North East (Hume) Region Emergency Response Plan





Earthquake 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 (EMV) in 2016.

Authorised by the Victoria State Emergency Service, 168 Sturt Street, Southbank, VIC, 3006.

An electronic version of the plan can be obtained at: HPE/TRIM CD/18/78536 PDF for printing: HPE TRIM CD/18/80251 or ses.vic.gov.au/em-sector/vicses-emergency-plans

Version Control North East (Hume) Region Emergency Response Plan – Earthquake Sub-plan Version 0.5 September 2018

Nature of amendment	Name	Date

North East (Hume) Region Emergency Response Plan – Earthquake Subplan Certification

The North East (Hume) Region Emergency Response Plan – Earthquake Sub-plan deals with response to earthquake incidents within 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to effectively and efficiently respond to future emergencies caused by earthquakes, and will remain current until rescinded by the authority of Victoria State Emergency Service (VICSES) Chief Officer Operations.

Date:

Tim Wiebusch

Chief Officer Operations

This plan is produced by VICSES and has been adapted from the SERP – Earthquake Sub-plan. All information contained in this plan was 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.

For further details about this plan, please contact North East (Hume) Region:

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

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 Emergency Management Manual Victoria (EMMV).



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, available at: <u>ses.vic.gov.au/em-sector/vicses-emergency-plans</u>



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1. Introduction

1.1. Purpose

The purpose of this plan is to provide strategic guidance for the effective emergency management of an earthquake in the North East (Hume) Region.

1.2. Objective

The objective of the North East (Hume) Region Emergency Response Plan – Earthquake Sub-plan is to outline the arrangements for ensuring an integrated and coordinated approach to the management of earthquake events in the North East (Hume) Region, in order to reduce the impact and consequences of these events on the community, infrastructure and services.

1.3. Scope

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

- Description of potential risks and consequences of earthquakes to the social, built, economic and natural environments.
- Region-specific emergency management arrangements for the management of earthquakes.
- 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 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 SERP (Part 3, EMMV) identifies Victoria's organisational arrangements for managing the response to emergencies.

The North East (Hume) Region Emergency Response Plan (yet to be developed) will detail specific arrangements for the management of 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 SERP – Earthquake Sub-plan, see: <u>ses.vic.gov.au/em-sector/vicses-emergency-plans</u>. This plan has been shared with the 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.

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, therefore it is available on the VICSES website: <u>ses.vic.gov.au/em-sector/vicses-emergency-plans</u>.

1.7. Linkages

This plan is a sub-plan of the SERP – Earthquake Sub-plan and the North East (Hume) Region Emergency Response Plan (yet to be developed). It reflects legislation, the arrangements in the SERP, the strategic direction for emergency management in Victoria and the accepted State practice for managing emergencies.

Arrangements in this plan have not been repeated from afore mentioned plans, unless necessary to ensure context and readability. The SERP – Earthquake Sub-plan can be accessed at <u>ses.vic.gov.au/em-sector/vicses-emergency-plans</u>.

Earthquake simulation: youtube.com/watch?v=hhYSDxrt1AQ&feature=youtu.be

Earthquake-Related	Earthquake-Related Hazard Plans, JSOPs, VICSES SOPs or Policy Names			
Flood response resulting from dam failure	<u>State Emergency Response Plan – Flood Sub-plan</u> <u>North East (Hume) Region Flood Sub-Plan</u> Dam Safety Plans: see page 12.			
Landslide	State Emergency Hazard Plan – (currently under development) North East (Hume) Region Landslide Plan (currently under development)			
JSOP 2.03	Incident Management Team (IMT) Readiness Arrangements			
JSOP 3.02	Incident naming – Major emergencies			
JSOP 3.03	Incident Action Planning			
JSOP 8.03	Tree hazard (Bushfire response)			
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			

Table 1: The following earthquake-related resources are listed for easy location and guidance.

SOP 041	Operations involving asbestos	
SOP 046	Earthquake notification and Activation Process	
SOP 071	71 Operations involving solar power and photovoltaic cells	
Safety Alert 23	Electrical risks associated with solar arrays	
Safety Alert 35	Ladder safety (securing of)	
Policy 10.02	Local Knowledge	
Policy 12.04	After Action Review Policy	

Arrangements for the management of secondary consequences are contained in the following:

- For health response State Health Emergency Response Plan
- For rescue the Victorian USAR Arrangements

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. A Region Earthquake Scenario has been created to support this function, available in Attachment 1 – Region Earthquake 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.

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

1.9. Review

This plan was 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. Earthquake risk within the North East (Hume) Region

2.1. 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: the Goulburn, Ovens, Broken, Kiewa and King rivers. Some of these waterways contain significant public and private dams which can be at risk of failure during an earthquake.

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 tourism).

2.2. The Earthquake hazard



Source: Seismology Resource Centre, a Division of ESS Earth Sciences (Richmond, Australia. Map: A.Pascale and E.Borleis)

An earthquake is the shaking and vibration at the surface of the Earth caused by energy being released along a fault plane, at the edge of a tectonic plate or by volcanic activity. Earthquakes, unlike many other natural hazards, have the potential to cause catastrophic losses.

Although Australia is popularly considered to have a low earthquake risk, a magnitude (M) 6.0 earthquake can be anticipated for all of Australia, on average, every five years and an M 5.0 earthquake once per year. The probable maximum earthquake magnitude for Australia is approximately M 7.2 to M 7.5.

