

# BENALLA RURAL CITY COUNCIL

## FLOOD EMERGENCY PLAN

### A Sub-Plan of the Municipal Emergency Management Plan

For Benalla Rural Council  
and  
VICSES Benalla Unit

Version 1.1 December 2021



# Table of Contents

<b>Distribution of MFEP .....</b>	<b>iv</b>
<b>Document Transmittal Form / Amendment Certificate .....</b>	<b>iv</b>
<b>List of Abbreviations &amp; Acronyms.....</b>	<b>v</b>
<b>Part 1. Introduction.....</b>	<b>6</b>
1.1 Approval and Endorsement .....	6
1.2 Purpose and Scope of this Flood Emergency Plan .....	7
1.3 Municipal Flood Planning Committee (MFPC) .....	7
1.4 Responsibility for Planning, Review & Maintenance of this Plan .....	7
<b>Part 2. BEFORE: Prevention / preparedness arrangements .....</b>	<b>8</b>
2.1 Community Engagement and Awareness .....	8
2.2 Structural Flood Mitigation Measures .....	8
2.3 Non-structural Flood Mitigation Measures.....	8
2.3.1 Exercising the Plan .....	8
2.3.2 Flood Warning .....	8
2.3.3 Local Knowledge .....	8
<b>Part 3. DURING: Response arrangements .....</b>	<b>9</b>
3.1 Introduction .....	9
3.1.1 Activation of Response .....	9
3.1.2 Responsibilities.....	9
3.1.3 Emergency Coordination Centre or equivalent .....	9
3.1.4 Escalation .....	9
3.2 The six C's .....	10
3.2.1 Control .....	10
3.2.2 Incident Controller (IC).....	10
3.2.3 Incident Control Centre (ICC) .....	11
3.2.4 Divisions and Sectors .....	11
3.2.5 Incident Management Team (IMT) .....	11
3.2.6 Emergency Management Team (IEMT) .....	11
3.2.7 On Receipt of a Flood Watch / Severe Weather Warning.....	12
3.2.8 On Receipt of the First and Subsequent Flood Warnings .....	13
3.3 Initial Impact assessment .....	13
3.4 Preliminary Deployments.....	13
3.5 Response to Flash Flooding.....	14
3.6 Evacuation .....	14
3.7 Flood Rescue.....	15
3.8 Aircraft Management .....	16

3.9	Resupply .....	16
3.10	Essential Community Infrastructure and Property Protection.....	17
3.11	Disruption to Services.....	17
3.12	Road Closures .....	17
3.13	Dam Spilling/ Failure.....	18
3.14	Waste Water related Public Health Issues and Critical Sewerage Assets.....	18
3.15	Access to Technical Specialists .....	18
3.16	After Action Review .....	18
<b>Part 4.</b>	<b>AFTER: Emergency relief and recovery arrangements .....</b>	<b>19</b>
4.1	General .....	19
4.2	Emergency Relief .....	19
4.3	Animal Welfare .....	19
4.4	Transition from Response to Recovery .....	19
	<b>Appendix A: Flood threats for Benalla Rural Municipality .....</b>	<b>20</b>
	<b>Appendix B: Typical flood peak travel times .....</b>	<b>28</b>
	<b>Appendix C1: Benalla Flood Emergency Plan.....</b>	<b>29</b>
	<b>Appendix C2: Granite Creeks Floodplain .....</b>	<b>45</b>
	<b>Appendix D: Flood evacuation arrangements.....</b>	<b>52</b>
	<b>Appendix F: Maps and Schematics .....</b>	<b>63</b>
	<b>Appendix G: Local knowledge arrangements .....</b>	<b>68</b>
	<b>Appendix H: Local flood information .....</b>	<b>69</b>

