

North East (Hume) Region

Emergency Response Plan



Landslide Sub-plan

Published by Victoria State Emergency Service

Melbourne, September 2019.

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

**Authorised by the Victoria State Emergency Service (VICSES)
168 Sturt Street,
Southbank VIC 3006**

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

Document Transmittal Form / Amendment Certificate

This Regional Landslide Emergency Plan will be amended, maintained and distributed as required by VICSES.

Suggestions for amendments to this plan should be forwarded to VICSES North East (Hume) Regional Office 64 Sydney Road, Benalla, Victoria 3672.

Amendments listed below have been included in this plan and promulgated to all registered copyholders.

Amendment Number	Date of Amendment	Amendment Entered By	Summary of Amendment
0.1	April 2019	S Sheldrick	Initial draft
0.2	2 June 2019	N Payn	Review and further additions to draft
0.3	17 July 2019	C Sexton	Regional Emergency Management Planning Committee additions
0.4	26 July 2019	N Payn	CR&C additions amendments
1.0	6 September 2019	S Makin	Copy review and edit to finalise document

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

The North East (Hume) Region Emergency Response Plan – Landslide Sub-plan deals with response to Landslide incidents within Central area of responsibility.

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Region to effectively and efficiently respond to future emergencies caused by Landslide, and will remain current until rescinded by authority of the Victoria State Emergency Service Chief Officer Operations.

_____ Date: _____

Tim Wiebusch

Chief Officer Operations

This plan is produced by VICSES and has been adapted from the SERP – Landslide Sub-plan. All information contained in this plan was current at time of publication.

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

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

Regional Manager – North East (Hume) Region

Victoria State Emergency Service

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State Emergency Management Priorities

The State Emergency Management Priorities are:

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

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1. Introduction

1.1 Purpose

The purpose of this plan is to provide strategic guidance for the effective emergency management of a landslide in the North East Region.

1.2 Objective

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

The objective of the Central Region Emergency Response Plan – Landslide Sub-Plan is to outline the arrangements for ensuring an integrated and coordinated approach to the management of landslide events in order to reduce the impact and consequences of these events on the community, infrastructure and services.

1.3 Scope

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

- Description of potential risks and consequences of earthquakes to the social, built, economic and natural environments.
- Region-specific emergency management arrangements for the management of landslides.
- Links to sources of information for further detail.
- Avalanche is out of scope in this plan

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 SERP (Part 3, EMMV) identifies Victoria’s organisational arrangements for managing the response to emergencies.

Part 7 of the EMMV outlines VICSES as the control agency for landslide emergencies. In this role, VICSES is responsible for providing protection of life, property and the environment.

The State Landslide Hazard Plan outlines overarching arrangements for management of landslide emergencies but does not replace arrangements in the SERP.

This plan has been approved by the VICSES Chief Officer of Operations.

Other 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, local government and agencies within the emergency management sector in North East (Hume) Region, including business and community groups with a significant role in the management of the emergency.

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

1.7 Linkages

This plan reflects current legislation, the arrangements in the SERP, the State Landslide Hazard Plan, 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.

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

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

1.8 Exercising and evaluation

This plan will be exercised within one year from the date of approval and once every three years thereafter as part of a phased cycle. 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 AIDR Managing Exercises Handbook, available here – 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. Landslide Risk Overview

2.1 Regional overview

The North East (Hume) Region extends over 43,000 square kilometres of north east Victoria, containing many culturally diverse communities. The region is geographically varied, with landscapes and topography that ranges from crops and wilderness bushland reserves, to the flat or undulating plains in the north and west and the mountains of Alpine National Park (part of the Great Dividing Range) in the east and south.

Located at the northern boundary of the region is the Murray River, which drains the entire course of several significant waterways including the Goulburn, Ovens, Broken, Kiewa and King rivers. From the 'mountains to the Murray', the region has a range of built and natural environments, rugged mountainous landscapes, diverse economic and agricultural base, and unique tourism (including ecotourism and adventure-based tourism), which can all be vulnerable to, and in some cases influence, orographic rainfall.