- The largest earthquake recorded in Victoria is the magnitude M 5.7 at Mt Hotham (within the North East (Hume) Region) in 1966.
- Australia's largest recorded earthquake is M 6.6 in Tennant Creek (Northern territory), in 1998.
- Australia's deadliest earthquake is M 5.6 in Newcastle (New South Wales), in 1989, causing 13 fatalities, hospitalisation of 160 and \$4 billion of damage.

A major earthquake could still occur under a heavily developed and populated area in Victoria, popular tourist areas or the Alpine environments. The impact of such an earthquake could have widespread or more specific (e.g. avalanche) consequences throughout the relevant township and surrounds. While there is a low probability that this event will occur in the foreseeable future, it is important to recognise the potential for such catastrophic impacts.

Victoria is located away from geologically-active tectonic plate boundaries, which lay hundreds of kilometres seaward of the eastern coastline. However, Victoria regularly experiences small earthquakes that are felt and reported. Stresses and strains develop in the Indo-Australian plate (of which Australia is a part) as it drifts northward; as sediment loads continually transfer from upper catchment areas to lower basins and coastal areas due to erosion; and as fluctuating sea levels load and unload the continental shelf.

In Australia, seismologists (people who study earthquakes) prefer the use of the moment magnitude scale, which calculates the magnitude of an earthquake based on physical properties such as the area of movement (slip) along the fault plane. The size of an earthquake is referred to as its magnitude (M). For every unit increase in magnitude, there is roughly a thirty-fold increase in the energy released. For instance, a magnitude 2.0 earthquake (M 2.0) releases about 30 times more energy than a magnitude 1.0 earthquake (M 1.0), while a magnitude 3.0 earthquake (M 3.0) releases 900 times (30x30) more energy than a magnitude 1.0 (M 1.0).

Australia is not immune from damaging earthquakes causing significant human and economic loss. In the North East (Hume) Region, a number of earthquakes have occurred resulting in damage and even death (see Section 3.2 Earthquake History).

A list of significant earthquake events that have impacted Victoria and their associated impacts is included in the SERP – Earthquake Sub-plan, available at: <u>ses.vic.gov.au/em-sector/vicses-emergency-plans</u>.

2.2.1. Sources of Earthquake Intelligence (during events and impacts)

Intelligence:

- Bureau of Meteorology (BOM): <u>bom.gov.au/vic</u>.
- Geoscience Australia (GA): <u>ga.gov.au/earthquake</u>.
- Regional activities (as per JSOP 2.03), e.g. briefings/ teleconferences (REMT, units, etc.), pre-positioning of specialist teams/ resources.
- Other plans, e.g. Municipal Emergency Management Plans (MEMPs).
- At the ICC, tight liaison with the IMT Intelligence Section (or Planning if Intel not in place).
- EM COP collection of impacts, photos, etc.
- o Social media for information on what the community is experiencing.
- **Local Knowledge:** Incorporating local knowledge is vital to the success of the operation.
 - Source local VICSES and/ or CFA volunteers, inputs from local Victoria Police (VICPOL) members.
 - Appoint a Local Information Officer.
- **Community Observers:** Identified trusted local sources in addition to VICSES members, e.g.:
 - Leaders within CFA, CFA ground observers.
 - Local police members.
 - Senior local government representatives.
 - Key community leaders.
 - o Other established networks, e.g. CMA groups.

2.2.2. Managing and Prioritising Requests for Assistance (RFAs) via 132 500 and 000

- A Request for Assistance (RFA) call to 132 500 triggers VICSES Dispatch (via 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 the response is coordinated and resources are allocated appropriately. 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 the Prioritising Table found in Attachment 7.

Table 1: Summary of RFAs and escalation. For more information, refer to Operations Management Manual,V4, July 2018 P.63. Note: table not earthquake specific.

Activation Level	RFAs per unit	RFAs 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+ ICPs. 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. Major dams with credible earthquake risk

Table 2: A list of major dams within the region with a credible earthquake risk.

Most Dam Safety Emergency Plans (DSEPs) can be located in EM COP or via the Regional Duty Officer (RDO) where security or in confidence arrangements apply.

Dam name	Location	DSEP available
Bakers Gully	Bright	N (recently decommissioned)
Dartmouth Dam	Dartmouth	Y
Goulburn Weir	near Shepparton	Υ
Hume Dam	Wodonga	Υ
Kerford Dam	near Stanley	Y
Kiewa Dam (Basin) Mount Beauty	Adjacent to Mount Beauty	Y
Pondage (AGL hydro)		
Khancoban Pondage (Snowy	Khancoban	Y
Hydro)		
Lake Buffalo	Mt Buffalo	Y
Lake Eildon	Mansfield	Y
Lake Loombah &	east of Tatong	Y
Mccall Says Reservoir	south east of Tatong	
Lake Nagambie	Nagambie	N
Lake Nillachootie	Swanpool	Y
Lake Sambell	Beechworth	Y
Lake William Hovel	Whitlands	Y
Nils Gully	Myrtleford	Y
Rocky Valley Reservoir	Falls Creek	Ν
Rocky Valley Storage	Bogong High Plains, near Falls	N
	Creek	
Yarrawonga Weir	Yarrawonga	Υ

2.4. Regional Resources

The following table lists the key regional resources that can be used for earthquake response. Refer to Attachment 2 for a complete list.

