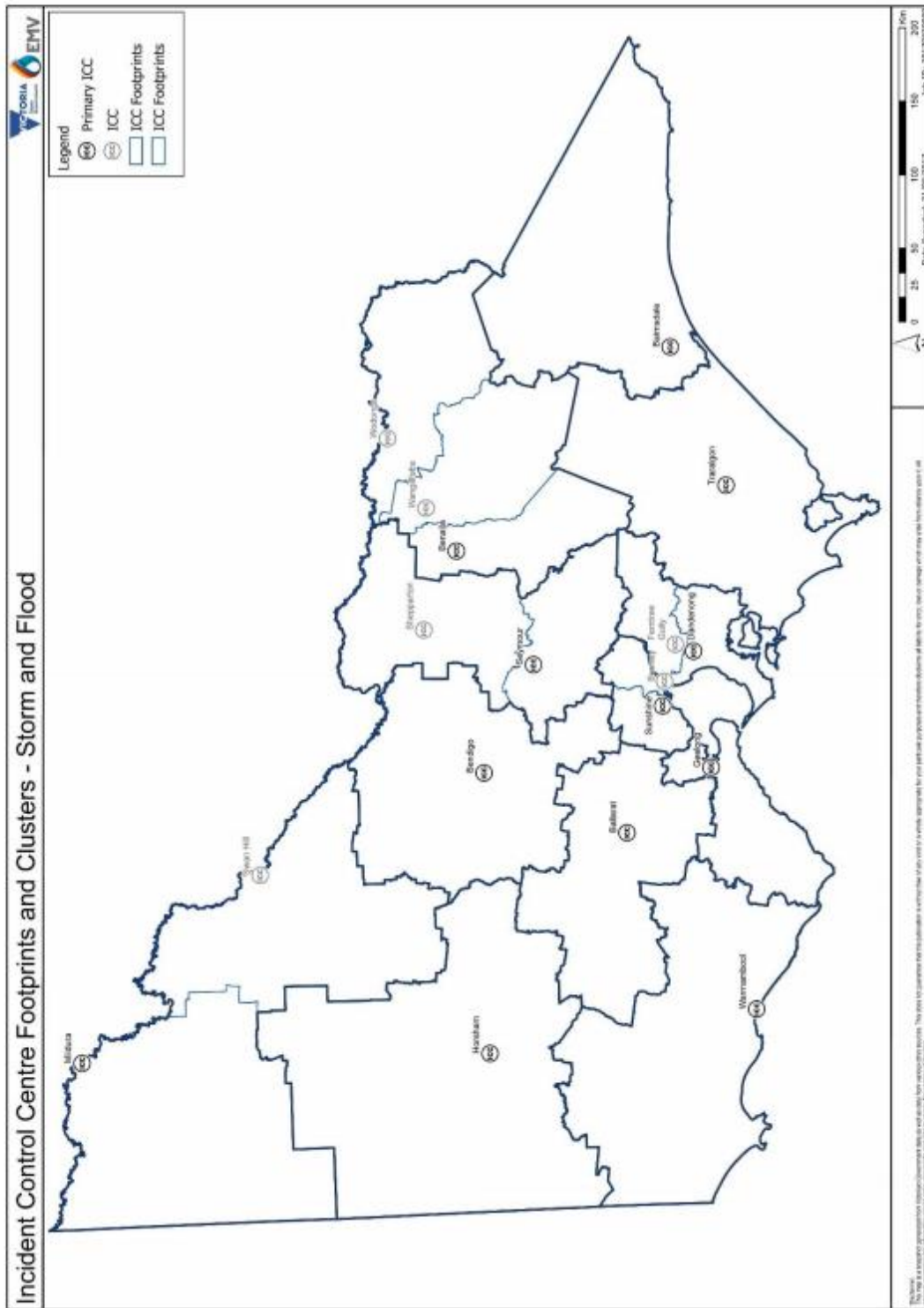
Region	Primary ICC	ICC Cluster	Storm Behaviour *			
			Wind avg	> 60 km/hr	> 70 km/hr	> 80 km/hr
			Wind gust ³	101-109 km/h	110-120 km/h	> 120 km/h
			Rain	>20mm/30min	>30mm/30min	>40mm/30min
			Hail	3 or 4 cm	5 cm	≥ 5cm
			Very High (high end)	Severe	Extreme	
Loddon Mallee	Bendigo	Bendigo	Base (I)	Base (I) Core (C)	Full (I)	
	Mildura	Mildura Swan Hill	Base (C)	Base (I) Core (C)	Full (I) Core (I) Full (C)	
Grampians	Ballarat	Ballarat	Base (I)	Base (I) Core (C)	Full (I)	
	Horsham	Horsham	Base (C)	Base (I) Core (C)	Core (I) Full (C)	
Barwon South West	Geelong	Geelong	Base (I)	Base (I) Core (C)	Core (I) Full (C)	
	Warrnambool	Warrnambool	Base (C)	Base (I) Core (C)	Core (I) Full (C)	
North West Metro	Sunshine	Sunshine	Base (I)	Core (I)	Full (I)	
		Burnley			Core (I) Full (C)	
Eastern Metro	Dandenong	Ferntree Gully	Base (I)	Core (I)	Core (I) Full (C)	
Southern Metro		Dandenong			Full (I)	
Hume	Benalla	Benalla	Base (I)	Base (I) Core (C)	Full (I) Core (I) Full (C)	
		Wodonga			Core (I) Full (C)	
		Wangaratta			Core (I) Full (C)	
	Seymour	Shepparton Seymour	Base (C)	Base (I) Core (C)	Full (I) Core (I) Full (C)	
Gippsland	Traralgon	Traralgon	Base (I)	Base (I) Core (C)	Full (I)	
	Bairnsdale	Bairnsdale	Base (C)	Base (C)	Core (I) Full (C)	

