

South West (Barwon)

Region

Emergency Response Plan



Flood Sub-plan

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

Authorised by the Victoria State Emergency Service (VICSES), 168 Sturt Street, Southbank.

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

Version Control

South West (Barwon) Region
Emergency Response Plan – Flood Sub-plan
Version 1, August 2019

South West (Barwon) Region Emergency Response Plan – Flood Sub-plan Certification

The South West (Barwon) Region Emergency Response Plan – Flood Sub-plan deals with response to flood incidents within the South West (Barwon) area of responsibility.

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Region to effectively and efficiently respond to future emergencies caused by floods and will remain current until rescinded by authority of the Victoria State Emergency Service (VICSES) Chief Officer Operations.



Date: 10 October 2019

Tim Wiebusch
Chief Officer Operations

This plan is produced by VICSES and has been adapted from the SERP – Flood 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 South West (Barwon) Region:

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State Emergency Management Priorities

The State Emergency Management Priorities are:

- Protection and preservation of life is paramount. This includes:
 - Safety of emergency response personnel.
 - 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 floods in the South West (Barwon) Region.

1.2 Objective

The objective of the South West (Barwon) Region Emergency Response Plan – Flood Sub-plan is to outline the regional arrangements for ensuring an integrated and coordinated approach to the management of flood events across South West (Barwon) Region, in order to reduce the impact and consequences of these events on the community, infrastructure and services.

1.3 Scope

This South West (Barwon) Region Emergency Response Plan – Flood Sub-plan includes:

- Description of potential risks and consequences of floods to the social, built, agricultural and natural environments within the South West (Barwon) Region.
- Regional specific emergency management arrangements for the management of floods.
- Links to sources of information where the reader can obtain further detail.

1.4 Authorising environment

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

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

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

The South West (Barwon) Region Emergency Response Plan will detail specific arrangements for the management of emergencies within the South West (Barwon) Region. This plan has been developed as a subordinate plan of the South West (Barwon) Region Emergency Response Plan and the SERP – Flood Sub-plan. This plan has been shared with the Regional Emergency Management Committee for comment and approved by the VICSES Chief Officer Operations.

Other relevant legislation includes:

- *Victoria State Emergency Service Act 2005*
- *Essential Services Act 1958*
- *Planning and Environment Act 1989*
- *Local Government Act 1989*

1.5 Activation of the plan

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

1.6 Audience

The audience for this plan comprises the Victorian Government and agencies within the emergency management sector, including businesses and community groups with a significant role in the management of the emergency.

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

1.7 Linkages

This plan is a sub-plan of the SERP – Flood Sub-plan and the South West (Barwon) Region Emergency Response Plan. It reflects legislation, the arrangements in the SERP, the strategic direction for emergency management in Victoria and the accepted state practice for managing emergencies.

This plan outlines regional response arrangements which impact arrangements detailed in Municipal Flood Emergency Plans (MFEPs) developed at municipal level, and are also subordinate plans to Municipal Emergency Management Plans (MEMPs). It is likely that flood events will occur in conjunction with severe weather.

For arrangements regarding management of severe weather events, refer to the State Storm Sub-plan and South West (Barwon) Region Storm Sub-plan at: www.ses.vic.gov.au.

Arrangements within this plan have not been repeated from the fore mentioned plans, unless necessary to ensure context and readability. All available VICSES plans can be accessed at www.ses.vic.gov.au, and more information on MFEPs can be accessed by respective council websites or as outlined in section 4.5 Municipal Flood Planning.

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

- Health response – State Health Emergency Response Plan (SHERP).
- Rescue – Victorian Urban Search and Rescue Response (USAR) Arrangements.
- Coastal flood response – State Emergency Response Plan – Tsunami Sub-plan.

1.8 Exercising and evaluation

This plan will be exercised within one year from the date of approval and once every three years thereafter as part of a phased cycle. Region Flood Scenarios have been created to support this function available in Attachment 1 – Region Flood Scenarios. The exercise will be evaluated and, where improvements to the emergency management arrangements in this plan are required, the plan will be amended and a revised version issued. Exercises will be conducted in accordance with the State Exercising Framework.

Any operational activity in South West (Barwon) Region requiring the management of a flood event will be regarded as exercising of the plan. The event is to be evaluated and reviewed, as outlined above.

1.9 Review

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

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

2. Flood risk within the South West (Barwon) Region

2.1 Region description

The South West (Barwon) Region of Victoria stretches from Little River, to the tip of the Queenscliff Heads, and to the border of South Australia. The region covers an area of 32,340 square kilometres, including 800km of coastline, making up 40% of Victoria's total coastline. This includes the world famous Great Ocean Road, which attracts thousands of tourists throughout the year.

South West (Barwon) Region has a population of approximately 420,000 people and includes the Local Government Areas (LGAs) of Queenscliffe, Greater Geelong, Surf Coast, Colac Otway, Corangamite, Moyne, Warrnambool, Southern Grampians and Glenelg. It is home to Victoria's largest provincial center Geelong, alongside other regional cities including Aireys Inlet, Anglesea, Apollo Bay, Camperdown, Colac, Hamilton, Lorne, Port Campbell, Port Fairy, Portland, Torquay and Warrnambool.

South West (Barwon) Region is highly regarded as a centre for excellence in education. With government and independent options available at primary and secondary level, the region is home to Technical and Further Education (TAFE) and university institutions including the Royal Melbourne Institute of Technology (RMIT) in Hamilton, and the expanding Deakin University in Geelong and Warrnambool.

The region is also home to a variety of nationally and internationally recognised sporting events, including the Rip Curl Pro World Surfing Titles and the world's largest organised swim, the Lorne Pier to Pub. This accompanies the region's number of impressive sporting complexes, including golf courses, aquatic centres, speedways, and thoroughbred and harness racing tracks.

Beside sporting events, the region also hosts a number of year-round cultural events, including the Greater Geelong food, wine and music festival Toast to the Coast, music festivals Falls Festival and the Port Fairy Folk Festival, the biennial Australian International Airshow at Avalon Airport, and Warrnambool's eight day Fun4Kids Festival.

The region's rich soil provides the basis for thriving horticulture, viticulture, dairy production, timber plantation/harvesting, cattle grazing and wool production. There is continued development of alternative energy sources throughout the region, including gas, wind, geothermal and wave energy power plants.

The region also has access to key transit services including a port at Geelong and deep-water port at Portland, and an established rail network with interstate connections and several commercial airports, with Avalon being the biggest.

Climate change poses significant challenges for the region. Coastal towns, buildings and infrastructure are at risk from higher sea levels, erosion, flooding, and storm surges.

2.2 The flood hazard

Flooding may be defined, as an overflowing or influx of water from its normal confines onto land not usually submerged. Within the South West (Barwon) Region, the following mechanisms may cause flooding:

- **Heavy rainfalls**, which cause runoff to enter watercourses, overtopping the banks of rivers and creeks, overflowing lakes, detention basins and stormwater drains, causing local overland flooding, or resulting in releases or spills from dams. Many factors contribute to the extent and nature of flooding caused by heavy rainfall such as the amount and duration of rainfall, the spatial distribution of rainfall, prior weather conditions and characteristics of a catchment including its size, shape, soil types, vegetation and land use. The characteristics of a river also influence the extent of flooding. These characteristics include the size and nature of the river, the presence of vegetation in and around the river, flood control structures and embankments that may restrict floodwater and downstream river levels¹

¹ Queensland Government (2011) Understanding floods: Questions and Answers. [[Available Online](#)]

- **Storm surges**, which involve the temporary raisings of sea levels above the astronomical tide. These are caused by deep low-pressure systems located off the coast and result in sea water invading low-lying areas along the coast
- **Tsunami**, resulting from undersea earthquakes, landslides, meteorite impacts or volcanic activity. The arrangements for the emergency management of tsunami are contained in the State Tsunami Sub-plan
- **Dam failure**, which involves the failure of a dam structure. There are a number of significant dams throughout Victoria that both store and provide water to communities across the State which have the potential to cause flooding in the event of failure. However, there are dam safety risk management processes in place and the possibility of dam failure is considered low but consequences could be catastrophic in some circumstances
- **Levee failure**, which involves the failure of a levee structure. There are a large number of levees across Victoria, created to redirect flood water to minimise impacts of flooding. Levee failure can result from poorly created and / or maintained levee structures or overtopping of levee structures due to significant water flows exceeding the structures capacity.

Flooding in Victoria is influenced by our variable climate, typified by periods of wet and dry conditions. A major factor in this variability is the El Nino – Southern Oscillation phenomena. La Niña, the positive phase, is associated with colder than average sea surface temperatures in the central and eastern tropical Pacific region. La Niña is normally associated with higher than average winter, spring and early summer rainfall over much of Australia, and this can result in more flooding. Flooding in Victoria can also be influenced by the north/south movement of the strong westerly winds and their associated cold fronts. A shift northwards results in more storms over southern Australia.

Intense heavy rainfall over a short period of time can cause flash flooding to occur within minutes to hours. Flash flooding can be defined as “flooding occurring within about 6 hours of rain, usually the result of intense local rain and characterised by the rapid rises in water levels” (Bureau of Meteorology, 2012)².

Flash flooding typically occurs in small catchments. As there is little warning time, flash flooding is difficult to predict and manage. In larger catchments, floods can occur over several days to weeks, and are easier to forecast and manage.

The South West (Barwon) Region is subject to riverine flooding from several major river systems, as experienced in the 2010, 2011 and 2016 floods. Riverine flooding associated with the Barwon River, Leigh River, Hovells Creek, Russells Creek, Grange Burn, Fitzroy River, Glenelg River, Moyne River, Moorabool River, Merri River, Mount Emu Creek, Deans Creek and Hopkins River has impacted many communities in the South West (Barwon) Region.

There is a high riverine flood risk in the following council areas: Colac Otway Shire, City of Greater Geelong, Surf Coast Shire, Moyne Shire, Warrnambool City, Glenelg Shire and Southern Grampians Shire. Refer to figure 2 below showing the 100 year ARI flood extent for waterways in the South West (Barwon) Region.

A map of areas susceptible to 1% probability of riverine flooding (1% AEP), otherwise known as a 1 in 100 year flood events, is provided in the map of South West (Barwon) Region below. This includes some of the towns that are known to have properties or buildings subject to flooding.