Kev	State and	regional	specialised	equipment/	resources.
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Core Capability	Human Resources	Equipment
Aerial observations		Drone/ unmanned aerial vehicle or rotary aircraft
Impact Assessment Teams	MFB Impact Assessment Teams	Drone/ unmanned aerial vehicle or rotary aircraft
USAR Rescue Teams Category 1 and Category 2	Category 1 x 280 VICSES-trained Category 2 x 220 MFB/ CFA/ VICSES members	USAR trailer from VICSES Benalla Unit regional office
VICPOL Search and Rescue	Category 2 trained members	
VICPOL Canine Unit	Members and dogs	
AV paramedics	Category 2 trained x20 (approx.)	
MFB USAR Pod		
North East (Hume) Technical Rescue Teams	Local SES and CFA teams	Technical Rescue POD based at Wangaratta CFA fire station
Swift Water Rescue (in water)	Swift Water Rescue Team (SWRT) from VICPOL or MFB	
Sandbag filling teams	DoJ work crews SES and CFA/DELWP members	Regional Sandbag filling machines x 2

Additional 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 and accessible on EM-COP for registered users.

3. Consequences

3.1. Possible earthquake consequences, including business continuity arrangements

The effects of an earthquake depend on many factors, such as its magnitude of the earthquake, its depth and the distance from the epicentre. The below summarises the possible types of damage and disruption that may result from a major earthquake. Detailed information about the effect of earthquakes is contained in the State Emergency Response Plan – Earthquake Sub-plan, at: <u>ses.vic.gov.au/em-sector/vicses-emergency-plans</u>

The effects of an earthquake 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, e.g. solar), potable water, sewage, gas, telecommunications, internet (for power outages go to: <u>https://m.powercor.com.au/outage-map</u> or power outage map layer in EM COP).
 - Private property.
 - o Industry/ business/ tourism (including ecotourism and major tourism events).
 - Agriculture/viticulture livestock, facilities, etc.
 - Damage to the environment.
 - Access and egress delays affecting emergency responders and community impacts such as evacuation.

Possible earthquake-specific consequences:

- Built infrastructure damage (e.g. buildings) Information on building critical infrastructure resilience can be found in the Victorian Critical Infrastructure Resilience Strategy available at: emv.vic.gov.au/our-work/critical-infrastructure-resilience
- Casualties Casualties and injuries are likely to result from large damaging earthquakes. People may also become trapped requiring rescue. Secondary public health impacts (e.g. untreated drinking water) may occur if essential services are not readily available after the impact of an earthquake.
- Displacement and isolation People can become displaced as a consequence of damage, requiring temporary accommodation. Areas can become isolated requiring resupply of essential items.
- Transport access Roads may be blocked as a consequence of debris from fallen buildings or landslides.
- Trams and trains Some rail and light rail bridges and other rail infrastructure may be extensively damaged.
- Electricity The complete failure of large power components, such as transformers or substations, may occur in the proximity of the epicentre.
- Water supply Major water facilities such as pumping stations and reservoirs may experience damage. Damage may occur across the network. In the case of <u>liquefaction</u>, breakage of pipes is likely to be widespread and concerns over contamination may render the water not suitable for drinking.
- Waste water Extensive damage may occur to waste water systems even without any liquefaction.
- Communications Communications infrastructure may suffer damage and be overloaded. Loss of communication can be due to a variety of reasons such as the crashing of telecommunication services, website crashes, and loss of power, meaning mobile phones cannot be charged or cordless home phones will not work.
- Chemical and high risk industrial sites It is expected that high risk facilities will be designed for increased resilience to earthquake damage, so the probability of an accident induced by earthquake is classified as low.
- Hazardous material release Hazardous materials are not exclusive to heavy industry and may be released as a consequence of building collapse. These may include carcinogenic or corrosive gases, or poisonous liquids that contaminate the water table. Asbestos may be exposed as a result of earthquake building damage.

- Avalanche following earthquake Will be localised to high risk sites during winter months, such as Alpine Resorts.
- Fire following earthquake Fire following earthquake will likely be localised to high risk sites such as industry, or as a result of damaged gas pipelines or storage facilities.
- Landslide/ mudslide following earthquake Will be localised to high risk sites, such as areas subject to recent fire or heavy rainfall/ flash flooding, or areas identified under the landslide hazard mapping, available as a layer in EM COP. See the State Landslide Hazard Plan for more information: ses.vic.gov.au/em-sector/vicses-emergency-plans.
- Long series of aftershocks A series of aftershocks are possible after an earthquake event and may result in increased damage levels as well as serious disruption of recovery activities.
- **Other impacts** Consideration should also be given to tsunami, floods from dam and levee failure, and subsidence.

Cascading secondary consequences

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

For example, damage to power infrastructure may result in a long term loss of potable drinking water supply, sewage systems, telecommunications, traffic and railway crossing signals and disruption to other critical supply chains (e.g. agriculture: dairy farm milking and milk collection).

Damage, landslides and flooding of any essential infrastructure may also result in isolation of properties and/ or communities which could take weeks, months or years to restore in a major incident or in remote areas.

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

VICSES business continuity arrangements

In the event that the Regional Office or other VICSES facility is impacted or affected 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 (e.g. generator to counteract power outages, fuel supplies, etc.). These plans can be located in HPRE or hard copy at the Benalla RCC.

3.2. Earthquake history

The table below provides an overview of historical occurrences of earthquakes within the North East (Hume) Region. Refer to the SERP – Earthquake Sub-plan (pp.6-7) at <u>ses.vic.gov.au/em-sector/vicses-emergency-plans</u> for examples and/or Geoscience Australia's Earthquake Database at <u>ga.gov.au/earthquakes/searchQuake.do</u>.

Table 3: Table includes most recent, M4.0> and significant historical examples. Note 1930s was a very active earthquake decade.

