

East (Gippsland) Region

Emergency Response Plan – Earthquake Complementary Plan



Safer Communities - Together



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This publication is intended to be consistent with the State Emergency Management Plan (SEMP), published by Emergency Management Victoria in 2020.

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

An electronic version of the plan can be obtained at: www.ses.vic.gov.au/about-us/state-and-regional-emergency-plans

Foreword

This plan was developed as an emergency response plan prior to introduction the of the **State Emergency Management Plan (SEMP)** in 2020 under *Emergency Management Legislation Amendment Act 2018* (EMLA Act 2018) and therefore constitutes a Complementary Plan to the **Regional Emergency Management Plan (REMP)**. In time, this plan will be reviewed and transition to being a form Sub-Plan under the **Regional Emergency Management Plan (REMP)** in accordance with the EMLA Act 2018 and with regard to the Emergency Management Planning Legislative Guidelines by 2023.

The Victoria State Emergency Service (VICSES) East Region led the preparation of **this Emergency Response Plan – Earthquake Complementary Plan** (this plan) in consultation with other agencies represented on the REMPC.

This plan replaces the **East (Gippsland) Region Earthquake Emergency Response Plan 2016** and is published to support any immediate operational response.

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

- Any VICSES changes in organisation, agency roles and responsibilities.
- Evolution of the sector in relation to multi-agency and cross border arrangements.
- Alignment with arrangements contained in the State Earthquake Sub-plan.

Version Control

East (Gippsland) Region
Emergency Response Plan – Earthquake Complementary Plan
Version, 1.6 April 2022
Nature of amendment: Editing

East (Gippsland) Region Emergency Response Plan – Earthquake Complementary Plan Certification

The East (Gippsland) Region Emergency Response Plan – Earthquake Complementary Plan deals with response to earthquake incidents within East (Gippsland) area of responsibility.

The following plan is intended to provide the framework for East (Gippsland) Region to respond to future emergencies caused by earthquakes effectively and efficiently and will remain current until rescinded by authority of the Victoria State Emergency Service Chief Officer Operations.

A blue ink signature of Tim Wiebusch.

Date: 22 April 2022

Tim Wiebusch
Chief Officer Operations

This plan is produced by Victoria State Emergency Service and has been adapted from the **State Emergency Response Plan – Earthquake Complementary Plan**. All information contained in this plan was current at time of publication.

The Victoria State Emergency Service 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.



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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 East (Gippsland) Region.

1.2 Objective

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

1.3 Scope

This East (Gippsland) Region Emergency Response Plan – Earthquake Complementary Plan includes:

- Description of potential risks and consequences of earthquakes to the social, built, economic and natural environments within the East (Gippsland) Region.
- 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) and the *Emergency Management Legislation Amendment Act 2018* (EMLA Act 2018) is the empowering legislation for the management of emergencies in Victoria.

The **State Emergency Management Plan (SEMP)** 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 SEMP also identifies Victoria's organisational arrangements for managing the response to emergencies as outlined in the Roles and Responsibilities Section. The East (Gippsland) Region Emergency Response Plan (yet to be developed) will detail specific arrangements for the management of emergencies within the East (Gippsland) Region. This plan has been developed as a subordinate plan of the East (Gippsland) Region Emergency Response Plan and **the State Emergency Response Plan – Earthquake Complementary Plan**. 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*

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.

1.7 Linkages

This plan is a Complementary Plan of the State Emergency Response Plan – Earthquake Sub-plan and the East (Gippsland) Region Emergency Response Plan). It reflects 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.

Arrangements in this plan have not been repeated from afore mentioned plans, unless necessary to ensure context and readability. The State Emergency Response Plan – Earthquake Sub-plan can be accessed at www.ses.vic.gov.au.

Arrangements for the management of secondary consequences 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 resulting from dam failure – **State Emergency Response Plan – Flood Sub-plan and East (Gippsland) Emergency Response Plan - Flood Sub-plan**.

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.

Any operational activity in East (Gippsland) 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.

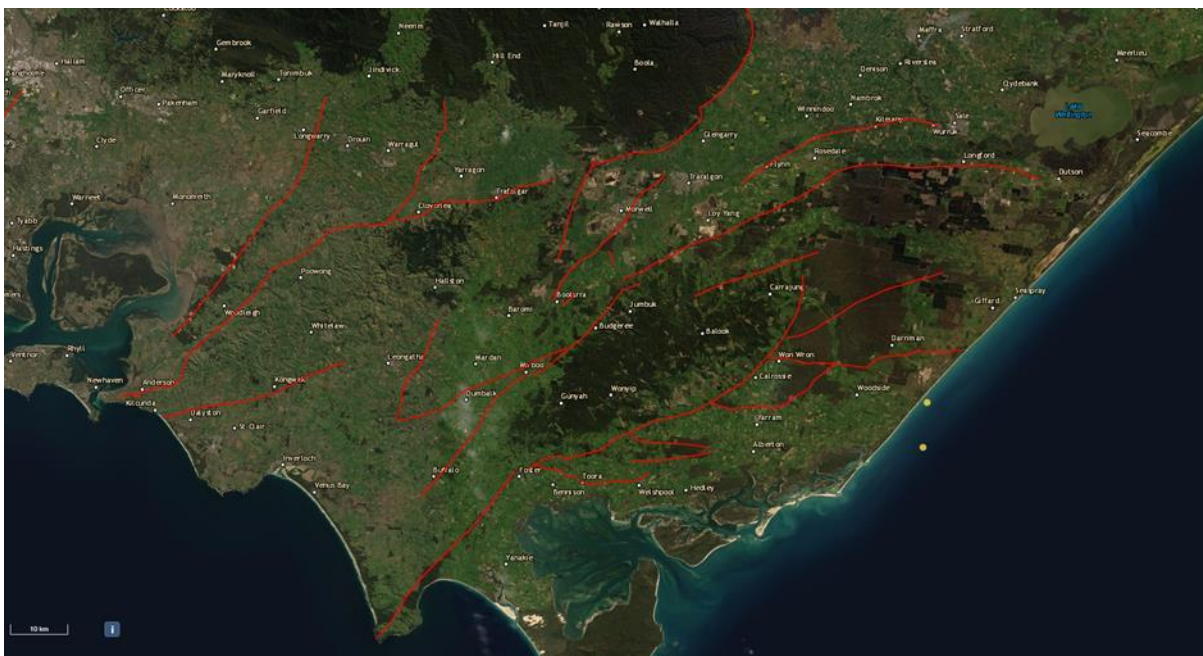
2. The Earthquake Risk within the East (Gippsland) Region

2.1 Region Description

Gippsland is a rural region of Victoria located in the south-eastern part of the state. It covers an area of 41,556¹ square kilometres and lies to the east of Melbourne. Gippsland is comprised of seven municipalities being Baw Baw, Bass Coast, South Gippsland, Wellington, East Gippsland, Latrobe and Southern Alpine Resort Management Board (Mt Baw Baw).

Gippsland has an estimated population of 271,269², with the principal population centres being Traralgon, Moe, Wonthaggi, Warragul, Morwell, Sale, Bairnsdale, Drouin, Leongatha, and Phillip Island. There are many more remote areas in Gippsland containing smaller, more isolated communities that are far away from regional centres.

