



Victoria State Emergency Service



# State Landslide Hazard Plan



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# 1. Introduction

## 1.1. Purpose

This State Landslide Hazard Plan outlines the arrangements for managing a landslide in Victoria.

## 1.2. Objective

The objective of the State Landslide Hazard Plan is to provide sources of information and to outline the arrangements for ensuring an integrated and coordinated approach to the State's management of landslide events. This is in order to reduce the impact and consequences of these events on the community, infrastructure and services.

## 1.3. Scope

This State Landslide Hazard Plan provides strategic information about the Victorian arrangements for managing response to a landslide emergency. It includes:

- An overview of what is known about the hazard in Victoria
- A description of potential risks and consequences of landslide to the wellbeing, liveability, viability, sustainability and community connectedness of Victorian communities
- The arrangements in place before, during and after a landslide event
- The positions with accountability and the agencies responsible for managing related strategies, and a coordinated approach to the use of resources
- The multi-agency management arrangements at the National, State, Regional and local levels
- Links to sources of information for further detail.

This plan does not include detail about the specific operational activities of individual agencies.

## 1.4. Authorising environment

The Emergency Management Act (1986 and 2013) is the empowering legislation for the management of emergencies in Victoria. The Emergency Management Manual Victoria (EMMV) contains policy and planning documents for emergency management in Victoria, and provides details about the roles different organisations play in these emergency management arrangements.

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

Part 7 of the EMMV outlines the Victoria State Emergency Service (VICSES) as the Control Agency for landslide emergencies. In this role, VICSES is responsible for providing protection of life, property and the environment.

This State Landslide Hazard Plan does not replace arrangements in the SERP. This plan has been approved by the VICSES Chief Officer Operations.

Relevant legislation includes:

- *Victoria State Emergency Service Act 2005*
  - Section 5(a) and (b) of the *VICSES Act 2005* details VICSES' role in landslide planning and response

- *Essential Services Act 1958*
- *Planning and Environment Act 1989*
- *Local Government Act 1989*
- *Water Act 1989*
- *Catchment and Land Protection Act 1994*
- *Meteorological Act 1955 (Commonwealth)*
- *Roads Management Act 2004.*

## 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.

## 1.7. Linkages

This plan reflects current legislation, the arrangements in the SERP, the State Emergency Relief and Recovery Plan, the strategic direction for emergency management in Victoria and the accepted State practice for managing emergencies. The arrangements in the SERP and State Emergency Relief and Recovery Plan have not been repeated unless necessary to ensure context and readability. Both plans can be accessed at [www.emv.vic.gov.au/policies/emmv](http://www.emv.vic.gov.au/policies/emmv) under Parts 3 and 4.

Regional Landslide Plans will be developed where a sufficient risk exists, and local arrangements should be contained within Municipal Emergency Management Plans (MEMPs) where a local landslide risk has been identified. Once developed, Regional Landslide Plans will be available at [www.ses.vic.gov.au](http://www.ses.vic.gov.au).

Arrangements for the management of secondary consequences related to landslide are contained in the following documents:

- Flooding – State Emergency Response Plan – Flood Sub Plan
- Rescue response – the Victorian Urban Search and Rescue Response Arrangements
- Health response – State Health Emergency Response Plan Health Sub Plan.

## 1.8. Exercising and evaluation

This plan will be exercised within one year from the date of approval. The exercise will be evaluated and, where improvements to the emergency management arrangements in this plan are required, the plan will be amended and a revised version issued. Exercises will be conducted in accordance with the Australian Institute for Disaster Resilience (AIDR) Managing Exercises Handbook – [www.knowledge.aidr.org.au/resources/handbook-3-managing-exercises](http://www.knowledge.aidr.org.au/resources/handbook-3-managing-exercises).

## 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 review 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 Landslide emergency context

### 2.1. The Landslide hazard and risk environment

The effects of landslides on the community can be significant in both the short and long term and can include:

- Damage to public infrastructure, public and private assets and property
- Displacement of people
- Isolation of properties or communities
- Disruption to essential services, and
- Death and injuries.

Landslides in Australia have caused fatalities, environmental degradation and damage to buildings, roads, railways, pipelines, communication networks and agricultural land.

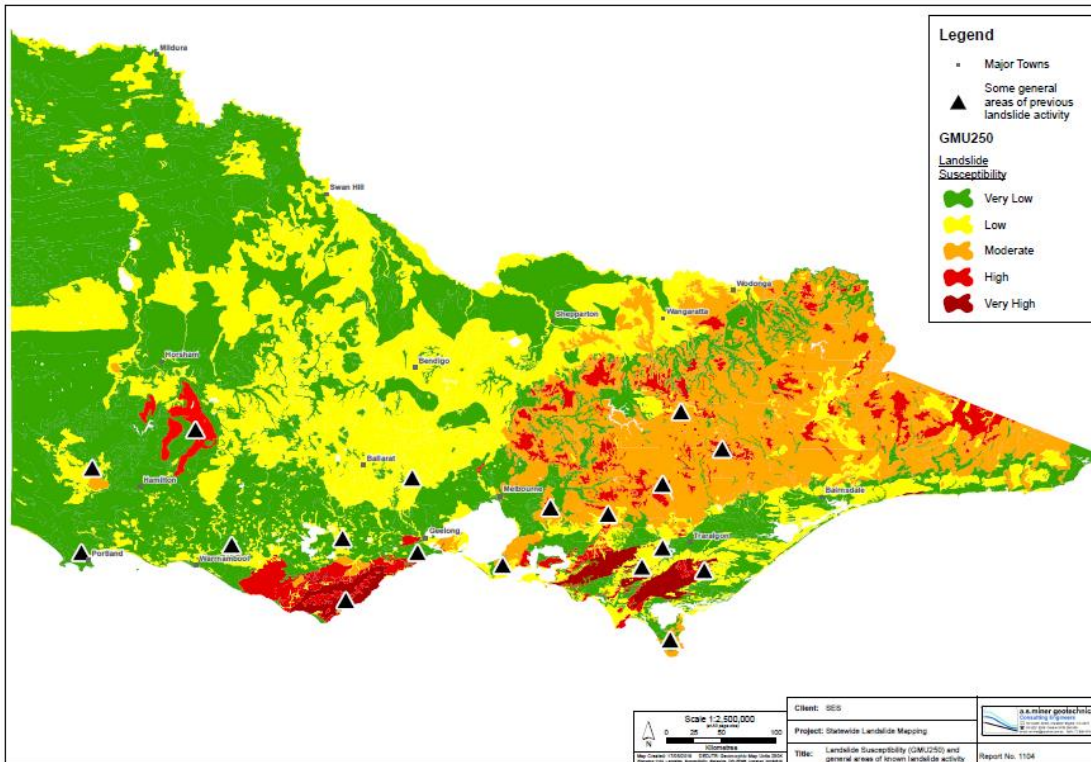
Victoria has many areas prone to landslide. Whilst there is currently no consistent state-wide landslide risk assessment for the state of Victoria, most landslide risk assessments completed have been commissioned by local government. Some locations that have undertaken risk assessments include: Yarra Ranges (including the Dandenong Ranges), Alpine Resorts and the Great Ocean Road. The Department of Environment, Land, Water and Planning (DELWP), Parks Victoria and VicRoads have also led local landslide risk assessments. A National Landslide Risk Management Framework for Australia is available through the Australian Geomechanics Society at [www.australiangeomechanics.org/public-resources/downloads](http://www.australiangeomechanics.org/public-resources/downloads).

Landslides have occurred across Victoria in rural and urban zones which sit outside of these known and mapped areas, including the Grampians National Park, Alpine areas and the Strezlecki Ranges.

Landslides are regular occurrences within Victoria and recent severe weather events (post bushfires or as a consequence of flash flooding) have resulted in large scale landslide events with over 180 landslides experienced along the length of the Great Ocean Road in 2016, and over 190 landslides within the Grampians National Park in 2011. Although a large number of landslides occurred, these did not result in any deaths or injuries. Both of these examples did however result in significant impacts to public infrastructure, economics and tourism.

A basic inventory of landslide events in Australia is available on the Geoscience Australia website at [www.ga.gov.au/landslides-web/landslips.htm](http://www.ga.gov.au/landslides-web/landslips.htm). More work is required in Victoria to consolidate various inventories of landslide events and multiple risk assessments and susceptibility mapping into a consolidated data set.

Figure 1 – Developed by A.S. Miner Geotechnical (2018) utilising a modified version of the Geomorphology of Victoria 1:250,000 (GMU250) spatial dataset (Department of Economic Development, Jobs, Transport and Resources (DEDJTR))



## 2.2. What is a Landslide?

A landslide is “the movement of mass rock, earth or debris down a slope” (*AIDR Manual 24 on ‘Reducing the Community Impact of Landslides’*). Landslides may result from a failure of the materials which make up the hill slope and are driven by the force of gravity.

Landslides are also known as landslips, slumps or slope failure. However in Victoria the agreed terminology is landslide as per the EMMV. Landslides can be triggered by natural causes or by human activity and can vary in size from a single boulder in a rock-fall to tens of millions of cubic meters of material in a debris landslide.

Some of the most common types of landslide applicable in Victoria are earth slides, rock falls and debris flows. The movement of landslide material can vary from abrupt collapses to slow gradual slides and at rates which range from almost undetectable to extremely rapid. Sudden and rapid events are the most dangerous because of a lack of warning, the speed at which material can travel down a slope and the force of its resulting impact. Extremely slow landslides might move only millimeters or centimeters a year and can be active over many years. Although landslides which occur slowly generally do not have a major short-term consequence to people, they can make land more susceptible to additional landslide triggers and they can cause considerable damage to land and property over time.

Landslides can also vary in their extent, with some occurring very locally and impacting a very small area or hill slope while others affect much larger areas. The distance travelled by landslide material can also differ significantly with slides travelling from a few centimeters to many kilometers depending on the volume and type of material, water content and gradient of the slope.



## **Avalanche**

For the purposes of this plan, a *Landslide Emergency* is different to an *Avalanche Emergency*. An avalanche involves the movement of a mass of snow and/ or ice detaching from mountain slopes and sliding or falling suddenly downwards. The control agency identified to manage the assessment of the risk of avalanche and management of the response required is different to that of landslides and requires a different response capability.

## **Dams and mines**

VICSES' role as the control agency for landslide does not include landslide events that threaten the integrity of dams or that are contained only within the structure of a declared mine or quarry area. If such a landslide has risks and consequences to the broader community beyond just impacts to the mine or quarry itself, VICSES will take the lead as the control agency.

## **2.3. Types of Landslide movement**

It is important to understand the different types of landslide movement and to promote the use of consistent terminology in their description. The basic types are:

### **Fall**

This is generally a rapid to extremely rapid rate of movement with the descent of material characterised by a freefall period. Falls are commonly triggered by earthquakes or erosion processes.

### **Topple**

This is characterised by the tilting of rock without collapse, or by the forward rotation of rocks about a pivot point. Topples have a rapid rate of movement and failure is generally influenced by the fracture pattern in rock. Material descends by abrupt falling, sliding, bouncing and rolling.

### **Flow**

This is the most destructive and turbulent form of landslide. Flows have a high water content which causes the slope material to lose cohesion, turning it into slurry. They are channeled by the landscape and move rapidly.

### **Slide**

This is one of the most common forms of failure and can be subdivided into translational and rotational slides. Rotational slides are sometimes called slumps because they move with rotation. Translational slides have a planar, or two dimensional surface of rupture. Slides are most common when the toe of the slope is undercut. They have a moderate rate of movement and the coherence of material is retained, moving largely intact or in broken pieces.