Year	Locality impacted	Magnitude	Description and consequences
1996	Mount Baw Baw	5.0	Despite the minor damage reported around the earthquake's epicentre, this event was the largest earthquake in a swarm triggered by the creation of the Thomson Dam since late 1970s. The shock was felt up to 100km away.
1984	Bright area	5.4	

1982	Wonnangatta Valley	5.4	Epicentre in remote Wonnangatta Valley, widely felt in eastern Victoria, throughout Melbourne and its south eastern suburbs, and south eastern New South Wales. Minor damage reported in nearby towns.
1966	Mt Hotham	5.5 (5.7 VICSES)	The largest observed earthquake in Victoria since European settlement. Broken windows at Mt Hotham Ski Village. Felt across North-eastern Victoria, Gippsland and South-eastern New South Wales. Not felt in Melbourne.
1960	Mt Feathertop	4.7	
1946	Benalla area	Unknown – damage equates to approx. 5±	Worst Earth tremor in the town's history, with damage estimated at over £2000 (equating to approx. \$400,000 in 2015 dollars) to dwellings in residential areas, and parts of the business area. A brick home in Gillies Street was so badly damaged that it had to be rebuilt. Almost every chimney topping houses in Magennis Street were displaced, and cracks were made in the bitumen on the roadway. Minor damage internally to many building by fallen plaster, broken mirrors, and ornaments. Victoria Hotel received large and very large cracks in some of the rooms upstairs. Cracks noticed in the High School, and damage was caused to the walls of the Arts and Crafts school.
1932	Benalla area	4.0 +0.3	Series of earthquakes near Benalla. Large pieces of plaster were broken from the walls and ceilings in about 12 homes
1931	Benalla area: see map below	4.5	Largest event in a series of earthquakes that occurred near Benalla during the 1930s. Damage included smashed windows, large cracks, collapsed chimneys, items thrown from shelves. Felt from Rutherglen in the north to Mansfield in the south. A large crack was also noticed in the wall of one of the rooms at the High School, and several openings were also observed at the Convent. The shock was felt around Lima, Warrenbayne, Lurg, St. James, Devenish, Lake Rowan, Goorambat and other parts. It was severely felt at Tatong and Tumbellup.
1913	Benalla	4.2 (estimated)	Walls trembled, windows rattled, plaster knocked off walls.
1904	Mt Beauty area	5.0	
1892	Kinglake	Unknown	"Houses swayed, the water rose in waves in the river, and there was a sound as if trees had been uprooted and came down with a crash simultaneously. In all parts of the district it was felt, and nothing at all approaching to it in violence has been experienced before."
1882	Bright	Unknown	"A loud and distinct noise, the earth itself shaking tremendously and vibrating twice"
1882	Near Jamieson	Unknown	"Melbourne Observatory suggested location between Jamieson, Mansfield and Alexandra or south west of Jamieson nearer Healesville. Near Jamieson it has been quite a strong shock, and more violent than usually experienced in this part of Australia. Was a series of small recurrent quakes was followed by a very severe shock of earthquake was felt throughout the eastern portion of this colony, concentrating its force on the distinctly volcanic locality of Woods Point and Gaffney's Creek. The activity was felt to a very marked degree at Mansfield and Jamieson, and in the adjacent districts of

			Matlock, and Jericho, and the populated centres along the valley of the Thompson River. Felt in Melbourne including St. Kilda and Richmond an uplifting and undulating movement was felt distinctly an uprising of the floor".
1869	Mt Hotham, Eastern Highlands	5.4	Light building damage and smashed windows reported around the Mt Hotham region, including in Benalla and Omeo. Felt widely across eastern Victoria and southern New South Wales, including Melbourne and Albury.
1868	Mt Hotham		"The shock waves, which appeared to move in a north to south direction, were felt in most parts of north east Victoria – Beechworth, Stanley, Chiltern and Wangaratta all reported tremor . Reports of jerky ground motion and cracked walls, diagonally from top to bottom, are evidence of strong shaking."

Sources:

The 2012 Australian Earthquake Hazard Map (Geoscience Australia, 2012/71) List of Earthquakes in Australia (GA, media, articles, literature review) Earthquakes in Victoria (VICSES QuakeSafe October 2012) Historical earthquakes in Victoria: A Revised List (Kevin McCue, Australian Seismological Centre, Canberra, ACT 2601

Other smaller quakes since European settlement¹:

- Beechworth M 3.5, 1868, 1872, 1892, 1917, shaking of beds, rattling windows, breaking of crockery.
- Benalla M 3.2, 2013, crockery displaced and articles fell from mantelpieces.
- Buckland River 1855.
- **Bright** 1885, roof tiles off school, 1916, rattled the windows and crockery, 2011, 3.1M.
- **Corryong** 1917, shaking of beds, rattling windows, some breaking of crockery.
- Mansfield 1898, crockery shaken, 3.2 M, 2013.
- Euroa/ Seven Creeks 1927, series of quakes, shaking of houses, rattling of crockery.
- Marysville 1944
- Mt Beauty M 2.6, 2007.
- **Tallarook** M 3.9, 1907.
- **Walhalla** 1891.
- Wangaratta 1951, shaking of houses rattling of crockery.
- **Woods Point** 1881, 1887.
- **Yea** 1898.



Map: 1931 earthquake in the Benalla area, showing intensity and extent of earthquake reporting felt.