² Bureau of Meteorology (nd) Arrangements for Flood Warning Services in Victoria from the Weather Services Handbook, February 2001, [\[Available Online\]](#)

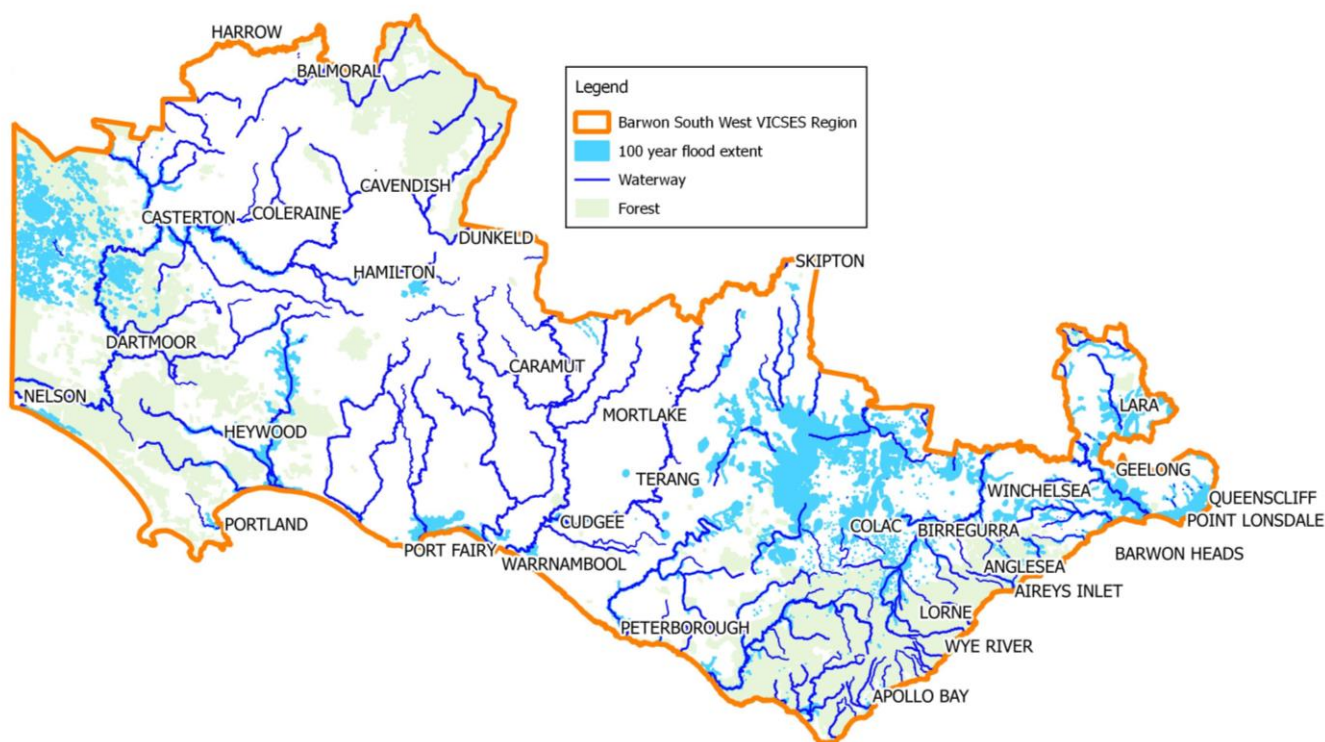


Figure 1: 100 year flood extent for waterways in the Barwon South West Region.

The Community Emergency Resilience Assessment (CERA) Findings Report May 2019 identified the Moyne Shire, Colac Otway Shire, Glenelg Shire, Corangamite Shire and the City of Greater Geelong council areas to have high riverine flood risk, whilst Surf Coast Shire, Southern Grampians Shire and the Warrnambool council areas to have a medium riverine flood risk.

The Moyne Shire, Surf Coast Shire, Colac Otway Shire, Glenelg Shire, City of Greater Geelong and the Southern Grampians Shires were also identified as having a high storm risk rating.

2.3 South West (Barwon) Region Catchments, Schematics and Intelligence Cards

The following major catchments are contained within the South West (Barwon) Region:

- Moorabool River (Hovells Creek) Catchment
- Barwon and Leigh River Catchment
- Corangamite Catchment
- Otway Coast Catchment
- Hopkins River Catchment
- Portland Coast Catchment
- Glenelg River Catchment

A map of major catchments in the South West (Barwon) Region is available in Attachment 2 – South West (Barwon) Region Catchment Map.

Catchment schematics for each of the South West (Barwon) Region catchments are also included in Attachment 3 – Catchment Schematics.

Flood intelligence cards for each of the South West (Barwon) Region catchments can be accessed via the MFEPs which are listed in Attachment 4 – MFEP List.

2.4 Regional flood risks

Region flood risks including urban, rural and communities at risk of experiencing isolation in South West (Barwon) Region are outlined in the respective MFEPs. Please refer to Attachment 4 for a full list of plans. The tables below provide a brief summary of key urban, rural and communities at risk of flooding in the South West (Barwon) Region.

Urban flood risks:

City / town	Population affected	Properties affected in 5% AEP event	Properties affected in 2% AEP event	Properties affected in 1% AEP event	Warning time (hrs)
Glenelg Hopkins Catchment					
Warrnambool Russells Creek	33,655	3,655	4,864	6,005	1 - 6 hours
Warrnambool Dennington	33,655	93	112	138	4-9 hours
Portland	10,754	56	88	98	6-12 hours
Hamilton	9,974	168	188	209	3-6 hours
Heywood	1,287	6	21	63	3.5 – 6 hours
Skipton	927	58	61	65	4-6 hours
Narrawong	176	-	-	26	12-24 hours
Port Fairy	3,340	200	261	343	12-24 hours
Harrow	315	1	5	5	20 – 36 hours
Casterton	1,665	156	162	166	24 – 36 hours
Corangamite Catchment					
Lara	16,355	-	-	-	1-6 hours
Colac	12,411	-	-	-	3-4 hours
Wye River	80	-	-	-	3-4 hours *
Apollo Bay	1,598	-	-	-	3-4 hours *
Aireys Inlet	802	-	-	-	3-4 hours *
Peterborough	178	-	-	-	4-6 hours *
Anglesea	2,545	-	-	-	6 – 8 hours *
Batesford	952	-	-	-	18 – 24 hours *
Winchelsea	1,954	-	-	-	20 – 21 hours *
Geelong CBD	190,000	-	-	-	33 – 42 hours *
Barwon Heads	3,875	-	-	-	57 – 78 hours *
Point Lonsdale	2,684	-	-	-	57 – 78 hours *

Note: * May need to confirm at the time of flood response

Rural flood risks:

Area	Description of flood risk
Barwon River Catchment	A number of rural properties are subject to flooding and may become isolated as a result of flooding. When flood studies are being undertaken to identify properties at risk, this flood mapping will be made available in FloodZoom.
Leigh River Catchment	
Moorabool River Catchment	
Mount Emu Creek Catchment	
Glenelg River Catchment	
Hopkins River Catchment	

Communities at-risk of experiencing isolation:

Corangamite Catchment	Population impacted	Primary access routes
Apollo Bay: Access via Great Ocean Road from Lorne cut off by flooding and landslides, as a result of heavy rainfall in January 2011 and again in September 2016.	1598	Great Ocean Road
Wye River / Separation Creek: Cut off by flooding and landslides as a result of heavy rainfall in January 2011 and again in September 2016.	80	Great Ocean Road

2.5 Major dams

VICSES, while not responsible for dam management, is responsible for the response to flooding caused by dam failure. This occurs when water overflows dam walls. More information regarding dams in the South West (Barwon) Region may be accessed within respective MFEPs that are listed in Attachment 4.

A list and description of major dams located within the region is provided in table below:

Dam name	Location	Capacity (megalitres)
West Barwon Reservoir	Forrest	21504
Wurdee Boluc Reservoir	Winchelsea South	38056
Bostock Reservoir (Grampians)	Ballan	7455
Allen Reservoir	Lorne	196
Lal Lal Reservoir (Grampians)	Lal Lal	59056
Stony Creek Reservoirs	Anakie	9494
West Gellibrand Dam	Beech Forrest	1856
Painkalac Reservoir	Aireys Inlet	532
Olangolah Reservoir	Barramunga	152

Marengo Basin	Apollo Bay	125
Apollo Bay Basin	Apollo Bay	250
Rocklands Reservoir	Balmoral	296000
Hayes Reservoir	Hensley Park	1200
Cruckoor Reservoir	Hamilton	990
Hartwicks Reservoir	Hamilton	380
Donald's Hill Reservoir	Camperdown	207
Jubilee Lake	Skipton	16

2.6 Levee management

Significant levee systems that exist within the South West (Barwon) Region are summarised in table below:

Levee name	Area protected	Design height (AEP%)	Additional information
Hamilton Apex Drive Levee.	Houses west of the levee.	5%	Not well maintained. Needs to be reinforced with sandbags.
Hovells Creek, Levee 1, Lara.	Eastern side of Hovells Creek, downstream of Station Lake Road.	Unknown	Inspections undertaken by LGA twice a year.
Hovells Creek, Levee 2, Lara.	Eastern side of Hovells Creek, extending from Flinders avenue to Station Lake Road.	Unknown	Inspections undertaken by LGA twice a year.
Hovells Creek, Levee 3, Lara.	Western side of Hovells Creek, extending from Forest Road (across Flinders avenue) to Station Lake Road.	Unknown	Inspections undertaken by LGA twice a year.
Sparrowvale.	Western side of Barwon River, extending from Brearleys Lane to Lake Connewarre, Charlemont.	Unknown	Inspections undertaken by LGA twice a year.
Barwon Heads Levee (Plummer Bank), River Parade Levee, and Barwon Heads Natural Ridgeline.	Western side of the Barwon Heads township.	0.1%	Crest of Levee is 4.25m AHD. At the eastern end of the levee is a low point that requires monitoring during flood events.
Lake Modewarre.	Farmland south west of Lake Modewarre near Batsons Road.	Unknown	Unknown
Darlot Creek Levee Banks, Tyrendarra.	Swamp land/farm land west of Darlot Creek.	Unknown	Unknown
Lake Colac Levee System, Balintore.	Farmland on north west edge of Lake Colac.	Unknown	Unknown

For further information about local levees refer to MFEPs that are listed in Attachment 4.

2.7 Regional resources

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

Regional resources remain under the command of the Regional Agency Commander (RAC) until they arrive at the incident.

Key regional resources that are used for storm response include:

- Attachment 4 – MFEP List
- Attachment 5 – VICSES Regional Resource List
- Attachment 6 – Regional Control Centre Footprint and VICSES Unit Map
- Attachment 9 – VICSES General Response Boundaries Map
- Attachment 10 – Divisional Command Location Map

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

A map of VICSES unit boundaries and general response boundaries are provided in Attachment 6 – Regional Control Centre Footprint and VICSES Unit Map and Attachment 9 – VICSES General Response Boundaries Map, and accessible via EM-COP for registered users.

3. Consequences

3.1 Possible flood consequences The South West (Barwon) Region has many flood prone communities. The effects of flooding on the community can include:

- Inundation of properties.
- Damage to essential infrastructure, public and private assets and property.
- Inundation of farmland, damage to crops and loss of livestock and fodder.
- Short or long term displacement of people.
- Isolation of properties or communities.
- Disruption to essential services.
- Death and injuries.

Significant community disruption can occur as a result of damage to essential infrastructure, which may lead to cascading secondary consequences. For example, a loss of power may result in a loss of telecommunications, traffic signals, and disruption to supply chains, among other impacts. Damage and flooding of road infrastructure may result in isolation of properties and/or communities.

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

3.2 Flood history

The table below provides information about historical floods within the South West (Barwon) Region when one or more of the consequences listed above occurred.