### **Spread**

This phenomenon is characterised by the gradual lateral displacement of large volumes of distributed material over very gentle or flat terrain. Failure is caused by liquefaction which is the process when saturated loose sediment with little or no cohesion such as sands or silts are transformed into a liquid-like state. This process is triggered by rapid ground motion most commonly seen during earthquakes.

## **Complex**

A combination of multiple types of movement.

## **Sinkhole**

This is a cavity in the ground, especially in a limestone formation which is caused by water erosion which provides a route for surface water to disappear underground. The sinkhole term is also commonly used within the community to reference when surface areas collapse and create deep subsurface holes, and can also occur from erosion i.e. underground water pipes or collapse of unknown mines.

## **2.4. Landslide material types**

The types of material associated with a landslide include one or a combination of the following:

### **Rock**

The solid mineral material exposed on the surface or underlying the soil.

### **Debris**

Loose or scattered natural material.

### **Earth or soil**

Other material on the surface produced by the weathering of rocks.

## **2.5. Causes of Landslide**

Before a slope fails, it first must have a set of factors in place that make it susceptible. Triggering causes are then responsible for the actual moment the landslide occurs.

### **Preparatory and destabilising factors**

The inherent characteristics that predispose or destabilise terrain may include:

- Geology and rock types.
- Steepness of the terrain.
- Groundwater conditions.
- Deforestation (including post bushfire).
- Increased weathering and erosion.
- Landscape changes following a bushfire.
- Human activity – This may include forming unsupported cuts, loading the slope by filling or discharging water.

## Triggering Factors

The triggering factors responsible for initiating a landslide include:

- Intense or prolonged rainfall (or moderate rainfall in post-bushfire landscapes).
- Burst or leaking water pipes.
- Shocks or vibrations, i.e. seismic activity.
- Human intervention.

## 2.6. When does a Landslide become an emergency?

Landowners, land managers and road authorities (local and State) manage the response to low level landslides on a weekly basis as part of their business as usual activities and have the responsibility to share this information with those affected and other stakeholders.

The EMMV defines an emergency as “the actual or imminent occurrence of an event which in any way endangers or threatens to endanger the safety or health of any person in Victoria or which destroys or damages, or threatens to destroy or damage, any property in Victoria or endangers or threatens to endanger the environment or an element of the environment in Victoria.”

In simple terms, a landslide, multiple landslides or the threat of landslide becomes an emergency under these arrangements where **the risks and consequences to community have reached an unacceptable threshold**, including but not limited to:

- Risk to life, property, essential services and community connections.
- The need for immediate community response or the requirement for community to undertake a certain action to avoid risk to life or property.
  - Relevant action may be prompted by targeted issuing of public information and warnings that exceed business as usual information released to the media by a single agency or organisation.
- The need for evacuation.
- Immediate mitigation or remediation works is required at the site that restricts or limits public access to the area or associated roadways for more than a few hours (or less time if the potential consequences are significant).
- Prolonged or ongoing displacement from work, business or residential areas.
- Prolonged access or egress issues for the community, including any scenario where community may become isolated.
- Inability of utility agencies to restore suitable access in order to ensure liveability needs of the community.
- Disruption to tourism or an impact on the state economy.

A Landslide Readiness and Activation Trigger Considerations document has been developed in Appendix B to assist with determining if the landslide is an emergency (generally when scale is between S1 – S4) and the associated emergency activation arrangements.

## 3. Landslide scale and consequences

### 3.1. Landslide scale and category considerations

In determining VICSES' response to a landslide event and to establish command and control, with consideration given to the consequence or potential consequence associated with the event, VICSES has determined to have six (6) scale categories of landslide events in line with National and International categories of landslide scale and has developed a supporting readiness and trigger document (Appendix B). It is important to note that whilst size can assist to categorise the nature of the event, this is just one factor that may impact the overall scale or category and the associated response based on actual or potential community consequences.

Landslide Scale					
Category	Relative Size	Volume of Failure (m3)	Typical Dimension (LxWxD) metres	Individual block size	Overall debris scale
S1	Very Large	>20,000	50 x 100 x 10	Individual block size >1.0m	Around the size of the MCG stadium or greater
S2	Large	2,000 to 20,000	25 x 60 x 7	0.5m-1.0m minimum dimension	Around the size of a local football oval
S3	Medium	200 to 2000	10 x 25 x 4	0.2 to 0.5m minimum dimension	Around the size of a house
S4	Small	20 to 200	5 x 10 x 2	0.2m minimum dimension	Around the size of a semi-trailer truck
S5	Very Small	2 to 20	2 x 4 x 1.2	0.1m minimum dimension	Around the size of a small car
S6	Extremely Small	< 2	1 x 3 x 0.3		Could fit in a wheelbarrow

## Category S1 – S2

### Example A (Thredbo NSW, 1997)

About 3,500 tonnes of liquefied earth and debris came down a slope collapsing a road and two ski lodges. The landslide resulted in 18 fatalities and one person rescued from the debris. This incident caused significant long term impacts on the local community, lives and property. The cause of the landslide was reported by the coroner as, “water from heavy rain, melting snow and a leaking water main”.

The landslide caused major disruption to the Alpine Way which required significant restructuring and reinforcement, and was completed in 1998. Multiple inclinometers monitor the area for slippage constantly. The economic impacts were enormous, not only in terms of rebuilding costs and compensation, but also to tourism with many people afraid to return for fear of more landslides.

### Example B (Great Ocean Road, 2016)

Heavy rainfall following previous fire damage created multiple landslides along a major roadway, closing the road for a considerable period of time. The event had significant state consequences, not just to the local communities but the broader community due to the nature of the road affected and its link to tourism and the state economy. This event necessitated both fast and long-term response and protracted community information, planning and monitoring.

### Example C – Sinkhole with potential further impacts

As a result of a broken water main, a large sink hole is causing subsidence of land. It is in close proximity to the footings of a block of units. Given the potential consequence it will require the evacuation of the tenants. In this example, the incident should be considered an emergency given the evacuation required and potential further risk.

### Public information and warning considerations

The significant nature of events of this scale may require targeted public information and warnings to be disseminated to communities that have an immediate threat. It is important that all warnings issued for any landslide event appropriately convey the associated level of threat (e.g. Emergency Warning, Prepare to Evacuate or Evacuate Now messages for significant events).

Surrounding communities (including tourists) may also require public information and warnings to ensure they have sufficient information to avoid the hazard. If a warning is issued to this group, it should also convey the appropriate level of threat (e.g. Advice message for those indirectly impacted by the significant landslide event).

A broad range of public information and warnings tools and associated communication channels should be used to provide information to the community, including:

- Social media posts, engagement with media outlets and media releases.
- Targeted engagement of communities, such as door knocks and the establishment of community engagement hubs and/ or relief centres.
- Press conferences conducted at the incident and/ or state tier.
- Relief and recovery messaging should become a focus early.

Effective collaboration with VicRoads is required to ensure appropriate information is available in relation to the impact on road availability or required diversion routes; to support VicRoads' obligation in providing information and advice about road safety and status; and to ensure messaging provided to the community and other agencies is consistent.

State level coordination of messaging is likely to be required, through the involvement of the State Strategic Communications Cell, the State Control Centre (SCC) Public Information Section and the Emergency Management Joint Public Information Committee (EMJPIC).

Note – Incident Controllers and warnings issuers should always refer to the IMT Toolbox – VICSES Landslide EM-COP Public Publishing Business Rules for the most up to date guidance on issuing community notifications.

## **Category S3 – S4**

### **Example D – Short-term road closure**

Multiple minor landslides occur along a major roadway which requires closing the road for a few hours. The event therefore has minor to moderate consequences to local communities (including increased travel time to access or egress properties or work). There is some risk of further landslides. Some short term diversions are required and some planning, monitoring and public information. In this example, the incident should be considered an emergency due to the significant nature of the roadway and the potential further risk.

### **Public information and warning considerations**

Provision of public information and warnings are likely to be required for this scale of event and should target affected communities including tourists.

In example D, issuing an Advice message would be appropriate to indicate that there is sufficient disruption that requires community to be aware of the event and continue to source further information to respond effectively. Additional localised media and social media is also important to ensure that information can be found by the community on its preferred channels.

Additional public information and warnings tools and associated communication channels should be used to ensure that information can be easily found by the community, including:

- Social media posts, engagement with media outlets and media releases.
- With consideration given to relief and recovery messaging.

State tier support in relation to the provision of public information may be required, depending on scale and complexity.

Effective collaboration with VicRoads is required to ensure appropriate information is available in relation to the impact on road availability or required diversion routes; to support VicRoads' obligation in providing information and advice about road safety and status; and to ensure messaging provided to the community and other agencies is consistent.

Incident Controllers and warnings issuers should always refer to the IMT Toolbox - VICSES Landslide EM-COP Public Publishing Business Rules for the most up to date guidance on issuing community notifications.

## **Category S5 – S6**

### **Example E – Lane closure on local roadway**

A small isolated landslide occurs on a regional roadway following some localised flash flooding. It requires a local lane closure for a short period of time. The debris can be cleared away by local agencies or contractors through VicRoads, Parks Victoria or local government. This response may result in a requirement for other agencies to attend for minor traffic management, etc., but should not be considered an emergency.

## Public information and warning considerations

Landslide events that have little impact on the community will not require specific warnings products to be issued, and may not require specific public information to be provided by VICSES.

Instead, basic messaging using locally available communication channels such as local signage and relevant agency channels such as the VicTraffic website ([traffic.vicroads.vic.gov.au](http://traffic.vicroads.vic.gov.au)), should be considered to inform community of the impacts.

Relevant agencies may choose to support this messaging with a social media post and/ or engagement with local media. It is important that messaging is consistent across platforms and any queries regarding road/ closures are directed back to [traffic.vicroads.vic.gov.au](http://traffic.vicroads.vic.gov.au).

## 3.2. Landslide Consequences

The impacts and consequences of a landslide depend on many factors and will be different for every landslide. Consequences are categorised under the themes of wellbeing, liveability, sustainability, viability and community connectedness.

Some potential consequences have been identified within these themes which may require consideration when responding to landslides. Consideration also needs to be given to other emergency hazards that may have occurred initially to generate a landslide (such as flash flooding or levee failure), as well as cascading events created by a landslide (such as power outages or building collapse).

**Wellbeing** (The safety, security, physical and mental health of individuals, families and the community, including the most vulnerable).

- Public and primary health – Casualties, injuries or illness.
- Displacement and isolation.
- Mental health – Potential for increased anxiety and long term mental health impacts.
- Public order and community safety.
- Air quality – Including potential for hazardous material release particularly from older buildings impacted.
- Environmental health – Potential for debris and disease to impact flora and fauna.

**Liveability** (The continuity, restoration and reconstruction of essential services, critical infrastructure and community infrastructure to enable the functioning of a community).

- Built infrastructure damage – These may include homes, businesses and even essential service facilities.
- Road and transport access – May include closure of a major highway, roads of significance or rail lines.
- Public transport disruption – Damage to bridges or supporting infrastructure.
- Energy (electricity and gas) – Impact on large power components such as transformers or substations. Damage to gas pipelines may be widespread and concerns may arise over disruption to reticulated gas supply. Impacts on community access to power and gas.
- Water supply and waste water – Pumping stations and reservoirs may experience damage. Disruption may occur across the network. Extensive damage may also occur to waste water systems. Pipelines may be ruptured.

- Communications – Impacts to telecommunication services including network and website outages. If there is a loss of power, phones and tablets cannot be charged and cordless or NBN home phones will not work.
- Education – School bus routes may be impacted or schools closed.
- Food and grocery logistics – Potential of isolation and reduced access.
- Health and emergency services – Road closures reduce access for ambulances and other emergency services.

**Sustainability** (The reconnection, re-establishment and integration of local social and economic systems and networks).