In North East (Hume) Region, every Local Government Authority (LGA) has been affected by some kind of landslide, big or small. The unique environments and climates of the alpine areas are especially prone to landslide events. The region contains twelve LGAs and four Alpine Resort Management Boards (ARMBs) as follows:

LGAs: Alpine, Benalla, Greater Shepparton, Indigo, Mansfield, Mitchell, Moira, Murrindindi, Strathbogies, Towong, Wangaratta and Wodonga.

ARMBs: Mt Hotham, Falls Creek, Mt Buller/ Mt. Sterling and Lake Mountain (Managed by Southern ARMB).

The consequences of isolation in rural and remote communities due to landslide events can also be substantial, for example, lack of power or access and egress, which can last for days or weeks.

Landslide risk overview

The term landslide denotes "the movement of a mass of rock, debris or earth down a slope" (AIDR Manual 24 on 'Reducing the Community Impact of Landslides'). Landslides are also known as landslips, slumps or slope failure. However in Victoria the agreed terminology is landslide as per the EMMV.

Landslides may result from a failure of the materials which make up the hill slope and are driven by the force of gravity. 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 phenomena described as landslides are not limited to either 'land' or to 'sliding', and usage of the word has implied a much more extensive meaning than its component parts suggest. The rates of movement cover the full range from very rapid to extremely slow. The size, similarly, can vary enormously in North East (Hume) Region. The combination of type of landslide, size and rate of movement can determine the destructive power, and hence potential consequences of the landslide in terms of damage to property, loss of life, economic costs and impact on the environment. Subsidence, as a mechanism, is excluded from consideration, though it may be similar in consequence and appear to be of a similar form.

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 millimetres or centimetres 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 centimetres to many kilometres depending on the volume and type of material, water content and gradient of the slope

Landslides can impact on human development and activity as well as natural areas/features within the North East (Hume) Region. It is the potential impact on human development which becomes of concern to planners, regulators and emergency management authorities. Landslides can be attributed with one of a number of threats in the North East (Hume) Region which must be considered, for example flooding, bushfires, and seismicity.

There is currently minimal available data about the landslide risk in the North East (Hume) Region. It is also acknowledged that the landslide risk is transient for some locations, due to factors such as recent fire in the landscape followed by intense rainfall or flooding, clearing of local plantations resulting in destabilised land, and where there is a history of landslides.

Factors which may influence landslides in the North East (Hume) Region include:

- Where there is a history of landslides.
- Where there is no history of sliding but the topography dictates sliding may occur.
- Landslides are known to occur where significant rainfall occurs following fires in the landscape, including fuel reduction burns.
- When there is no history of landslides but geological and geo-morphological conditions are such that sliding is possible.
- Where there are constructed features which, if they fail, may travel rapidly, including drainage and culverts around roads and bridges.
- Forestry and plantation works/removal and agricultural land clearing which can lead to landslides, causing damage to the environment or infrastructure nearby.
- Extreme localised weather resulting in heavy rainfall.
- Where earthworks and or extrication of sand, soil, gravel etc. has occurred.
- All of the above where there is a community or infrastructure interface, e.g. a plantation next to the Great Alpine Road, fire in a landscape above a rural township etc.

3. Sinkholes

3.1 Definition

A sinkhole is a cavity in the ground, especially in a predominantly 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. Sinkholes can also occur from erosion caused by underground water and sewerage pipes, or the collapse of unknown mines.

Sinkholes in the North East (Hume) Region of Victoria are caused as the result of an underground pipping failure. Limestone is not commonly found in the region, and therefore that type of sinkhole is not identified as a high risk.

Determining response based consequence

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. 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 can 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 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 businesses 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 communities system and network to connect.

In determining response to a landslide event and to establish effective command and control, consideration should be given to the consequence or potential consequence associated with the event. VICSES has determined to apply six (6) scale categories of landslide events.