¹ Historical earthquakes in Victoria: A Revised List (Kevin McCue Australian Seismological Centre, Canberra, ACT 2601)

4. Community Resilience

4.1. Shared and individual responsibility for action

The National Strategy for Disaster Resilience, developed by the Council of Australian Governments, 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 earthquake include:

- Individuals being aware of their earthquake risk, and following advice from emergency services when responding to warnings.
- Local governments and communities including earthquake 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 earthquake risk.
- Engaging with the community regarding earthquake risk.
- Working with communities to plan the management of earthquake risk.
- Providing emergency information and earthquake warnings.
- Ensuring an effective, well-coordinated response to an earthquake event.
- Helping communities to recover and learn following an earthquake and 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 earthquakes. Information can be found at <u>ses.vic.gov.au/get-ready</u>.

4.2. Earthquake notifications and warnings

Earthquake notifications are provided by GA (via <u>ga.gov.au/earthquakes/</u>), who analyse and report on earthquakes within Australia and internationally. This is done on a 24/7 basis by Duty Seismologists for the purposes of earthquake warnings and to alert governments, emergency services and the general public of earthquakes in Australia and overseas.

There is no accepted method to predict earthquakes; however, some regions are more prone to earthquakes than others due to their location in proximately to earthquake faults. When an earthquake occurs, GA and VICSES will work together to notify the community.

GA monitors seismic data from the Australian National Seismic Network and stations worldwide. This is done in near real-time, 24 hours a day. Seismic data is also freely provided by overseas governments who have national seismic networks. GA uses data provided by the governments of New Zealand, Indonesia, Malaysia, Singapore and China. Data from global seismic networks are also provided by USA, Japan, Germany and France. The seismic data is collected and analysed automatically and then immediately reviewed by GA's Duty Seismologist. For earthquakes that have the potential to generate a tsunami, preliminary earthquake details are computed within 15 minutes. All other earthquakes are generally computed within 30 minutes.

Earthquakes that can be located in Australia are catalogued and published on the GA website. The analysis includes the origin time and date of the earthquake, its location (latitude, longitude and depth) and its magnitude. Earthquakes outside Australia, but within our region, are published only for earthquakes with a magnitude of 5 or greater. Earthquakes occurring anywhere internationally with a magnitude of 6 or greater are also catalogued and published on the GA website at: <u>ga.qov.au/earthquakes/</u>.

4.3. Building codes

Australia's building codes set out data and procedures for determining earthquake loads on structures and their components, while detailing minimum requirements for structures. Local government is responsible for the application of building code provisions.

4.4. Municipal earthquake emergency planning

Where earthquake is identified through the CERA emergency risk management process as a priority risk to a community, VICSES will provide advice and support to the Municipal Emergency Management Planning Committee to ensure the Municipal Emergency Management Plan (MEMP) contains, at a minimum, arrangements for the response to an earthquake event based on an all-hazards and all-agency response.

4.5. Community engagement: QuakeSafe

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

The QuakeSafe program engages with the community to raise awareness of the dangers of earthquakes and the inability to provide warnings, and teach some simple, useful actions they can take for their own safety and that of their property.

Programs to build resilience in the North East (Hume) Region include local engagement activities and initiatives.

The North East (Hume) Region community engagement 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.

4.6. Household and business plans

The Emergency Management Commissioner advises that every household and business should have a written emergency plan. Information to assist development of these plans can be found at: <u>ses.vic.gov.au</u>.

The North East (Hume) Region also supports local Caravan park owners/ managers to prepare for emergencies by supporting use of the online planning tool which can be found at: <u>ses.vic.gov.au/get-ready/caravan-park-information</u>.

4.7. Community safety advice

VICSES provides advice to community in the form of key safety messages for earthquake, including advice for safe evacuation. A full list of community safety advice messages can be viewed online via EM-COP in the IMT Toolbox at: https://files-em.em.vic.gov.au/IMT-Toolbox/PubInf/MediaTools/VICSES-HazardKeyMessages-February2018.pdf.

5. Managing an earthquake event

5.1. Roles and responsibilities

Roles and responsibilities of agencies involved in responding to earthquakes are detailed in the SERP – Earthquake Sub-plan.

5.2. Concept of Operations (refer to the VICSES Operations Management Manual V 4 July 2018)

The Concept of Operations for responding to an earthquake is detailed in the SERP – Earthquake Sub-plan.

- The Incident Controller (IC) with the IMT will determine the Operational make-up of the earthquake response based on the unique situation presented by each earthquake scenario. This will include the need for possible activation of:
 - Divisional Command Points (DCP) as per Table 5 (see P. 22). These are based around a municipality/ local VICSES unit footprint.
 - Sector Command Points (SCP) will be established based on the impacts and tasking required according to SME knowledge, safest work practices, skills and equipment.
 - Taskforces may also be 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.
 - Sample tasking: VICSES (and some specialised CFA) crews will be tasked



Image from VICSES Operations Management 1

with rescue or working at height safety tasks, while CFA crews may be deployed to cut up fallen trees or remove debris for access jobs. Department of Environment, Land Water and Planning (DELWP) or council crews to use heavy equipment, for example to remove road debris, etc. caused by landslides.

• Staging Areas: may be established to support the Incident or a Division or both.

5.3. Escalation and Notification

GA publishes any earthquake activity, as detailed in section 4.2 Earthquake Notifications, on its public website (<u>ga.gov.au/earthquakes/</u>) and notifies pre-identified agencies, organisations and media outlets, including pager and email notification message to the VICSES State Duty Officer (SDO).

The VICSES SDO will acknowledge any Earthquake Notification, confirm details with GA and notify relevant internal personnel, including RDOs.