## Distribution of MFEP

Once endorsed and signed the, MFEP should be distributed to all MFEP committee members, MEMPC Chair, council, MEMO, Deputy MEMO, Representatives from; BoM, CMA, DELWP, Parks Victoria, Ambulance Victoria, VicRoads, DFFH, relevant utilities, MFB, MERC, RERC, Police station, VICSES Units, VICSES Regional office, CFA Brigades, CFA Regional office,

## Document Transmittal Form / Amendment Certificate

This Municipal Flood Emergency Plan (MFEP) will be amended, maintained and distributed as required or every 3 years facilitated by VICSES in consultation with the Municipal Emergency Management Planning Committee (MEMPC)

Suggestions for amendments to this Plan should be forwarded to VICSES Regional Office via Northeast @ses.vic.gov.au.

Amendments listed below have been included in this Plan and updated as a new version.

Amendment Number	Date of Amendment	Amendment Entered By	Summary of Amendment
1	Sept	VicSES	Updated currency and the addition of the Granites Creek flood study
1.1	May 2021	VicSES	Updated to new MFEP version.

This Plan will be maintained on the VICSES website at [www.ses.vic.gov.au/get-ready/your-local-flood-information](http://www.ses.vic.gov.au/get-ready/your-local-flood-information) and the Benalla Rural City website <https://www.benalla.vic.gov.au>

# List of Abbreviations & Acronyms

The following abbreviations and acronyms are used in the Plan

<b>AAR</b>	After Action Review	<b>IIA</b>	Initial Impact Assessment
<b>AEP</b>	Annual Exceedance Probability	<b>IEMT</b>	Incident Emergency Management Team
<b>AHD</b>	Australian Height Datum (the height of a location above mean sea level in metres)	<b>JSOP</b>	Joint Standard Operations Procedure
<b>AIDR</b>	Australian Institute of Disaster Resilience	<b>IMS</b>	Incident Management System
<b>AIIMS</b>	Australasian Inter-service Incident Management System	<b>LSIO</b>	Land Subject to Inundation Overlay
<b>AoCC</b>	Area of Operations Control Centre / Command Centre	<b>MEMO</b>	Municipal Emergency Management Officer
<b>ARI</b>	Average Recurrence Interval	<b>MEMP</b>	Municipal Emergency Management Plan
<b>ARMCANZ</b>	Agricultural & Resource Management Council of Australia & New Zealand	<b>MEMPC</b>	Municipal Emergency Management Planning Committee
<b>AV</b>	Ambulance Victoria	<b>MERC</b>	Municipal Emergency Response Coordinator
<b>BoM</b>	Bureau of Meteorology	<b>FRV</b>	Fire Rescue Victoria
<b>CEO</b>	Chief Executive Officer	<b>MFEP</b>	Municipal Flood Emergency Plan
<b>CERA</b>	Community Emergency Risk Assessment	<b>MFEPCC</b>	Municipal Flood Emergency Planning Committee
<b>CFA</b>	Country Fire Authority	<b>MRM</b>	Municipal Recovery Manager
<b>CMA</b>	Catchment Management Authority	<b>PMF</b>	Probable Maximum Flood
<b>RERC</b>	Regional Emergency Response Coordinator	<b>RAC</b>	Regional Agency Commander
<b>RERCC</b>	Regional Emergency Response Coordination Centre	<b>RCC</b>	Regional Control Centre
<b>DFFH</b>	Department of Families, Fairness and Housing	<b>RDO</b>	Regional Duty Officer
<b>DEDJTR</b>	Department of Economic Development, Jobs, Transport, Resources	<b>SAC</b>	State Agency Commander
<b>DELWP</b>	Department of Environment, Land, Water and Planning	<b>SBO</b>	Special Building Overlay
<b>EMLO</b>	Emergency Management Liaison Officer	<b>SCC</b>	State Control Centre
<b>EMT</b>	Emergency Management Team	<b>SDO</b>	State Duty Officer
<b>ERC</b>	Emergency Relief Centre	<b>SEMP</b>	State Emergency Management Plan
<b>EO</b>	Executive Officer	<b>SEWS</b>	Standard Emergency Warning Signal
<b>FO</b>	Floodway Overlay		

# Part 1. Introduction

## 1.1 Approval and Endorsement

This Municipal Flood Emergency Plan (MFEP) has been prepared by VicSES and Benalla Rural City Council MEMP flood sub-committee and with the authority of the Benalla Rural City MEMP committee pursuant to the Emergency Management Act 1986 and the Emergency Management Legislation Amendment Act 2018.