Fault lines and earthquakes have been recorded in areas surrounding the major population centres in the Latrobe Valley and South Gippsland

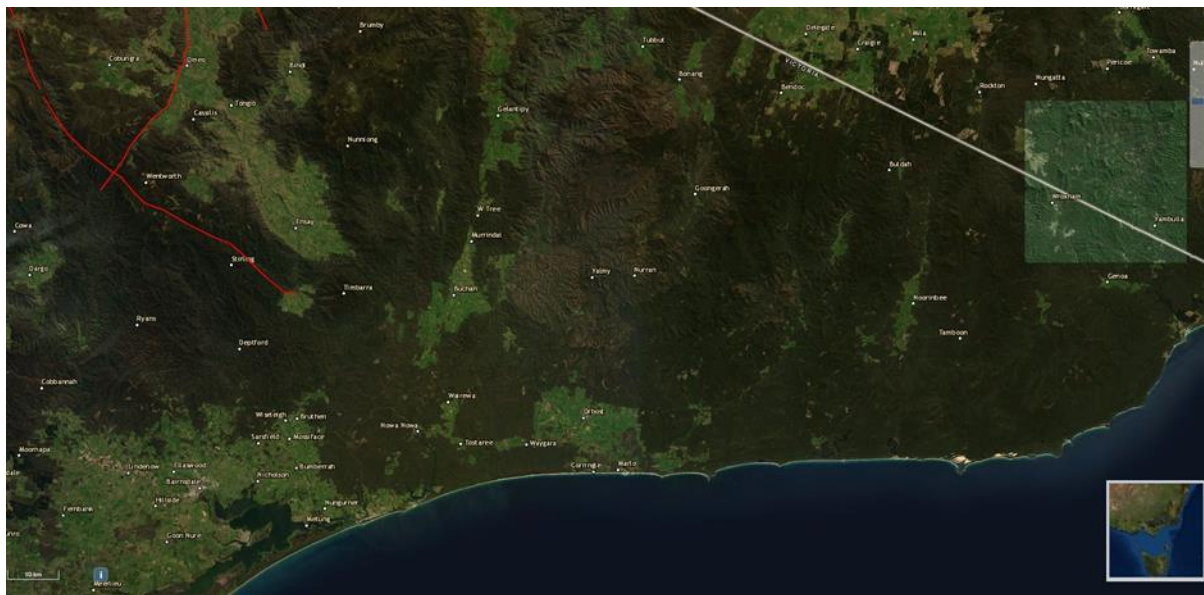


Reference: Geoscience Australia <https://earthquakes.ga.gov.au/>

There are limited known fault lines in Gippsland in the area from lake wellington to the New South Wales border (refer to image below). This would support that the major risk of earthquake events occurring would be in the Latrobe Valley – South Gippsland areas.

¹ Australian Bureau of Statistics (ABS), Census 2016 <http://www.abs.gov.au/census>.

² Australian Bureau of Statistics (ABS), Census 2016 <http://www.abs.gov.au/census>.



Reference: Geoscience Australia <https://earthquakes.ga.gov.au/>

Gippsland is best known for its primary production such as mining, power generation and farming. An earthquake in the region has the potential to impact the following key infrastructure that supports the region and a number of states.

- Transportation
 - Princes Hwy is a major transport route to the region and also NSW. Earthquakes destabilise and undermine roads and bridges delaying distribution of basic foods and perishable items.
 - Major rail network connects Melbourne to East Gippsland.
- Essential services –
 - Power generated in the region is distributed to metropolitan Melbourne and interstate. The loss of transmission infrastructure would reduce the output of these facilities with the potential to impact tens of thousands of residents through blackouts.
 - Water, sewerage, gas, telecommunications
- Private property
 - The impacts of private property as a result of a Strom event can be loss of parts or total destruction habitable areas of the houses, forcing relocation in the short or long term.
- Industry / business
 - The loss of transportation access can impact the ability of businesses to be able to continue to trade resulting in economic impacts, potential short or long term loss of employment.
- Agriculture – crop and livestock
 - Earthquakes may damage grazing lands and may result in the loss of livestock.
- Damage to the environment from an earthquake can lead to erosion in sensitive environmental areas with subsequent impacts to native vegetation and wildlife.

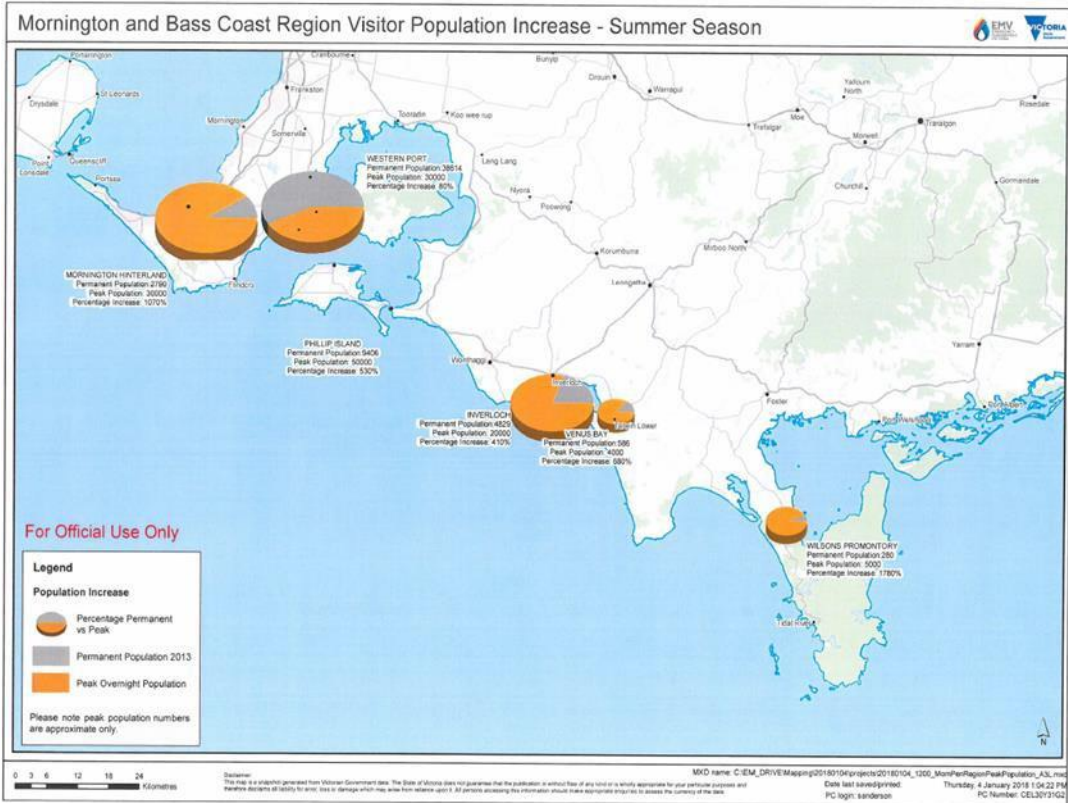
Gippsland tourist destinations that include – International events such as the motorcycle grand prix held at Phillip Island, Wilsons Promontory, the Gippsland Lakes, Walhalla, the Baw Baw Plateau and the Strzelecki Ranges to name a few.

Tourism is an important industry for Gippsland. The region received over 5.4 million domestic (overnight and daytrip) and international overnight visitors combined, who spent an estimated \$872 million in the year ending December 2017³

A major earthquake during a peak tourist season could have major economic impacts and additional complications with vastly exceeded local populations.

Emergency Management Victoria has estimated that some areas of Gippsland will experience population increase varies from approximately 400 – 1700% as a result of visitors above the permanent population.