³ For Alpine areas of Hume and Gippsland regions, add 10 km/h to the specified average wind and or wind gusts. Readiness is based on 50% of the relevant ICC footprint being affected.

* A variety of products such as Severe Weather Intelligence Brief, Thunderstorm forecast and Severe Weather Warnings will need to be used to identify the storm behaviours.

Schedule 4

ICC Footprint and Clusters – Flood and Storm



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VICSES Flood Readiness and Activation Trigger Considerations (v3.0 – September 2017)

STORM READINESS AND ACTIVATION TRIGGER CONSIDERATIONS - V3.0 - SEPTEMBER 2017

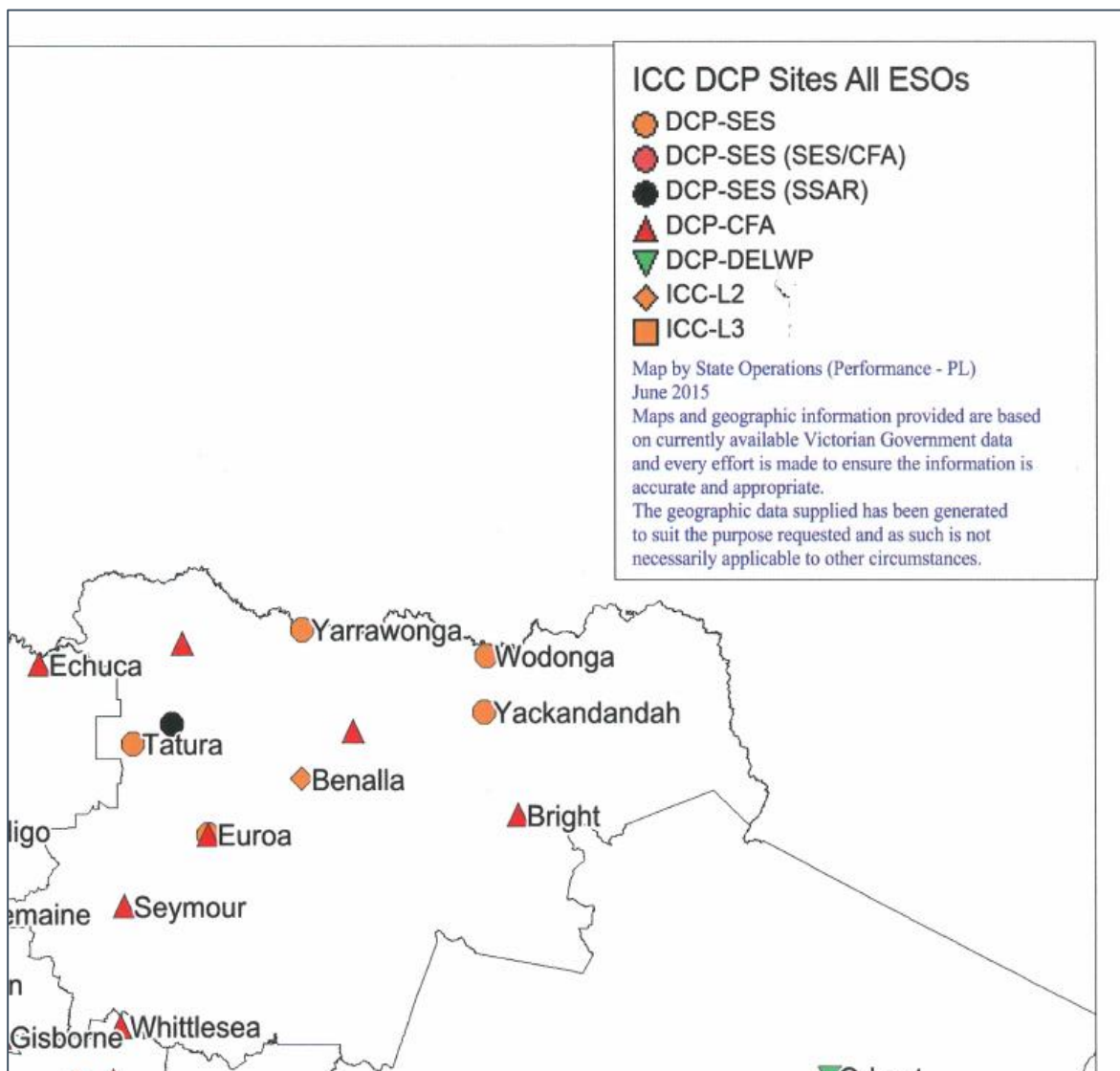
Readiness Level	RL 1 - LOW TO MODERATE	RL 2 - HIGH	RL 3(A) - VERY HIGH	RL 3 (B) - VERY HIGH	RL 4 - SEVERE	RL 5 - EXTREME
FDI	0 - 11	12 - 24	25 - 34	35 - 49	50 - 74	75 - 99
Fire Behaviour	Fires can be easily controlled	Fires can be controlled, expect short distance spotting	Fires can be difficult to control, crown fires may develop in forest.	Fires can be difficult to control, crown fires may develop in forest.	Fires may be uncontrollable and move quickly. Spot fires may occur up to 4km ahead of the fire.	Fires will be uncontrollable, unpredictable and fast moving. Spot fires up to 6km ahead of the fire.
THUNDERSTORM FORECAST CHART [TFC] issued daily			SEVERE WEATHER INTELLIGENCE BRIEFING [SWIB] issued TUE & FRI			
Storm Prediction or Warning READINESS CONSIDERATION	No Thunderstorms No Severe Weather	TFC show THUNDERSTORMS POSSIBLE No SWW	TFC shows SEVERE THUNDERSTORMS POSSIBLE SWW issued for winds and/or possible heavy rainfall STW issued for wind and/or heavy rainfall and/or hail	Severe Weather Intelligence Briefing (SWIB) colored YELLOW TFC shows SEVERE THUNDERSTORM LIKELY SWW issued for wind and/or heavy rainfall STW issued for wind and/or heavy rainfall and/or hail	SWIB colored ORANGE for winds and rainfall, showing TFC shows SEVERE THUNDERSTORMS LIKELY including potential for LARGE Hail, Damaging Winds, Heavy Rainfall leading to flash flooding SWW issued for Damaging Winds and/or Heavy Rainfall STW issued for wind and/or heavy rainfall and/or hail	SWIB colored RED for Damaging to Destructive Winds and Very Heavy Rainfall TFC shows SEVERE THUNDERSTORMS LIKELY including potential for GAI NT Hail, Damaging Winds, Heavy Rainfall leading to flash flooding SWW for damage or destructive winds or heavy rainfall STW - Super Cells possible, Heavy Rain and/or Very Dangerous Thunderstorm warning issued
Storm Behaviour READINESS CONSIDERATIONS	No Thunderstorms No Severe Weather	Wind gusts < 90km/h, rain rates not conducive to flash flooding, small hail (<2cm)	TFC - Possibility of Thunderstorms, may or maynot include small hail < 3cm. SWW or STW - Chance of flash flooding and damaging winds considered Possible.	SWIB - 60km/hr+ average winds, gusts reaching over 100km/hr (101-109 km/hr) for 6 or more hour period. TFC - Severe Thunderstorms Possible, high possibility of 3 or 4cm hail, wind gusts over 100km/hr. SWW - Heavy Rainfall leading to flash flooding across Districts considered 'Possible' STW - Localised flash flooding rates of >20mm per 30mins likely.	