The MFPC – Benalla Rural City Council MEMP have undertaken the following consultations with the Benalla Township and surrounding communities about the arrangements contained within this plan: Benalla MFEP

This MFEP is a sub plan to the Benalla Rural City Council (MEMP), is consistent with the State Emergency Management Plan (SEMP) and the Victorian Floodplain Management Strategy (2016), and takes into account the outcomes of the Community Emergency Risk Assessment (CERA) process undertaken by the Municipal Emergency Management Planning Committee (MEMPC).

The MFEP is consistent with the Regional Flood Emergency Plan (RFEP) and the State Emergency Management Plan (SEMP) – Flood sub-plan.

This MFEP is a result of the cooperative efforts of the MFPC and its member agencies.

This Plan is approved by the VICSES Regional Manager.

This Plan is endorsed by the Benalla Rural City Council MEMPC as a sub-plan to the MEMP.

### Approval

.....

Keith O'Brien Date

North East Region VICSES Assistant Chief Officer

### Endorsement

.....

[Enter Name Details] Date

Chair – Municipal Emergency Management Planning Committee

## 1.2 Purpose and Scope of this Flood Emergency Plan

The purpose of this MFEP is to detail arrangements agreed for the managing a flood emergency before, during and after it occurs or potentially occurs within Benalla Rural City Council

As such, the scope of the Plan is to:

- Identify the local flood risk;
- Support the implementation of mitigation and planning measures to minimise the causes and impacts of flooding;
- Detail emergency management arrangements;
- Identify linkages with Local, Regional and State emergency and wider planning arrangements with a specific emphasis on those relevant to flood.

## 1.3 Municipal Flood Planning Committee (MFPC)

Membership of the Benalla Rural City Council Flood Planning Committee (MFPC) comprises of the following representatives from the following agencies and organisations:

- VICSES (i.e. Unit Controller & Regional Officer – Emergency Management) **(Chair)**,
- Council (i.e. Municipal Emergency Management Officer)
- Victoria Police (i.e. Municipal Emergency Response Co-ordinator) (MERC),
- Catchment Management Authority (CMA),
- Department of Families, Fairness and Housing (DFFH) as required,
- Department of Environment, Land, Water and Planning (DELWP) as required,
- Water Authorities as required,
- Bureau of Meteorology as required,
- Local community representatives and
- List other agencies as required

## 1.4 Responsibility for Planning, Review & Maintenance of this Plan

This MFEP must be maintained in order to remain effective.

VICSES through the MFPC has responsibility for facilitating the preparation, review, maintenance and distribution of this plan.

The MFPC will meet at least once per year. The plan should be reviewed following:

- A new flood study;
- A significant change in flood mitigation measures;
- After the occurrence of a significant flood event within the Municipality;
- Or if none of the above occur, every 3 years.

## Part 2. BEFORE: Prevention / preparedness arrangements

### 2.1 Community Engagement and Awareness

Details of this MFEP will be released to the community through; local media, any FloodSafe engagement initiatives and websites (VICSES and the Benalla Municipality) upon formal adoption by VICSES and the Benalla Municipality

VICSES with the support of Benalla Rural City Council and Goulburn Broken Catchment Management Authority will coordinate targeted community flood engagement programs within the council area.

Refer to appendix H, LFG and FloodSafe Information.