Refer to the maps below:



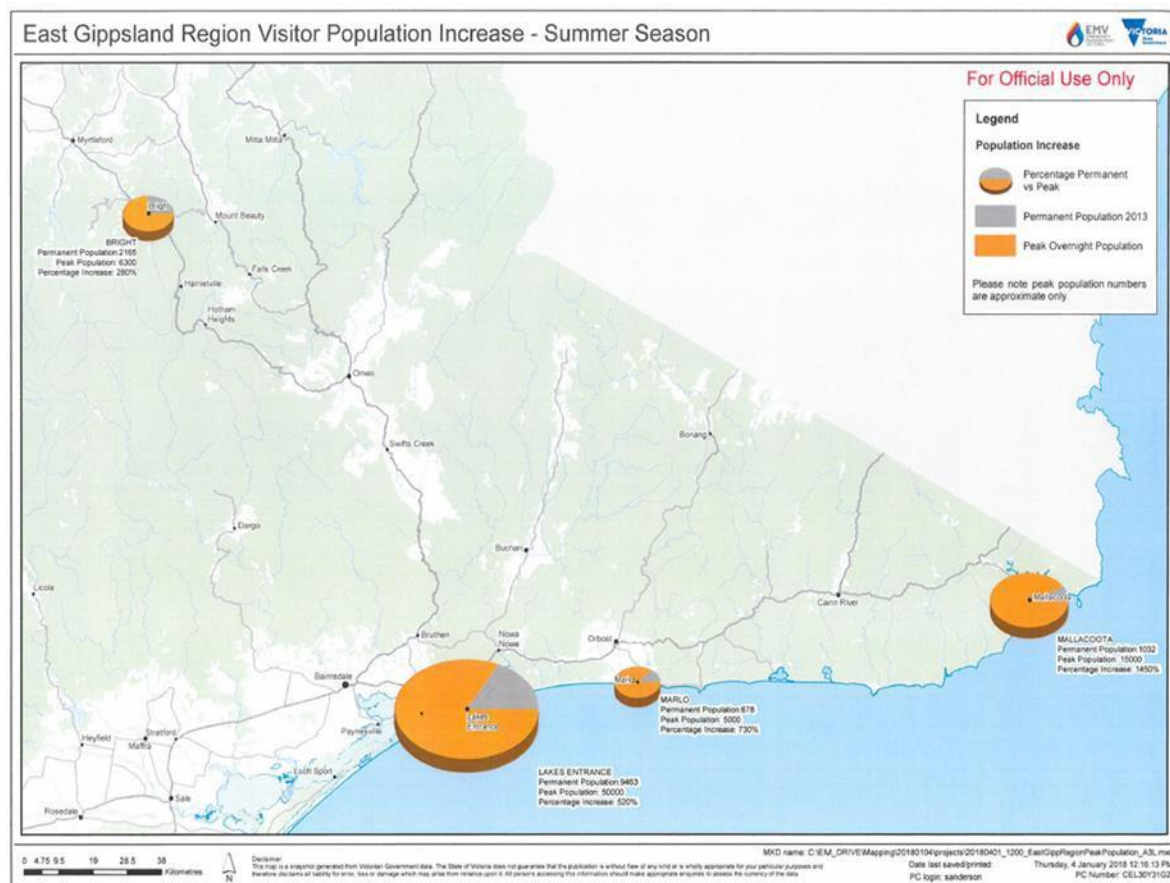
Bass Coast

- Inverloch permanent population 4,829 – peak 20,000 - 410% increase
- Phillip Island permanent population 9,406 – Peak 50,000 - 530% increase
- Venus Bay permanent population 586 – peak 4,000 - 680% increase

South Gippsland

- Wilson’s Promontory - permanent population 280 – peak 5,000 – 1780% increase

³ Gippsland Regional Tourism Summary, Tourism Victoria, December 2017.
http://www.business.vic.gov.au/_data/assets/pdf_file/0010/1643779/Gippsland-Regional-Summary-year-ending-December-2017.pdf



East Gippsland

- Lakes Entrance - permanent population 9,463 – peak 50,000 - 520% increase
- Marlo - permanent population 678 – peak 5,000 - 730% increase
- Mallacoota - permanent population 1,032 – peak 15,000 - 1,450% increase

2.2 The Earthquake Hazard

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 major earthquake could still occur under a heavily developed and populated area in Victoria. The impact of such an earthquake could have widespread consequences throughout the relevant township and surrounds. Whilst 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.

The size of an earthquake is referred to as its magnitude. 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).

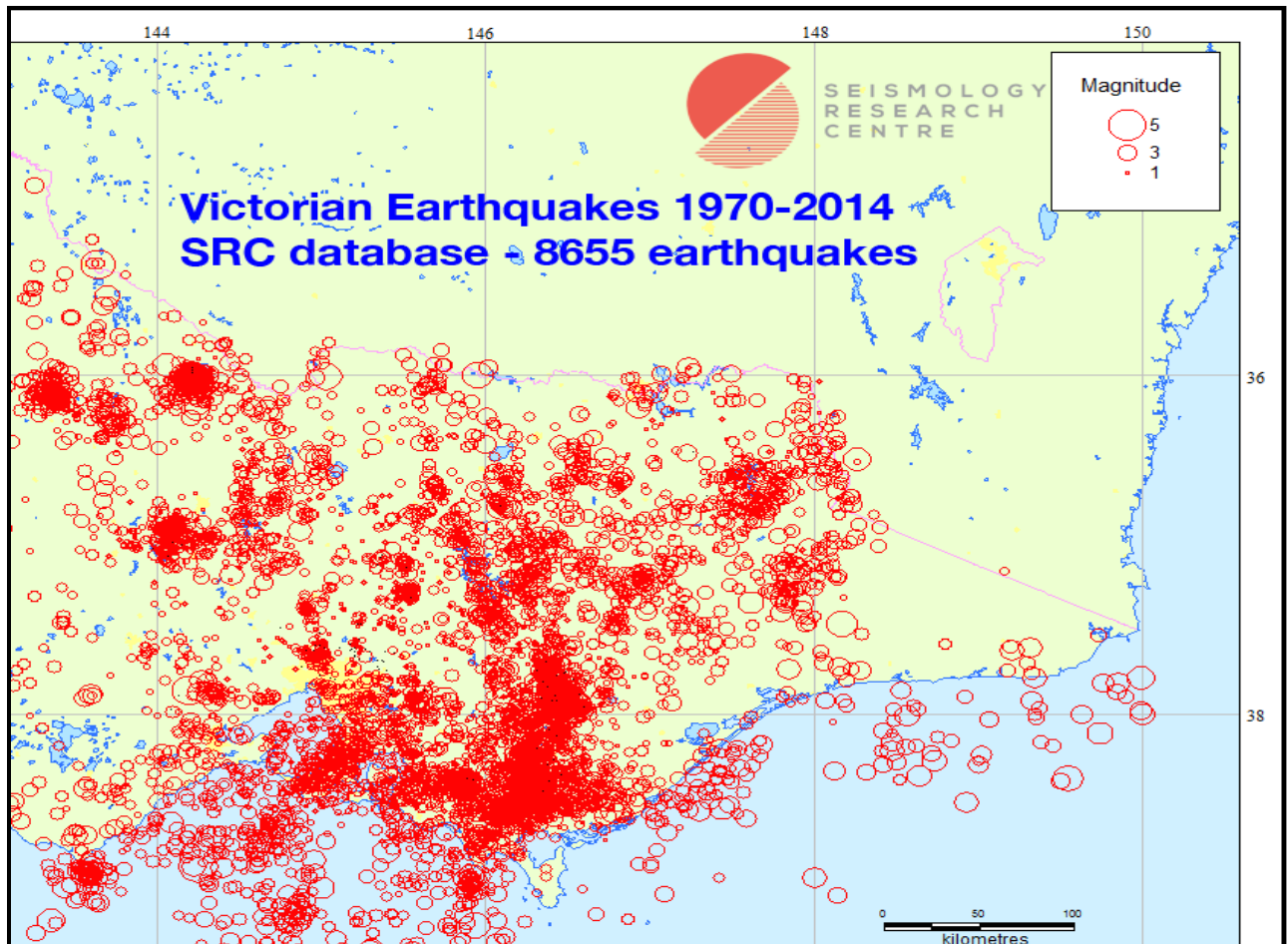
In Australia, seismologists (people who study earthquakes) prefer the use of the moment magnitude scale, which calculates the magnitude of an earthquake based on physical properties such as the area of movement (slip) along the fault plane.