Date	Catchments impacted	Description
August -September 2017	Glenelg River Catchment Barwon River Catchment	Minor flood warnings issued for both the Glenelg River and the Barwon River Catchments.
September 2016	Merri River Catchment Mount Emu Creek Catchment	A number of houses flooded in Dennington and Warrnambool, measuring between a 10 and 20-year flood event. More than 4 buildings flooded above floor in Skipton, measuring a 5-year flood event.
August 2013	Surry River Catchment	More than 23 properties impacted by flooding in Narrawong.
January 2011	Mount Emu Creek Catchment Barham River Catchment	A number of houses flooded in Skipton, measuring over a 66-year flood event. Shops in the lower end of Montgomery Street, including the supermarket, chemist, hotel, garage, art gallery and pottery were flooded along with 30 properties. The Glenelg Highway Bridge was closed for two days. Largest flood on record. Flooding caused landslides, causing part of the Great Ocean Road to be closed between Lorne and Skenes Creek.
August 2010	Merri River Catchment Mount Emu Creek Catchment Glenelg River Catchment	A number of houses flooded in Dennington and Warrnambool, measuring between a 20 and 50-year flood event. In Skipton more than four buildings flooded above floor measuring a 14-year flood event. Significant inundation was observed in the township of Harrow, with several buildings flooded below floor. An RSL Hall in Blair Street was also subject to flooding and was sandbagged, measuring between a 100 and 200-year flood event.
November 2007	Painkalac Creek Catchment	In Aireys Inlets a large number of buildings were impacted by flooding

		on River Reserve Road, measuring . a 23 year flood event.
November 1995	Moorabool River Catchment Barwon River Catchment	Close to a 100 year flood event in Batesford with significant flood impacts. Significant flooding in Winchelsea, measuring between a 50 year and 100-year flood event. Significant flooding in Geelong, measuring between a 50 year and 100-year flood event.
December 1988	Hovells Creek Catchment	Significant inundation of flooding was observed in Lara, with 28 buildings flooded above floor.
September 1983	Grange Burn Catchment	More than 122 properties impacted by flooding in Hamilton, with more than six properties impacted by above floor flooding.
November 1978	Moyne River Catchment Barwon River Catchment	More than three buildings flooded above floor in Port Fairy, measuring a 15 year flood event. Significant flooding in Winchelsea, measuring a 40-year flood event. Significant flooding in Geelong, measuring between a 10 and 20 year flood event.
October 1976	Anglesea River Catchment Barwon River Catchment	Significant flooding in Anglesea. Significant flooding in Winchelsea, measuring close to a 100 year flood event.
October 1975	Glenelg River Catchment	Caused above floor flooding to more than 12 buildings, measuring a 10-year flood event.
June 1952	Barwon River Catchment	Largest flood on record for Geelong, measuring greater than a 100-year flood. Significant flooding in Barwon Heads, measuring between a 20 and 50 year flood event. Largest flood on record for Point Lonsdale, measuring close to a 100-year flood.
March 1946	Merri River Catchment Wattle Hill Creek Catchment Grange Burn Catchment Moyne River Catchment Glenelg River Catchment	Significant number of houses flooded in Dennington and Warrnambool, measuring over a 200-year flood event. Significant number of houses flooded in Hamilton and Portland,

		<p>measuring a 500 year flood event.</p> <p>More than 72 buildings flooded above floor in Port Fairy, measuring a 1,000-year flood event. Caused significant flooding, with over 200 people evacuated from 70 flooded houses. All bridges were washed away, causing the town to become isolated. This event measured between a 20 and 50 year flood event.</p>
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4. Community Resilience

4.1 Shared and individual responsibility for action

The National Strategy for Disaster Resilience, developed by the Council of Australian Governments, provides high-level guidance on disaster management to agencies with a role in emergency management.

Foremost in the Strategy is the principle of all of society taking responsibility for preparing for disasters. Examples in the context of flooding include:

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

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

4.2 Flood warning services

Flood warnings and notifications are provided by the Bureau of Meteorology (BOM) and VICSES to the Victorian community. The flood warning services provided by BOM is dependent on local infrastructure, including flood gauges. The service is documented in the Service Level Specification for Flood Forecasting and Warning Services for Victoria, which can be accessed at www.bom.gov.au/vic/flood/. A map of flood gauges for the South West (Barwon) Region can be seen at Attachment 7– Map Region Flood Gauges.

VICSES provides warnings and emergency information to the community by publishing Flood Community Notifications using EM-COP Public Publisher on the VicEmergency website at www.emergency.vic.gov.au/respond/.

Flood Community Notifications are informed by BOM, Catchment Management Authorities (CMAs) and local information and intelligence.

4.3 Corangamite CMA Regional Catchment Strategy

The CMA Regional Catchment Strategy outlines how flood management agencies will work together to manage flood risks and increase community preparedness. It is aligned with the Victorian Floodplain Management Strategy, emergency management arrangements and planning policy. The strategy is available at <http://www.ccma.vic.gov.au/What-we-do/Water/Floodplain-Management.aspx>.

4.4 Glenelg Hopkins CMA Regional Catchment Strategy

Glenelg Hopkins CMA Regional Catchment Strategy outlines how flood management agencies will work together to manage flood risks and increase community preparedness. It is aligned with the Victorian Floodplain Management Strategy, emergency management arrangements and planning policy. The strategy is available at <http://www.ghcma.vic.gov.au/about-us/strategies-plans-and-reports/>.

4.5 Flood intelligence

Flood intelligence supports decision making and planning for flooding by providing reliable and accurate information relating to:

- The level, depth and velocity of floodwater and its consequences.
- Determination of actions to be undertaken in response to the identified consequences.

VICSES works closely with CMAs, DELWP, other agencies and trusted local sources to ensure available resources and platforms containing flood information and intelligence are utilised.

DELWP maintains FloodZoom, which is the Victorian flood intelligence platform. FloodZoom is a web-based platform which assists VICSES and other emergency services agencies in identifying the possible local consequences of flooding, and supports CMA's in land use planning and flood risk assessments.

EMV maintains the online multi-agency operational platform, EM-COP, used for sharing flood intelligence with the sector, before, during and after flood emergencies.

4.6 Municipal flood planning

Municipal flood emergency planning is managed by municipal emergency management planning committees. MFEPs are created by municipalities that are considered to have a high susceptibility to flooding. These plans can be found online at respective council websites, FloodZoom for registered users, and on the VICSES website at www.ses.vic.gov.au.

A list of completed municipal flood emergency Pplans finalised within the South West (Barwon) Region is available as Attachment 4 – MFEP List.

4.7 Community engagement

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

Programs include local engagement initiatives such as the development of a series of local flood guides that provide information of local flood risks to specific communities. These guides can be found at www.ses.vic.gov.au/get-ready.

4.8 Household and business Plans

The Emergency Management Commissioner encourages every household and business to have a written emergency plan in place. Information on the development of household and business plans can be found at www.ses.vic.gov.au.

VICSES also supports local caravan owners to prepare for emergencies through the use of the online caravan park planning tool, which can be found at www.ses.vic.gov.au/get-ready/caravan-park-information.

4.9 Community safety advice

VICSES provides advice to the community in the form of key safety messages for minor, moderate and major flooding, including advice for safe evacuation. A full list of community safety advice messages can be viewed online via EM-COP, located in the IMT Toolbox.

5. Managing a flood event

5.1 Roles and responsibilities

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

5.2 Concept of operations

The concept of operations for responding to floods are detailed in the SERP – Flood Sub-plan.

5.3 Escalation and notification

BOM publishes flood watches and warnings, as detailed in section 4.2 Flood Warning Service, on their public website www.bom.gov.au, and provides them to pre-identified agencies, organisations and media outlets, including pager and email warning messages to VICSES at a state and regional level.

Upon the receipt of a warning, the RDO will notify the potentially affected and/or affected communities by issuing flood community notifications, and the RAC will notify the Regional Controller (RC) and/or Regional Emergency Management Team (REMT) members for flood response.

The escalation and notification process for flood response is operationalised within the VICSES Standard Operating Procedure (SOP) 009 – Flood Notification and Activation Process.

5.4 Strategic response planning

The actions listed below are the responsibility of VICSES at regional and state tiers. Responsibility for these actions may transition to the Regional Controller to support multi-agency response when significant impacts caused by a flood event occur.

Associated flood readiness levels and Incident Control Centre (ICC) footprints can be accessed within JSOP 2.03 Incident Management Team (IMT) Readiness Arrangements, the VICSES Flood Readiness and Activation Trigger Considerations (v3.0), or via Attachment 8 – IMT Readiness Levels – Flood (JSOP 2.03).

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

- Establishing the control structure for managing the event.
- Supporting consistent emergency warnings and provision of information to the community.
- Preparations for possible evacuations including implementation of evacuation and emergency relief plans and identification of evacuation points.

- Confirming agencies at all tiers are activated and appropriate response arrangements are in place.
- Identifying the likely consequences of the flood event and any interdependencies that may affect planning.
- Confirming agencies have adequate resources in place to fulfil their responsibilities and are planning for sustainment and surge capacity, including identification of need for inter-state assistance.
- Ensuring that flood mitigation structures have been checked and any issues identified.
- Identifying mass gatherings and large public events that maybe at risk, and arrangements to ensure the safety of individuals attending.
- Confirming agencies with call taking responsibilities have resources in place and back up arrangements to cope with the expected call load.
- Positioning of Emergency Management Liaison Officers (EMLOs) from key support agencies to Regional Control Centres (RCCs) where appropriate.
- Arranging for regular meetings of the REMTs and Incident Emergency Management Teams (IEMTs).
- Providing situation reports to the State Control Team (SCT).

5.5 Cross Border Arrangements

Part 8 of the EMMV explains the procedure for requesting emergency support from other states.

During significant flooding events, it is common for additional units to be deployed to Mid-West (Grampians) Region, with reciprocal arrangements for units deployed to support South West (Barwon) Region:

Bannockburn Unit is located in Mid-West (Grampians) Region, but is managed by the South West (Barwon) Region due to its proximity to Geelong and part of the Golden Plains Shire being located in the Geelong ICC footprint.

5.6 Regional Control Centre

The following pre-determined facilitates are suitable for the establishment of a RCC for the management of flood events.

- Barwon South West Regional Control Centre
CFA Regional Office
61-63 Separation Street
North Geelong 3215

A map of the RCC footprint can be viewed at Attachment 6 –Regional Control Centre Footprint and VICSES Unit Map.

5.7 Incident Control Centres

VICSES has two ICC locations that have been pre-determined for flood readiness (see table below). The requirement to establish and level of resourcing for ICCs is outlined in JSOP 2.03 Incident Management Team Readiness Arrangements. A map of ICC footprints can be viewed at Attachment 9.

Location	Catchments within footprint	Local Government Areas within footprint
District 5 CFA Service Centre	Corangamite Catchment (Part)	Corangamite
Cnr Walsh Road & Princes Highway	Hopkins River Catchment	Glenelg

Warrnambool 3280	Portland Coast Catchment Glenelg River Catchment	Moyne\ Southern Grampians Shire Warrnambool City Council
Geelong Incident Control Centre 90 Furner Avenue Bell Park 3215	Moorabool River (Hovells Creek) Catchment Barwon and Leigh River Catchment Corangamite Catchment (Part) Otway Coast Catchment	City of Greater Geelong Borough of Queenscliff Colac Otway, Surf Coast Part of the Golden Plains Shires

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

Additional ICCs, capable of running Level 3 Incidents, are located within the South West (Barwon) Region that may be used by VICSES personnel in the event of localised incidents (see table below). These ICCs may act as redundancies, should the Warrnambool or Geelong ICCs become non-functional (i.e. if affected by the incident).