### 2.2 Structural Flood Mitigation Measures

The following summary of structural flood mitigation measures exist within the Council area:

- Levees: (No known levees are located within the Benalla municipality).
- Retarding Basins: Lake Benalla is a significant natural feature of local and regional importance. The establishment of the lake in the 1970's has transformed the central area of Benalla. Various land uses adjoin the lake and its environs including residential, commercial, recreation, riverine habitat and farming. The Lake is designed to maintain free passage and temporary storage of riverine water.

Refer to appendix C for detailed information of structural flood mitigation measures.

### 2.3 Non-structural Flood Mitigation Measures

#### 2.3.1 Exercising the Plan

Arrangements for exercising this Plan will be at the discretion of the MEMPC. It is recommended that the MFEP is exercised on annual basis and reviewed in line with Section 1.4.

#### 2.3.2 Flood Warning

Arrangements for Bureau issued Flood Watch and Flood Warning products are contained within the SEMP Sub Plan – Flood ([www.ses.vic.gov.au/em-sector/vicses-emergency-plans](http://www.ses.vic.gov.au/em-sector/vicses-emergency-plans)) and on the Bureau of Meteorology (BoM) website [www.bom.gov.au](http://www.bom.gov.au).

Details on Warnings issued by VICSES through VicEmergency and VICSES channels are outlined in **Appendix E**.

#### 2.3.3 Local Knowledge

Community Observers provide local knowledge to VICSES and the Incident Control Centre regarding local insights and the potential impacts and consequences of an incident and may assist with the dissemination of information to community members.

Specific details of arrangements to capture local knowledge are provided in **Appendix G**.



## Part 3. DURING: Response arrangements

### 3.1 Introduction

#### 3.1.1 Activation of Response

Flood response arrangements may be activated by the Regional Duty Officer (RDO) VICSES North East / Hume Region or Regional Agency Commander (RAC).

The VICSES Incident Controller (IC) / RDO will activate agencies as required as documented in the State Emergency Management Plan - Flood.

#### 3.1.2 Responsibilities

There are a number of agencies with specific roles that will act in support of VICSES and provide support to the community in the event of a serious flood within the Benalla Rural City Council. These agencies will be engaged through the EMT.

The general roles and responsibilities of supporting agencies are as agreed within the: MEMP, SEMP ('Emergency Management Agency Roles') and SEMP Sub Plan - Flood and Regional Flood Emergency Plan.

Agreed roles of supporting agencies **may** be listed/are in a separate appendix to this plan or link back to the MEMP.

#### 3.1.3 Emergency Coordination Centre or equivalent

If established, liaison with the Emergency Coordination Centre will be through the established Division/Sector Command and through Municipal involvement in the IEMT, in particular the Municipal Emergency Response Coordinator (MERC). The VICSES RDO / ICC will liaise with the centre directly if no Division / Sector Command is established.

The function, location, establishment and operation of an emergency coordination centre if relevant will be as detailed in the MEMP.

#### 3.1.4 Escalation

Many flood incidents are of local concern and an appropriate response can usually be coordinated using local resources. However, when these resources are exhausted, the State's arrangements provide for further resources to be made available, firstly from neighbouring Municipalities (on a regional basis) and then on a State-wide basis.

Resourcing and event escalation arrangements are described in the SEMP.

## 3.2 The six C's

Arrangements in this MFEP must be consistent with the 6 C's detailed in State and Regional Flood Emergency Plans and the MEMP. For further information, refer to the SEMP.

- **Command:** Overall direction of response activity in an emergency.
- **Control:** Internal direction of personnel and resources within an agency.
- **Coordination:** Bringing together agencies and resources to ensure effective preparation for response and recovery.
- **Consequence:** Management of the effect of emergencies on individuals, communities, infrastructure and the environment.
- **Communication:** Engagement and provision of information across agencies and proactively with the community around preparation, response and recovery in emergencies.
- **Community Connection:** Understanding and connecting with trusted networks, leaders and communities around resilience and decision making.