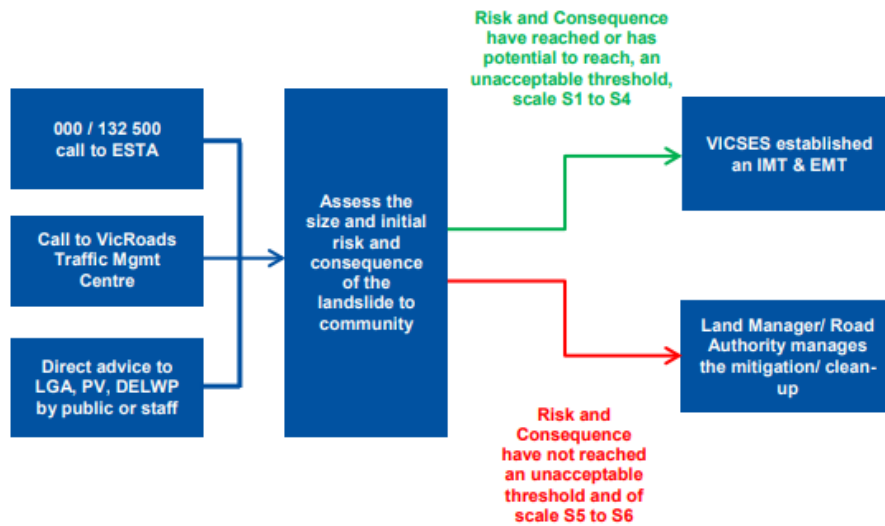
It is important to note that whilst size can assist to categorise the nature of the event, it is just one factor that may impact the overall scale or category and the associated response based on actual or potential community consequences is to be in line with the VICSES Landslide Readiness and Activation Trigger Considerations (Attachment 1).

Six (6) scale categories of landslide events

Category	Readiness and activation Trigger	Relative Size	Volume of Failure (m3)	Typical Dimension (LxWxD) metres	Individual block size	Overall debris scale
S1	RL 5 Extreme	Very Large	>20,000	50 x 100 x 10	Individual block size >1.0m	Approximately the size of the MCG stadium or greater
S2	RL 4 Severe	Large	2,000 to 20,000	25 x 60 x 7	0.5m-1.0m minimum dimension	Approximately the size of a local football oval
S3	RL 3 Very High B	Medium	200 to 2000	10 x 25 x 4	0.2 to 0.5m minimum dimension	Approximately the size of a house
S4	RL 3 Very High A	Small	20 to 200	5 x 10 x 2	0.2m minimum dimension	Approximately the size of a semi-trailer truck

S5	RL 2 High	Very Small	2 to 20	2 x 4 x 1.2	0.1m minimum dimension	Could fit in a small car
S6	RI 1 Low to Moderate	Extremely Small	< 2	1 x 3 x 0.3	n/a	Could fit in a wheelbarrow

Landslide response scale categories flow chart



Agency roles

A landslide event requires a coordinated response from multiple supporting agencies. The roles and responsibilities of all agencies including VICSES are available in Appendix A of the State Landslide Hazard Plan and are summarised in the table below:

VICSES role (control agency)	Responsible agency/owners (support agencies)
Make the scene safe (cordon).	Stabilising the scene: Landholder/road authority.
Support evacuation of people.	Evacuation management: Victoria Police.
Ensuring the right agencies are involved and engaged.	Restoring utilities such as water, gas, electricity and telecoms.
Forming an Incident Management Team (IMT) and Incident Emergency Management Team (IEMT) (impact and consequence).	Traffic management including freight and tourism road authority: LGA/VicRoads and Victoria Police.
Short term traffic management.	Public transport routes: Public Transport Victoria/ Department of Education and Training.
Issuing public information and warnings.	Clean-up/restoration: Landholder/road authority.
	Relief (isolation/accommodation): LGA with support of Department of Health and Human Services (DHHS).
	Relocation (medium-long): DHHS.

Public information and warnings roles and responsibilities




Business as usual: Responsibility for delivery and coordination of public information and warnings during business as usual operations, or when an Incident Control Centre (ICC) has not yet been established remains with the Regional Duty Officer (RDO) and Regional Agency Commander (RAC).




Line of Control: Responsibility for delivery and coordination of public information and warnings when formal Line of Control is active, or an ICC is in place, rests with the Public Information Section of the relevant ICC, with authorisation through the Incident Controller.