SWIB - 70km/hr+ average winds, DAMAGING gusts reaching over 110km/hr (110-120 km/hr) for 3 or more hour period. TFC - Severe Thunderstorms LIKELY SWW - Heavy Rainfall leading to flash and/or riverine flooding across Districts considered 'Likely' STW - Possibility of hail of 4-5cm, wind gusts over 110km/hr. POTENTIAL for Super Cell, Squall or Tornado. Localised flash flooding rates of >30mm per 30mins likely.	SWIB - Very unstable weather conditions including 80km/hr+ average winds, DAMAGING (120km/hr to DESTRUCTIVE > 125km/hr for 3 or more hour period CERTAIN. TFC - Severe Thunderstorms more LIKELY. SWW - Heavy Rainfall leading to flash and/or riverine flooding across Districts considered 'Very Likely' STW - Super Cells including Hail > 5cm, wind gusts > 120km/hr. Localised flash flooding rates of >40mm per 30mins. Squalls or likely Tornado.
NOTE: ADD 10km/hr to average winds and/or gusts when considering Alpine District predictions and/or warnings						
Storm Activity ACTIVATION CONSIDERATIONS	Local level unit response with less than 10 RFAs	Local level unit response with less than 10 RFAs	Local Unit level response with local agency support METRO 30+ RFA active at each 8-10 Units RURAL 15+ RFA active at each 4-6 Units	Multi-Unit responses with increasing multi-agency responses METRO 250+ active RFA in the region, where multi Units have more than 30 RFAs, ESTA has activated Critical Incident Response Plan (CIRP) Level 1 RURAL 100+ active RFA across the region, where Units have 15+ RFA at more than 5 Units	Multi-Unit response activity with multi-agency support and high level of multi-agency response activity (eg: Fire Alarms) METRO 400+ RFA active across the region, where Units have more than 30 RFAs or ESTA CIRP Level 2, event creation has increased to 2-4 per minute, < 15 calls waiting RURAL 250+ RFA, where multi Units have more than 30+ RFA each	Multi-Unit response and high level of multi-agency response activity with significant impacts across multi municipalities METRO 1000+ RFA across ICC footprint, where Units have more than 60 RFAs or ESTA CIRP Level 2 event creation has increased to more than 4 per minute, 15+ calls waiting consistently RURAL 500+ RFA across ICC footprint, where multi Units have more than 45+ RFA each
VICSES - Business As Usual Operations			JSOP 2.03 LINE OF CONTROL			
Readiness (State)	SCC Level White SAC and SDO (monitor)	SCC Level White SAC and SDO (monitor)	SCC Level White/Blue SAC and SDO (actively monitoring)	SCC Level BLUE or When ICC activated SDO and SAC In Place	SCC Level ORANGE Multiple ICCs activated or multi region SDO and SAC In Place Consider Day/Night	SCC Level RED Multiple ICCs activated or multi region SDO and SAC In Place Day and Night