An 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 7.5.

Australia is not immune from damaging earthquakes causing significant human and economic loss, as shown in the list below:

In Victoria a number of earthquakes have occurred resulting in damage and even death. A list of significant earthquake events that have impacted Victoria and their associated impacts is included in the State Emergency Response Plan – Earthquake Sub-plan.

- In 1996 an M 5.2 earthquake was centred near Mt Baw Baw, the shock was felt up to 100 km away with minor damage reported in Melbourne.
- In August 2000, an M 5.0 earthquake in Boolarra caused minor damage and was felt throughout Gippsland.
- In 2009, Korumburra experienced two earthquakes within two weeks of each other on the 6 March and then the 18 March. Both earthquakes were recorded at M 4.6.
- In June 2012, an M 5.3 earthquake occurred in the La Trobe Valley, Gippsland. The earthquake caused minor damage. The earthquake epicentre was 16 kilometres southwest of Moe and was the strongest earthquake recorded since the 1982 Wonnangatta Valley earthquake and was felt across the state including in Melbourne and as far away as Wodonga.



The map below is from the Seismic Research Centre, there has been 8655 recorded earthquakes in Victoria during the period from 1970 to 2014, with the highest concentration of recorded events in the South of the state and in particular the South Gippsland to Latrobe Valley.

2.2.1 Sources of Earthquake Intelligence (during events and impacts)

■ Intelligence:

- Bureau of Meteorology (BOM): bom.gov.au/vic.
- Geoscience Australia (GA): ga.gov.au/earthquake.
- 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.
- 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.
- 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.
- 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.

2.3 Major Dams

A list and description of major dams and /or major water storages for industry located within the Region and near a known fault line. Risk management plans for dams are available upon request to the Catchment Management Authority.

Dam/water storage name	Location	
Lake Narracan	Yallourn North	There are two known faults located near the Yallourn North Power station.
Hazelwood Pondage	Hazelwood	Hazelwood pondage and decommissioned power station water storage are located near the Morwell monocline. This fault line also runs through Morwell.
Lake (un-named)	Trafalgar South	A recreation lake (boating) and School camp at the Summit are located within 1km of the Yarragon Monocline.
Foster Dam	Foster	The dam is the primary source of water for the Foster township and is located on the Gelliondale monocline.
Battery Creek	Fish Creek	The dam is the primary source of water for the Fish Creek township and is located on the Gelliondale monocline.

2.4 Regional Resources

VICSES Resource processes are set out in the '*VICSES Operations Management Manual*'.

Regional Resources remain under the command of the Regional Agency Commander until they arrive at the incident.

Key regional resources that are used for storm response include:

- Attachment 2 – VICSES Regional Resource List
- Attachment 3 - VICSES SES Unit Map
- Attachment 5 – VICSES ICC Unit List

Additional specialist multi-agency resources may be accessed during operations through the Australasian Inter-Service Incident Management System (AIIMS) structure. These resources are requested via the State Resource Request System.

East (Gippsland) General Response Boundaries are accessible via Emergency Management – Common Operating Picture (EM-COP) for registered users.

3. Consequences

3.1 Possible Earthquake Consequences

The effects of an earthquake depend on many factors, such as the 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 in a major earthquake. Detailed information about the effect of earthquakes is contained in the State Emergency Response Plan – Earthquake Sub-plan.

Built infrastructure damage (e.g. buildings) – Information on building critical infrastructure resilience can be found in the Victorian Critical Infrastructure Resilience Strategy available at www.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 may occur if essential services are not readily available after the impact of an earthquake.

Displacement and isolation – As a consequence of damage, people can become displaced 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.

Trams and trains – Some rail and light rail bridges 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 case of liquefaction, breakage of pipes is likely to be widespread and concerns over contamination may render the water not suitable to drinking.

Waste water – Extensive damage may occur to waste water systems can occur even without the occurrence of 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 plants – It is expected that high risk facilities will be designed for increased resilience to earthquake damage, thus the probability of an accident induced by an 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,

poisonous liquids that contaminate the water table. Asbestos may be exposed as a result of earthquake building damage.

Fire following earthquake – Fire following earthquake will likely be localised to high risk sites such as industry.

Long series of aftershocks – A series of aftershocks are possible after an earthquake event and may result in increased damage levels as well as seriously disrupting recovery activities.

Other impacts – Consideration should also be given to: Land or mud slide, Tsunami, Floods from dam and levee failure and subsidence.

3.2 Earthquake History

The table below provides information about historical occurrence of earthquake within the East (Gippsland) Region.

Gippsland has a long history of recorded earthquakes and tremors. The list below is of four series of earthquake events that had a series of recorded aftershocks.

Korumburra – Jan to May 2009

During the period commencing January 2009 through to May 2009, a series of five earthquakes were registered in the Korumburra area with no reports of damage or injury:

Date	Magnitude	Description
January 12 th 2009	3.7	<p>Geoscience confirmed reports that a moderate earthquake occurred about 5 kilometres east of Korumburra.</p> <p>It was followed 12 minutes later by an aftershock of magnitude 1.8.</p> <p>Another smaller aftershock was recorded at 18:34 UTC (5:34 am, Tuesday).</p>
March 3 rd 2009	2.9	<p>Another aftershock in the continuing sequence near Korumburra.</p> <p>This follows a smaller magnitude 2.3 aftershock a few days earlier.</p>
18 th March 2009	4.7	<p>Largest in the sequence of events</p> <p>This earthquake occurred about 5 kilometres northeast of Korumburra, in the same area as the magnitude 4.6 earthquake on March 6.</p> <p>This earthquake was felt widely throughout the Gippsland region and across Melbourne.</p> <p>There was dozens of aftershocks - the largest since the main event have been two of magnitude 3.0 and one of magnitude 2.7, all of which occurred in the few hours after the main earthquake.</p>
16 th April 2009	2.5	Aftershock in the continuing sequence near Korumburra
6 th May 2009	2.9	Aftershock in the continuing sequence near Korumburra
19 th May 2009	3.7	Second largest in the sequence with intensity reports sent in from Leongatha and Drouin

Moe – June to July 2012

During the period commencing 19th June 2012 through to 20th July 2012 a series of 5 Earthquakes were registered in the Moe area with aftershocks felt across the region. There were no reports of injuries.