Specific details of arrangements for this plan are to be provided in **Appendix C**.

### 3.2.1 Control

Functions 5(a) and 5(c) at Part 2 of *the Victoria State Emergency Service Act 1986 (as amended)* detail the authority for VICSES to plan for and respond to flood.

The SEMP prepared under the *Emergency Management Act 1986 and the Emergency Management Legislation Amendment Act 2018*, identifies VICSES as the Control Agency for flood. It identifies DELWP as the Control Agency responsible for "dam safety, water and sewerage asset related incidents" and other emergencies. A more detailed explanation of roles and responsibilities is provided in later sections of the SEMP.

All flood response activities within the Benalla Rural City Council including those arising from a dam failure or retarding basin / levee bank failure incident will therefore be under the control of the appointed IC, or delegated representative.

### 3.2.2 Incident Controller (IC)

An Incident Controller (IC) will be appointed by the VICSES (as the Control Agency) to command and control available resources in response to a flood event on the advice of the Bureau of Meteorology (or other reliable source) that a flood event will occur or is occurring. The IC responsibilities are as defined in the SEMP.

### 3.2.3 Incident Control Centre (ICC)

As required, the IC will establish an Incident Control Centre (ICC) from which to initiate incident response command and control functions. The decision as to if and when the ICC should be activated, rests with the Control Agency (i.e. VICSES).

Incident Level	Location	ICC Location	Facility owner	Key contact
2	Benalla	64 Sydney Road, Benalla.	VicSES	(03) 9256-9650
3	Wangaratta	1 Ely street, Wangaratta.	CFA	(03) 5721 4122
3	Shepparton	195-205 Numurkah Road Shepparton.	CFA	(03) 5833 2400
3	Seymour	39 McIntyre Street, Seymour.	CFA	(03) 5735 3100

### 3.2.4 Divisions and Sectors

To ensure that effective Command and Control arrangements are in place, the IC may establish Divisions and sectors depending upon the complexity of the event and resource capacities.

The following Divisions and Sectors may be established to where applicable to assist with the management of flooding within the Municipality:

Division	Sector
Benalla SES	East Benalla
	West Benalla

### 3.2.5 Incident Management Team (IMT)

The IC will form an Incident Management Team (IMT).

Refer to the SEMP for guidance on IMTs and Incident Management Systems (IMSs).

### 3.2.6 Emergency Management Team (IEMT)

The IC will establish a multi-agency Incident Emergency Management Team (IEMT) to assist the flood response. The IEMT consists of key personnel (with appropriate authority) from stakeholder agencies and relevant organisations who need to be informed of strategic issues related to incident control. They are able to provide high level strategic guidance and policy advice to the IC for consideration in developing incident management strategies.

Organisations, including Benalla Rural City Council, required within the IEMT will provide an Emergency Management Liaison Officer (EMLO) to the ICC if and as required as well as other staff and / or resources identified as being necessary, within the capacity of the organisation.

Refer to the SEMP for guidance on IEMTs.

### 3.2.7 On Receipt of a Flood Watch / Severe Weather Warning

SOP008 and SOP009 outline in detail the actions to be undertaken upon receipt of a Flood Watch/Flood Warning or Severe Weather Warning. VICSES RDO (until an incident controller is appointed) or IC will undertake actions as defined within the flood intelligence cards (**Appendix C**). General considerations by the IC/VICSES RDO will be as follows:

- Review flood intelligence to assess likely flood consequences
- Monitor weather and flood information – [www.bom.gov.au](http://www.bom.gov.au)
- Assess Command and Control requirements.
- Review local resources and consider needs for further resources regarding personnel, property protection, flood rescue and air support
- Notify and brief appropriate officers. This includes Regional Control Centre (RCC) (if established), State Control Centre (SCC) (if established), Council, other emergency services through the EMT.
- Assess ICC readiness (including staffing of IMT and IEMT) and open if required
- Ensure flood warnings and community information is prepared and issued to the community where required
  - Flood (Riverine and flash) Warnings are managed by the RDO/RAC
  - Severe Weather/ Thunderstorm warnings are managed by SDO/SAC
- Develop media and public information management strategy
- Monitor watercourses and undertake reconnaissance of low-lying areas
- Ensure flood mitigation works are being checked by owners
- Develop and issue incident action plan, if required
- Develop and issue situation report, if required