Readiness & Activation (Regional)	RDO (monitor) RAC (aware)	RAC (monitor) RAC (aware)	Regional Command IN PLACE RAC/RDO attends Regional Office	RURAL - Regional Cmd In Place, RC notified METRO - RCC OPEN: with BASE RCT in place Rural - RAC & RDO In Place at Regional Office Metro - RC, RAC, RDO at RCC	RCC OPEN: RCT in place, some agencies available on immediate recall RC, RAC and RDO In Place at RCC	RCC OPEN: Full RCT/most REMT In Place RCT, RAC and RDO In Place at RCC
Readiness and Activation (Incident)	RDO (monitor)	RDO (monitor)	RDO - RAC IN PLACE Resource Officer (Stby) Management Support (Stby)	RURAL - BASE IMT (Rostered) METRO - BASE IMT (In Place) Observed activity - BASE IMT (In Place)	RURAL - BASE IMT (In Place), CORE (On Call / Stand-by) METRO - CORE IMT (In Place) Observed activity - CORE IMT (In Place)	RURAL - CORE IMT (In Place), FULL (On Call / Stand-by) METRO - FULL IMT (In Place) Observed activity - FULL IMT (In Place)
Effect	Potential Consequences					
People	Some minor inconvenience around local roads.	Increased number of roads being impacted traffic management plan should be considered.		Significant number of roads impacted traffic management plan is required some major roads closed with tree blockages or flash flooding impacts		
Power	Possible power disruptions	Likely short term power disruptions		Power disruptions almost guaranteed likely with potential long term outages.		
Health	Little impact expected some local issues might be encountered but managed locally within own facility Plan	Consideration for review and familiarisation with facility Plan - VICPOL and DHHS to review Vulnerable persons list		Highly likely vulnerable people impacted by power outage require relocation. Communities without power for days needing support		
Education	Unlikely impact	Some impact expected traffic management plan for school buses should be considered.		Some school and preschools may be impacted by utilities loss and damage to infrastructure and school bus routes closed for period of time		
Road Network	Unlikely to impact	Some minor roads may be impacted with possible disruption to critical needs supplies such as milk		Highly likely for roads to be cut and egress and access impacted. Major roads potentially out in some locations traffic diversions in place. Potential rescue of trapped persons in vehicles highly likely. Expected impact on rail routes. Economic impact likely with loss of power and utilities supply for lengthy period.		
Public Transport	Limited impact on public transport routes	Impact to public transport routes may occur but likely to be minimal with diversions possible		Public transport impacts will occur with roads and rail lines out and no alternative route available - significant disruption to people movement likely		
Relief and Recovery	Relief and recovery activity unlikely may be some local issues.	Increased potential for relief and recovery activity but likely to be managed locally by LGA with support of DHHS		Formal arrangements put in place for relief and recovery activity Regional Recovery Commander appointed. Health Commander in Place and demands on relief and recovery to be substantial and potentially long term.		