Date	Magnitude	Description
19 th June 2012	5.5	<p>A large earthquake occurred approximately 120 kilometres southeast of Melbourne, about 10km south of Moe.</p> <p>This earthquake was felt across Melbourne, with reports of it being felt from as far away as Deniliquin in NSW – around 330km from the epicentre. There were dozens of aftershocks in the hours following this earthquake, reducing in frequency after about 36 hours</p> <p>Approximately 50 requests for assistance (RFAs) were placed with VICSES. The requests were directed to the Morwell and Moe VICSES units.</p> <p>The requests included</p> <ul style="list-style-type: none"> • Building damage– minor internal cracking partial, ceiling collapse • Trees down on roads • Rescue persons - Structure collapse
30 th June 2012	2.9	One of the larger aftershocks in the sequence following the widely felt earthquake of 19 June.
18 th July 2012	2.8	Aftershock in the ongoing sequence near Moe. Reported as being felt in Morwell and Trafalgar.
20 th July 2012	2.8	Aftershock in the ongoing sequence of seismic events near Moe.
20 th July 2012	4.2	This is the largest aftershock to date following the earthquake of June 19. It was widely felt throughout the region and in parts of Melbourne over 100km away, including Wallan, Ringwood, Dandenong and Frankston. This was followed by a magnitude 2.7 earthquake

Boolarra South – April to May 2003

During the period commencing April through to May 2003 a series of 3 Earthquakes were registered in the Boolarra South Area with no reports of damage or injury

Date	Magnitude	Description
14 th April 2003	2.9	<p>Following three smaller events that occurred the night before, this magnitude 2.9 earthquake has been reported felt in Budgeree.</p> <p>These earthquakes are occurring in an area of Victoria that has had minor swarms of activity over the years.</p> <p>In late 2002 another moderate event occurred nearby in the Gippsland region, this time near Fish Creek, with a magnitude of 3.8.</p>
22 nd April 2003	3.3	This event is the largest so far in the current sequence of activity near Boolarra South.
24 th April 2003	3.2	This event was felt near Boolarra South and was followed by another earthquake in the same area of magnitude ML 2.4 at 2218 UT.

Boolarra – August 2000

On the 29th August 2000, the third largest earthquake recorded in in Gippsland in the past 20 years occurred. There were no reports of injury or damage

Date	Magnitude	Description
29 th August 2000	4.6	<p>This earthquake occurred just west of Boolarra in Gippsland, about 22 km Southwest of Morwell and 130 km Southeast of Melbourne.</p> <p>It was felt strongly in Gippsland, and there have been unconfirmed reports of minor damage.</p> <p>It was felt over all Melbourne suburbs, particularly in the east, but as far west as Sunshine.</p> <p>A foreshock of magnitude ML 2.6 was recorded at 09:20 pm AEDT, about two hours before the main shock, and there was an ML 1.5 foreshock at 10:40 am AEDT.</p> <p>There were no significant aftershocks in the three weeks after the main shock.</p>

4. Community Resilience

4.1 Shared and Individual Responsibility for Action

The National Strategy for Disaster Resilience and [VICSES Community Resilience Strategy](#) together, provide high-level guidance on disaster management for our people, providing examples on how we can work together to build safer and more resilient communities.

Together this can be done by building capacity, increasing collaboration and fostering connections. Foremost is the principle of all of society taking responsibility for preparing for disasters. The role of the community in disasters is based on individuals taking their share of the responsibility for preventing, preparing for, responding to and recovering from 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 during an earthquake
- Helping communities to recover and learn following an earthquake and to build their resilience to future events.

We therefore recognise the importance of working in partnership with communities. When communities play a role in their own safety, resilience is enhanced. The benefits of building community resilience and investing in disaster preparedness (disaster risk reduction – DRR) initiatives include:

- Safer communities
- Less demands on emergency services for assistance
- Less damage to property and infrastructure
- Speedier recovery
- Reduction in overall (impact and recovery) costs to the national economy
- Increase capacity and capability across the board

East (Gippsland) Region has developed and delivers a range of programs to achieve the goals outlined in the VICSES Community Resilience Strategy and delivers programs to at-risk communities to provide information on what to do during and after earthquakes. More information can be found in section 4.6 Community Engagement and at www.ses.vic.gov.au/plan-and-stay-safe.

4.2 Earthquake Notifications

Earthquake notifications are provided by Geoscience Australia, 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 proximity to earthquake faults. When an earthquake occurs, Geoscience Australia and the Victoria State Emergency Service will work together to notify the community.

Geoscience Australia 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. Geoscience Australia 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 Geoscience Australia'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 Geoscience Australia 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 Geoscience Australia website at www.ga.gov.au/earthquakes/.

4.3 Building Codes

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

4.4 Municipal Emergency Planning

Where earthquake is identified through the emergency risk management process as a priority risk 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 (MEMP) contains, at a minimum, arrangements for the response to an earthquake event based on all-hazards and all-agency response.

4.5 Community Engagement

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 East (Gippsland) Region community engagement Earthquake Awareness strategy involves, but is not limited to:

- Community Education Facilitator (CEF) courses conducted to equip volunteers with the required tools, skills and knowledge to build flood awareness in their local communities.

- Community Education Awareness sessions are provided to general VICSES volunteers.
- Endorsed CEF's from across the region come together to form a Community Education Advisory Group (CEAG) where they support and share ideas on activities used to engage with their community.
- Participation in multi-agency activities including municipal Earthquake education responsibilities.
- Participation in community led emergency planning.

Earthquake education resources have been developed by Victoria State Emergency Service and available to provide information on earthquake risk. These resources can be found at www.ses.vic.gov.au/plan-and-stay-safe/emergencies/earthquake.

4.6 Household and Business Plans

The VICSES advises that every household and business should have written emergency plans. Information on the development of household and business plans can be found at www.ses.vic.gov.au/plan-and-stay-safe/emergencies/earthquake.

4.7 Community Safety Advice

The Victoria State Emergency Service 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, located in the IMT Toolbox and VICSES public website.

5. Managing an Earthquake Event

5.1 Roles and Responsibilities

Roles and responsibilities of agencies involved in responding to earthquakes are detailed in the **State Emergency Response Plan – Earthquake Sub-plan**.

5.2 Concept of Operations

The concept of operations is detailed in the **State Emergency Response Plan – Earthquake Sub-plan**. Further information is also contained in VICSES Operations Management Manual V4.

5.3 Escalation and Notification

Geoscience Australia publishes any earthquake activity, as detailed in section 4.2 Earthquake Notifications, on their public website www.ga.gov.au/earthquakes/ and notifies pre-identified agencies, organisation and media outlets, including pager and email notification message to the Victoria State Emergency Service State Duty Officer (SDO).

The Victoria State Emergency Service SDO will acknowledge any Earthquake Notification, confirm details with Geoscience Australia and notify relevant internal personnel, including Regional Duty Officers (RDOs).

Upon receipt of an Earthquake Notification, RDOs will acknowledge the pager message and notify the Regional Agency Commander (RAC) to notify the Regional Controller and/or Regional Emergency Management Team members for earthquake response, and any relevant Units.

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

5.4 Strategic Response Planning

The actions listed below are the responsibility of the Victoria State Emergency Service at the regional and State tiers. Responsibility for these actions may transition to the Regional Controller 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 sustainment and surge capacity, including identification of need for inter-state or international assistance
- Identifying mass gatherings and large public events that maybe at risk, and arrangements to ensure the safety of individuals attending
- 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 Control Centres (RCCs), where appropriate
- Arranging for regular meetings of the Regional Emergency Management Teams (REMTs) and Incident Emergency Management Teams (IEMTs)
- Providing situation reports to the State Control Team (SCT).

5.5 Cross Border Arrangements

For the East (Gippsland) Region, cross border arrangements exist with NSW SES, supported by a Memorandum of Understanding (MoU) that outlines how VICSES will request assistance from the NSW SES

5.6 Regional Control Centre

The Region Response Plan will outline pre-determined facilitates that are suitable for the establishment of a Regional Control Centre for the management of emergency events, including for earthquake response, in East (Gippsland) Region. The only one in East (Gippsland) Region is:

Gippsland Region
Level 1, 181 Franklin Street, Traralgon, 3844
Phone: 03 5177 3240
Fax: 03 5177 3284
E: rccgip.all@rcc.vic.gov.au

5.7 Incident Control Centres

The Regional Response Plan will outline Incident Control Centre (ICC) locations that have been pre-determined for emergency response, including flood response, in the East (Gippsland) Region. The ICCs that are used for flood response are detailed in table below.