### 3.2.8 On Receipt of the First and Subsequent Flood Warnings

VICSES RDO (until an incident controller is appointed) or IC will undertake actions as defined within the flood intelligence cards (**Appendix C**). General considerations by the IC/VICSES RDO will be as follows:

- Develop an appreciation of current flood levels and predicted levels. Are floodwaters, rising, peaking or falling?
- Review flood intelligence to assess likely flood consequences.
- Consider:
  - What areas may be at risk of inundation?
  - What areas may be at risk of isolation?
  - What areas may be at risk of indirect affects as a consequence of power, gas, water, telephone, sewerage, health, transport or emergency service infrastructure interruption?
  - The characteristics of the populations at risk
- Determine what the at-risk community need to know and do as the flood develops.
- Warn the at-risk community including ensuring that an appropriate warning and community information strategy is implemented including details of:
  - The current flood situation
  - Flood predictions
  - What the consequences of predicted levels may be
  - Public safety advice
  - Who to contact for further information
  - Who to contact for emergency assistance
- Liaise with relevant asset owners as appropriate (i.e. water and power utilities)
- Implement response strategies as required based upon flood consequence assessment.
- Continue to monitor the flood situation – [www.bom.gov.au/vic/flood/](http://www.bom.gov.au/vic/flood/)
- Continue to conduct reconnaissance of low-lying areas

### 3.3 Initial Impact assessment

Initial impact assessments will be conducted in accordance with the SEMP to assess and record the extent and nature of damage caused by flooding. This information may then be used to provide the basis for further needs assessment and recovery planning by DFFH and recovery agencies.

### 3.4 Preliminary Deployments

When flooding is expected to be severe enough to cut access to towns, suburbs and/or communities the IC will consult with relevant agencies to ensure that resources are in place if required to provide emergency response. These resources might include emergency service personnel, food items and non-food items such as medical supplies, shelter, assembly areas, relief centres etc.

### 3.5 Response to Flash Flooding

Emergency management response to flash flooding should be consistent with the guideline for the emergency management of flash flooding contained within the State Emergency Management Plan - Flood.

When conducting pre-event planning for flash floods the following steps should be followed, and in the order as given:

1. Determine if there are barriers to evacuation by considering warning time, safe routes, resources available and etc;
2. If evacuation is possible, then evacuation should be the adopted strategy and it must be supported by a public information capability and a rescue contingency plan;
3. Where it is likely people will become trapped by floodwaters due to limited evacuation options safety advice needs to be provided to people at risk. Advice should be given to not attempt to flee by entering floodwater if they become trapped, it may be safer to seek the highest point within the building and to telephone 000 if they require rescue.
4. For buildings known to be structurally unsuitable by council engineers an earlier evacuation trigger will need to be established (return to step 1 of this cycle).
5. If an earlier evacuation is not possible then specific preparations must be made to rescue occupants trapped in structurally unsuitable buildings either pre-emptively or as those people call for help.
6. Contact the Benalla Rural City Council MERC and MEMO at the earliest opportunity to allow for relief preparation to commence.

Due to the rapid development of flash flooding it will often be difficult, to establish relief centres ahead of actually triggering the evacuation. This is normal practice but this is insufficient justification for not adopting evacuation.

### 3.6 Evacuation

The IC decides whether to warn people to evacuate or if it is recommended to evacuate immediately.

Once the decision is made VicPol are responsible for the management of the evacuation process where possible. VICSES and other agencies will assist where practical. VICSES is responsible for the development and communication of evacuation warnings.