- Economic – Localised or widespread impacts including to: transport and ports, mining and resources, investment attraction and facilitation, trade, innovation, regional development and small business.
- Agriculture and environment – Damage to stock, crops, food and natural resources.
- Animal health – Effect on livestock and associated diseases.
- Tourism – Impact of tourism trade due to weather conditions, loss of attractions, road closures or reputational loss. Major events may also be cancelled.
- Beaches – May be impacted, closed and/ or deemed unsafe for swimming.
- Cultural and heritage – Impacts to Indigenous or culturally significant sites.

**Viability** (Social and economic systems and networks provide opportunities for growth, renewal and innovation).

- Business Continuity – Considerations for local business needs and support.
- Local and Regional Investment – Considerations for investment into impacted areas to support resilience and recovery.

**Community Connectedness** (Community systems and networks are understood, informed and work together to participate in planning and leading recovery through to long-term community resilience).

- Repeated disruption to access and egress – Multiple landslides or the threat of landslide with repeated or prolonged road closures can disrupt the community system and network to connect.



## 4. Community Resilience

### 4.1. Shared responsibility and Community Resilience

The [National Strategy for Disaster Resilience \(NSDR\)](#), 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 national strategy is the principle of all of society taking responsibility for preparing for disasters. Examples in the context of landslide for Victoria include:

- Local governments, emergency management committees, and communities undertaking 'Community Emergency Risk Assessment (CERA)' including landslide for discussion, and ensuring consideration within emergency management planning, intelligence gathering and land use planning.
- Individuals being aware of their landslide risk, and following advice from emergency services when taking preventative action responding to warnings.
- Industry and businesses planning for the risk of disruption, and ensuring arrangements are in place to maintain critical services and assist communities.
- Government agencies undertaking:
  - Risk assessments to gain an appreciation of landslide risk.
  - Engagement with the community regarding landslide risk.
  - Work with communities to plan the management of landslide risk.
  - Provision of emergency information and landslide warnings.
  - Effective, well-coordinated emergency response to a landslide event.
  - Helping communities to recover and learn following a landslide and build their resilience to future events.

In Victoria, Emergency Management Victoria (EMV) has led the development of the Community Resilience Framework for Emergency Management. It defines community resilience as “the capacity to survive, adapt and thrive no matter what kind of chronic stresses and acute shocks they experience”. Information can be found at: [emv.vic.gov.au/how-we-help/community](http://emv.vic.gov.au/how-we-help/community).

Likewise, the VICSES Community Resilience Strategy (2016-2019) defines a key and measurable objective to increase the level of interest, and support behaviour change within communities, so they are more aware, informed and prepared for emergencies – supporting them to understand their risk, and the relevance of taking action before, during and after emergencies. Information can be found at: [ses.vic.gov.au/get-ready/resilience](http://ses.vic.gov.au/get-ready/resilience).

### 4.2. Household, business and farm plans

The Victorian emergency management sector encourages every household, business and farm to have a written emergency plan.

Information on the development of these plans can be found at [ses.vic.gov.au/get-ready](http://ses.vic.gov.au/get-ready) or [redcross.org.au](http://redcross.org.au).

### 4.3. Landslide notifications and warnings

Where a landslide becomes an emergency, VICSES will lead the coordination of public information and warnings.

With no predictive state-wide landslide warning service in Victoria, VICSES has developed a non-predictive landslide community notification process and associated templates.

VICSES uses the current standard platform (EM-COP Public Publishing) to disseminate landslide warnings to the community by publishing warnings to all VicEmergency channels and through emergency broadcasters. These broadcasters include commercial and ABC radio in accordance with the Emergency Broadcasting Practice Note and the agreed Memorandum of Understandings. Warnings may also be sent utilising the Standard Emergency Warning Signal (SEWS) and/ or Emergency Alert platforms. Multiple methods will be used to disseminate information to the community.

The VICSES landslide warning business rules can be found on the Public Information section of the IMT Toolbox – VICSES Landslide EM-COP Public Publishing Business Rules. A version is also contained in Appendix C of this plan.

Once published, landslide community notifications are then available for further dissemination to the community by other key stakeholders.

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

Land management agencies, Local Government and road management agencies (VicRoads) need to be kept informed of a landslide or potential landslide and should share with the community details of landslides or potential landslide risk through: signage in the threat area, targeted media releases, targeted correspondence with land users and using social media.

VicRoads is accountable for providing advice and information related to road status and road safety. This information is shared via [traffic.vicroads.vic.gov.au](http://traffic.vicroads.vic.gov.au). It is vital that agencies ensure consistent messages across platforms and, where providing communications, any road status queries from the community and other stakeholders are directed back to this website.

#### **4.3.1. VicEmergency Hotline (1800 226 226)**

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

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

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

#### **4.3.2. Community meetings**

Community meetings are a useful and effective method of disseminating up-to-date information and engaging with communities. They can be utilised to provide face-to-face information before, during or after an incident, to assist community members to make decisions and educate attendees on the roles of relevant agencies. A 'virtual meeting' can also be held through various platforms where a face-to-face meeting is not possible for any reason or to reach a wider audience (i.e. Facebook live).

The decision to run a community meeting is made within the Incident Management Team (IMT) through the Incident Controller and Public Information Officer, prior to consultation with the Emergency Management Team (EMT).

## **4.4. Community safety messages**

VICSES has developed awareness packages and key safety messages for the community regarding landslides. The latest version of the VICSES Hazard Key Messages document can be found on the Public Information section of the IMT Toolbox.

#### 4.4.1. Before any emergency – Key messages

- Emergencies can happen anywhere, at any time. It's important to have a plan, know what to do and where to find information in any emergency.
- Preparing for emergencies is simple. You can reduce the impact of the emergency, and can recover quicker afterwards. Visit the VICSES website to find out how to get ready.
- Emergency information is available through the VicEmergency app, website and hotline (1800 226 226). You can also access this information on social media (Victoria State Emergency Service on Facebook and VICSES News on Twitter) and emergency broadcasters: ABC Local Radio, designated commercial radio and SKY NEWS TV.
- During some emergencies, we may alert communities by sounding a local siren, or by sending an SMS to mobile phones or a voice message to landlines.
- For emergency assistance from VICSES, call 132 500 or Triple Zero (000) in life threatening emergencies.
- In some emergencies, you may be isolated for an extended period of time. Have three to five days' worth of clean drinking water and food ready to use.

#### 4.4.2. Before a landslide – Key messages

- If you notice considerable changes to the landscape that may indicate movement, contact the landowner, landholder, road authority or local government immediately. For emergency assistance from VICSES, call 132 500 or Triple Zero (000) in life threatening emergencies.
- You need to act quickly if a landslide occurs:
  - If you are outside during a landslide, move away quickly and keep clear of embankments, trees, powerlines and poles.
  - If you are inside during a landslide, move to the part of the building that is furthest away from the approaching landslide and take shelter under a table or bench.
- Plan any travel in advance – trips may take longer due to closed roads and poor driving conditions. For up to date information visit [traffic.vicroads.vic.gov.au](http://traffic.vicroads.vic.gov.au).

#### 4.4.3. During any emergency – Key messages

- Emergency information is available through the VicEmergency app, website and hotline (1800 226 226). You can also access this information on social media (Victoria State Emergency Service on Facebook and VICSES News on Twitter) and emergency broadcasters: ABC Local Radio, designated commercial radio and SKY NEWS TV.
- For emergency assistance from VICSES, call 132 500 or Triple Zero (000) in life threatening emergencies.
- For information on power outages check the DELWP energy website.
- For road closure information, check the VicTraffic website at [traffic.vicroads.vic.gov.au](http://traffic.vicroads.vic.gov.au), contact your local council or call VicRoads on 13 11 70.
- For information on public transport service disruptions, check the Public Transport Victoria (PTV) website at [ptv.vic.gov.au/disruptions](http://ptv.vic.gov.au/disruptions).

#### 4.4.4. During a landslide – Key messages

- Stay away from the landslide – the slope may continue to move for hours to days afterwards.

- Communities may be isolated due to blocked or damaged roads.
- If another landslide occurs, act quickly:
  - If you are outside, move away quickly and keep clear of embankments, trees, powerlines and poles.
  - If you are inside, move to the part of the building that is furthest away from the approaching landslide and take shelter under a table or bench.

#### 4.4.5. After any emergency – Key messages

- If you experience damage to your property contact your insurer as soon as possible to lodge a claim. Visit your insurer's website or the Insurance Council of Australia website for more information.
- Take care after an emergency as dangerous conditions may still exist. It may not be safe for you to immediately return to your home or workplace.
- For recovery information, contact your local council, go to the VicEmergency Relief and Recovery page or call the VicEmergency Hotline (1800 226 226).
- For emergency assistance from VICSES, call 132 500 or Triple Zero (000) in life threatening emergencies.
- For road safety and closure information, check the VicTraffic website at [traffic.vicroads.vic.gov.au](http://traffic.vicroads.vic.gov.au).
- Financial support is available to help eligible Victorians impacted by an emergency. Find out more about the Personal Hardship Assistance Program at the Department of Health and Human Services (DHHS) website or call 1800 226 226 to find out if you are eligible.
- For mental health support talk to your doctor or contact:
  - Lifeline on [www.lifeline.org.au](http://www.lifeline.org.au) or call 13 11 14.
  - Beyond Blue on [www.beyondblue.org.au](http://www.beyondblue.org.au) or call 1300 224 636.
  - Kids Helpline on [www.kidshelpline.com.au](http://www.kidshelpline.com.au) or call 1800 551 800.
  - SANE Australia on [www.sane.org](http://www.sane.org) or call 1800 187 263.

#### 4.4.6. After a landslide – Key messages

- Stay away from the impacted areas to allow emergency services to help affected communities.
- Do not re-enter damaged buildings until authorities advise that it is safe to do so.
- Stay safe by avoiding damaged buildings, fallen trees and powerlines, blocked or damaged roads. Be aware of other hazards caused by the landslide.
- When cleaning, protect your health and safety. Wear strong boots, gloves and protective clothing and wash your hands and clothes regularly.
- Electricity, gas and water supplies may be disrupted. If your property has been damaged, have all utilities checked and tested by a licenced technician before you use them.

## 5. Collaboration, Response and Coordination

### 5.1. Collaboration, escalation and transition

Landslide emergency operations will be managed as per the Emergency Management Manual Victoria, Part 3 – State Emergency Response Plan.

The Emergency Management Manual Victoria, Part 4 – State Relief and Recovery Plan outlines the arrangements for the coordinated management of relief and recovery.

VICSES has developed a Landslide Readiness and Activation Trigger process for landslide (Appendix B).

The role of VICSES is the control agency for the response to emergency landslide events, which does not include landslide events that threaten the integrity of dams or that are contained within a declared mine area. It also does not include avalanches. These events are out of scope for landslide emergency response as these types of events have their own specific response arrangements.

### 5.2. Response coordination of a Landslide event

#### 5.2.1. Emergency Management Commissioner

Under the Emergency Management Act 2013, the Emergency Management Commissioner has legislated management responsibilities across major emergencies. These include response coordination, ensuring effective control arrangements are established and consequence management.

The Emergency Management Commissioner is also responsible for the “coordination of the activities of organisation, including agencies, having roles or responsibilities under the State Emergency Relief and Recovery Plan in relation to recovery from all emergencies”.

#### 5.2.2. The role of VICSES

VICSES is the Control Agency for landslide as defined in Part 7 of the Emergency Management Manual Victoria. In this role VICSES is responsible for providing protection of life, property and the environment.

#### 5.2.3. Supporting agency roles and responsibilities

A landslide event will require a coordinated response from multiple supporting agencies. Roles and responsibilities of supporting agencies are listed in Appendix A. This should be read in conjunction with Part 7 of the Emergency Management Manual Victoria.