The activation of the ICCs will be in line with the readiness arrangements outlined in *JSOP 2.03*. Dependant on the location and scale of the Earthquake event.

Name	Agency	Location
Bairnsdale	DELWP	574 Main Street, Bairnsdale
Traralgon	DELWP	Level 2, 181 Franklin Street, Traralgon

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

5.8 Divisional Command Points

VICSES facilities equipped as Divisional Command Points (DCPs) and CFA Facilities nominated as Local Command Facilities (LCFs) are listed in table below.

Location	Address	Agency
Bairnsdale Unit	189 Macleod Street, Bairnsdale	VICSES
Sale Unit	35-37 Union Street, Sale	VICSES
Moe Unit	265 Monash Road, Newborough	VICSES
Yarram Unit	Railway Avenue, Yarram	VICSES

Where fixed Command and Control Facilities are not available or appropriate to operational conditions, a mobile facility may be deployed to enable an Incident Controller or Commander to manage the incident.

The Field Operation Vehicle (FOV) is a mobile facility which provides working space to support a base of operations including, Incident Control Point, Sector or Division Command Point.

5.9 Regional Resource Requirements

Likely resource requirements for significant earthquake events within ICC footprints are detailed in Attachment 3 East (Gippsland) resource list.

Agency	Resources
Victoria Police (VICPOL)	Swift Water Rescue Team – Available via Rescue Coordination Centre (RCC)
	Traffic Management
	Evacuation Management
CFA	Ground Observers – (Initial impact Assessment)
	IMT Roles
	Ladder Platform – Specialist Access
	Chain Saw Operators / Tree fallers
	Sand Bag Crews
	IMT Roles



Fire Rescue Victoria (FRV)	Impact Assessment
DELWP	IMT Roles
	Recovery
Local Government	Plant
	Chain Saw Operators / Arborists
	Traffic Management
Department of Health (DoH)	Relief and Recovery
Department of Justice (DoJ)	Assistance with labour for Sandbagging crews
VICSES & CFA	East Gippsland - Technical rescue teams
VicRoads	Chain Saw Operators / Arborists
	Traffic Management

Attachment 1 – Region Earthquake Scenario

A Region 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 likely earthquake scenario in the East (Gippsland) Region.

Earthquake Scenario – Moe, June 2012

On June 19th, 2012, at 8:55PM a magnitude 5.5 earthquake struck Gippsland near Moe on June 19th 2012. Bureau of Meteorology confirmed the depth of the earthquake was 10 kilometres which is considered as shallow with the epicentre was located approximately 10 Kilometres south of the Moe township.

Moe is located occurred approximately 120 kilometres southeast of Melbourne. This earthquake was also felt across Melbourne with reports of it being felt from as far away as Deniliquin in NSW – around 330km from the epicentre. Dozens of aftershocks were also recorded in the hours following this earthquake, reducing in frequency after about 36 hours.

There were reports of building damage to 50 houses and local businesses in the area. VICSES received numerous calls for assistance. An ICP was activated at the SES Moe Regional office.

Resource Requirements

The below resource requirements have been identified based upon the above earthquake scenario resulting in significant impacts across Moe area locations. There are approximately 7,600 households with approximately 16,000 people living in the Moe/Newborough area.

The scenario including the initial 5.5 Magnitude quake and subsequent aftershocks lasted 5 weeks with a second quake of 4.5 felt in July.

East (Gippsland) Regional Resources listed in attachment 2 below are those that would be required at the peak of an event. During the subsequent assessment and recovery phases of the event with additional resources being requested from Central regions to assist in management of fatigue and safety.

Attachment 2 – East (Gippsland) Regional Resource List

The table below outlines the resources available for response held by East Region VICSES units.

Unit Name	Primary Vehicle/s	Support Vehicle/s	Boats	Light Tower	Trailers & other equipment
Bairnsdale	Rescue RAIR (Heavy)	Support x 2 4wd	Rescue Boat 5.0 Gemini Poly RHIB Rescue Boat 4.7 Jabiru	N/A	Search & Rescue trailer Storm Trailer General Trailer
Bruthen	GR Response 4WD	Support x 1 4WD	N/A	Yes	Storm Trailer
Bendoc	RAID Rescue (Medium)	Support x 1 4WD	N/A	N/A	General Trailer
Buchan	Primary Rescue (6 wheel drive medium)	Support x 1 4WD	N/A	N/A	Storm Trailer
Cann River	Primary Rescue (Medium)	Support x 1 4WD	Rescue Boat 3.8m Quicksilver IRB (Inflatable Rigid Hull)	Yes	Catering Caravan
Erica	Support 4WD	Transport 4WD	N/A	Yes	Storm Trailer
Foster	GR Response (Medium)	Support x 2 4WD	Rescue Boat 5.0 Zodiac RHIB (Rigid Hull Inflatable Boat)	Yes	Storm Trailer Motorbikes (2)
Inverloch	GR Response 4WD	Medium truck to tow boat	Off Shore Rescue Boat 8.0 Stabicraft Rescue Boat 5.0 Zodiac RHIB (Rigid Hull Inflatable Boat)	N/A	Storm Trailer General Trailer
Leongatha	Primary Rescue (Heavy)	Medium Rescue Storm/ Rescue Support	N/A	N/A	Light Tower
Loch Sport	GR Response 4WD	Support x 1 4WD	Rescue Boat – 5.0 Gemini Poly RHIB	N/A	ATV - Polaris
Maffra	GR Response (6 wheel drive Medium)	Support x 2 4WD	N/A		Storm Trailer Argo – ATV General trailer
Mallacoota	Rescue RAIR (Medium)	Support x 1 4WD	Rescue Boat – 4.7 Jabiru Rescue Boat – 4.0 Zodiac IRB (Inflatable Rigid Hull)	N/A	N/A
Moe	Rescue RAIR (Medium)	Support x 2 4WD	Rescue Boat – 4.2 Gemini RIB	N/A	Storm Trailer Car trailer Motorbikes x 2
Morwell	Rescue RAIR (Heavy)	Support x 1 4WD	Rescue Boat – 5.2 Jabiru Rescue Boat – 5.0 Gemini Poly RHIB	Yes	N/A
Morwell Traralgon Satellite	Rescue RAIR (Heavy)	Support x 1 4WD	N/A	N/A	Storm Trailer
Orbost	Rescue RAIR (Heavy)	Support x 1 4WD	Rescue Boat – 4.7 Jabiru	N/A	Storm Trailer
Phillip Island	Rescue RAIR (Heavy)	Support x 1 4WD	N/A		Storm Trailer
Rosedale	Rescue RAIR (Heavy)	Support x 1 4WD	N/A	Yes	Storm Trailer
Sale	Rescue RAIR (Heavy)	Support x 2 4WD	Rescue Boat – 5.0 Zodiac RHIB (Rigid Hull Inflatable Boat)	N/A	Storm Trailer

Attachment 2 – East (Gippsland) Regional Resource List cont.