Public information and warnings 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 2.6 of the State Landslide Hazard Plan. VICSES will consider issuing an EM-COP community notification based on scale, category and actual or potential community consequences. Further guidance is available in the VICSES Landslide EM-COP Public Publishing Business Rules available in the IMT Toolbox (Public Information) via EM-COP.

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

Message Type	Trigger	Publish	Update	Expiry
Advice 	Generally for S3-S4 events with moderate impacts.	<30 minutes of notification.	Update every 4 – 6 hours if situation changes, otherwise update every 12 – 24 hours.	Unpublished after the conclusion of the threat, but downgrade messaging as required (e.g. issue advice – all clear if appropriate).
Warning 	Generally for S1-S2 events with moderate to major impacts.	<30 minutes of notification.	Update every 4 – 6 if situation changes, otherwise update every 12 – 24 hours.	Unpublished after the conclusion of the threat, but downgrade messaging as required (e.g. issue advice – all clear).
Emergency Warning 	Generally for S1-S2 events with any risk to life and/or major impacts.	<30 minutes of notification.	Update every 2 – 6 hours until threat has concluded.	Unpublished after the conclusion of the threat, but downgrade messaging as required (e.g. issue advice – all clear).

Prepare to Evacuate 	When the evacuation/ planned relocation of persons from dangerous or potentially dangerous areas is required as per Joint Standard Operating Procedure (JSOP) 3.12.	ASAP, no more than 30 minutes from time of request.	Update as required.	Set expiry as per update timeframes. Original message will be unpublished when updated or updated with new template (e.g. when 'evacuate now' issued).
Evacuate Now 	When the Evacuation/ planned relocation of persons from dangerous or potentially dangerous areas is required as per JSOP 3.12.	<30 min of notification.	Update every 2 to 4 hours, or more frequently if required.	Original message will be unpublished when updated or updated with new template (e.g. when 'safe to return' is issued).
Evacuate Now – Update 	Generally for S3-S4 events with moderate impacts.	<30 min of notification.	Update every 12 – 24 hours until a 'safe to return' is issued, or more frequently if required.	Original message will be unpublished when updated or updated with new template (e.g. when 'safe to return' is issued).

4. Regional landslide arrangements

This section of the plan outlines the specific arrangements for managing landslide emergencies in the North East (Hume) Region. Arrangements differ depending on the scale and consequence of the landslide emergency. This section of the plan relates to landslides deemed to be an emergency, which are generally S1 – S4 landslides, as outlined in the State Landslide Hazard Plan.

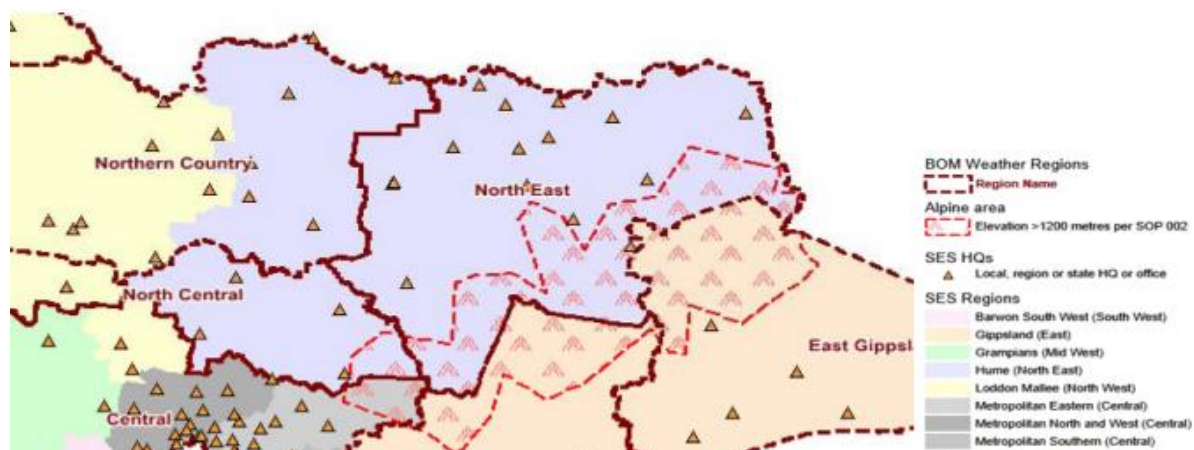
Arrangements for S1 – S3 landslide emergencies

This section describes the arrangements for managing medium, large to very large landslide emergencies, with the following attributes:

Category	Relative Size	Volume of Failure (m ³)	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	Approximately 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	Approximately the size of a local football oval.
S3	Medium	200 to 2000	10 x 25 x 4	0.2 to 0.5m minimum dimension	Approximately the size of a house.