Upon receipt of an Earthquake Notification, RDOs will acknowledge the pager message and notify the RAC to notify the Regional Controller (RC) and/o r Regional Emergency Management Team (REMT) members for earthquake response, and any relevant units.

The escalation and notification process for earthquake response is operationalised within the VICSES Standard Operating Procedure (SOP) 046 – Earthquake Notification and Activation Process.

5.4. Strategic Response Planning

The actions listed below are the responsibility of VICSES at the regional and State tiers. Responsibility for these actions may transition to the RC to support multi-agency response when significant impacts caused by an earthquake event occur.

On receipt of an Earthquake Notification the RAC will undertake strategic level planning.

Key considerations will include:

- Establishing the control structure for managing the event.
- Supporting consistent emergency warnings and provision of information to the community.
- 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 earthquake and any interdependencies that may affect planning.
- Confirming agencies have adequate resources in place to fulfil their responsibilities and are planning for both sustained response and surge capacity, including identification of need for inter-state or international 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, information relating to mass gatherings/ events is available from the Hume REMT 7-Day Readiness Plan in EM COP at: <u>http://files.em.vic.gov.au/OpFac/HUM/HUM-Plans.htm?v=1</u>.
- Confirming agencies with call-taking responsibilities have resources in place and back up arrangements to cope with the expected call load.
- Positioning of Emergency Management Liaison Officers (EMLOs) from key support agencies to Regional and/or Incident Control Centres (RCCs, ICCs), where appropriate.
- Arranging for regular meetings of the 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 for the North East (Hume) Region.

Cross border arrangements with NSWSES: For the North East (Hume) Region, 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 SDO.
- 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 potential earthquake event along the Murray River effective liaison and joint community messaging is essential.

This should be facilitated by regular communication with NSWSES, including the Hume REMT. ICCs that are managing Murray River flooding should request a NSWSES EMLO.

5.6. Regional Control Centre (RCC)

The Region Response Plan will outline pre-determined facilitates that are suitable for the establishment of an RCC for the management of emergency events, including earthquake response. This includes the North East (Hume) Region Control Centre – DEWLP Office – 89 Sydney Road, Benalla.

5.7. Incident Control Centres (ICCs)

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ICC locations that have been pre-determined for earthquake response are as detailed in the table below.

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Table 4: ICC locations ((a map of ICC	footprints is	available online	e via EM-COP).

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Location	Local Government Area (LGA) within footprint
Benalla ICC 64 Sydney Rd, Benalla 03 9256 9650	All LGAs within Hume Region
Wangaratta ICC 1 Ely St, Wangaratta 03 5720 2300	Alpine, Indigo and Wangaratta
Wodonga ICC 55 Moorefield Park Dve, Wodonga West 02 6043 4400	Wodonga, Indigo and Towong
Shepparton ICC 195-205 Numurkah Rd, Shepparton 03 5833 2400	Moira, Shepparton, Benalla and Mansfield
Seymour ICC 36 McIntyre St, Seymour 03 5735 3100	Mitchell, Murrindindi and Strathbogie

5.8. Divisional Command Points (DCPs)

Further facilities suitable for use as DCPs for earthquakes are available from CFA. Local Command Facilities are equipped to DCP standard. A map of DCPs can be found in Attachment 6 – Division Command Location Map.

Table 5: Facilities suitable for use as DCPs.

Facility Location LHQ=local HQ CFA= fire station	VICSES units within footprint	LGA / Alpine Resort Management Board (ARMB) areas	
Benalla SES 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 SES 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 SES LHQ 03 5824 1910 Tatura.dcp@ses.vic.gov.au	Tatura and Murchison	Greater Shepparton	
Wangaratta Sth (current) 03 5725 7415 lcfsrat.ops@cfa.vic.gov.au	Wangaratta, Myrtleford and Bright	Wangaratta and Alpine	
Wangaratta (new) SES LHQ *under construction*	Wangaratta, Myrtleford and Bright	Wangaratta and Alpine	
Wodonga SES LHQ 02 6024 3300 Wodonga.dcp@ses.vic.gov.au	Wodonga, Chiltern, Rutherglen, Corryong, Tallangatta and Mitta Mitta	Wodonga, Indigo and Towong	
Yackandandah SES LHQ 02 6071 1911 Yackandandah.dcp@ses.vic.gov.au	Yackandandah, Beechworth, Bright, Myrtleford and Tallangatta	Indigo and Towong	
Yarrawonga SES LHQ 03 5744 1933 Yarrawonga.dcp@ses.vic.gov.au	Yarrawonga and Cobram	Moira	
Yea CFA 03 5797 2492 lcfyeaa.ops@cfa.vic.gov.au	Alexandra, Marysville and Kinglake	Murrindindi and Lake Mountain (jointly managed by Southern ARMB and Murrindindi Shire)	

A map of these DCPs can be viewed at Attachment 5 – Division Command Location Map.

5.9. Regional Resource Requirements

Likely resource requirements for responding to an earthquake event are detailed in Attachment 2 – North East (Hume) Region Resource List.