### 5.3. Victorian Government management arrangements

This section describes the management arrangements for a whole of Victorian Government approach to managing a major emergency.

The Emergency Management Commissioner manages the State response to major emergencies through the following five key teams:

- State Coordination Team (SCOT).
- State Control Team (SCT).
- State Emergency Management Team (SEMT).
- Emergency Management Joint Public Information Committee (EMJPIC).
- The Executive.

During a large-scale emergency, the Victorian Government's Security and Emergency Management Committee of Cabinet (SEMC) provides whole of government ministerial oversight. The State Crisis and Resilience Council (SCRC) provide SEMC with assurance that the consequences of the emergency are being addressed at a whole of government level. The SCRC also has responsibility for the oversight of the development of a whole of government communications strategy for the approval of SEMC.

Neither the SEMC nor the SCRC have an operational response role.

## 5.4. Emergency Management Team (EMT)

EMTs are formed at each activated tier of emergency response management as follows:

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

EMTs are collaborative forums where agencies with a diverse range of responsibilities and capabilities meet during emergencies to discuss the risks and likely consequences of a landslide and assist the Emergency Management Commissioner and Incident Controllers to establish priorities and plan a 'whole of government' approach to the management of these risks and consequences.

An EMT ensures the response and recovery agencies, other agencies, local government and service providers are coordinated in their approach.

The response to a landslide event may involve a range of simultaneous emergencies (e.g. health emergencies, power and transport emergencies, flooding, etc.); the Emergency Management Commissioner, Regional Emergency Response Coordinators and Municipal Emergency Response Coordinators chair their respective EMT.

Once formed, an EMT operates throughout a continuum for the response to and recovery from the landslide event.

Not all agencies have the capability to provide a representative for EMT at each tier. For example, a person may represent their agency at both the REMT and IEMT.

Further detail can be found in the SERP.

## 5.5. Consequence management arrangements

After a landslide with state-wide implications, the Emergency Management Commissioner appoints a Consequence Manager, responsible for assessing the likely consequences of the landslide. They work with the SEMT and REMT to ensure a whole-of-government approach to the management of these consequences. Some potential consequences are considered in section 3 of this plan.

## 5.6. Reporting to government

During a landslide response, the Emergency Management Commissioner may request agencies to report on the impact and consequences of the event on their area of responsibility, identifying any emerging issues and actions to resolve these.

This information forms the basis of the State Emergency Management Team Situation Report, which the Emergency Management Commissioner uses to brief the Minister for Emergency Services and the SCRC, and for the SEMT members to brief their departmental executive and respective Minister.

## 5.7. Transition to Recovery

Emergency relief and recovery activities integrate with emergency response activities and commence as soon as the effect and consequences of the emergency are anticipated. Towards the conclusion of the emergency response, and where recovery activities need to continue, the arrangements for managing the emergency will transition from response to recovery coordination.

The teams at the relevant Incident, Regional and State tiers should discuss and agree the timing of the transition. The recovery coordinators/ managers at the relevant tiers must be ready to assume responsibility and have the appropriate resources assembled prior to the transition. Considerations regarding the timing of the transition should include the extent to which:

- Any emergency risks remain.
- The powers available to response agency personnel (which may be available only during an emergency response) are still required.
- The effect and consequences of the emergency are known.
- The affected community continues to require relief services.
- The recovery resources have assembled and are ready to manage their responsibilities.

A schedule of required transition actions is included in the document *'An Agreement for Transition of Coordination Arrangements from Response to Recovery'*, which can be obtained from Regional or State coordinators.<sup>1</sup>

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<sup>1</sup> Victorian Emergency Operations Handbook – Edition 1 October 2017

## 6. Capability and complementary plans

The Victorian Preparedness Goal led by EMV sets out the core capabilities needed before, during and after emergencies occur ([emv.vic.gov.au/our-work/victorian-preparedness-goal](http://emv.vic.gov.au/our-work/victorian-preparedness-goal)).

The 21 core capabilities in the Victorian Preparedness Goal are highly interdependent on each other. Many are relevant to reducing the potential for a landslide event (i.e. building community resilience) as well as managing an actual landslide event (i.e. search and rescue) as well as the relief and recovery considerations after it occurs.

For VICSES, these capabilities are developed through its volunteer workforce supported by paid staff within the responsibilities of being the control agency. VICSES requires supporting capabilities from across whole of government including for example access to technical specialists and implementation of relief and recovery requirements.

Water authorities, VicRoads and rail authorities, all have specific capabilities and plans for responding to landslides that affect their assets.

### 6.1. Regional and municipal Landslide planning

#### 6.1.1. Regional landslide planning

VICSES Regions with an identified landslide risk will develop Regional Landslide Plans that include the identification of suitable Incident Control and Regional Control locations in consultation with other key emergency management agencies. The selection and placement of these sites must take into account possible access and damage limitations that could occur during major landslides.

Regional landslide emergency plans should cover:

- Regional risk assessment.
- Sources of incident intelligence.
- Public information and warnings arrangements.
- Location of ICCs.
- Incident management and regional control arrangements.
- Rescue arrangements.
- Engineering advice and services arrangements.
- Consequence management.
- Resource arrangements for within the region.
- Traffic management plans including for public transport as required.
- Planned staging areas.
- Relief Centres.
- Cross boundary arrangements (intra and inter State).



### **6.1.2. Municipal landslide planning**

Where a landslide hazard is identified through the CERA process as a high risk to a community, VICSES will coordinate support to the municipality and provide advice to ensure the MEMP contains arrangements concerning the preparedness for, and response to, a landslide event based on all-hazards and all-agency response. It is important to distinguish that landowners and the local government own the risk, in which VICSES as the control agency will provide a response to the emergency.

## **6.2. Dam safety**

DELWP has a regulatory role in ensuring that water authorities, who manage water storages, address safety issues (including dam breach events) and that owners of private dams are licensed, with safety provisions included in their licences. If a dam failure emergency was to occur it will be managed in accordance with arrangements for the management of flooding downstream of dams within the State Emergency Response Plan Flood Sub Plan.

## **6.3. Mine and quarry safety**

DEDJTR has a regulatory role in ensuring that mines and quarries meet the requirements of the *Mineral Resources (Sustainable Development) Act 1990* that all slopes/ batters including excavations, roadways and dumps must be designed, constructed and maintained to ensure slope stability, and work must be carried out in accordance with an approved work plan. If there is a significant failure or event, the Work Authority Holder must cease all operations, notify the relevant regional manager and not recommence operations until authorised to do so by the relevant regional manager.

## 7. Managing a Landslide Event

### 7.1. Concept of operations

At the State tier, VICSES will act as the control agency for the response to a landslide event. Other agencies will support operations as detailed in this Plan. The Emergency Management Commissioner may vary this arrangement in consultation with VICSES and the State Response Controller.

Control and coordination of a landslide event should be carried out at the lowest effective level. The State Response Controller shall consult with the Regional Controller (RC) and the SCT to determine the most appropriate structure to manage the event.

There may be other emergency hazards that create a landslide such as levee failure or flash flooding. There may also be simultaneous emergencies resulting from a landslide such as building collapse or hazmat. Incident Controllers shall therefore be appointed from the most appropriate agency to lead incident control under the 'all agencies – all emergencies' focus.

Incident Controllers at all times will ensure the occupational health and safety of emergency service personnel. This includes ensuring that dynamic risk assessments are undertaken, engineering/ technical specialist advice is sought, adequate risk treatments are implemented in the possibility of secondary or further landslide impacts, and noting that sometimes disturbing debris can create further movement.

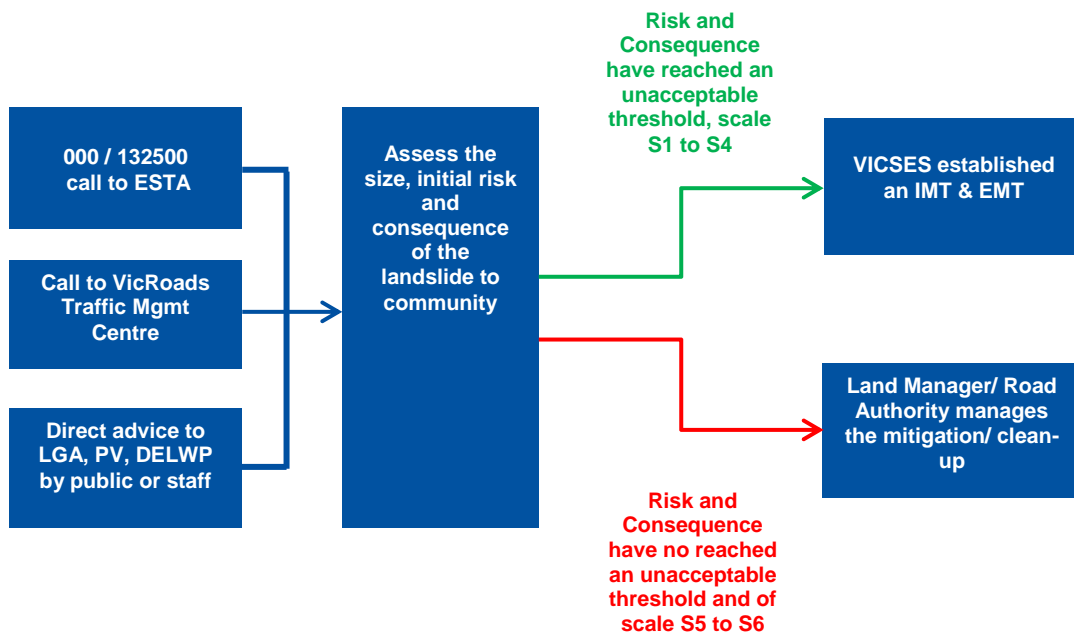
As the Control Agency for landslide, VICSES has the responsibility to issue warnings to the potentially affected community and to other agencies (see section 4.3).

VicRoads has responsibility to issue advice and warnings about road safety and status for the Victorian road network. PTV has the responsibility to issue advice and warnings about public transport safety and status for the Victorian public transport network. Collaboration with VicRoads to support consistent provision of information, advice and warnings is critical.

#### 7.1.1. Control of incidents

Establishing an appropriate Control Structure to manage the response and recovery from a landslide incident should be determined by the impact and consequences that are experienced from the actual or threat of a landslide occurring. Relative size is just one factor for determining the control structure that may be required. Information to support management of the landslides which can be used as a guide in conjunction with the need for warnings and/ or evacuation of the community at risk can be found in Appendix B.

Initial notification of landslide events may come through a variety of channels. Typically calls that are noticed by the public or staff of agencies will be reported through the Emergency Services Telecommunications Authority (ESTA), VicRoads or directly to the landowner such as Local Government Authorities (LGAs), Parks Victoria or DELWP. Where it is determined to be a landslide that requires an emergency response, agencies should ensure notification to VICSES.



If an agency has been notified of a landslide they will assess the initial scale of the landslide and its initial risk, consequence or potential consequence to the community, using the guidelines in the readiness and activation triggers available in Appendix B.

Landslides of:

- S5 and S6 would normally be regarded as being managed by the land manager and/ or road authority as part of business as usual activities and not trigger an emergency response.
- S1 to S4 are likely to require an emergency response.
  - S4 events can likely be managed under business as usual regional control arrangements with engagement from a number of agencies and support in response from potentially local government and utility agencies.
  - For S1 – S3 events, VICSES will likely establish an IMT and ensure that relevant agencies are engaged through an EMT.