Water utilities	Little impact expected some local issues might be encountered but managed locally.	Increased potential but still managed locally. May be minor sewerage overflow issues in isolated areas		Highly likely that some infrastructure will be impacted, water authorities should develop or initiate their plans to address issues. Significant potential for pollutants including sewerage in water and loss of power will exacerbate the impacts		
Telecommunications	Nil impact	Minimal impact to individual premises only		Significant impact with loss of landlines and mobile powers which will affect peoples capacity to receive warnings and information. Commercial Business impacts with loss of phone services.		
Public Events	Maybe cancelled due to weather conditions only	Some public events may need to be cancelled or rescheduled due to safety of patrons either whilst at event or travelling to or from.		Public events impacted likely cancellation of major events due to wind impacts and risk. and potential flooding impact on venue or ability to attend or leave event.		
Tourism	Unlikely that event will be impacted but consideration must be given to any event occurring to ensure it is safe to continue.	Potential impact on tourist locations if area not safe to visit or isolated due to road closures.		May impact on high value tourist locations and facilities with long term impacts in the social and economic environment of communities.		
Agriculture/Animal welfare	No impact likely with landowners managing any localised issues.	Potential impact with losses to live stock, fencing and crops including high intensive farming of produce and tree farms		Substantial impact to crops, including high intensive produce farming (vegetables and fruit) and tree farms with short and long term impacts due to loss of crops. Economic impact to area.		
Remote communities	Inconvenience only	Some minor isolation and loss of utilities of individual properties or remote communities is likely		Community isolation and loss of food/supplies potential with resupply requirements dependant on time of power or access outages		
Environmental	Minimal impact	Stream erosion and loss of vegetation around watercourses potential. Minor tree damage		Significant disturbance to vegetation with some areas heavily impacted		
Cultural Heritage	Minimal impact likely	Some disturbance along watercourses may occur but likely to be minimal		Potential for impact on historical structures and features.		
Public Infrastructure /Essential Community Infrastructure	limited impact	Some disruption to access-Parks and vegetated community areas and infrastructure - Some minor damage of community infrastructure		Significant damage to community infrastructure and community facilities. Long term closure of key community facilities likely		
Critical infrastructure	Nil impact	May require some preparatory work and discussion with owner of infrastructure		Significant work likely to be required to protect critical infrastructure - Contingency plans put in place if loss of the infrastructure occurs		