Glossary

BOM	Bureau of Meteorology
CERA	Community Emergency Risk Assessment
CFA	Country Fire Authority
DELWP	Department of Environment, Land, Water and Planning
DEDJTR	Department of Economic Development, Jobs, Transport and Resources
DET	Department of Education and Training
DHHS	Department of Health and Human Services
DoJ	Department of Justice
DSEP	Dam Safety Emergency Plan
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
GA	Geoscience Australia
ICC	Incident Control Centre
ICP	Incident Control Point
IEMT	Incident Emergency Management Team
IMT	Incident Management Team
LGA	Local Government Authority
М	Magnitude
MEMP	Municipal Emergency Management Plan
MFEP	Municipal Flood Emergency Plan
MFB	Metropolitan Fire Brigade
PTV	Public Transport Victoria
RAC	Regional Agency Commander
RC	Regional Controller
RCC	Regional Control Centre
RDO	Regional Duty Officer
REMT	Regional Emergency Management Team
RFA	Request for Assistance
SAC	State Agency Commander
SCC	State Control Centre
SCOT	State Coordination Team
SCP	Sector Command Points

SCRC	State Crisis and Resilience Council
SCT	State Control Team
SDO	State Duty Officer
SEMC	Security and Emergency Management Committee of Cabinet
SEMT	State Emergency Management Team
SERP	State Emergency Response Plan
USAR	Urban Search and Rescue
VICSES	Victoria State Emergency Service
VICPOL	Victoria Police

Attachments

Attachment 1 – North East (Hume) Region Earthquake Scenario

This Earthquake Scenario has been developed to support periodic training requirements (outlined in Section 1.8), provide opportunity to document anecdotal and/ or known earthquake impacts based on historic events, and provide an indication of the resource requirements and associated gaps for operational response.

The below scenario is based on a possible earthquake scenario in the North East (Hume) Region.

Mount Hotham:	Open			
Snow			Open trails	Open lifts
Variable			70/75	12/13
Base			Summit	
196cm		1°C	196cm	– 1°C
Snow depth	•	S 3 km/h	Snow depth	SW 3 km/h

Earthquake Scenario - It's been a terrific snow season

- Winter 2018 has been a bumper snow season with around 2 metres of natural snow recorded at most of the main Alpine Resorts, with Mt Hotham recording 102cm, all back country trails open and 12 of the 13 lifts operating.
- During these school holidays, many Melburnians were flocking to the resorts for their first ever day trip to the snow and many of the mountain chalets were already packed with regular skiers and resort staff.
- It's just on dark. Ski lifts are operating under lights for the annual kids' snow fun festival on the middle weekend of the school holidays. A M 5.7 earthquake has just been recorded by GA, with the epicentre 1km south of Mt Hotham.
- All communication to the mountain has been lost so no initial impact reports or situation reports can be sourced. VICPOL, CFA and VICSES crews have been deployed up the mountain to ascertain what might have happened.
- In the interim, use the list of possible consequences (see page 12) and Attachment 7 Earthquake Damage Description tables and images to scope what might have happened and what your initial Incident Action Plan look might like.

Resource Requirements

Table 6 below provides a list of resource requirements that have been identified to support operational response to a significant earthquake event, as outlined in the scenarios above. A full list of North East (Hume) Region resources is available in Attachment 4 – Regional Resources.

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 SERP – Earthquake 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 earthquake events, Divisional Command locations can be found at Attachment 5.

Pre-planned ICCs and RCCs (DELWP Benalla L3) have been determined for response, and their boundaries are represented in Attachment 5.

Table 6: Regional 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	Category 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)	SWRT from VICPOL or MFB	Rescue boats	
Sandbag/ work teams	CFA/DELWP/DoJ /taskforces	VICSES sandbag filling machines	

All requests for such resources should be made via the relevant RAC. In addition to the unit resources listed above, the following VICSES regional strategic resources and composite teams are 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 VICSES Tatura Unit headquarters)
- 8 x Snow Mobiles (based at Falls Creek Unit)
- 1 x Sandbag Filling Trailer (based at VICSES Myrtleford Unit)
- 1 x USAR Trailer (located at VICSES Benalla Regional Office)
- 1 x High Angle Rescue Cache (based at VICSES Bright Unit)
- 1x Technical Rescue POD (based at Wangaratta Fire Station)
- Land Based SWRT (contactable via Pager Group: 230525)
- Alpine Search and Survival Team (contactable via Pager Group: 224460)
- Technical Rescue Team (contactable via Pager Group: 230877)

CFA, DELWP, Shepparton Search and Rescue and some LGAs maintain resources and specialist personnel that are able to be utilised by VICSES during earthquake response, relief and recovery, including:

- IMT personnel
- Chainsaw Crews
- Arborists

- Initial Impact Assessment Teams
- 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.

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 SERP – Earthquake Sub-plan.

For DCP locations and boundaries see Attachment 5.

Attachment 2 – Regional Resource List

See relevant Municipal Flood Emergency Plan (MFEP) for more detail and the VICSES unit map found in Attachment 5.

 Table 7: VICSES North East (Hume) Region unit vehicles and equipment (excludes Shepparton Search & Rescue).

Unit Name	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 seat)	Rescue Boat x2	Storm Trailer
Yackandandah	-	Storm/rescue support	4WD x 1	-	-
Yarrawonga	Primary Rescue	-	4WD x 2	Rescue Boat x2	Storm Trailer

In addition, VICSES maintain small community sandbag caches, which are listed in the relevant MFEPs. The figures below refer to nominal amounts stored subject to refurbishment after an event.

Table 8: Strategic VICSES reserves of sandbags.

Unit name/ other location	Primary contact person	Quantities (refers to 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
Shepparton Search and Rescue	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 9: Sand supplies are available from the following suppliers in region.