## 7.2. Strategic response

Soon after the receipt of advice of a landslide, the Emergency Management Commissioner, VICSES and all agencies with responsibilities in the management of a landslide event will collectively plan for the integrated management of the impact and consequences at the State and Regional tiers through the State, Regional and Incident Emergency Management Teams. Actions may include:

- Establishing the control structure for managing the event.
- Providing consistent emergency warnings and information to the community.
- Implementation of evacuation and emergency relief plans.
- Ensuring functionality of communications networks.
- Confirming agencies at all tiers are activated and appropriate arrangements are in place.

- Identifying the likely consequences of the landslide 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. This may include identification of need for interstate or international assistance.
- Identifying mass gatherings and large public events that may be at-risk, and arrangements to ensure the safety of individuals attending or those travelling.
- Confirming agencies with call taking responsibilities have resources in place and back up arrangements to cope with the expected call load at short notice.
- Positioning of Emergency Management Liaison Officers (EMLOs) from key support agencies to the SCC and Regional Control Centres (RCCs), where appropriate.
- Arranging for regular meetings of the State, Regional and Incident Emergency Management Teams.
- Providing whole-of-government situation reports to relevant Government Ministers.

### 7.3. Community information

VICSES will lead the community information and media management function to ensure the provision of timely and accurate emergency information to the community.

Where there are road impacts, this will be done in collaboration with VicRoads which has responsibility for providing information and advice on road safety and status for the State's road network.

See section 4.3 of this plan for full details relating to the provision of public information and warnings.

### 7.4. Rescue

Relevant response resources will be activated based on the detail provided which may initiate local response for designated rescue agency, once the actual detail of the incident is known, and if required, transfer of control should take place to an Incident Control Centre (ICC). The response may include Urban Search and Rescue (USAR) resources, through the appropriate agencies as detailed in the Victorian USAR Response Arrangements.

### 7.5. Medical response

In aftermath of a landslide, DHHS has a support function and coordinates the health response from its SEMC.

The State Health Emergency Response Plan (SHERP) outlines the arrangements for coordinating the health and medical response to emergencies. The State Health Emergency Response Plan is a sub-plan of the SERP and is referenced in the EMMV Part 8 Appendix 10, located [www.health.vic.gov.au/sherp/](http://www.health.vic.gov.au/sherp/).

The State Health and Medical Commander (undertaken by Ambulance Victoria) is responsible for directing health and medical resources, and the Health Commander is responsible for directing the pre-hospital response in an emergency and represent several agencies in the SEMT. These agencies may include:

- DHHS.
- Ambulance Victoria.
- First aid providers.
- Medical providers (including general practitioners).
- Health services (public and private hospitals).

- Residential and aged care services.

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

## 7.6. Restricting access

To ensure public safety, it may be necessary to restrict access to affected areas. VICPOL will coordinate the restriction of access to these areas as directed by the Incident Controller.

Traffic management will be conducted in accordance with the Joint Standard Operating Procedure for Traffic Management (Joint Standard Operating Procedure 3.10).

## 7.7. Evacuation

Evacuation is a risk management strategy, which may be used as a means of mitigating the effects of an emergency on a community. It involves the movement of people to a safer location. However, to be effective it must be correctly planned and executed.

In Victoria, the Incident Controller makes a recommendation to evacuate and it is the choice of individuals as to how they respond to this recommendation. However, in particular circumstances legislation provides some emergency service personnel with authority to remove people from areas or prohibit their entry, e.g. *Coroners Act 2008* (sections 37(2), 37(3) & 38(1)).

Evacuation operations should be consistent with the Evacuation Guidelines contained in Appendix 9 of the EMMV and Joint Standard Operating Procedure on Evacuation (JSOP 3.12).

## 7.8. Engineering advice

Engineering/ technical specialist advice will be required to undertake the following:

- Assess built infrastructure stability (e.g. buildings, bridges).
- Support USAR activities.
- Support damage control to limit risks to public safety.

In the first instance, Incident Controllers should seek engineering advice through the relevant Municipal Council or Road or Asset Manager.

## 7.9. Landslide treatment/ mitigation response operations

In the threat of a landslide or in the immediate aftermath there may be some scope for action to be taken to limit danger to the public through identifying and mitigating immediate damage to built infrastructure.

Landslide treatment/ mitigation operations will be directed from the relevant ICC and/ or RCCs. Engineering/ technical specialist advice is critical in assessing remedial options. The activity will only be undertaken when it does not conflict with rescue and recovery priorities.

There are a number of ways in which the risk may be treated. Options include:

- Avoid the risk:
  - Evacuation of the community and establish 'no-go zones'.
  - Acquisition/ re-zoning the land.

- Introduce stabilisation measures to control the landslide. After implementation of these stabilisation measures risks should be acceptable or tolerable and may include:
  - Retaining walls – gabions.
  - Subsurface drainage systems.
  - Rock bolts.
  - Draping areas with plastic and other general surface water diversion techniques.
  - Introducing appropriate vegetation.
- Implementing defensive measures or adapt the element at risk. Examples include:
  - Levees to deflect small debris flows.
  - Construction of debris flow channels.
  - Evacuation plans.
  - Wire mesh fences.
- Introduction of active monitoring of landslide activity:
  - Appearance of tension cracks and other forms of surface disruption.
  - Movement sensors – ground surveys, inclinometers.

Restoration or Reconstruction tasks are regarded as Recovery Operations under these arrangements and will be the responsibility of the landholder and/ or relevant road authority, with the support of the Municipal Recovery Manager.

## 7.10. Impact assessment

Undertaking impact assessment provides all decisions makers with relevant information regarding the nature and extent of the hazard, and any potential consequences during and after an emergency to ensure efficient, timely and appropriate support for communities.

Immediate reconnaissance of affected areas will be managed by the Incident Controller responsible for that area. Rapid reconnaissance is required to: establish the impact to community, inform appropriate response, and identify immediate and longer term needs.

The Victorian Preparedness Framework identifies three critical tasks for the future state of Victoria's impact assessment processes. In the initial stages of an event, the critical task is to 'gather information regarding extent of damage, immediate threats, loss of life and persons displaced.'

Impact assessment should include data on people (casualties, injuries, displacement and the demand on health services); property (residences, businesses); essential community infrastructure (roads, transport, bridges, water, sewerage, telecommunications); and, environmental data.

The State Response Controller will ensure that arrangements are in place for Initial Impact Assessment data to be incorporated into the operational response. Information collected may be derived and coordinated from several sources, for instance multiple agency Incident Management Systems may be used for smaller type events whilst large events may require the use of dedicated Initial Impact Assessment Coordinator teams (located within ICCs and the SCC to collate collected data).

Intelligence gathered will be used to inform situational awareness, incident action planning and recovery planning.

The Incident Controller will:

- Ensure that Initial Impact Assessment data is collected, collated and passed on to the appropriate agencies in a timely manner.
- Ensure systems are put in place to manage the collection and collation of Initial Impact Assessment data and that they are determined by the level of operation and severity of the incident.

Further landslides may continue to affect the community and the environment and the potential for this should be taken into consideration. After the impact of an event, secondary hazards include:

- Further landslides and rock falls.
- Hazardous material releases (i.e. asbestos).
- Flooding.
- Dam failure.
- Further environmental impacts.
- Social and economic impacts.

## 7.11. Clean-up

Local governments maintain broad responsibility for waste management within their municipalities, and have the expertise required to coordinate the additional clean-up requirements that follow natural disasters such as landslides.

In instances where the clean-up requirements for private property owners exceed their capacity or present public health issues, councils may be able to extend their regular waste disposal services or waive tipping fees. Standing funding arrangements, either through the Victorian Government's *Natural Disaster Funding Arrangements* or through the joint State and Commonwealth Government-funded *Natural Disaster Relief and Recovery Arrangements* are available to provide councils with reimbursement of these costs.

In events where the scale of damaged or destroyed properties may require the coordination of private property clean-up, more targeted responses may be required. The requirement for government support in such circumstances will be determined by the capacity and capability of the impacted local councils, and may be influenced by the extent of damage to council infrastructure and essential public services.

State Government coordination of clean-up is most likely to occur when clean-up requirements extend beyond a single local government area, and where the scale of clean-up works require expertise and resources that are beyond the capacity of affected councils.

The Emergency Management Commissioner, with the support of the State Relief and Recovery Manager, will work with impacted local councils, DHHS (regional coordination), and Victorian local government to identify whether the support of State government is required.

## 7.12. Relief and recovery

The aim of relief and recovery is to support communities to successfully deal with the impacts of an emergency on the social, built and economic and natural environments.

EMV supported by the Australian Red Cross is responsible for relief and recovery at the State level, and the DHHS supported by the Australian Red Cross is responsible for coordinating relief and recovery at the regional level. At the local level Municipal Councils are responsible for coordinating relief and recovery.

Relief and recovery commences at the local level through Municipal Councils. As required, it can escalate from local to regional or state level:

- When requested, because capability is exceeded, or
- Where an emergency has affected multiple municipalities in one region, or multiple regions within the state, or
- Where an emergency has a significant community-wide impact, in which case, the Victorian Government may establish an event-specific relief or recovery coordination structure to oversee a whole-of sector response.

Incident Controllers are responsible for ensuring that relief arrangements have been considered and implemented where required however, the decision to recommend the opening of an emergency relief centre rests with the Local Government in consultation with the Incident Controller.

If the Regional Emergency Response Coordinator becomes satisfied that the event exceeds the capacity of the council to perform this function, a request to DHHS to coordinate emergency relief at the regional level will be made. To ensure a smooth transition of responsibility, a Council should notify DHHS as soon as it becomes apparent an event will exceed its capacity. This does not replace the requirement for the Regional Emergency Response Coordinator to monitor the emergency relief situation.

Detailed arrangements for the management of emergency relief and recovery are outlined in the State Emergency Relief and Recovery Plan.



## Glossary

<b>BOM</b>	Bureau of Meteorology
<b>CFA</b>	Country Fire Authority
<b>DELWP</b>	Department of Environment, Land, Water and Planning
<b>DEDJTR</b>	Department of Economic Development, Jobs, Transport and Resources
<b>DET</b>	Department of Education and Training
<b>DHHS</b>	Department of Health and Human Services
<b>EMLO</b>	Emergency Management Liaison Officer
<b>EMMV</b>	Emergency Management Manual Victoria
<b>EMV</b>	Emergency Management Victoria
<b>EMT</b>	Emergency Management Team
<b>EPA</b>	Environment Protection Authority
<b>ESTA</b>	Emergency Services Telecommunications Authority
<b>ICC</b>	Incident Control Centre
<b>IEMT</b>	Incident Emergency Management Team
<b>IMT</b>	Incident Management Team
<b>LGA</b>	Local Government Authority
<b>MFB</b>	Metropolitan Fire Brigade
<b>MEMP</b>	Municipal Emergency Management Plan
<b>PTV</b>	Public Transport Victoria
<b>RAC</b>	Regional Agency Commander
<b>RC</b>	Regional Controller
<b>RCC</b>	Regional Control Centre
<b>RDO</b>	Regional Duty Officer
<b>REMT</b>	Regional Emergency Management Team
<b>SAC</b>	State Agency Commander
<b>SCC</b>	State Control Centre
<b>SCOT</b>	State Coordination Team
<b>SCRC</b>	State Crisis and Resilience Council
<b>SCT</b>	State Control Team
<b>SDO</b>	State Duty Officer
<b>SEMC</b>	Security and Emergency Management Committee of Cabinet
<b>SEMT</b>	State Emergency Management Team
<b>SERP</b>	State Emergency Response Plan
<b>USAR</b>	Urban Search and Rescue
<b>VICSES</b>	Victoria State Emergency Service
<b>VICPOL</b>	Victoria Police