Unit Name	Primary Vehicle(s)	Support Vehicle(s)	Boats	Light Tower	Other Equipment
Stratford	Rescue RAIR (Medium)	Support x 2 4WD	N/A	N/A	Sandbag trailer
Tambo Valley	Rescue RAIR (Medium)	Support x 2 4WD	N/A	N/A	Storm Trailer
Warragul	Rescue RAIR (Heavy)	Support x 1 4WD	N/A	Yes	Storm Trailer Argo - All Terrain
Drouin (satellite of Warragul)	Rescue RAIR (6WD Medium)	Transport x 4WD	N/A	N/A	N/A
Wonthaggi	Rescue RAIR (Heavy)	Light Rescue x 2WD Support x 1 4WD	N/A	N/A	All-Terrain Vehicle Storm Trailer Vehicle Trailer General Purpose
Yarram	Rescue RAIR (Medium)	General Response x 2WD Support x 1 4WD	Rigid Savage Jabiru	N/A	Motorbikes (2)

In addition to the unit resources listed above the following VICSES regional strategic resources and composite teams are available:

- 1 x Field Operation Vehicle (Mobile Command Facility)
- 1 x Sandbag Filling Trailer – Stratford
- 1 x Logistics Truck (With staging area or base camp equipment)
- Health Monitoring units located at Bairnsdale SES Unit

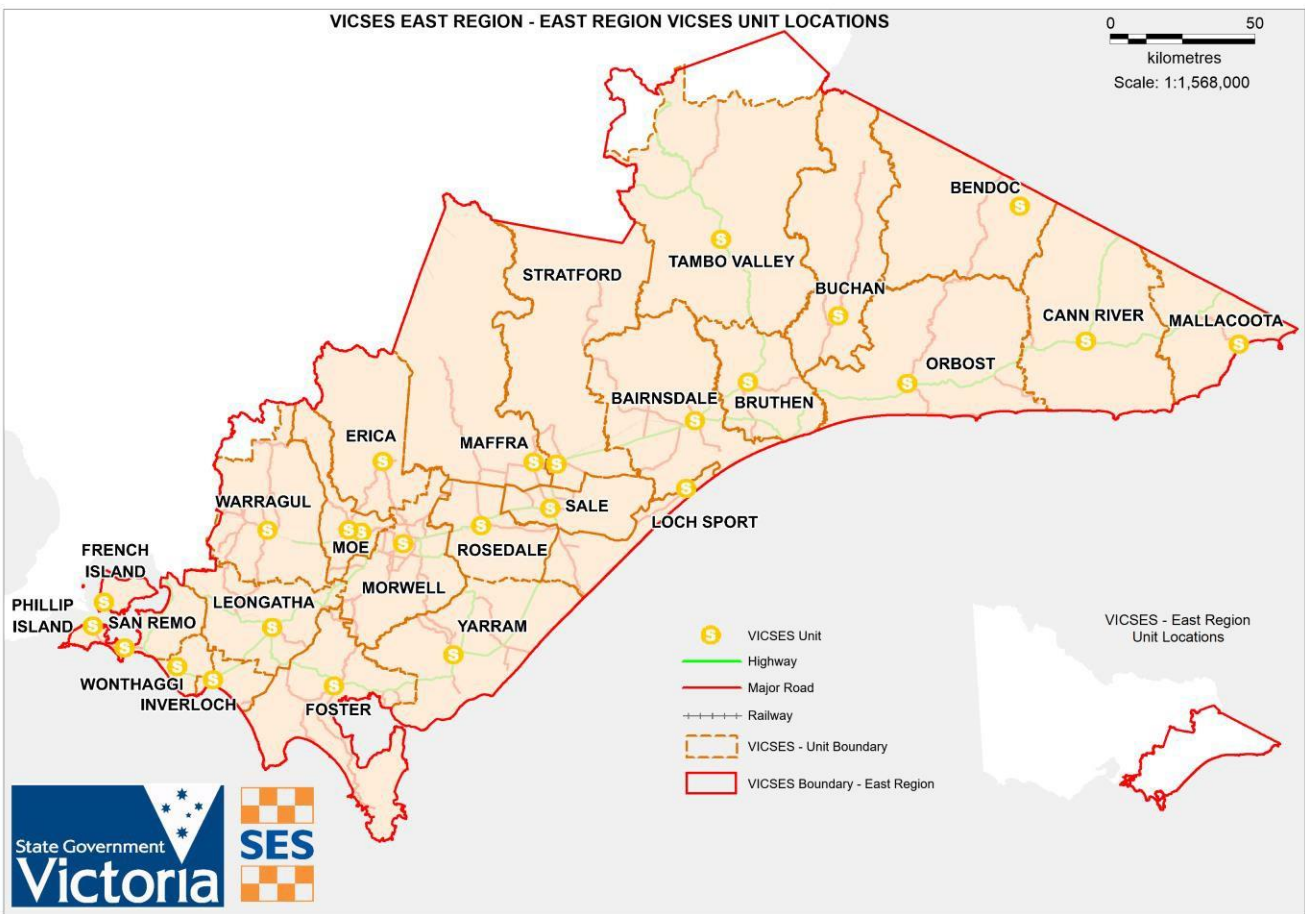
Additional expert multi-agency resources may be accessed during operations through the Australasian Inter-Service Incident Management System (AIIMS) structure. This support is initiated/ accessed in the first instance by the VICSES RDO via the Regional Agency Commander (RAC) to the Gippsland Regional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

Attachment 3 – East (Gippsland) Unit Map

Units within East (Gippsland) Region include:

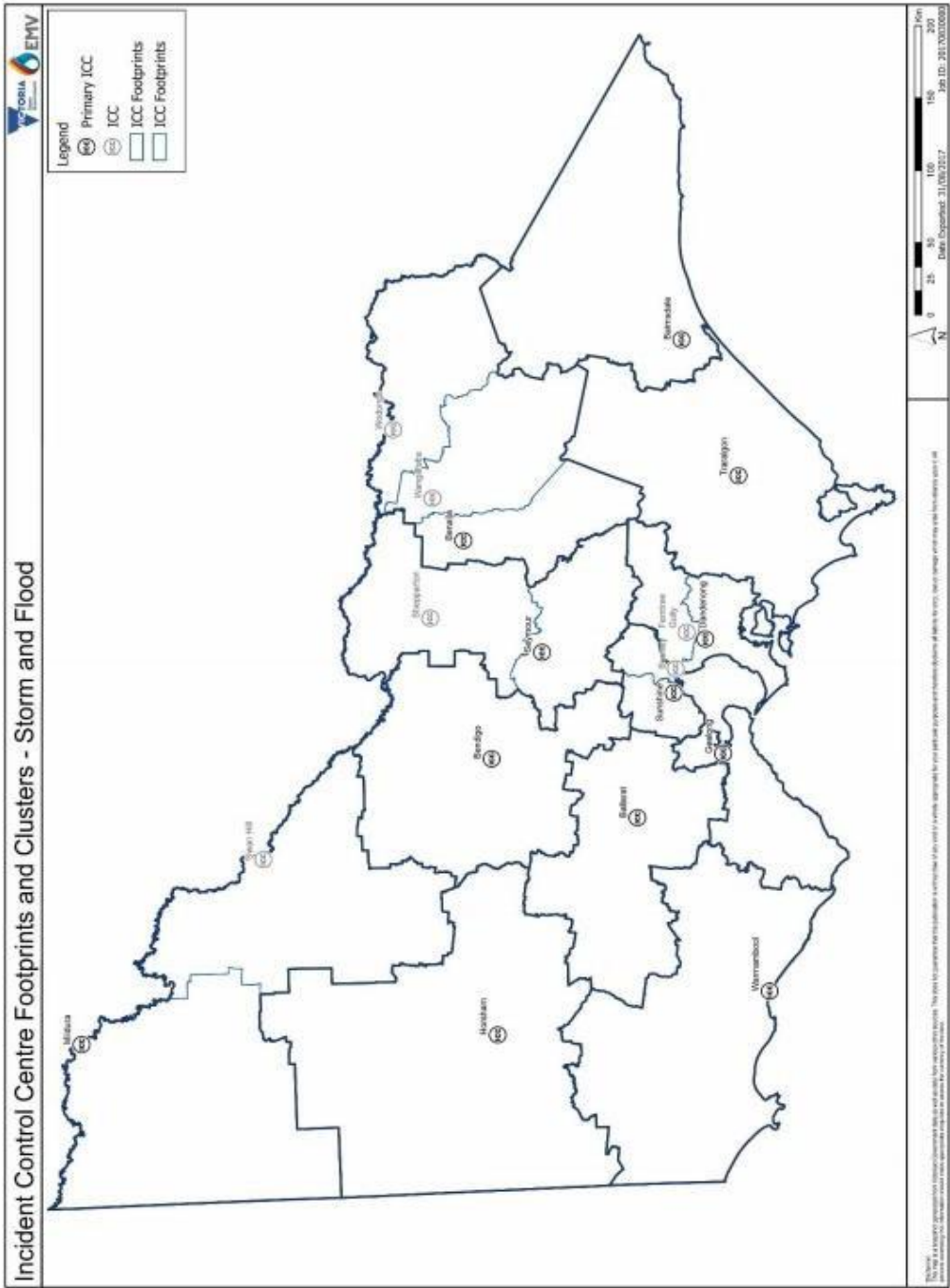
- | | | |
|------------------------|------------------|----------------|
| ■ Bairnsdale | ■ Leongatha | ■ San Remo |
| ■ Bendoc | ■ Loch Sport | ■ Stratford |
| ■ Bruthen | ■ Maffra | ■ Tambo Valley |
| ■ Buchan | ■ Mallacoota | ■ Warragul |
| ■ East RECC Unit | ■ Moe | ■ Wonthaggi |
| ■ East RHQ Support RSU | ■ Morwell | ■ Yarram |
| ■ Erica | ■ Orbost | |
| ■ Foster | ■ Phillip Island | |
| ■ Inverloch | ■ Sale | |