Location	Catchments within footprint	Local Government Areas within footprint
Heywood - DELWP Office 12 Murray Street Heywood 3304	Corangamite Catchment (Part) Hopkins River Catchment Portland Coast Catchment Glenelg River Catchment	Within Warrnambool ICC footprint
DELWP Office 83 – 85 Gellibrand Street Colac 3250	Moorabool River (Hovells Creek) Catchment Barwon and Leigh River Catchment Corangamite Catchment (Part) Otway Coast Catchment	Within Geelong ICC footprint

5.8 Divisional Command Points

Facilities suitable for use as Divisional Command Points (DCPs) are listed in table below.

Location	VICSES Units within footprint	Local Government Areas within footprint
Hamilton Regional Office	Dartmoor Heywood Portland	Glenelg
	Balmoral Dunkeld Hamilton	Southern Grampians
Warrnambool – SES Unit LHQ	Mortlake Port Fairy Warrnambool	Moyne Shire Warrnambool City Council
	Camperdown Cobden Lismore Port Campbell Terang	Corangamite Shire
South Barwon – SES Unit LHQ	Colac Otway	Colac Otway Shire

	Lorne Torquay Winchelsea	Surf Coast Shire
	South Barwon	City of Greater Geelong
Geelong – SES Unit LHQ	Bellarine Corio Geelong	City Greater of Geelong
	Bannockburn	Golden Plains Shire (Mid-West Region)

A map of DCPs can be viewed at Attachment 10 – Division Command Location Map.

5.9 Regional Resource Requirements

Likely resource requirements for significant (major) flood events within each ICC footprint are detailed in

- Attachment 5 – VICSES Regional Resource List.
- Attachment 11 – Agency Contact Details

Glossary

AEP	Annual Exceedance Probability
AIIMS	Australasian Inter-Service Incident Management System
ARI	Average Recurrence Interval
BOM	Bureau of Meteorology
CFA	Country Fire Authority
DCP	Divisional Command Point
DELWP	Department of Environment, Land, Water and Planning
EM-COP	Emergency Management – Common Operating Picture
EMLO	Emergency Management Liaison Officer
EMMV	Emergency Management Manual Victoria
EMV	Emergency Management Victoria
ICC	Incident Control Centre
IEMT	Incident Emergency Management Team
IMT	Incident Management Team
JSOP	Joint Standard Operating Procedure
MEMP	Municipal Emergency Management Plan
MFEP	Municipal Flood Emergency Plan
RAC	Regional Agency Commander
RC	Regional Controller
RCC	Regional Control Centre
RDO	Regional Duty Officer
REMT	Regional Emergency Management Team
SCC	State Control Centre
SCT	State Control Team
SERP	State Emergency Response Plan
SOP	Standard Operating Procedure
USAR	Urban Search and Rescue
VICSES	Victoria State Emergency Service

Attachments

Attachment 1 – Region flood scenarios

Region flood scenarios have been developed to support periodic training requirements, as outlined in section 1.8. These scenarios provide an opportunity to document anecdotal and/or known flood impacts based on historic events, and provide an indication of the resource requirements and associated gaps for operational response.

The following scenarios are based on likely flood scenarios of varying intensity.

Scenario 1 – September 2010

A major rainfall event impacts parts of the South West (Barwon) Region as a low-pressure system over South Australia deepens and moves over the Bass Strait, with an associated trough extending north into New South Wales. Merri River, Mount Emu Creek and the Glenelg River catchments experience significant flooding. Widespread agriculture impacts also occur, with extensive damage to buildings in Skipton and Dennington.

Scenario 2 – January 2011

Significant widespread rainfall during the wettest January on record affects all of South West (Barwon) Region. The region receives almost three times its usual rainfall on an already wet catchment. The extreme rainfall is generated by the passing of complex and persistent low-pressure systems. A broad slow-moving trough centred over south western Victoria and a ridge of high pressure to the south of Tasmania. The two systems created exceptionally humid conditions and unstable easterly flow across Victoria. Significant flooding was experienced across the South West (Barwon) Region, with flooding causing significant damages in Skipton.

Typically such events are forecast in advance and JSOP 2.03 is applied (readiness arrangements).

Note: The structures and resources set out for managing this event highlight the key personnel and equipment that should be considered and are a guide only. The actual structure and resources used will depend on the State and Regional Controllers priorities, e.g. such events may be accompanied by extreme fire danger risk in south west Victoria.

RCC structure

The Geelong RCC will be operational in this instance. Staffing as per rostered arrangements. Full REMT should be notified with key agencies in place at the RCC by request of the Region Controller.

IMT structure

As per JSOP 2.03, the IMT should include representatives from municipalities (or a single representative from a municipality with connections to other municipalities in the ICC footprint), Vic Roads, Victoria Police (Traffic Manager and EMLO) and Ambulance Victoria. EMLOs from other emergency services should also be included, in particular DELWP and CFA.

Division command structure

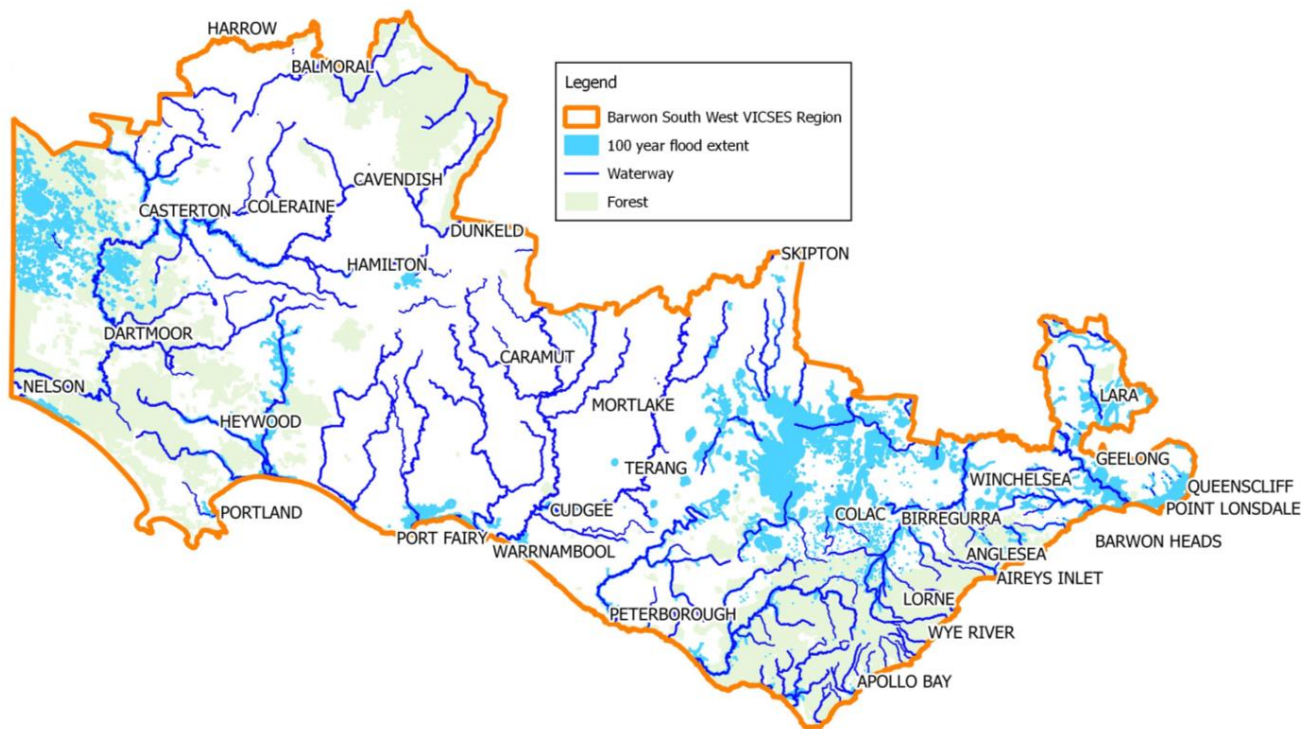
Division command points (set out in attachment 10) should operate as ICPs in the first instance, with transition to Division Command points when the emergency activity within the division exceeds the capacity of the ICPs management structure, or at the direction of the Regional or Incident Controller (at the nominated readiness ICCs). ICPs should include an Incident Controller and cover the Operations Planning (including OIMS operators) and Logistics functions. Representatives from Shires and the CFA/DELWP may assist with ensuring appropriate resource use at the Division level).

Resource Requirements

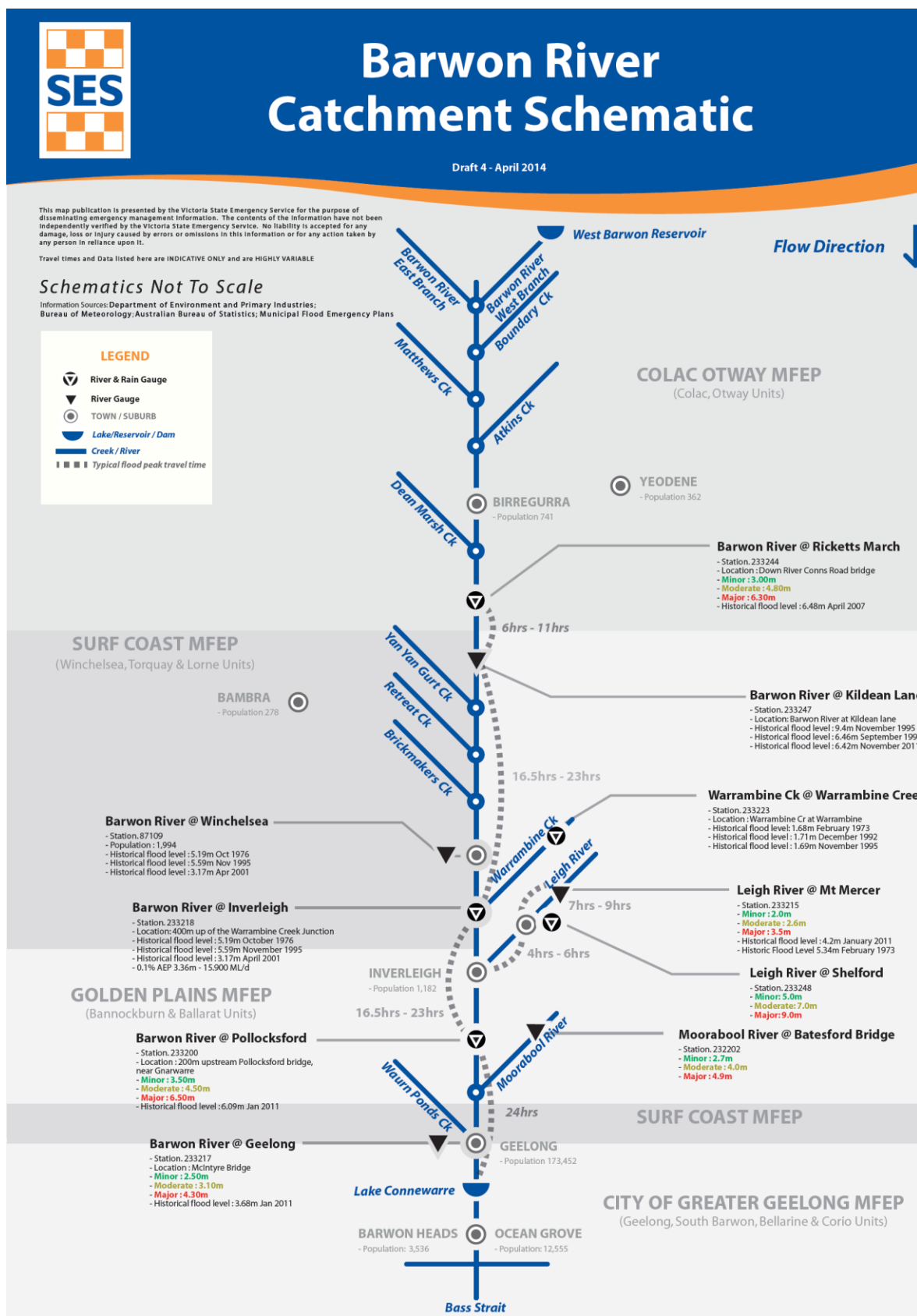
Resources listed are those that would be required at the peak of an event and would represent the resources of all agencies with responsibilities under the SERP – Flood Sub-plan. VICSES Resources required are listed in Attachment 5.