IMT footprints, structures and resourcing

Pre-determined ICCs and Divisional Command Points (DCPs).



ICC Location	Local Government Areas
Benalla ICC, VICSES facility 64 Sydney Road, Benalla. Phone: 03 9256 9650	All LGAs and ARMBs within North East (Hume) Region.
Wangaratta ICC 1 Ely Street, Wangaratta.	Alpine, Indigo and Wangaratta.
Wodonga ICC 55 Moorefield Park Dve Wodonga, VIC 3690	Wodonga, Indigo and Towong.
Shepparton ICC 195-205 Numurkah Road, Shepparton.	Moira, Shepparton, Benalla and Mansfield.
Seymour ICC 36 McIntyre Street, Seymour,	Mitchell, Murrindindi and Strathbogie.

DCP Location	VICSES Units Within Footprint	Local Government Areas
Benalla, VICSES Local Headquarters (LHQ) Phone: 03 9256 7309 Email: 15enalla.dcp@ses.vic.gov.au	Benalla and Mansfield.	Benalla, Mansfield and Mt Buller/ Mt. Stirling ARMB.
Shepparton Search And Rescue (SAR)	Shepparton SAR.	Shepparton.
Tatura LHQ	Tatura, Murchison.	Shepparton.
Yarrowonga LHQ	Yarrowonga, Cobram.	Moira.
Yackandandah LHQ	Yackandandah, Beechworth, Bright, Myrtleford and Tallangatta.	Indigo and Towong.
Wodonga LHQ	Wodonga, Chiltern, Rutherglen, Corryong	Wodonga, Indigo and Towong.

	Tallangatta and Mitta Mitta.	
Euroa LHQ	Euroa, Seymour, Alexandra and Kilmore.	Strathbogie, Murrindindi and Mitchell.
Wangaratta	Wangaratta, Myrtleford and Bright.	Wangaratta and Alpine.
Yea Country Fire Authority (CFA)	Alexandra, Marysville and Kinglake.	Murrindindi.
Numurkah CFA	Numurkah.	Moira.

Response

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, by using the guidelines in the readiness and activation triggers table.

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 Emergency Management Team (EMT).

A base IMT structure would need to be considered, dependant on the location and the risk or potential risk to the community.

Control structures for landslide emergencies are determined according to the Landslide Readiness and Activation Trigger Considerations (Attachment 1).

Inter-agency agreements

All interagency arrangements will be coordinated through an EMT and based on the current risk to the community at the time of the landslide.

Local intelligence sources

Intelligence type and description	Location
VicRoads traffic camera dashboard: Provides live intelligence (video) about impacts to traffic on major arterials/freeways.	EM-COP > Desktop > Information Displays > Traffic Melbourne.
Twitter	EM-COP > Desktop > Sections
Facebook	EM-COP > Desktop > Sections
Web cam	EM-COP > Desktop > Sections
First responders	Phone video and photographs
Webex	Information Technology.

Regional resources

Resource Type	Description	Host Agency / Location
Variable messaging boards.	2 X 4 metre electronic messaging boards often deployed roadside to communicate information on road closures.	VicRoads
Lighting.	Lighting trailers.	VICSES Chiltern, Benalla, Seymour, Marysville, Mansfield, and Tatura Units and Shepparton S&R.

Supporting doctrine

- VICSES – State Landslide Hazard Plan.
- VICSES SOP 72 – Operations Involving Landslides.
- Mount Buller Municipal Emergency Management Plan (MEMP) – Landslide Contingency Plan.
- Mount Hotham Severe Weather Road Protocol 2018.
- Mount Buller Severe Weather Road Protocol 2018.
- Falls Creek Resort Management – Alpine Risk Mitigation Program – Geotechnical 2018.