Regional Agency Commander (VICSES) provides advice to the Regional Controller re: forecast and consideration for varying the actual number, distribution and level of IMT required.

Attachment 6 – North East (Hume) Region ICC Footprint Map

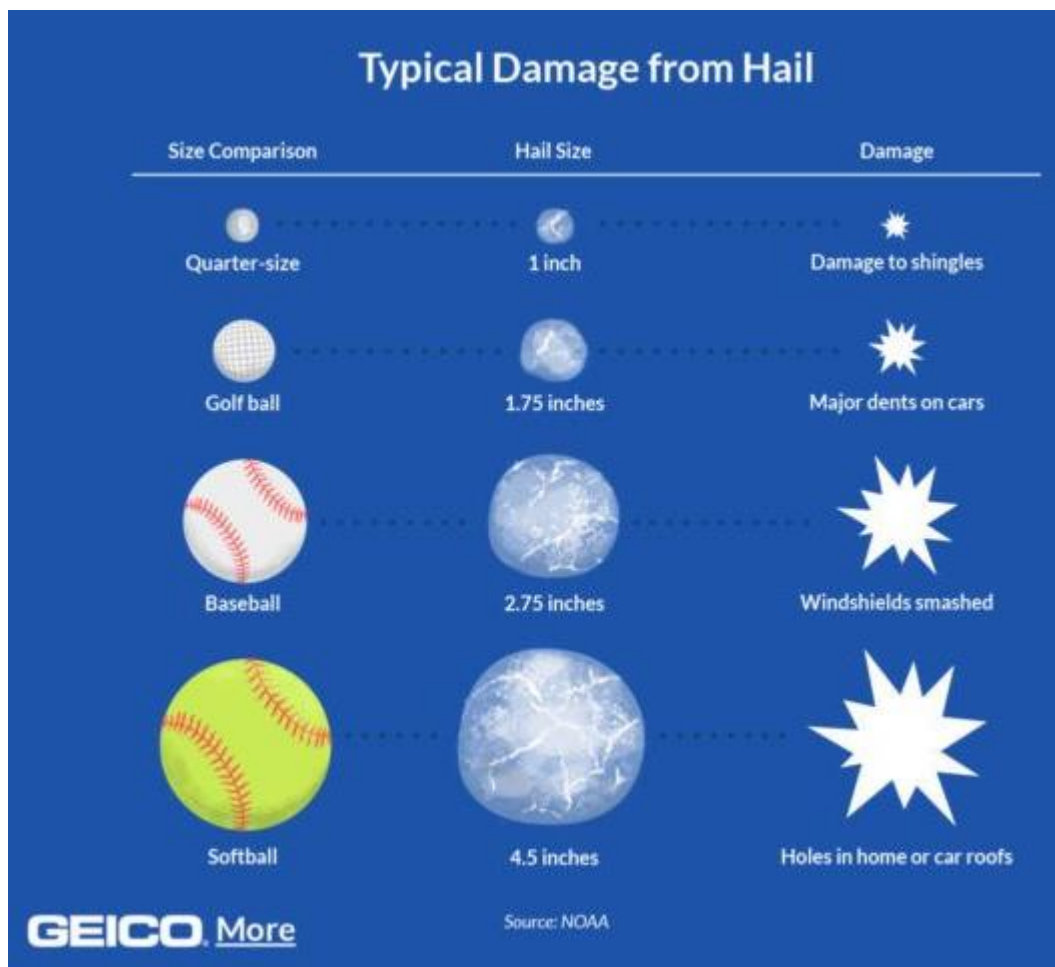
For storm and flood see: JSOP 2.03

Attachment 7 - North East (Hume) Division Command Location Map



Source: VICSES Operations Management Manual July 2015

Attachment 8 – Hail information



Coconut



Image: National Weather service weather.gov

Damage
2010 Vivian, USA,
hailstones 20 cm

Metric:

- Large hail= 2cm +
- Giant hail = 12-15cm+

Attachment 9 – Tornado information

Tornado rating scale

Tornadoes are rated by their intensity and the damage they cause to vegetation and built structures. The Enhanced Fujita (EF) Tornado rating scale came into effect in 2007 for tornado damage assessments, superseding the “Fujita scale.”

Enhanced Fujita (EF) Tornado Scale


The EF scale uses the same basic principles as the original Fujita scale, with six categories of tornadoes, rated from 0 to 5. However, wind speeds have been revised along with the addition of more structure types and vegetation, degrees of damage, and better accounts for variables such as differences in construction quality. The table below gives a brief description of each type of tornado on the EF scale.

Table 15

EF0 zero tornado	<ul style="list-style-type: none">▪ Wind speeds between 104 to 137km/h▪ Light damage▪ Broken branches; shallow rooted trees pushed over; some chimney damage
EF1 tornado	<ul style="list-style-type: none">▪ Wind speeds between 138 to 177km/h▪ Moderate damage▪ Surface damage to roofs; mobile homes pushed off foundation; moving vehicles pushed off the road
EF2 tornado	<ul style="list-style-type: none">▪ Wind speeds between 178 to 217km/h▪ Significant damage▪ Frame houses have roof torn off; mobile homes complete destroyed; train carriages overturned; large trees snapped or uprooted; smaller debris turned into missiles
EF3 tornado	<ul style="list-style-type: none">▪ Wind speeds between 218 to 266km/h▪ Severe damage▪ Roofs completely torn off well-constructed buildings, along with some walls, majority of trees uprooted, trains overturned, vehicles lifted off the ground.
EF4 tornado	<ul style="list-style-type: none">▪ Wind speeds between 267 to 322km/h▪ Devastating damage▪ Well-constructed houses are completely destroyed; structures with weak foundations blown away; vehicles could be lifted; large debris become flying missiles
EF5 tornado	<ul style="list-style-type: none">▪ Wind speeds greater than 322+ km/h (200mph)▪ Incredible damage▪ Most structures severely damaged or completely destroyed, vehicles can become flying missiles

For more information go to: www.bom.gov.au/storm_spotters/handbook/tornadoes_and_other_funnel.shtml

Attachment 10 – StormSafe CALD Resources



English

Storms can be very dangerous.

Storms can come with strong wind, heavy rain, lightning and hail.

Heavy rain can cause flash flooding. Low-lying areas can flood without warning.

Listen to storm warnings. Make sure friends, family and neighbours know about the warning.

If driving, pull over safely, away from the traffic. Turn your hazard lights on and wait for the storm to pass.

DO NOT park your vehicle under trees. Trees and branches can fall during storms.

If outside, seek shelter indoors. **DO NOT** shelter under trees.

Secure all loose objects in your garden or around your house.

If indoors, stay away from windows.

Listen to your ABC or your local radio station for emergency warnings and advice.

Prepare a home emergency plan for your home or business.

Prepare an emergency kit with:

- Important documents (passport/visa, medical prescriptions)
- Battery powered radio
- First Aid Kit
- Torch
- Photos and Identification.

Flood and Storm Emergency Assistance call 132 500.

Life threatening Emergency call 000.

If you need to evacuate, take the emergency kit with you.

NEVER drive, ride or walk through floodwater.

NEVER let children play in floodwater. It is dirty and dangerous.

When the storm has passed, let people know you are okay.

For more information visit www.ses.vic.gov.au

FLOOD STORM EMERGENCY **132 500**

For this StormSafe fact sheet (available in several translated languages and an audio mp3 file), go to: ses.vic.gov.au/web/www/get-ready/other-languages.