External Agency	Resources
CFA	Chainsaw operators – trim and cross cut
	Sand bag crews
	Ground observers – initial impact assessment
	IMT roles
	Ladder platform – specialist access
DELWP (see South West (Barwon) Region Readiness and Response Plan – DELWP)	Chainsaw Operators/tree fallers
	Sand bag crews
	IMT roles
DHHS	Recovery
Local government	Chainsaw Operators/arborists
	Plant
	Relief and recovery
	Traffic management
Victoria Police	Traffic management
	Evacuation management
VicRoads /Regional Roads Victoria	Chainsaw operators/arborists
	Traffic management

Attachment 2 – South West (Barwon) Region catchment map



Attachment 3 – Catchment schematics

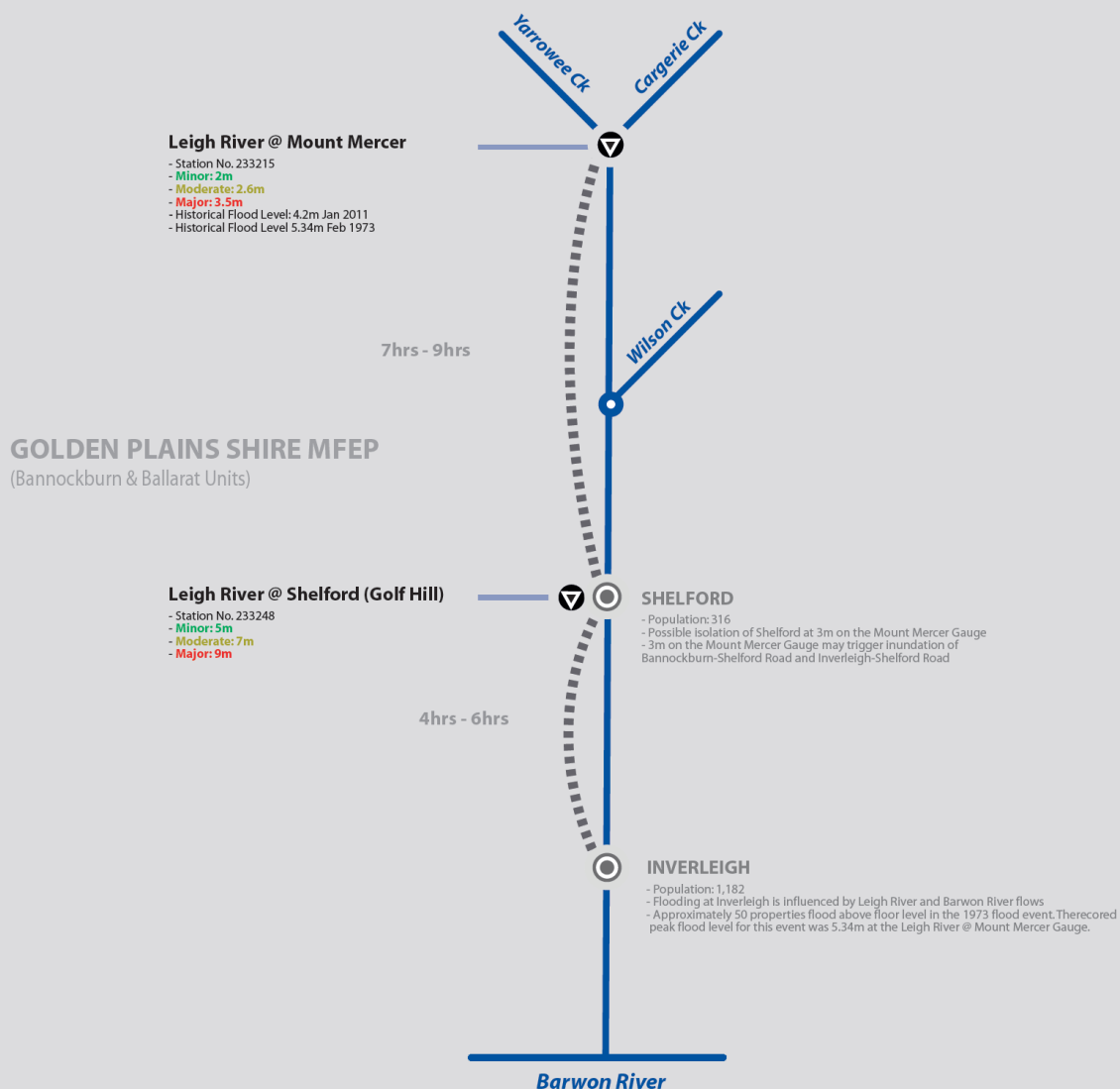




Leigh River Catchment Schematic

Draft 1- May 2014

Flow Direction



This map publication is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victoria State Emergency Service. No liability is accepted for any damage, loss or injury caused by errors or omissions in this information or for any action taken by any person in reliance upon it.

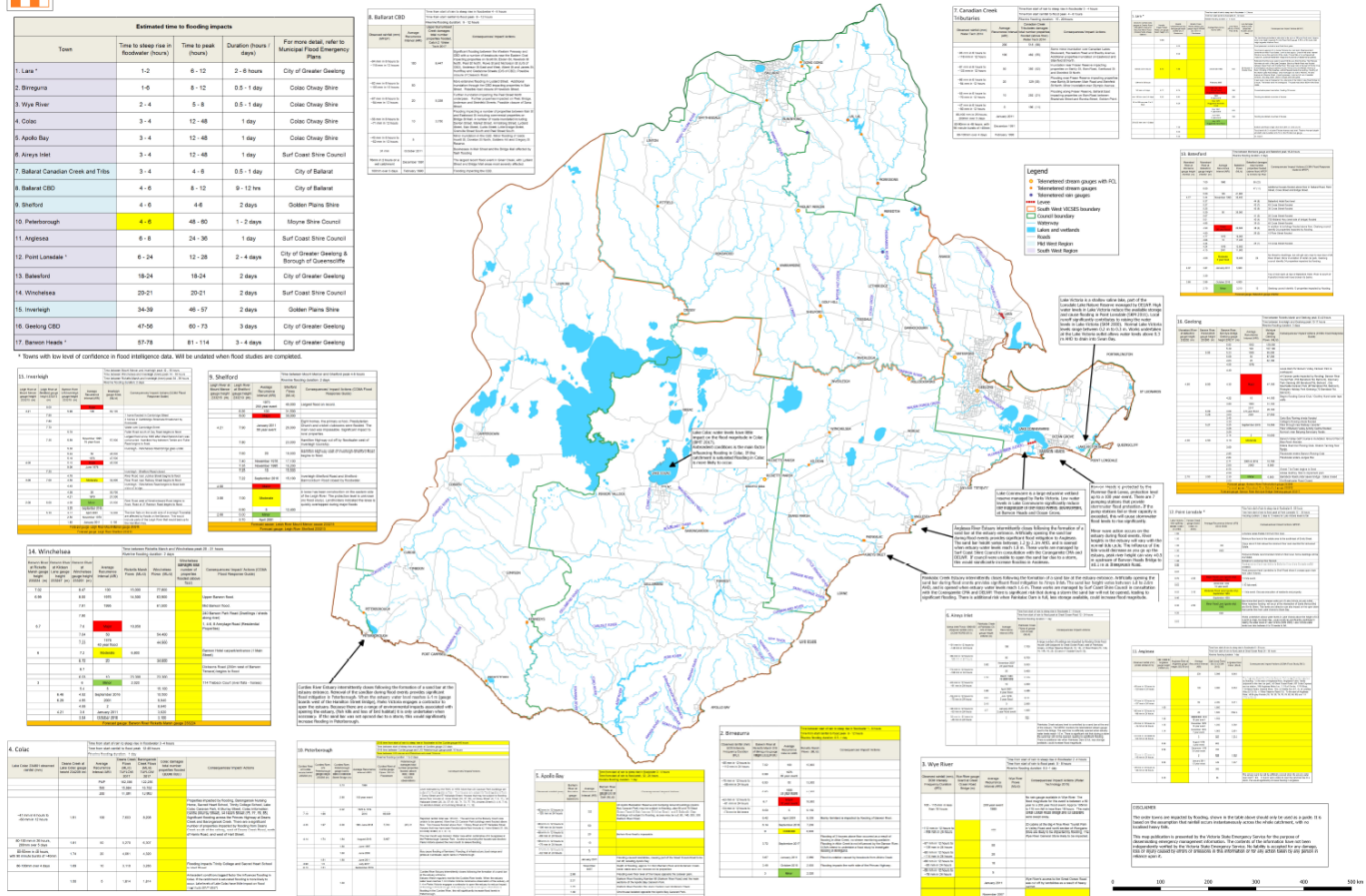
Information sources from Department of Environment and Primary Industries, Bureau of Meteorology, Australian Bureau of Statistics, Municipal Flood Emergency Plans

Travel times and Data listed here are INDICATIVE ONLY and are HIGHLY VARIABLE

Schematics Not To Scale

LEGEND

- River & Rain Gauge
- Rain Gauge
- River Gauge
- TOWN / SUBURB
- Reservoir / Dam
- URBAN AREA
- Creek / River
- Stormwater Drain
- 20km Distance between Gauges or to River / Creek End
- Typical flood peak travel time



A0 size Catchment Flood Intelligence Summary maps are available on FloodZoom. For the latest version of each map, please check FloodZoom.