A map of VICSES Units within the East (Gippsland) Region is provided below. Further details are available for registered users of EM COP.



Attachment 4 – ICC Footprints

Schedule 4
ICC Footprint and Clusters – Flood and Storm



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Attachment 5 – East (Gippsland) Unit List

EAS - Contact number 1800 609 511
East Region Duty Officer – Capcode 30148

Unit Name	Address	Paging Number
Bairnsdale	189 McLeod Street, Bairnsdale Vic. 3875	30095
Bendoc	Corner James & Nichol Streets, Bendoc Vic. 3888	30099
Bruthen	51 Main Street, Bruthen Vic. 3885	30101
Buchan	32 Main Street. Buchan Vic. 3885	30103
Cann River	29 Monaro Hwy, Cann River Vic. 3890	30105
Erica	1A Lehman Court, Rawson Vic. 3825	30109
ERHSU	130 Macleod Street, Bairnsdale Vic 3875	30097
Foster	14 Pioneer Street, Foster Vic. 3960	30111
Inverloch	23 Bear Street, Inverloch Vic. 3996	30113
Leongatha	12 Watson Road, Leongatha Vic. 3953	30115
Loch Sport	105 National Parks Drive, Loch Sport 3851	30117
Maffra	90 Landy Street, Maffra Vic. 3860	30119
Mallacoota	Lees Road, Mallacoota Vic. 3892	30121
Moe	265 Monash Road, Moe Vic. 3825	30123
Morwell	75 Airfield Road, Traralgon West Vic. 3844	30125
Orbost	5 Wolseley Street, Orbost Vic. 3888	30127
Phillip Island	125/127 Settlement Road, Cowes Vic. 3922	30129
Rosedale	47 Cansick Street, Rosedale Vic. 3847	30131
Sale	37 Union Street, Sale Vic. 3850	30133
San Remo	14 Davis Point Road, San Remo Vic. 3925	30135
Stratford	53 Mac Farlane Street, Stratford Vic. 3862	30137
Tambo Valley	6870 Great Alpine Road, Swifts Creek Vic. 3896	30139
Warragul	160 Queen Street, Warragul Vic. 3820	30141
Wonthaggi	319 White Street, South Dudley Vic. 3995	30143
Yarram	Railway Ave, Yarram Vic. 3971	30145



Attachment 6 – Agency Contact Details

Emergency Management Contacts

Refer to EM-COP - Gippsland Contact Directory

VICSES Contacts

Refer to East (Gippsland) Unit Profiles

Other useful contacts			
Business	Details	Phone	Fax
ABC	Emergency Hotline (Radio Master Control)	1300 737 102	
Ambulance	Medical emergency	000	
AUSLAN	To book an interpreter service 1300 AUSLAN or book online https://auslanservices.com/	1300 287 526	
Country Fire Authority (CFA)	Fire	000	
Agriculture Victoria	Emergency Animal Disease Watch Hotline	1800 675 888	
Agriculture Victoria	Exotic plant pest hotline	1800 084 881	
Department of Education & Training (DET)	Emergency Duty Officer	1300 333 232	1300 DEECD 2
Department of Environment, Land, Water and Planning (DELWP)	Customer Service Centre	13 61 86	
Energy Safe Victoria	Electrical Emergencies	1800 000 922	
Energy Safe Victoria	Gas Emergencies	132 771	
Environment Protection Authority (EPA)	Pollution Hotline	1300 372 842	
Emergency Services Telecommunications Authority (ESTA)	emergency call-taking and dispatch	03 8656 1200	
Fire Rescue Victoria (FRV)	Fire	000	
Victorian Poisons Information Centre (VPIC)	Poisons information helpline	13 11 26 (000 in an emergency)	
Victoria Police	Emergency	000 131444	
Public Transport Victoria (PTV)	Crisis and Emergency Response	03 9027 4241	03 9027 4011 (facsimile)
Lifesaving Victoria (LSV)	General Enquiries and Life Saving Operations	General: 03 9676 6900 Operations 03 9676 6930 (000 in an emergency)	
Transport Safety Victoria	Incident Reporting - passenger transport and boating	Rail Melbourne: 1800 318 244	



		Bus: 1800 301 151 Maritime: 1800 135 729	
Victorian Bushfire Information Line (VBIL)	VicEmergency Hotline	1800 226 226	
VicFish	Fisheries Offences	13 FISH	13 3474
VLine / VicRail	24/7 Duty Officer	188 800 007	
VicRoads	Emergencies and Road Closures	131 170	
VICSES Requests for assistance	Flood or Storm	132 500	
VICSES	Life Threatening	000	
VICSES Media	Media enquiries and support	1300 783 933	
VICSES	Emergency Information Line	1300 842 737	
Worksafe	Incident Notification	13 23 60	
VicEmergency	VicEmergency Hotline	1800 226 226	

Attachment – 7 Earthquake intensity scale

Intensity (Mercalli)	Observations (Mercalli)	Richter Scale Magnitude	Deskarati Earthquake Scale
I	No effect	1 to 2	1
II	Noticed only by sensitive people	2 to 3	
III	Resembles vibrations caused by heavy traffic	3 to 4	2
IV	Felt by people walking; rocking of free standing objects	4	3
V	Sleepers awakened; bells ring	4 to 5	4
VI	Trees sway, some damage from falling objects	5 to 6	
VII	General alarm, cracking of walls	6	5
VIII	Chimneys fall and some damage to building	6 to 7	6
IX	Ground crack, houses begin to collapse, pipes break	7	7
X	Ground badly cracked, many buildings destroyed. Some landslides	7 to 8	8
XI	Few buildings remain standing, bridges destroyed.	8	9
XII	Total destruction; objects thrown in air, shaking and distortion of ground	8 or greater	10