Arrangements for S4 landslide emergencies

This section describes the arrangements for managing small landslide emergencies, with the following attributes:

Category	Relative Size	Volume of Failure (m3)	Typical Dimension (LxWxD) metres	Individual block size	Overall debris scale
S4	Small	20 to 200	5 x 10 x 2	0.2m minimum dimension.	Approximately the size of a semi-trailer truck.

IMT Footprints, Structures and Resourcing

Pre-determined ICCs and DCPs

ICC Location	Local Government Areas
Benalla ICC, VICSES facility 64 Sydney Road, Benalla Phone: 03 9256 9650	All LGAs and ARMBs within North East (Hume) Region.

DCP Location	VICSES Units Within Footprint	Local Government Areas
Benalla, VICSES LHQ Phone: 03 9256 7309 Email: 18enalla.dcp@ses.vic.gov.au	Benalla and Mansfield.	Benalla, Mansfield and Mt Buller/ Mt. Stirling ARMB.
Shepparton SAR	Shepparton SAR	Shepparton.
Tatura LHQ	Tatura and Murchison	Shepparton.
Yarrawonga LHQ	Yarrawonga and Cobram.	Moira.
Yackandandah LHQ	Yackandandah, Beechworth, Bright, Myrtleford and Tallangatta.	Indigo and Towong.
Wodonga LHQ	Wodonga, Chiltern, Rutherglen, Corryong Tallangatta and Mitta Mitta.	Wodonga, Indigo and Towong.
Euroa LHQ	Euroa, Seymour, Alexandra and Kilmore.	Strathbogie, Murrindindi and Mitchell.
Wangaratta	Wangaratta, Myrtleford and Bright.	Wangaratta and Alpine.
Yea CFA	Alexandra, Marysville and Kinglake.	Murrindindi.
Numurkah CFA	Numurkah.	Moira.

Pre-determined control structures

The IMT structure will be determined by the VICSES North East Duty Officer in consultation with the RAC.

Control structures for landslide emergencies are determined according to the Landslide Readiness and Activation Trigger Considerations (Attachment 1).

Inter-agency agreements

All interagency arrangements will be coordinated through an EMT and based on the current risk to the community at the time of the landslide.

Intelligence Type and Description	Location
VicRoads Traffic Camera Dashboard: Provides live intelligence (video) about impacts to traffic on major arterials/freeways.	EM-COP > Desktop > Information Displays > Traffic Melbourne.
Twitter	EM-COP > Desktop > Sections
Facebook	EM-COP > Desktop > Sections
Web cam	EM-COP > Desktop > Sections
First responders	Phone Video and photographs.
Webex	Information Technology.

Regional Resources

Resource Type	Description	Host Agency / Location
Variable messaging boards.	2 X 4 metre electronic messaging boards often deployed roadside to communicate information on road closures.	VicRoads.
Lighting.	Lighting trailers.	VICSES Chiltern, Benalla, Seymour, Marysville, Mansfield, and Tatura Units and Shepparton S&R.

Supporting doctrine

- VICSES - State Landslide Hazard Plan.
- SOP 72 - Operations Involving Landslides.
- Mount Buller MEMP - Landslide sub plan.
- Mount Hotham Severe Weather Road Protocol 2018.
- Mount Buller Severe Weather Road Protocol 2018.
- Falls Creek Resort Management - Alpine Risk Mitigation Program – Geotechnical 2018.