Attachment 4 – MFEP List

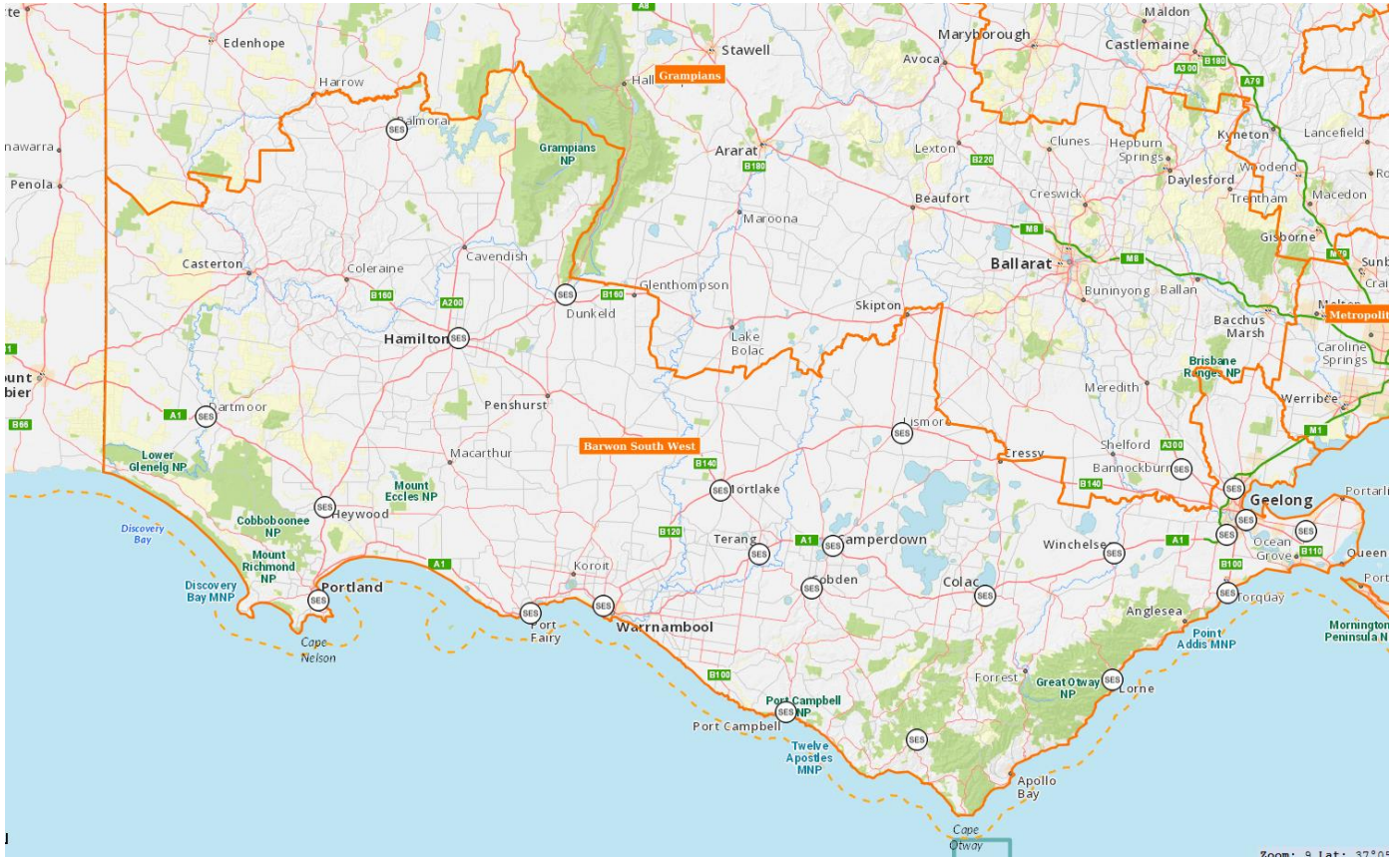
All local flood guides are published at: www.ses.vic.gov.au/get-ready/your-local-flood-information.

Municipal Flood Emergency Plans	Local Flood Guides
Corangamite Shire Council	Skipton
Glenelg Shire Council	Portland (Draft)
	Casterton
Southern Grampians Shire Council	Hamilton
Moyne Shire Council (MFEP not completed)	Port Fairy
Warrnambool City Council	Warrnambool
Colac Otway Shire	Apollo Bay
	Wye River (Draft)
Surf Coast Shire Council	Aireys Inlet
City of Greater Geelong	Geelong
	Ocean Grove Barwon Heads
	Lara
Borough of Queenscliff (MFEP not required)	

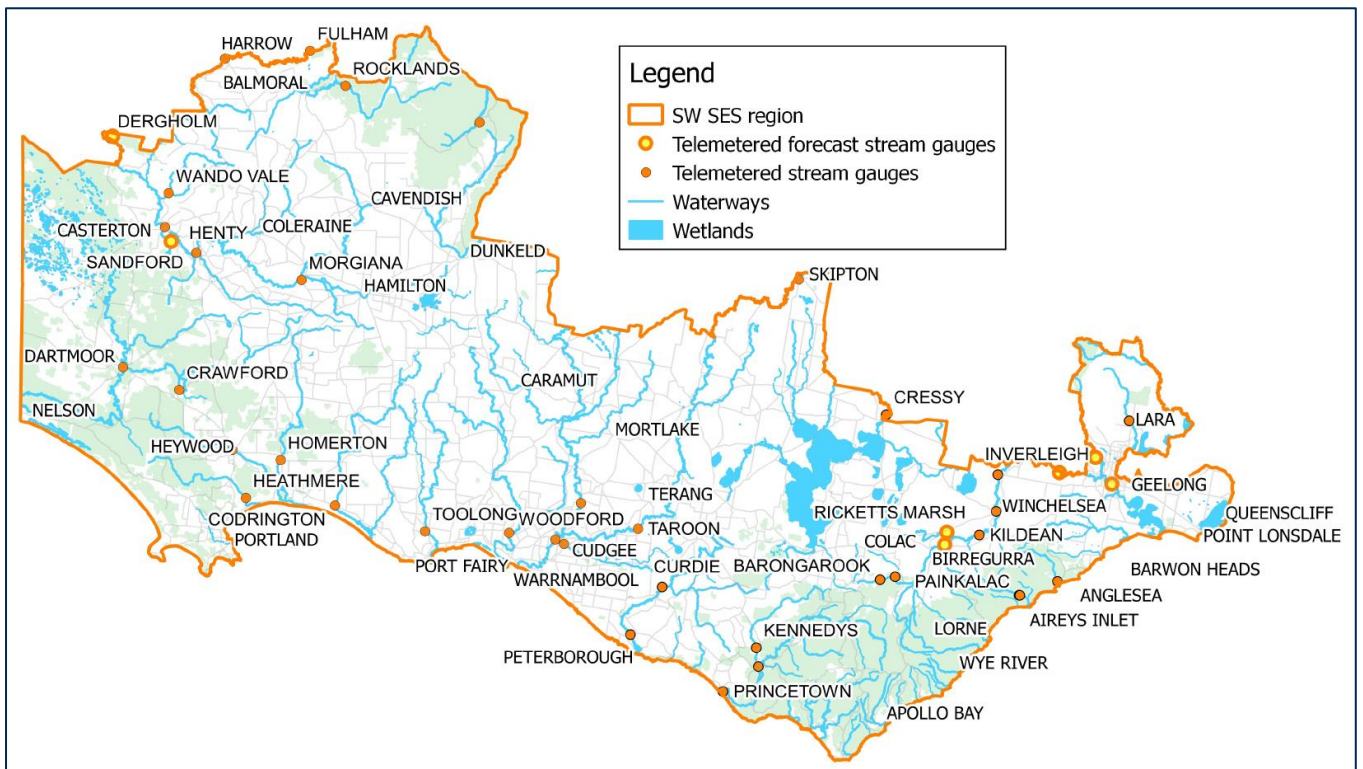
Attachment 5 – VICSES regional resource map

SW Unit No. / EAS paging No. / Resource - Quick Reference																																
Unit	Unit No.	EAS paging number	Heavy Rescue	Medium Rescue	Medium Rescue 2nd	Rescue Support Unit (RSU)	DR Support Unit (DSU)	Transport Unit	Storm Unit	Crash Unit	Proposed DR Unit	Wakara Trailer (WAT)	4x4 Off Road (4x4OR)	Rescue Boat	Search and Rescue	Fire Support Unit	Land Based Search	Statewide Search	High Angle Rescue	Lighting Unit	Pump Unit	EPA Unit	Loaders Truck	Field Operations Vehicle	Earthquake	PR / Comm Ed	IT Field Kit	Hand Held Radio	Portable Radio	Hand Held Radio		
Balmoral	850	30299			1		1					1									1											
Bannockburn	851	30301		1	1			1	1																							
Bellarine	852	30303	1		1		1	1	1		1	1	1	1		Y			1	1												
Camperdown	853	30305			1		1	1	1	1			1																			
Cobden	854	30307		1			1	1	1				1						1													
Colac	855	30309	1		1			1	1					1											1							
Corio	856	30311	1		1		1	1																								
Dartmoor	857	30313			1			1	2				1																			
Dunkeld	858	30315			1		1	1		1																						
Geelong	859	30317		1			2	1					2			Y			1						1					1		
Hamilton	861	30319	1				1	1					1						1	1		1										
Hegwood	863	30321	1				1																									
Lismore	864	30323	1				1	1																								
Lorne	865	30325			1		1	1																								
Mortlake	866	30327	1					1	1																							
Otway	867	30329			1		1						1																			
Port Campbell	868	30331			1		1				1							1	1													
Port Fairy	869	30333	1		1		1			1	1	1	1																			
Portland	870	30335	1			1	1	1	1	1			1					1	1													
South Barwon	871	30337	1		1		2	1	1							Y																
Terang	872	30339	1				1																									
Torquay	873	30341	1		1		1	1	1																							
Warrnambool	874	30343	1		1		2	1	2	1	1	1	1	1	1	Y			1	1	2											
Winchelsea	875	30345	1				1																									
South West Geelong	878	30348		1					1														1		1		2	1	1		2	
South West Hamilton	878	30348							1														1		1	1	1	1	1	1	1	
South West Warrnambool	878	30348																													1	
Total			14	3	9	7	1	22	8	16	11	7	2	6	9	1	0	2	2	6	11	4	1	1	1	2	1	3	2	2	2	4

Attachment 6 – Regional Control Centre footprint and VICSES unit map



Attachment 7 – Region flood gauges map



Attachment 8 – IMT readiness levels – flood (JSOP 2.03)

Schedule 6 IMT Readiness Levels – Flood

To determine the readiness level required, all three riverine flood conditions (FCL) described in the table below are needed to be predicted for 50% or more of an ICC footprint. Each river catchment, the upper and lower reaches of a river system have been allocated to an ICC footprint.

The RC may vary the actual number, distribution and level of an IMT from this schedule in order to manage local risks, as per section 15 of this JSOP.

IMTs should be in place as advised by the Regional Controller (RC) based on the risk, indicatively 2 hours before the community impact is expected to occur in the ICC footprint.