## Appendix A – Roles and Responsibilities of Supporting Agencies (EMMV)

<b>Ambulance Victoria</b>	<ul style="list-style-type: none"> <li>■ Provide Health Commander(s) to the EMT/ IMT under the State Health Emergency Response Plan.</li> <li>■ Continue response to emergency medical '000' calls in altered environment.</li> <li>■ Support relocation/ evacuation of health and aged care facilities.</li> <li>■ Treat sick and injured people, including the provision of pre- hospital care and transport.</li> </ul>
<b>Australian Red Cross</b>	<ul style="list-style-type: none"> <li>■ Support VICPOL with the registration of evacuees.</li> <li>■ Support relief and recovery operations.</li> </ul>
<b>Bureau of Meteorology (BOM)</b>	<ul style="list-style-type: none"> <li>■ Provide weather forecasts for landslide affected areas.</li> </ul>
<b>Country Fire Authority (CFA)</b>	<ul style="list-style-type: none"> <li>■ Support incident management.</li> <li>■ Provide access to ICC facilities.</li> <li>■ Support the Initial Impact Assessment process.</li> <li>■ Support VICPOL with evacuations.</li> <li>■ Provide skilled and equipped personnel to assist with damage control operations to limit danger to the public following a landslide.</li> <li>■ Provide resources for pumping floodwater out of buildings and from low-lying areas.</li> <li>■ Undertake response to hazmat incidents.</li> <li>■ Assist with mapping.</li> <li>■ Support initial rescue operations.</li> <li>■ Support the deployment of the State USAR response team.</li> </ul>
<b>Department of Education and Training (DET)</b>	<ul style="list-style-type: none"> <li>■ Provision of on-site assistance and support for management of local issues involving students.</li> <li>■ Management of closure and evacuation of schools.</li> <li>■ Support the Initial Impact Assessment process.</li> </ul>
<b>Department of Health and Human Services (DHHS)</b>	<p><b>Response</b></p> <ul style="list-style-type: none"> <li>■ Through the State Health Emergency Response Plan coordinate</li> </ul>

	<p>deployment of medical personnel under the direction of the State Health and Medical Commander.</p> <ul style="list-style-type: none"> <li>■ Provide advice on public health consequences via Chief Health Officer to Incident Controller.</li> <li>■ Support the Initial Impact Assessment process.</li> <li>■ Coordinate emergency relief and recovery at Regional level.</li> <li>■ Control agency for incidents involving retail food contamination, food/ drinking water contamination, human illnesses/ epidemics, radiological substances and biological materials.</li> <li>■ Support service delivery to affected individuals, groups and/ or communities.</li> <li>■ Provision of advice in relation to potable water quality in an landslide emergency.</li> </ul> <p><b>Recovery</b></p> <ul style="list-style-type: none"> <li>■ Coordinate relief and recovery planning at Regional levels.</li> <li>■ Coordinate provision of psychosocial support at incident sites and across the community.</li> <li>■ Coordinate the provision of emergency financial assistance to eligible community members.</li> <li>■ Support councils and community recovery committees in recovery planning and managing recovery activities.</li> <li>■ Provide support, advice, information and assistance to affected individuals, communities, funded agencies and municipal councils.</li> <li>■ Assist with provision of temporary accommodation.</li> </ul>
<p><b>Department of Economic Development, Jobs, Transport and Resources (DEDJTR)</b></p>	<p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>■ Assist VICSES to identify infrastructure at-risk of landslide damage for incorporation into planning and intelligence.</li> <li>■ Develop awareness in agricultural industries regarding environmental emergencies and risk management planning.</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>■ Support the Initial Impact Assessment process.</li> <li>■ Facilitate the provision of skilled personnel to provide engineering advice regarding damaged transport infrastructure.</li> <li>■ Provide information regarding the status of the transport network and associated infrastructure.</li> <li>■ Facilitate the provision of transport capabilities when requested to support evacuation, passenger transport and logistics purposes.</li> </ul>

	<p><b>Recovery</b></p> <ul style="list-style-type: none"> <li>■ Assess losses of agricultural assets and livestock, and needs of affected persons and communities.</li> <li>■ Arrange for the restoration of transport infrastructure as required.</li> </ul>
<p><b>Department of Environment, Land, Water and Planning (DELWP)</b></p>	<ul style="list-style-type: none"> <li>■ Provide access to ICC facilities.</li> <li>■ Support Incident Management.</li> <li>■ Support the Initial Impact Assessment process.</li> <li>■ Assist with mapping.</li> <li>■ Provide skilled personnel to provide engineering advice regarding damaged structures.</li> <li>■ Provide skilled and equipped personnel to assist with damage control operations to limit danger to the public following a landslide.</li> <li>■ Provision of human and physical resources.</li> <li>■ Provide advice regarding major power and energy outages including any known need to disconnect electricity or gas.</li> <li>■ Provide advice regarding the timetable for restoration of services as available.</li> <li>■ Assist with the identification of interdependencies between landslide damage and utility services.</li> </ul>
<p><b>Electricity, gas, transmission and distribution businesses</b></p>	<ul style="list-style-type: none"> <li>■ Engineering advice regarding damaged structures.</li> <li>■ Provide information on impact to energy assets or services.</li> </ul>
<p><b>Emergency Management Victoria (EMV)</b></p>	<p><b>Recovery</b></p> <ul style="list-style-type: none"> <li>■ Coordinate relief and recovery planning at State level.</li> </ul>
<p><b>Emergency Services Telecommunications Authority (ESTA)</b></p>	<ul style="list-style-type: none"> <li>■ Provide facilities for EMLO.</li> </ul>
<p><b>Environment Protection Authority (EPA)</b></p>	<ul style="list-style-type: none"> <li>■ Assess the environmental impact of the emergency.</li> <li>■ Determine practical measures to protect the environment.</li> <li>■ Advise emergency services on the properties and environmental impacts of hazardous materials.</li> <li>■ Ensure that appropriate disposal methods are adopted for detritus and waste.</li> <li>■ Implement the Community Environmental Trauma Protocol when required.</li> </ul>

<p><b>Melbourne Water Corporation</b></p>	<ul style="list-style-type: none"> <li>■ Provide skilled personnel to provide engineering advice regarding damaged structures.</li> <li>■ Support the Initial Impact Assessment process.</li> <li>■ Implement crisis and incident management plans when assets fail to perform their function (water supply and sewerage).</li> <li>■ Provide information on impact to water assets or services.</li> <li>■ Provision of emergency works to alleviate flooding and clearance of Melbourne Water’s drainage assets after flooding has occurred.</li> </ul>
<p><b>Metropolitan Fire Brigade (MFB)</b></p>	<ul style="list-style-type: none"> <li>■ Support incident management.</li> <li>■ Provide access to ICC facilities.</li> <li>■ Support initial impact assessment process.</li> <li>■ Support VICPOL with evacuations.</li> <li>■ Provide skilled and equipped personnel to assist with damage control operations to limit danger to the public.</li> <li>■ Undertake response to hazmat incidents.</li> <li>■ Undertake urban fire suppression.</li> <li>■ Assist with mapping.</li> <li>■ Support initial rescue operations.</li> <li>■ Support the deployment of the State USAR response team.</li> </ul>
<p><b>Municipal Councils</b></p>	<p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>■ Ensure MEMPs are appropriate to respond to a landslide event.</li> <li>■ Assist with and contribute to landslide education programs.</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>■ Provision of resources as available and needed by the community and response agencies.</li> <li>■ Support the Initial Impact Assessment process.</li> <li>■ Provision of engineering advice.</li> <li>■ Provision of facilities for emergency services staging areas.</li> <li>■ Assist with the delivery of public information.</li> <li>■ Co-ordination of the provision and operation of emergency relief (includes catering, emergency relief centres, emergency shelters and material needs).</li> <li>■ Assist with debris removal where locally required.</li> </ul>

	<ul style="list-style-type: none"> <li>■ Assist with the provision of plant and skilled operators.</li> <li>■ Support to VicRoads for partial/ full road closures and determination of alternative routes.</li> </ul> <p><b>Recovery</b></p> <ul style="list-style-type: none"> <li>■ Provision of information services to affected communities (e.g. using information lines, newsletters, community meetings and websites).</li> <li>■ Provision and staffing of recovery/ information centre(s).</li> <li>■ Formation and leadership of municipal/ community recovery committees.</li> <li>■ Post-impact assessment — gathering and processing of information.</li> <li>■ Survey and determination regarding occupancy of damaged buildings.</li> <li>■ Environmental health management — including food and sanitation safety, vector control, such as removing dead animals (domestic, native or feral) from waterways.</li> <li>■ Oversight and inspection of rebuilding/ redevelopment services.</li> <li>■ Provision and management of community development services.</li> <li>■ Provision and/ or co-ordination of volunteer helpers.</li> <li>■ Provision of personal support services (e.g. counselling, advocacy).</li> <li>■ Co-ordination of clean-up activities, including disposal of dead animals (domestic, native and feral).</li> <li>■ Provision/ co-ordination of temporary accommodation.</li> <li>■ Repair/ restoration of infrastructure (roads, bridges, sporting facilities, public amenities).</li> </ul>
<p><b>Parks Victoria</b></p>	<ul style="list-style-type: none"> <li>■ Support agency for emergency landslide situations within its parks and reserves.</li> <li>■ Support incident management.</li> <li>■ Rehabilitation of flora and fauna affected by an emergency within its parks and reserve.</li> <li>■ Coordinate the clearing and restoration of roads, bridges and other assets within its parks and reserves.</li> <li>■ Close and evacuate at risk camping grounds in National Parks.</li> </ul>
<p><b>Public Transport Victoria (PTV)</b></p>	<ul style="list-style-type: none"> <li>■ Manage public transport impacts.</li> <li>■ Undertake alternative transport plan management.</li> <li>■ Provide information and advice on transport safety and status to the community.</li> </ul>

	<ul style="list-style-type: none"> <li>■ Share with and receive information from the EMT supportive of respective messaging responsibilities.</li> <li>■ Support the Initial Impact Assessment process.</li> <li>■ Assist with the broader communication of warnings and information provision to the public through the use of variable message signs.</li> <li>■ Provide engineering assistance and advice.</li> <li>■ Clear debris from public transport tracks.</li> </ul>
<b>VicRoads</b>	<ul style="list-style-type: none"> <li>■ Manage road closures and diversions.</li> <li>■ Undertake traffic management planning.</li> <li>■ Provide information and advice on road safety and status to the community via the website, <a href="http://traffic.vicroads.vic.gov.au">traffic.vicroads.vic.gov.au</a>.</li> <li>■ Share with and receive information from the EMT supportive of respective messaging responsibilities.</li> <li>■ Support the Initial Impact Assessment process.</li> <li>■ Assist with the broader communication of warnings and information provision to the public through the use of variable message signs.</li> <li>■ Provide engineering assistance and advice.</li> <li>■ Clear debris from VicRoads managed roads.</li> <li>■ Assist with the provision of plant and skilled operators.</li> </ul>
<b>Victoria Police (VICPOL)</b>	<ul style="list-style-type: none"> <li>■ Coordinate evacuation in consultation with Incident Controller.</li> <li>■ Coordinate USAR resources in consultation with Incident Controller.</li> <li>■ Coordinate registration of evacuees – with support from the Australian Red Cross.</li> <li>■ Coordinate public enquiry system for disaster victims.</li> <li>■ Coordinate disaster victim identification.</li> <li>■ Assist with media management.</li> <li>■ Traffic management planning.</li> <li>■ Support Initial Impact Assessments.</li> </ul>
<b>Victoria State Emergency Service (VICSES)</b>	<ul style="list-style-type: none"> <li>■ Control agency for landslide.</li> <li>■ Coordinate response to protect life, property and the environment.</li> <li>■ Lead provision of public information and warnings relating to landslide.</li> <li>■ Establish EMT.</li> </ul>