Glossary

CFA	Country Fire Authority
DCP	Divisional Command Points
DHHS	Department of Health and Human Services
EMMV	Emergency Management Manual Victoria
EMV	Emergency Management Victoria
EMT	Emergency Management Team
ICC	Incident Control Centre
IEMT	Incident Emergency Management Team
IMT	Incident Management Team
JSOP	Joint Standard Operating Procedure
LGA	Local Government Authority
LHQ	Local Headquarters
MEMP	Municipal Emergency Management Plan
RAC	Regional Agency Commander
RC	Regional Controller
RCC	Regional Control Centre
RDO	Regional Duty Officer
SAC	State Agency Commander
SCC	State Control Centre
SDO	State Duty Officer
SERP	State Emergency Response Plan
VICSES	Victoria State Emergency Service

Attachments

Attachment 1 – VICSES 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
Category /Scale	S6	S5	S4	S3	S2	S1
	THUNDERSTORM FORECAST CHART [TFC] issued daily			SEVERE WEATHER INTELLIGENCE BRIEFING [SWIB] issued TUE & FRI		
Landscape Observation	<p>Trees leaning on an angle</p> <p>Hand size rocks falling on road, small cracks in roadways</p> <p>Less than 1m wide sinkhole</p> <p>Sinkhole data is lost in here</p> <p><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></p>		<p>Potential or observed land movement (slump or minor landslide)</p> <p>Head size rocks falling, cracks in roadways that are increasing</p> <p>Sink hole that is over 1m wide but not increasing, small debris flow</p>	<p>Potential or observed land movement that will impact community</p> <p>Isolated or impact to dwellings is this correct wording</p> <p>Rock and/or debris on road closing the road for up to 6 hours, cracks in roadways that require traffic management</p> <p>Sink hole that is over 3m wide and increasing, debris flow in creeks</p>	<p>Potential or observed land movement with direct community impact including people trapped</p> <p>Significant rock and/or debris on road closing the road for greater than 24 hours, road damage that requires road closure</p> <p>Sink hole that is over 7m wide and increasing, multiple debris flows impacting communities</p>	<p>Potential or observed land movement with direct community impact in multiple locations and possible multiple trapped people</p> <p>Rock and/or debris on road closing the road for greater than 72 hours, road damage that requires road rebuilding</p> <p>Sink hole that is consuming infrastructure and increasing, multiple debris flows impacting communities</p>
Approximate Size And/Or	<p>Wheelbarrow < 2 Tonnes</p> <p>1m (L) x 3m (W) x 0.3m (L)</p>	<p>Small Car 2 to 20 Tonnes</p> <p>2m (L) x 4m (W) x 1.2m (L)</p>	<p>Semi-Trailer Truck 20 to 200 Tonnes</p> <p>5m (L) x 10m (W) x 2m (D)</p>	<p>House 200 to 2000 Tonnes</p> <p>10m (L) x 25m (W) x 4m (D)</p>	<p>Country Football Oval 2,000 to 20,000 Tonnes</p> <p>25m (L) x 60m (W) x 7m (D)</p>	<p>Large Stadium (e.g.: MCG) >20,000 tonnes</p> <p>50m (L) x 100m (W) x 10m (D)</p>

<p>Susceptibility with Weather</p> <p>Areas identified as known risks are:</p> <p>Grampians Halls Gap Otway National Park Great Ocean Road Wye River Great Alpine Road Great Alpine National Park Snowy River National Park Dandenong ranges, Frankston</p>	<p>SWW - Heavy Rainfall leading to flash and/or riverine flooding across Districts considered 'Likely'.</p> <p>Significant chance of Thunderstorms and hail likely.</p> <p>Chance of Flash flooding likely. Predicted rainfall over 50mm of rain in an hour.</p> <p>Catchment areas identified saturated with little initial losses.</p>	<p>SWW - Heavy Rainfall leading to flash and/or riverine flooding across Districts considered 'Very Likely'</p> <p>Significant chance of Thunderstorms and hail likely.</p> <p>Chance of Flash flooding likely. Predicted rainfall of up to 80mm of rain in an hour.</p> <p>Catchment areas already identified as saturated with little initial losses.</p> <p>Particular interest should be taken in recent fire damaged areas.</p>	<p>SWW - Heavy Rainfall leading to flash and/or riverine flooding across Districts considered 'Very Likely'</p> <p>Significant chance of Thunderstorms and hail likely.</p> <p>Predicted rainfall of up to 150mm of rain in 6 hours.</p> <p>Catchment areas already identified at capacity, unable to retain further moisture.</p> <p>Particular interest should be taken in recent fire damaged and known mapped landslide risk areas.</p>	<p>SWW - Heavy Rainfall leading to flash and/or riverine flooding across Districts considered 'Very Likely'</p> <p>Potential Dangerous thunderstorm warnings issued. Thunderstorms and hail certain.</p> <p>Predicted rainfall above 200mm of rain in 6 hours.</p> <p>Catchment areas already identified at capacity, unable to retain further moisture.</p> <p>Particular interest should be taken in recent fire damaged and known mapped landslide risk areas.</p>
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VICSES - Business As Usual Operations