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

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

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

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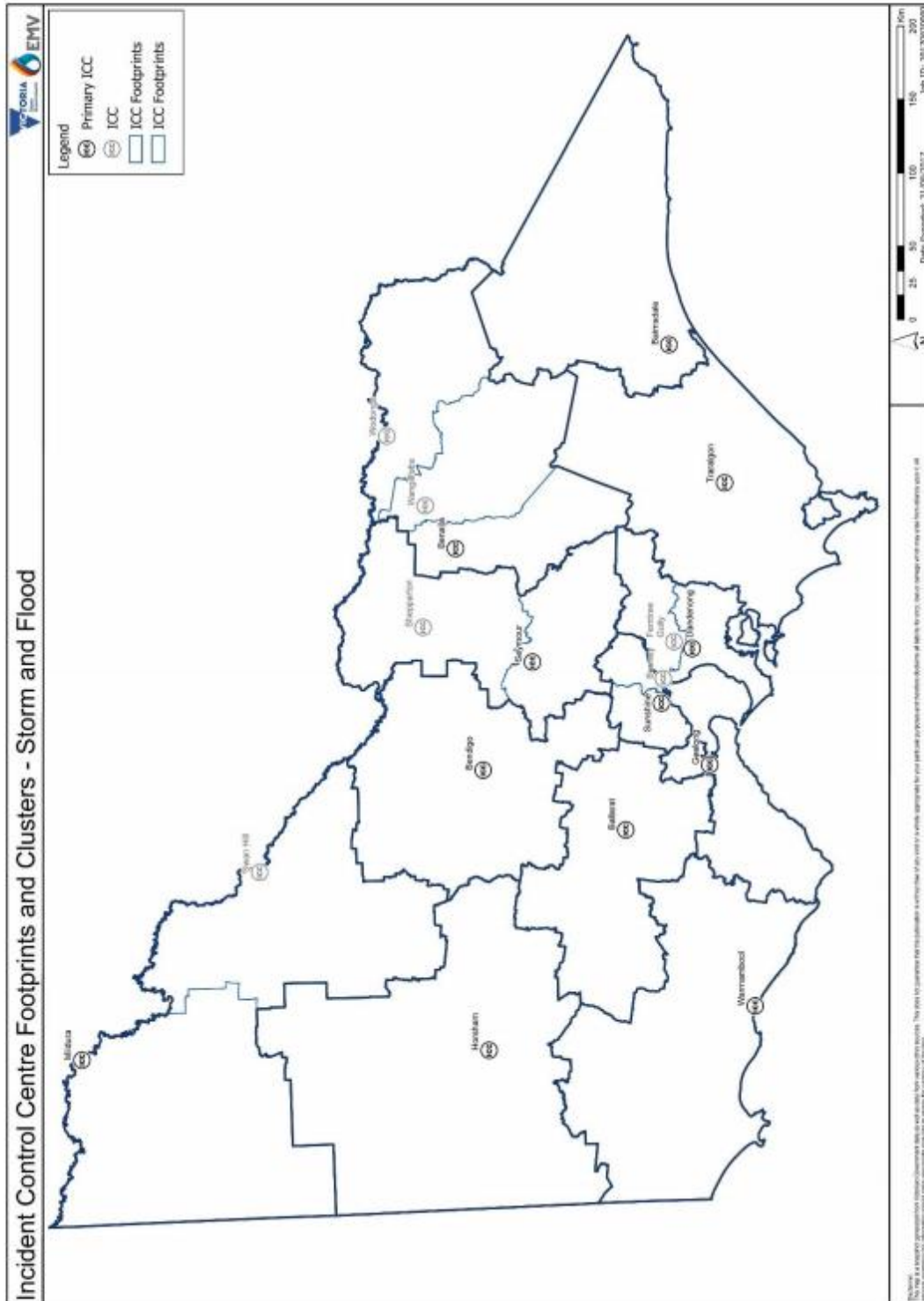
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Region	Primary ICC	ICC Cluster	Minor Mod Major	Flood Class Level (FCL) ⁴		
				Multiple > 2 0	Multiple >2 ≥1	Multiple Multiple ≥2
				Very High (high end)	Severe	Extreme
Loddon Mallee	Bendigo	Bendigo		Base (I)	Base (I)	Full (I)
	Mildura	Mildura		Base (C)	Base (I)	Core (I) Full (C)
		Swan Hill			Base (I)	Core (I) Full (C)
Grampians	Ballarat	Ballarat		Base (C)	Base (I)	Core (I) Full (C)
	Horsham	Horsham		Base (I)	Base (I)	Core (I) Full (C)
Barwon South West	Geelong	Geelong		Base (I)	Base (I) Core (C)	Core (I) Full (C)
	Warrnambool	Warrnambool		Base (C)	Base (I) Core (C)	Core (I) Full (C)
North West Metro	Sunshine	Sunshine		Base (I)	Core (I)	Core (I) Full (C)
		Burnley				Full (I)
Eastern Metro	Dandenong	Ferntree Gully		Base (I)	Core (I)	Core (I) Full (C)
Southern Metro		Dandenong				Full (I)
Hume	Benalla (NE CMA area)	Benalla		Base (I)	Base (I) Core (C)	Full (I)
		Wodonga			Base (I) Core (C)	Base (I) Full (C)
		Wangaratta			Base (I) Core (C)	Base (I) Full (C)
	Seymour (Goulburn Broken - CMA area)	Seymour		Base (C)	Base (I) Core (C)	Core (I) Full (C)
		Shepparton			Base (I) Core (C)	Full (C)
Gippsland	Traralgon	Traralgon		Base (C)	Base (I) Core (C)	Full (I)
	Bairnsdale	Bairnsdale			Base (I) Core (C)	Full (I)

⁴ Where no FCL provided for a river system, The RC is to consult the SES Agency Commander for the alignment of the warning issued to a FCL.

Schedule 4

ICC Footprint and Clusters – Flood and Storm



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

For the most up to date readiness and activation trigger considerations document always check the latest version on the VICSES Hub at: <https://hub.ses.vic.gov.au/library/operational-doctrine>.

FLOOD READINESS AND ACTIVATION TRIGGER CONSIDERATIONS - V3.0 - SEPTEMBER 2017						
Readiness Level	RL 1- LOW TO MODERATE	RL 2 - HIGH	RL 3(A) - VERY HIGH	RL 3(B) - VERY HIGH	RL 4 - SEVERE	RL 5 - EXTREME
FDI	0 - 11	12 - 24	25 - 34*	35 - 49*	50 - 74	75 - 99
Fire Behaviour	Fires can be easily controlled	Fires can be controlled, expect short distance spotting	Fires can be difficult to control, crown fires may develop in forest.	Fires can be difficult to control, crown fires may develop in forest.	Fires may be uncontrollable and move quickly. Spot fires may occur up to 4km ahead of the fire.	Fires will be uncontrollable, unpredictable and fast moving. Spot fires up to 6km ahead of the fire.
Flood Prediction	Minor Flood Watch issued and /or Minor Flood warning issued	Minor Flood Warning issued	Low to mid range Moderate Flood warning issued with low consequences for built environment based on risk	Moderate to high end MODERATE Flood Warning with moderate consequences for built environment based on risk Multiple other Rivers in MINOR	MAJOR Flood Warning predicted and/or >2 high end MODERATE Flood warnings with risks and consequences for built environment & economic	Two or more MAJOR Flood warning(s) or One with significant consequences / widespread evacuations for built environment, exceeding 1 in 100 year riverine event. Multiple MODERATE Flood Warnings. Large Dam failure considered very likely.
Flood Behaviour	Anticipated continued light rain. Catchments able to absorb predicted rain for consecutive days but may lead to flooding. Nil impacts or consequences predicted unless identified.	Anticipated continued rain. Catchments able to absorb predicted rain for consecutive days with minor flooding occurring. Low-lying areas next to water courses are inundated. Minor roads may be closed and low-level bridges submerged. In urban areas inundation may affect some backyards and buildings below the floor level as well as bicycle and pedestrian paths. In rural areas removal of stock and equipment may be required.	Anticipated continued rain. Catchments likely to be saturated and unable to absorb continued rain. Areas of inundation are more substantial in size but consequence low. Main traffic routes may be affected. Unlikely for buildings to be affected above the floor level. Evacuation of flood affected areas may start to be considered. In rural areas removal of stock is required.	Anticipated continued rain. Catchments are saturated and unable to absorb continued rain. Areas of inundation are more substantial. Main traffic routes may be affected. Some buildings may be affected above the floor level. Evacuation of flood affected areas may be planned for. In rural areas removal of stock is required. Impact assessment may be required.	Anticipated continued high rain. Catchments are saturated and unable to absorb continued rain and runoff. Extensive rural areas and/or urban areas are inundated. Many buildings may be affected above the floor level. Properties and towns are likely to be isolated and major rail and traffic routes closed. Evacuation of flood affected areas likely. Utility services likely to be impacted.	Anticipated significant extreme weather event that will lead to rapidly rising river conditions. Catchments are saturated and unable to absorb current or additional runoff. Extensive rural areas and/or urban areas are inundated. Many buildings may be affected above the floor level. Properties and towns are likely to be isolated and major rail and traffic routes closed. Evacuation of flood affected areas are likely. Utility services will be impacted.
VICSES - Business As Usual Operations				JSOP 2.03 LINE OF CONTROL		
Readiness Level (State)	Preparedness WHITE SDO and SAC (monitor)	Preparedness WHITE SDO and SAC (monitor)	Preparedness WHITE SDO and SAC (monitor)	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 Darklight.	SCC Level RED Multiple ICCs activated or multi region SDO and SAC in Place Day and Night
Readiness levels (Regional)	Preparedness WHITE RAC (Monitoring) RDO (monitor and issuing public information)	Preparedness WHITE RAC (Monitoring) RDO (monitor and issuing warnings)	Regional Command (on CALL/STBY) RAC (Monitoring) RDO (issuing warnings - overnighting basic response (eg: evac caravan park))	RURAL - Regional Cmd In Place, RC notified METRO - RCC OPEN - Base RCT in place RAC and RDO at the RCC	RCC OPEN - RCT in place, some agencies available on immediate recall RAC and RDO at the RCC	RCC OPEN - Full RCT/ most REMT in Place RAC and RDO at the RCC
Readiness levels (Incident)			Base IMT (Rostered STBY)	FULL RCT on Standby REMT briefed by RAC Base IMT (In Place - Primary ICC)	REMT briefed by RAC and on standby to come in (as required) RURAL - BASE IMT (in Place), CORE (On Call / Stand-by) METRO - CORE IMT (in Place) Observed activity - CORE IMT (in Place)	FULL RCT and REMT in Place RURAL - CORE IMT (in Place), FULL (On Call / Stand-by) METRO - FULL IMT (in Place) Observed activity - FULL IMT (in Place)
People	Some minor inconvenience around local roads.		Increased number of roads being impacted traffic management plan should be considered.	Significant number of roads impacted traffic management plan is required some major roads closed with isolation or evacuation possible.		
Power	Possible power disruptions		Likely short term power disruptions	Power disruptions likely with some substations impacted and potential long term outages.		
Health	Little impact expected some local issues might be encountered but managed locally within own facility Plan		Consideration for review and familiarisation with facility Plan - VICPOL and DHHS to review Vulnerable persons list	Highly likely some hospitals isolated and vulnerable people isolation and require evacuation.		
Education	Unlikely impact		Some impact expected traffic management plan for school buses should be considered.	Some school and preschools may be inundated and school bus routes closures		
Road Network	Unlikely to impact		Some minor roads may be impacted with possible disruption to critical needs supplies such as milk	Highly likely for roads to be cut and egress and access impacted. Major roads potentially cut in some locations traffic diversions in place. Potential rescue of trapped persons in vehicles. Expected impact on rail routes. Economic impact likely with loss of commercial transport routes.		
Public Transport	Limited impact on public transport routes		Impact to public transport routes may occur but likely to be minimal with diversions possible	Public transport impacts will occur with roads and rail lines out and no alternative route available - significant disruption to people movement likely		
Relief and Recovery	Relief and recovery activity unlikely may be some local issues.		Increased potential for relief and recovery activity but likely to be managed locally by LGA with support of DHHS	Formal arrangements put in place for relief and recovery activity Regional Recovery Commander appointed. Health Commander in Place and demands on relief and recovery to be substantial and potentially long term.		
Water utilities	Little impact expected some local issues might be encountered but managed locally.		Increased potential but still managed locally. May be minor sewerage overflow issues in isolated areas	Highly likely that some infrastructure will be impacted water authorities should develop or initiate their plans to address issues. Significant potential for pollutants including sewerage in water		
Telecommunications	Nil impact		Minimal impact to individual premises only	Significant impact with loss of landlines and mobile powers which will affect peoples capacity to receive warnings and information.		
Public Events	Maybe cancelled due to weather conditions only		Some public events may need to be cancelled or rescheduled due to safety of patrons either whilst at event or travelling to or from.	Public events impacted likely cancellation of major events due to flooding impact on venue or ability to attend or leave event.		
Tourism	Unlikely that event will be impacted but consideration must be given to any event occurring to ensure it is safe to continue.		Potential impact on tourist locations if area not safe to visit or isolated due to road closures.	May impact on high value tourist locations and facilities with long term impacts in the social and economic environment of communities.		
Agriculture/Animal welfare	No impact likely with landowners managing any localised issues.		Potential impact with losses to live stock, fencing and crops including high intensive farming of produce	Substantial impact to live stock, fencing (widespread), farm machinery and crops, including high intensive produce farming short and long term impacts due to loss of soil and erosion. Highly likely need for stock movement support and fodder resupply for isolated stock		
Remote communities	Inconvenience only		Some minor isolation of individual properties or remote communities is likely	Community isolation likely with resupply requirements as well as evacuation considerations needed		
Environmental	Minimal impact - some minor watercourse erosion		Stream erosion and loss of vegetation around watercourses	Significant disturbance to soil and vegetation		
Cultural Heritage	Minimal impact likely		Some disturbance along watercourses may occur but likely to be minimal	Potential for significant disturbance especially of flood of significance in area and flood of record		
Public Infrastructure /Essential Community Infrastructure	limited impact		Some disruption to access-Parks and low lying community areas and infrastructure - Some minor damage of community infrastructure build on floodplains	Significant damage to road infrastructure and community facilities. Long term closure of key community facilities likely		
Critical infrastructure	Nil impact		May require some preparatory work and discussion with owner of infrastructure	Significant work likely to be required to protect critical infrastructure - Contingency plans put in place if loss of the infrastructure occurs		