Attachment 11 – Storm RFA Triage Priority Table

Source: Operations Management Manual V 4 July 2018 P. 55

Priority		Example
1	Threatened or entrapped persons.	<ul style="list-style-type: none"> ■ Trapped in cars, buildings, etc. ■ Evacuation of persons, in the event of flash flooding.
2	Traffic hazard presenting a potential threat to life.	<ul style="list-style-type: none"> ■ Major arterials, main roads and single access roads.
3	Render critical infrastructure and community assets safe and provide protection from further damage. note: infrastructure is those items or places necessary for the maintenance of community function e.g. schools, essential services, care facilities, water pumping stations etc.	<ul style="list-style-type: none"> ■ Removal of trees from structure or that are likely to cause further damage. ■ Tarping to reduce impacts of weather on the structure. ■ Shoring (if safe to do so) of building to reduce the risk of collapse. ■ Flood protection (where possible).
4	Render primary residence (building only) safe and provided protection from further damage. note: out buildings and fencing of primary residence are deemed 'private property' and form part of priority 6.	<ul style="list-style-type: none"> ■ Removal of trees from primary residence structure or that are likely to cause further damage. ■ Tarping to reduce impacts of weather on the structure. ■ Shoring (if safe to do so) of building to reduce the risk of collapse. ■ Flood protection (where possible).
5	Tree down blocking access and / or egress for property owner. Tree down blocking access and / or egress for public footpaths.	<ul style="list-style-type: none"> ■ Removal of tree from driveway and paths that prevent entry and/or exit either by foot or vehicle from property. ■ Removal of tree from public footpath that has the potential to impede foot traffic.
6	Render private property safe and provide protection from further damage. note: property includes residence and other private assets, i.e. vehicles.	<ul style="list-style-type: none"> ■ Making safe fences. ■ Removal of trees from structures. ■ Tarping to reduce impacts of weather on the structure. ■ Shoring (if safe to do so) of building to reduce the risk of collapse.

Attachment 12 – Storm SMEACS briefing sample



SMEACS Briefing



INCIDENT NAME: XXXXXX Storm event

BRIEFING BY: Ops Officer XXXXXX BRIEFING TO: North East Units

DATE: XX-XXX-XXXX TIME: XXXXhrs

Situation	
Mission	To ensure readiness of units to respond to RFAs if required
Execution	<p>A base IMT will be in Operation/Standby from XXXXX ICC from XXXXhrs tonight/today to provide support if required.</p> <p>It is imperative that Unit Duty Officers advise the RDO via pager if your Unit receives greater than 10 RFAs per SOP 004.</p> <p>Once this trigger is met your unit MUST activate an Incident Command Point at your LHQ. A determination will then be made as to whether your ICP will commence reporting to the ICC as an ICP or continue to manage your unit's response with control to remain locally.</p> <p>All units are to ensure they appoint a Level 1 incident controller which must be located in your LHQ should your RFAs exceed 10 & ICP activated. An OIMS operator must also be active from the ICP to ensure RFAs are cleared in IMS in a timely manner.</p> <p>Ensure local knowledge networks are active including CFA brigades in remote areas of your response boundary & Council response crews.</p> <p>Ensure road closures are reported to RDO & crews are to ensure any water hazards on roads are which pose a threat to life are physically closed until Council or police are on site.</p>
Administration	<p>If an ICP is active RFAS are to be cleared by the OIMS operator in IMS in addition to bulk clearances emailed to estasesupervisors@esta.vic.gov.au</p> <p>IRS reports are to be completed by all crews via OIMS Lite, paper, or by phoning 1800 737 477.</p> <p>Ensure new events are created by using the ESTA priority number 1300 796 356</p> <p>Logistical & resource support will be available via the RDO initially & ICC if activated.</p>
Command & Communications	<ul style="list-style-type: none"> • Regional Duty Officer via Page • XXXX ICC – Ph: XXXXXXXX <ul style="list-style-type: none"> ◦ XXXXXX.ops@icc.vic.gov.au
Safety	<ul style="list-style-type: none"> • Ensure DRAs are completed at every RFA & consider. <ul style="list-style-type: none"> ▪ Lightning potential ▪ Wind speed • Ensure Solar panels are isolated prior to working on rooftops • Ensure all members wear the appropriate PPE & C

Prepared By: _____ XXXXXXXXXXXXXXX