Company Name	Address	24/7 Access	BH Number	Contact Name	AH Number	Appro x Quant. on site	Supplier in area
Bedrock Garden Supplies	2 Rose Street, Alexandra VIC 3714	Y	03 5772 1911	David Leary	0447 788 018	30m³	Alexandra
Beechworth Sand & Soil	1617 Diffey Rd, Beechworth VIC 3747	Y	03 5728 3193	Evan Taylor	0419 266 771	10m³	Beechworth
Green 'n' Grow	139 Grant Drive Benalla Vic 3672	N	03 5762 2296	Christine Carter	0417 350 110	30m³	Benalla
Adornato	Numurkah Rd, Shepparton VIC	Y	03 5831	Ross	0418 334	600m	Murchison
Sanu & Gravel			4392	Adornato	003		Numurkah

Supplies	3632						Tatura
							Shepp Search and Rescue
							Cobram
Wodonga	162 Victoria Cross	Y	02 6056	Michael	0407 789	20m³	Wodonga
Sand and Soli	VIC 3690		3300	Criesilite	005		Tallangatta
							Chiltern
							Corryong
							Mitta Mitta
							Rutherglen
							Yackandandah
Mawsons	110-112 Wimble Street Seymour 3661	Y	03 5799 2355	Darren Crook	0427 048 955	100m ³	Seymour
							Euroa
Northern	30 Willowmavin	Y	03 5781	Claude	0427 788	100m ³	Kilmore
Supplies	3764		1000	0	393		Kinglake
							Marysville
McPhersons	17 McGeehan Crt,	Y	03 5752	Craig McPhers	0427 326	50m³	Bright
Contractors	3737		2333	on	097		Myrtleford
Toil and Soil Garden Supplies	2/14 Provis St, Wangaratta VIC 3677	Y	03 5722 2220	John Gollin	0429 945 509	TBC	Wangaratta
J W & R P Payne - Sand and Soil	6 Lucan St, Mulwala NSW 2647	Y	03 5744 3800	John Payne	0428 576 423	1000m³	Yarrawonga
Alpine Garden Supplies	261 Dead Horse Ln, Mansfield VIC 3722	Y	03 5775 2924	Ben Kipping	0400 877 582	10m³	Mansfield

Attachment 3 – VICSES Unit Map

Units within North East (Hume) Region:



Regional Support Unit (RSU) (based at Benalla Regional Office).

Map of VICSES Units within the North East (Hume) Region:



Map source: BMT WBM Pty Ltd

Attachment 4 – General response boundaries map

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

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

Attachment 5 – ICC footprint map and DCP location map



Source: VICSES Operations Management Manual July 2015.

Attachment 6 – Earthquake damage description reference table

Felt	Impact	Magnitude (Approxi- mat Value)	Building Damage (Masonry)
Not felt	Not felt	2	
Weak	Felt indoors by a few people. People at rest feel a swaying or light trembling.	3	
Light	Felt indoors by many people, outdoors by very few. A few people are awakened. Windows, doors and dishes rattle.		
Moderate	Felt indoors by most, outdoors by few. Many sleeping people wake up. A few are frightened. Buildings tremble throughout. Hanging objects swing considerably. Small objects are shifted. Doors and windows swing open or shut.	4	
Strong	Many people are frightened and run outdoors. Some objects fall. Many houses suffer slight non-structural damage like hair-line cracks and falling of small pieces of plaster.		
Very strong	Most people are frightened and run outdoors. Furniture is shifted and objects fall from shelves in large numbers. Many well-built ordinary buildings suffer moderate damage: small cracks in walls, fall of plaster, parts of chimneys fall down; older buildings may show large cracks in walls and failure of in-fill walls.	5	
Severe	Many people find it difficult to stand. Many houses have large cracks in walls. A few well built ordinary buildings show serious failure of walls, while weak older structures may collapse.		
Violent	General panic. Many weak constructions collapse. Even well built ordinary buildings show very heavy damage: serious failure of walls and partial structural failure.	<u>6</u>	
Extreme	Most ordinary well built buildings collapse, even some with good earthquake resistant design are destroyed.	7	

Source: Natural Hazards: Swiss Seismological Service (<u>www.geophysics.ethz.ch/research/groups/sed.html</u>).

Attachment 7- RFA triage priority table (landslide adapted as impacts similar to earthquake)

Landslide Triage

Consistent with the State Emergency Management Priorities (outlined in the Victorian Command and Control Principles chapter of this manual) the following triaging priorities are to be adopted during landslide events:

Priority		Example	
1	Threatened or entrapped persons	-	Trapped in cars, buildings, etc. Evacuation of persons, in the event of landslide
2	Protection from threat to life	-	Evacuation of vulnerable people from the affected or potential affected areas
		-	Evacuation of people from affected or potential affected areas.
		-	Restriction of movement of people in affected areas (road closures)
3	Traffic hazard	-	Major arterials, main roads and single access roads.
4	Protection of critical community infrastructure	-	Removal of debris blocking access to structure, or that is likely to cause further damage
	places necessary for the maintenance of community function e.g. schools, essential services, care facilities, water pumping stations etc.	•	Tarping to reduce impacts of weather on the structure
		•	Shoring (if safe to do so) of building to reduce the risk of collapse
5	Protection of primary residence note: out buildings and fencing of primary residence are deemed 'private property' and form part of priority 6.	-	Removal of debris blocking access to primary residence, or that is 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
6	Render private property safe and provide protection from further damage.	-	Making safe fences, large debris from causing further damage.
	note: private property includes residence and other private assets, i.e. vehicles.		Removal of debris 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

Source: Operations Management Manual July Version 4 2018, P. 57.