	<ul style="list-style-type: none"> <li>■ Secure scene and create cordon.</li> <li>■ Lead/ support initial rescue operations.</li> </ul>
<p><b>Victorian Water Authorities (other than Melbourne Water)</b></p>	<ul style="list-style-type: none"> <li>■ Provide skilled personnel to provide engineering advice regarding damaged structures where available.</li> <li>■ Support the Initial Impact Assessment process.</li> <li>■ Implement crisis and incident management plans when assets fail to perform their function (water supply and sewerage).</li> <li>■ Provide information on impact to water assets or services.</li> </ul>



# Appendix B – IMT Readiness and Activation Triggers

## LANDSLIDE READINESS AND ACTIVATION TRIGGER CONSIDERATIONS - V3.3 - March 2018

Readiness Level	RL 1 - LOW TO MODERATE	RL 2 - HIGH	RL 3 - Very High (A)	RL 3 - VERY HIGH (B)	RL 4 - SEVERE	RL 5 - EXTREME
<b>Category/ Scale</b>	<b>S6</b>	<b>S5</b>	<b>S4</b>	<b>S3</b>	<b>S2</b>	<b>S1</b>
<b>FDI</b>	<b>0 - 11</b>	<b>12 - 24</b>	<b>25 - 34*</b>	<b>35 - 49*</b>	<b>50 - 74</b>	<b>75 - 99</b>
<b>TRIM Location: CD/18/30923</b>	<b>THUNDERSTORM FORECAST CHART [TFC] issued daily</b>			<b>SEVERE WEATHER INTELLIGENCE BRIEFING [SWIB] issued TUE &amp; FRI</b>		
<b>Landscape Observation</b>	Trees leaning on an angle Hand size rocks falling on road, small cracks in roadways Less than 1m wide sinkhole  <i>S6 may have little or no impacts on the community and not require specific warnings to be provided except through relevant agency channels (e.g. VicRoads)</i>		Potential or observed land movement (slump or minor landslide) Head size rocks falling, cracks in roadways that are increasing Sink hole that is over 1m wide but not increasing, small debris flow	Potential or observed land movement that will impact community Isolated or impact to dwellings Rock and/ or debris on road closing the road for up to 6 hours, cracks in roadways that require traffic management Sink hole that is over 3m wide and increasing, debris flow in creeks	Potential or observed land movement with direct community impact including people trapped Significant rock and/ or debris on road closing the road for greater than 24 hours, road damage that requires road closure Sink hole that is over 7m wide and increasing, multiple debris flows impacting communities	Potential or observed land movement with direct community impact in multiple locations and possible multiple trapped people Rock and/ or debris on road closing the road for greater than 72 hours, road damage that requires road rebuilding Sink hole that is consuming infrastructure and increasing, multiple debris flows impacting communities
<b>Approximate Size And/ or</b>	Wheelbarrow < 2 Tonnes 1m (L) x 3m (W) x 0.3m (L)	Small Car 2 to 20 Tonnes 2m (L) x 4m (W) x 1.2m (L)	Semi Trailer Truck 20 to 200 Tonnes 5m (L) x 10m (W) x 2m (D)	House 200 to 2000 Tonnes 10m (L) x 25m (W) x 4m (D)	Country Football Oval 2,000 to 20,000 Tonnes 25m (L) x 60m (W) x 7m (D)	Large Stadium (eg: MCG) >20,000 tonnes 50m (L) x 100m (W) x 10m (D)
<b>Susceptibility with Weather</b>			SWW - Heavy Rainfall leading to flash and/ or riverine flooding across districts considered 'Likely' Significant chance of Thunderstorms and hail likely Chance of flash flooding likely. Predicted rainfall of over 50mm in an hour Catchment areas identified saturated with little initial losses	SWW - Heavy Rainfall leading to flash and/ or riverine flooding across districts considered 'Very Likely' Significant chance of thunderstorms and hail likely Chance of flash flooding likely. Predicted rainfall of up to 80mm in an hour Catchment areas already identified as saturated with little initial losses Particular interest should be taken in recent fire damaged areas	SWW - Heavy rainfall leading to flash and/ or riverine flooding across districts considered 'Very Likely' Significant chance of thunderstorms and hail likely Predicted rainfall of up to 150mm of rain in 6 hours Catchment areas already identified at capacity, unable to retain further moisture Particular interest should be taken in recent fire damaged and known mapped landslide risk areas	SWW - Heavy rainfall leading to flash and/ or riverine flooding across districts considered 'Very Likely' Potential dangerous thunderstorm warnings issued. Thunderstorms and hail certain Predicted rainfall above 200mm of rain in 6 hours Catchment areas already identified at capacity, unable to retain further moisture Particular interest should be taken in recent fire damaged and known mapped landslide risk areas
<b>VICSES – Business As Usual Operations</b>				<b>JSOP 2.03 LINE OF CONTROL</b>		
<b>Readiness (State)</b>	SCC Level White SAC and SDO (monitor)	SCC Level White SAC and SDO (monitor)	SCC Level White/Blue SAC and SDO (actively monitoring)	SCC Level BLUE or when ICC activated SDO and SAC in place	SCC Level ORANGE Multiple ICCs activated or multi region SDO and SAC in place Consider day/ night	SCC Level RED Multiple ICCs activated or multi region SDO and SAC in place day and night
<b>Readiness &amp; Activation (Regional)</b>	RDO (monitor) RAC (aware)	RAC (monitor) RAC (aware)	Regional Command IN PLACE RAC/ RDO attends Regional Office	RCC OPEN: with BASE RCT in place RC, RAC, RDO at RCC	RCC OPEN: RCT in place, some agencies available on immediate recall RC, RAC and RDO In place at RCC	RCC OPEN: Full RCT/most REMT in place RCT, RAC and RDO in place at RCC
<b>Readiness and Activation (Incident)</b>	RDO ( monitor)	RDO ( monitor)	RDO - RAC IN PLACE Resource Officer (Stby) Management Support (Stby)	BASE IMT (in place)	CORE IMT (in place)	FULL IMT (in place)

Impact	Potential Consequences		
<b>People</b>	Some minor inconvenience around local roads.	Increased number of roads being impacted, traffic management plan likely to be in place. May require formal landslide warnings to be issued. Potential individual property relocation and evacuations. Inconvenience to normal transport routes, delays on road network could be expected, school bus routes may require change. Local Regional/ State and National Parks may be closed for short periods.	Significant number of roads impacted, traffic management plan is required, some major roads closed for extended periods. Formal landslide warnings issued, evacuations likely to be undertaken, potential prolonged relocations. Local, Regional/ State and National Parks closed for a number of days. Disruption to communities, daily routines, increased traffic, schools closed, community requiring support to remain functioning. Injuries and potential for deaths due to landslides.
<b>Remote communities</b>	May have minor local inconvenience only .	Some isolation and loss of utilities of individual properties or remote communities are likely. May require additional support to maintain community routine, including consideration for groceries, medication, etc.	Community isolation and potential loss of food/ medical supplies, with resupply requirements dependant on time of power or access outages. Ongoing requirement to assist isolated communities for extended periods, may require additional support services to be deployed to areas.
<b>Health</b>	Little impact expected, some local issues might be encountered but managed locally within own facility plan.	Consideration for review and familiarisation with facility plan - VICPOL and DHHS to review vulnerable persons list, potential to engage community networks to ensure additional vulnerable people support.	Likely that vulnerable people impacted require relocation. Communities without utilities for days needing support. Hospitals and nursing homes may require additional management for increased patient care.
<b>Power</b>	Possible power disruptions.	Likely short term power disruptions.	Power disruptions almost guaranteed, likely with potential long term outages in affected areas. Will require management for short term solutions.
<b>Water utilities</b>	Little impact expected some local issues might be encountered but managed locally.	Increased potential for infrastructure damage and disruption but still managed locally. Sewerage and potable water may be affected. May take days to restore connections. Silt and drinking water quality concerns.	Likely that some infrastructure will be impacted, water authorities should develop or initiate their plans to address issues. Significant potential for pollutants including sewerage in water and loss of power will exasperate the impacts.
<b>Telecommunications</b>	Unlikely to impact network but may have some local damage.	Potential impact for communities, isolation from communications networks. May take days to restore connections.	Significant impact with loss of landlines and mobile towers which will affect people's capacity to receive warnings and information. Commercial/ business impacts with loss of phone services. NBN impacts with loss of power and data. Potential for infrastructure damage for cable/ fibre.
<b>Gas</b>	Little impact expected, some local issues might be encountered but managed locally.	Increased potential for infrastructure damage and disruption but still managed locally. Sewerage and potable water may be affected. May take days to restore supplies.	Likely that some infrastructure will be impacted, supply authorities should develop or initiate their plans to address issues. Significant potential for longer term supply restrictions.
<b>Road Network</b>	Unlikely to impact network but may have some local road damage/ impacts.	Some minor roads may be impacted with possible disruption to critical needs supplies such as milk and transport routes. Roads could be closed up to 2 hours with mitigation works required.	Likely for roads to be cut and egress and access impacted. Major roads potentially cut in some locations traffic diversions in place for extended periods. Infrastructure such as bridges destroyed. Potential rescue of trapped persons in vehicles highly likely. Expected impact on rail routes. Economic impact likely with loss of power and utilities supply for lengthy period.
<b>Public Transport</b>	Limited impact on public transport routes	Impact to public transport routes may occur with diversions possible and some delays experienced	Public transport impacts will occur with roads and rail lines cut and no alternative route available - significant disruption to people movement likely in affected areas.
<b>Critical infrastructure</b>	Nil impact.	Requires preparatory work and discussion with owner of infrastructure, potential for damage to infrastructure.	Significant work likely to be required to protect critical infrastructure. Contingency plans put in place if loss of the infrastructure occurs.
<b>Public Infrastructure /Essential Community Infrastructure</b>	Limited impact.	Some disruption to community areas and infrastructure. Potential damage of essential community infrastructure.	Significant damage to community infrastructure and community facilities. Long term closure of essential community facilities likely.
<b>Education</b>	Unlikely impact.	Some impact expected, traffic management plan for school buses should be considered.	Some school and preschools may be impacted by utilities loss and damage to infrastructure, and school bus routes closed for period of time in affected areas.
<b>Public Events</b>	Unlikely to impact,	Some public events may need to be cancelled or rescheduled due to safety of patrons either while at event or travelling to or from.	Public events impacted, likely cancellation of major events due to damage and risk, and potential direct impact on venue or ability to attend or leave event.
<b>Tourism</b>	Unlikely that event will be impacted but consideration must be given to any event occurring to ensure it is safe to continue.	Potential impact on tourist locations if area not safe to visit or isolated due to road closures and landslide impact areas. Economic impacts due to isolated areas from road closures/ transport, etc.	May impact on high value tourist locations and facilities with long term impacts on the social and economic environment of communities.
<b>Agriculture/Animal welfare</b>	No impact likely with landowners managing any localised issues.	Potential impact with losses to livestock, fencing and crops including high intensive farming of produce and tree farms.	Substantial impact to crops, including high intensive produce farming (vegetables and fruit) and tree farms with short and long term impacts due to loss of crops. Economic impact to area. Social impact to area.
<b>Environmental</b>	Minimal impact.	Stream erosion and potential loss of vegetation around watercourses. Minor tree damage, vegetation displacement and local parks infrastructure damage, silt and water quality concerns. Potential for new river or creek flow paths to develop, change in flood risk.	Stream erosion and loss of vegetation around watercourses expected. Tree damage, vegetation displacement and local parks infrastructure damage, silt and water quality concerns. Potential for new river or creek flow paths to develop, change in flood risk.
<b>Cultural Heritage</b>	Minimal impact likely.	Some disturbance or damage along watercourses and sacred areas may occur. Potential for destruction of cultural heritage sites.	Potential for impact on historical structures and features. Damage along watercourses and sacred areas may occur. Likely destruction of cultural heritage sites.
<b>Relief and Recovery</b>	Relief and recovery activity unlikely, may be some local issues.	Increased potential for relief and recovery activity but likely to be managed locally by LGA with support of DHHS.	Formal arrangements put in place for relief and recovery activity, Regional Recovery Commander appointed. Health Commander in place and demands on relief and recovery to be substantial and potentially long term. Requirement for transition to recovery to be implemented.