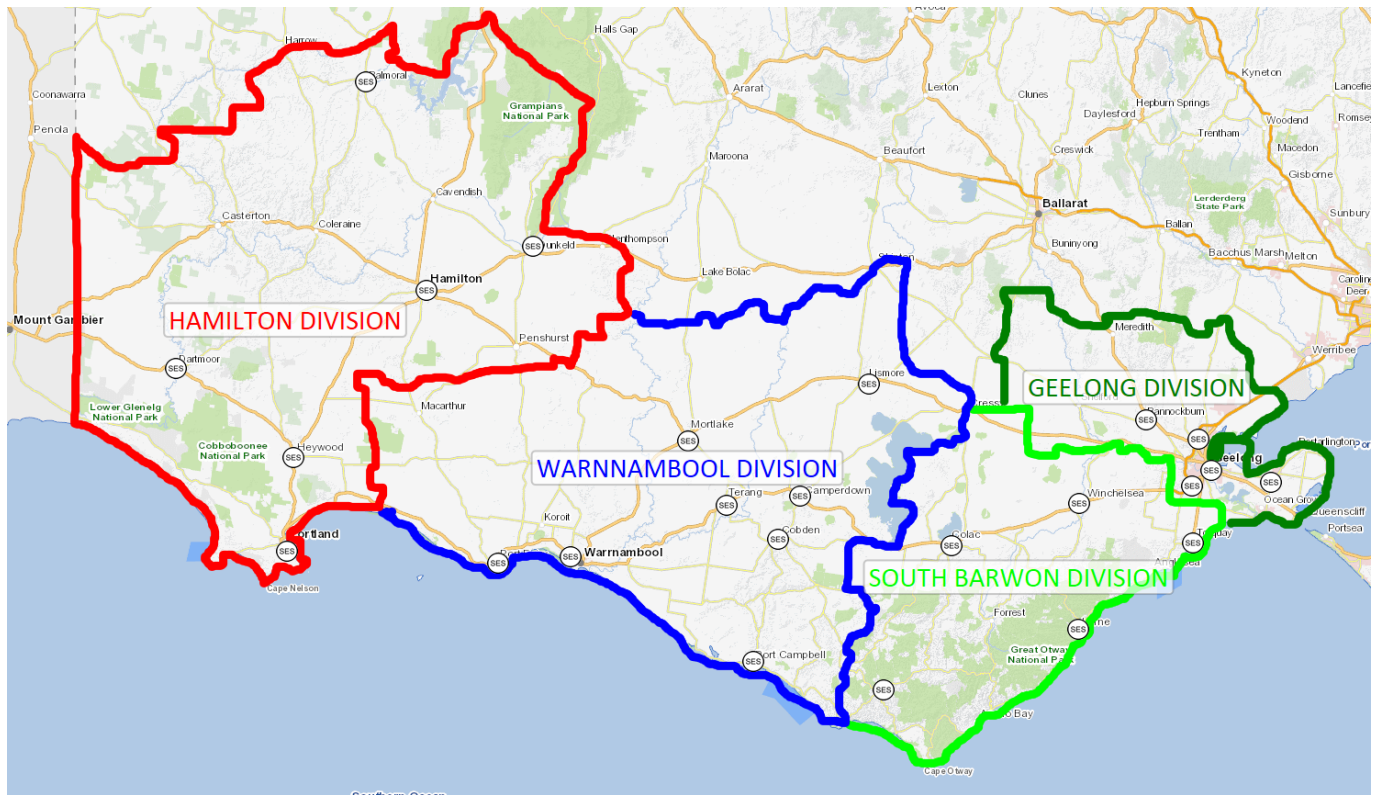
Regional Agency Commander (VICSES) provides advice to the Regional Controller re: forecast and consideration for varying the actual number, distribution and level of IMT required.

Attachment 9 – VICSES unit general response boundaries map



South West SES Response Structure			
Warrnambool ICC			
Hamilton Division		Warrnambool Division	
Dartmoor	1	Port Fairy	7
Portland	2	Warrnambool	8
Heywood	3	Mortlake	9
Hamilton	4	Terang	10
Balmoral	5	Port Campbell	11
Dunkeld	6	Cobden	12
		Camperdown	13
		Lismore	14
Geelong ICC (Black Boundary)			
South Barwon Division		Geelong Division	
Colac	15	Bannockburn	20
Otway	16	Corio	21
Lorne	17	Geelong	22
Torquay	18	Bellarine	24
Winchelsea	19		
South Barwon	23		

Attachment 10 – Division Command location map



Attachment 11 – Agency Contact Details

Emergency Management Contacts

Refer to South West (Barwon) Emergency Management Contact Directory updated by DHHS (Terry Murreihy 0419389372)

VICSES Contacts

Refer to South West (Barwon) Region Unit Profiles

Other Useful Contacts			
ABC	Emergency Hotline (Radio Master Control)	1300 737 102	
Ambulance	Medical Emergency	000	
Centrol	Train Control	03 9619 4350	1800 023 668
DJPR	Animal Disease Hotline	1800 675 888	
DJPR	Plant Pest and Disease Hotline	1800 084 881	
DET	Emergency Duty Officer	1300 333 232	1300 DEECD 2
DELWP	Customer Service Centre	136 186	
Energysafe Victoria	Electrical Emergencies	1800 000 922	
Energysafe Victoria	Gas Emergencies	132 771	
EPA	Litter Hotline	1800 352 555	
EPA	Pollution Hotline	1800 444 004	
ESTA	Ballarat	03 5337 3520	1300 705 911
Fire	CFA or MFB	000	
Help for Wildlife	Wildlife Rescue	0417 308 687	
Livestock	24hr National Assist Hotline Livestock Truck Roll over and Emergency Vet	136 186	
NOCC	Network Operations Control Centre – SMR Radio	03 9632 5595	1800 678 121
Parks Victoria	Call Centre	13 19 63	
Police	Emergency	000	
PowerCor	Power Outages	m.powercor.com.au	
Public Transport Victoria	Crisis and Emergency Response	03 9027 4241	03 9027 4011 (facsimile)
VICSES	Flood or Storm	132 500	
VICSES	Life Threatening	000	
Transport Safety Victoria	Incident Reporting	1800 301 151	
VicEmergency	VicEmergency Hotline	1800 226 226	
VicFish	Fisheries Offences	13 FISH	13 3474
VicRoads / RRV	Emergencies and Road Closures	131 170	
VLine / VicRail	24/7 Duty Officer	03 9619 1077	
Worksafe	Incident Notification	13 23 60	

External Subject Matter Expert Contacts

Agency	Address	Name	Position	Phone	Mobile	Email
Corangamite Catchment Management Authority	64 Dennis Street Colac VIC 3250 5232 9100 (Switch) www.ccma.vic.gov.au	Geoff Taylor	Floodplain Statutory Manager	5224 9405	0417 605 244	geoff.taylor@ccma.vic.gov.au
		Tony Jones	Floodplain Statutory Senior Advisor		0490 095 202	tony.jones@ccma.vic.gov.au
		Penny Reed	Senior Floodplain Project Officer	5232 9100	0427 359 929	penny.reed@ccma.vic.gov.au
		Rachel Hawkins	Temporary Floodplain Administration Officer	5224 9407		rachel.hawkins@ccma.vic.gov.au
Glenelg Hopkins Catchment Management Authority	79 French Street Hamilton VIC 3300 5571 2526 (Switch) www.ghcma.vic.gov.au	Steve Homer	Floodplain & Works Manager	5551 3361	0487 674 196	s.homer@ghcma.vic.gov.au
		Graeme Jeffery	Statutory Water Planner	5551 3347	0434 769 813	g.jeffery@ghcma.vic.gov.au
		Amanda Sim	Environmental Engineer	5551 3366		a.sim@ghcma.vic.gov.au
		Sheree Kearns	Senior Environmental Engineer	5571 2526		s.kearns@ghcma.vic.gov.au
		Tatjana Bunge	Environmental Engineer	5551 3359	0408 817 656	t.bunge@ghcma.vic.gov.au
		Michael Clarke	Environmental Engineer	5551 3346		m.clarke@ghcma.vic.gov.au
DELWP Floodplain Management Unit	Level 12 / 8 Nicholson Street East Melbourne VIC 3002 PO Box 500 East Melbourne VIC 3002 9637 8000 (Switch) 9637 8600 (Fax)	Gil Marshall	Manager, Floodplain Management	9637 8657	0409 548 851	gil.marshall@delwp.vic.gov.au
		Mike Edwards	Program Leader, Strategic Policy	9637 9012	0409 963 036	mike.edwards@delwp.vic.gov.au
		Viktor Brenners	Senior Policy Officer	9637 9014	0439 023 931	viktor.brenners@delwp.vic.gov.au
		Simone Wilkinson	Senior Project Officer	5226 4771	0467 719 375	simone.wilkinson@delwp.vic.gov.au
		Rebecca Lett	Senior Project Officer	9637 8798	0407 767 781	rebecca.lett@delwp.vic.gov.au
		Matt	Floodzoom	9637	0427 809	matt.allen@delwp.vic.gov.au

	www.delwp.vic.gov.au	Allen	Program Manager	9817	521	
		Kedar Kumthekar	Business Analyst	9637 9403		kedar.kumthekar@delwp.vic.gov.au
		Rebecca Dick	Project Officer	5036 4813	0438 674 866	rebecca.dick@delwp.vic.gov.au

Correct as at June 2019.