Readiness (State)	State Control Centre (SCC) Level White	SCC Level White	SCC Level White/Blue
	State Agency Commander (SAC) and State Duty Officer (SDO) (monitor)	SAC and SDO (monitor)	SAC and SDO (actively monitoring)
Readiness & Activation (Regional)	RDO (monitor)	RAC (monitor)	Regional Command IN PLACE

JSOP 2.03 LINE OF CONTROL

SCC Level BLUE or When ICC activated	SCC Level ORANGE Multiple ICCs activated or multi region	SCC Level RED Multiple ICCs activated or multi region
SDO and SAC In Place	SDO and SAC In Place Consider Day/Night	SDO and SAC In Place Day and Night
Regional Control Centre (RCC) OPEN: with BASE RCT in place	RCC OPEN: RCT in place, some agencies available on immediate recall	RCC OPEN: Full RCT/most Regional Emergency Management Team In Place

	RAC (aware)	RAC (aware)	RAC/RDO attends Regional Office	RC, RAC, RDO at RCC	RC, RAC and RDO In Place at RCC	RCT, RAC and RDO In Place at RCC
Readiness and Activation (Incident)	RDO (monitor)	RDO (monitor)	RDO - RAC IN PLACE Resource Officer (Stby) Management Support (Stby)	BASE IMT (In Place)	CORE IMT (In Place)	FULL IMT (In Place)

Impact	Potential Consequences		
People	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 properties 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.
Remote communities	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 loss of food/ medical supplies potential 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.
Health	Little impact expected some local issues might be encountered but managed locally within own facility Plan	Consideration for review and familiarisation with facility Plan – Victoria Police and DHHS to review Vulnerable persons list, potential to engage community networks to ensure additional vulnerable people support.	Likely vulnerable people impacted require relocation. Communities without utilities for days needing support. Hospitals and nursing homes may require additional management for increased patient care.
Power	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.

Water utilities	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.
Telecommunications	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.
Gas	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 longer-term supply restrictions.
Road Network	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.
Public Transport	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.
Critical infrastructure	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.
Public Infrastructure /Essential Community Infrastructure	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.

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Education	Unlikely impact	Some impact expected traffic management plan for school buses should be considered.	Some school and preschools may be impacted by utilities loss and damage to infrastructure and school bus routes closed for period of time in affected areas.
Public Events	Unlikely to impact	Some public events may need to be cancelled or rescheduled due to safety of patrons either whilst at event or travelling to or from.	Public events likely to be impacted, with cancellation of major events due to damage and risk, and potential direct impact on venue or ability to attend or leave event.
Tourism	Unlikely that event will be impacted but consideration must be given to any event occurring to ensure it is safe to continue.	Potential impact on tourist locations if area not safe to visit or isolated due to road closures 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 in the social and economic environment of communities.
Agriculture/ Animal welfare	No impact likely with landowners managing any localised issues.	Potential impact with losses to live stock, fencing and crops including high intensive farming of produce and tree farms	Substantial impact to crops, including high intensive produce farming (vegetables and fruit) and tree farms with short and long term impacts due to loss of crops. Economic impact to area. Social impact to area.
Environmental	Minimal impact	Stream erosion and loss of vegetation around watercourses potential. 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.
Cultural Heritage	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.
Relief and Recovery	Relief and recovery activity unlikely may be some local issues.	Increased potential for relief and recovery activity but likely to be managed locally by LGA with support of DHHS	Formal arrangements put in place for relief and recovery activity Regional Recovery Commander appointed. Health Commander in place and demands on relief and recovery to be substantial and potentially long term. Requirement for transition to recovery to be implemented.

RAC advises the Regional Controller to vary the actual number, distribution and level of IMT required.