**Regional Agency Commander (VICSES) advises the Regional Controller to vary the actual number, distribution and level of IMT required.**

## Appendix C – Community Notification Business Rules v2.0

Please note that all VICSES Community Notification Business Rules are reviewed and updated on a regular basis. The next review of this document will consider additional tools to support warnings issuers select appropriate warning products that reflect likely or actual severity of a landslide and associated consequences, in addition to including more detailed guidance on how to effectively incorporate available field intelligence by experts into this process and the content of the warning.

The most up to date version of these business rules can be found on the Public Information section of the IMT Toolbox on EM-COP - VICSES Landslide EM-COP Public Publishing Business Rules.



VIC  
EMERGENCY

# **VICSES Landslide EM-COP Public Publishing Business Rules**

**August 2018**

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## 1 Landslide warning business rules

The following provides guidance for personnel issuing VICSES landslide community notifications, and supports the core EM-COP Public Publishing Business Rules.

### 1.1 Landslide warnings

VICSES is the control agency for landslide with the responsibility to disseminate emergency information to the community, as outlined below.

With no predictive state-wide landslide warning service in Victoria, VICSES has developed a non-predictive landslide community notification process and associated templates.

The community notifications are consequence based and are only to be issued upon verified report(s) of landslide(s) (movement of rock, debris or earth down a slope) posing / resulting in a significant threat to life and / or property.

When intelligence or technical advice is available and suggests an imminent landslide is likely, Incident Controllers may use their discretion and issue a landslide community notification.

### 1.2 Responsibility for issuing and authorisation of community notifications

#### Business as usual:

- Issuer: Regional Duty Officer (RDO) or Warnings and Advice Duty Officer (WADO) if time critical (note: WADO must be requested to issue community notification by RDO/RAC)
- Authorisation: Regional Agency Commander (RAC)

#### ICC/RCC/SCC:

- Issuer: ICC Information and Warnings Officer (IWO) / Public Information Officer (PIO)
- Authorisation: Incident Controller (IC) (may be delegated to PIO)



### 1.3 Community notification triggers, publish, update and expiry times


#### Triggers:

VICSES will only issue EM-COP community notifications if a landslide is determined to be an emergency and VICSES takes active control of the incident as explained in Section 3 of the State Landslide Hazard Plan.





VICSES will consider issuing an EM-COP community notification based on Landslide scale, category and actual or potential community consequences. Further guidance on landslide categories is available in section 1.13 of these business rules.





When issuing landslide community notifications contact VicRoads emergency services priority phone line: 1300 107 778 to ensure incident and is listed on VicTraffic website.

The following table outlines triggers, publish, update and expiry times for community notifications.

Message Type	Trigger	Publish	Update	Expiry
<b>No EM-COP community notification required</b>	<b>S5 – S6</b> With minimal community interest and/or impacts. OR <b>S1-S4</b> Where higher warning level has been issued, but further communications need to be disseminated to broader community affected.	N/A	N/A	N/A
	<b>S5 – S6 example:</b> A small isolated landslide on a regional roadway following some localised flash flooding. It requires a local lane closure for a short period of time. <b>S1-S4 example:</b> 2016 Great Ocean Road landslides that requires community information outside the area under a higher level warning.			
	Contact VicRoads emergency services priority phone line: 1300 107 778 contact SES SMDO to share social media message (e.g.: re-share Parks/Council/VicRoads/VicTraffic social media), request distribution of media release and community liaison officer when at an ICC.			
<b>Advice</b> 	<b>S3-S4 - With moderate impacts,</b> such as multiple RFAs related to the landslide and/or calls to triple zero and/or some risk of (or actual) physical damage. If a road is impacted contact VicRoads to put message on VicTraffic website	<30 minutes of notification	Update every 4 – 6 hours if situation changes, otherwise update every 12 – 24 hours	Unpublish after the conclusion of the threat, but downgrade messaging as required (e.g.: issue advice – all clear if appropriate)
<b>Example:</b> Multiple minor landslides occur along a major roadway which requires closing the road for at least 6 – 12 hours, plus there is a risk of further landslides. Local arrangements are not enough to manage public information needs.				



Message Type	Trigger	Publish	Update	Expiry
<b>Warning</b> 	<b>S1-S2 - With moderate to major impacts,</b> such as high number of RFAs related to the landslide and/or calls to triple zero and/or greater risk of (or actual) physical damage If a road is impacted contact VicRoads to put message on VicTraffic website	<30 minutes of notification	Update every 4 – 6 if situation changes, otherwise update every 12 – 24 hours	Unpublish after the conclusion of the threat, but downgrade messaging as required (e.g.: issue advice – all clear)
<p><b>Example:</b> A landslide on a major road causing it to be closed for an extended period of time, with the potential for further landslides that will impact nearby properties or infrastructure.</p> <p>This might include landslides with a moderate to major risk of significant damage to property or critical community assets).</p>				
<b>Emergency Warning</b> 	<b>S1-S2 - With any risk to life and/or major impacts,</b> such as risk of significant (or actual) physical damage If a road is impacted contact VicRoads to put message on VicTraffic website	<30 minutes of notification	Update every 2 – 6 hours until threat has concluded	Unpublish after the conclusion of the threat, but downgrade messaging as required (e.g.: issue advice – all clear)
<p><b>Example:</b> A landslide has damaged a number of buildings with community members directly at risk, or there is a large sinkhole in close proximity to the footings of a block of units.</p> <p>An Emergency Warning should be issued for landslides that pose any risk to life, or a major risk of significant damage to property or critical infrastructure or community assets).</p>				
<b>Advice All Clear</b> 	Must be issued as part of de-escalation after Warning or Emergency Warning has been issued.	<30 min of notification time	Only update if required	6 – 24 hours at discretion of RAC/IC
<b>Community Information – Newsletter</b> 	As required – determined by IC, SAC or SRC (significant event has occurred and recovery info needs to be communicated).	As requested by SAC/SDO	Update at the discretion of IC, RAC	Unpublish within 3 days of first issue

Message Type	Trigger	Publish	Update	Expiry
<b>Prepare to Evacuate</b> 	RAC, SAC or IC request or update required	ASAP, no more than 30 mins from time of request	Update as required	Set expiry as per update timeframes. Original message will unpublish when updated or updated with new template (e.g.: when Evacuate Now issued)
<b>Evacuate Now</b> 	As required – determined by IC, SAC or SRC.	<30 min of notification	Update every 2 to 4 hours, or more frequently if required	Original message will unpublish when updated or updated with new template (e.g.: when Safe to Return is issued)
<b>Evacuate Now – Update</b> 	As required – determined by IC, SAC or SRC.	<30 min of notification	Update every 12 – 24 Hours until a Safe to Return is issued, or more frequently if required	Original message will unpublish when updated or updated with new template (e.g.: when Safe to Return is issued)
<b>All Clear – Safe to Return</b> 	As required – determined by IC, SAC or SRC.	<30 min of notification	Does not generally require updating – publish once only	Unpublish after 24 hrs

#### 1.4 Incident naming

- **Major emergencies** – apply JSOP J03.02 (Incident Naming – Major Emergencies):
  - Hazard Type – Widely Known Location – Local Reference  
(e.g.: Landslide – Grampians – Halls Gap)

*When initially creating an EM-COP incident, the platform does not allow incident names to include spaces, however, the incident name can be altered manually when creating a community notification.*

#### 1.5 Location

Enter the location for the incident based on the impacted locations, or the localities for which the information is relevant

#### 1.6 Polygons

Creation of the appropriate landslide polygon shapes should be based on available intelligence.

- **Hand drawn vertex or circle polygon**

Draw a circle or vertex polygon based on the actual or expected area of impact.

## 1.7 Agency issuing warning

Always select SES as the agency issuing the warning from the drop down list, when creating the warning. This ensures the community notification is published to VICSES social media channels.

## 1.8 Recipient list

The State Wide Mandatory list must be selected, in addition to relevant Emergency Management Region(s).

### 1.8.1 SMS notification

The SMS notification is automatically selected for all warning messages and above.

An SMS **shouldn't** be sent:

- For Advice, All Clear or Community Information products
- If an insignificant change is being made to the warning (e.g. correcting a typo) if it's a long running event and the warning is being updated without significant change.

## 1.9 Message creation

- **Critical details** – include any verified local event intelligence about the event
- **What you should do** – select relevant drag and drop statements.
- **Impacts in your area** – include any verified intelligence or local knowledge.

## 1.10 Additional alerting tools

### 1.10.1 Emergency Alert

The use of Emergency Alert is governed by Joint Standard Operating Procedure J04.01 and SES SOP057 Use of Emergency Alert and Community Alert Sirens.

### 1.10.2 Sirens

Community Alert Sirens should be activated when issuing an Emergency Warning or Evacuate Now where an imminent threat to life exists and it authoriser determines it is appropriate to use the tool in line with SES SOP057.

## 1.11 Redundancy

If you are unable to publish a community notification, the Redundancy Warnings Work Instruction (available via the IMT Toolbox > Public Information > Redundancy) should be applied.

Initially, you should:

- Contact the rostered State-wide Warnings and Advice Duty Officer via telephone (03) 9262 8779 (may be diverted to SCC Public Information Section if activated).

## 1.12 Continual improvement

These business rules are reviewed annually and are subject to ad-hoc amendments as required.

### 1.13 Landslide Scale and Category Considerations

In determining VICSES' response to a landslide event and to establish command and control, consideration is given to the consequence or potential consequence associated with the event.

VICSES has determined to have six (6) scale categories of landslide events in line with National and International categories of landslide scale and VICSES has developed a supporting readiness and trigger document (Appendix B). It is important to note that whilst size can assist to categorise the nature of the event, it is just one factor that may impact the overall scale or category and the associated response based on actual or potential community consequences.

Landslide Scale					
Category	Relative Size	Volume of Failure (m <sup>3</sup> )	Typical Dimension (LxWxD) metres	Individual block size	Overall debris scale
S1	Very Large	>20,000	50 x 100 x 10	Individual block size >1.0m	Around the size of the MCG stadium or greater
S2	Large	2,000 to 20,000	25 x 60 x 7	0.5m-1.0m minimum dimension	Around the size of a local football oval
S3	Medium	200 to 2000	10 x 25 x 4	0.2 to 0.5m minimum dimension	Around the size of a house
S4	Small	20 to 200	5 x 10 x 2	0.2m minimum dimension	Around the size of a semi-trailer truck
S5	Very Small	2 to 20	2 x 4 x 1.2	0.1m minimum dimension	Around the size of a small car
S6	Extremely Small	< 2	1 x 3 x 0.3		Could fit in a wheelbarrow

## 2 Document Information

### Document details

Criteria		Details	
Document title:		VICSES EM-COP Public Publishing Business Rules – Landslide	
Agency		Victoria State Emergency Service	
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0.1	28/02/2017	Initial Draft	VICSES
1.0	01/03/2017	Final	VICSES
2.0	10/09/2018	Updates due to hazard plan	VICSES

### Reference list

- EMMV Part 8, Standard Emergency Warning Signal (App. 14), August 2013
- SOP J03.02 Incident Naming – Major Emergencies
- SOP J03.12 Evacuation for major emergencies
- SOP J03.14 Control of Class 1 Emergencies
- SOP J04.01 Incident Public Information and Warnings
- Victorian Warnings Protocol v2



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