VicPol and/or Australian Red Cross may take on the responsibility of registering people affected by a flood emergency including those who have been evacuated.

Refer to the SEMP Evacuation Guidelines for guidance of evacuations for flood emergencies.

Refer to **Appendix C** of this Plan and the MEMP for additional local evacuation considerations for the municipality.

### 3.7 Flood Rescue

VICSES may conduct flood rescues. Appropriately trained and equipped VICSES units or other agencies that have appropriate training, equipment and support may carry out rescues.

Rescue operations may be undertaken where voluntary evacuation is not possible, has failed or is considered too dangerous for an at-risk person or community. An assessment of available flood rescue resources (if not already done prior to the event) should be undertaken prior to the commencement of Rescue operations.

Rescue is considered a high-risk strategy to both rescuers and persons requiring rescue and should not be regarded as a preferred emergency management strategy. Rescuers should always undertake a dynamic risk assessment before attempting to undertake a flood rescue.

Victoria Police Rescue Coordination Centre should be notified of any rescues that occur: (03) 9399 7500

The following resources are available within Benalla Rural City Council to assist with rescue operations:

Benalla SES Primary Rescue, Storm / rescue support, 4WD x 2, Rescue Boat x 2 and a Storm Trailer

Known high-risk areas/communities (i.e. low-lying islands) where rescues might be required include:

- Benalla
- Goulburn Valley Highway Benalla – Shepparton

### 3.8 Aircraft Management

Aircraft can be used for a variety of purposes during flood operations including evacuation, resupply, reconnaissance, intelligence gathering and emergency travel.

Air support operations will be conducted under the control of the IC

The IC may request aircraft support through the State Air Desk located at the SCC. The Air Desk supervisor will establish priorities.

Benalla Airport			
IATA: BLN – ICAO: YBLA			
Summary			
Airport type	Public		
Operator	Benalla Rural City Council		
Location	Benalla, Victoria		
Elevation AMSL	569 ft / 173 m		
Coordinates	36°33'06"S 146°00'24"E		
Map			
Location in Victoria			
Runways			
Direction	Length		Surface
	m	ft	
08R/26L	1,043	3,422	Bitumen
08L/26R	1,043	3,422	Grass
17R/35L	718	2,356	Grass
17L/35R	718	2,356	Grass
Sources: Australian AIP and aerodrome chart <sup>[1]</sup>			

Wangaratta Airport			
IATA: WGT – ICAO: YWGT			
Summary			
Airport type	Public		
Operator	Rural City of Wangaratta		
Location	Wangaratta, Victoria		
Elevation AMSL	504 ft / 154 m		
Coordinates	36°24'57"S 146°18'25"E		
Map			
Location in Victoria			
Runways			
Direction	Length		Surface
	m	ft	
09/27	530	1,739	Grass
18/36	1,640	5,381	Asphalt
Sources: Australian AIP and aerodrome chart <sup>[1]</sup>			

Shepparton Airport			
IATA: SHT – ICAO: YSHT			
Summary			
Airport type	Public		
Operator	Greater Shepparton City Council		
Location	Shepparton, Victoria		
Elevation AMSL	374 ft / 114 m		
Coordinates	36°25'44"S 145°23'33"E		
Map			
Location in Victoria			
Runways			
Direction	Length		Surface
	m	ft	
09/27	423	1,388	Gravel
18/36	1,378	4,521	Asphalt
Sources: Australian AIP and aerodrome chart <sup>[1]</sup>			

Sources: Australian AIP and aerodrome chart

### 3.9 Resupply

Communities, neighbourhoods or households can become isolated during floods as a consequence of road closures or damage to roads, bridges and causeways. Under such circumstances, the need may arise to resupply isolated communities/properties with essential items.

When predictions/intelligence indicates that communities, neighbourhoods and/or households may become isolated, VICSES will advise businesses and/or households that they should stock up on essential items.

After the impact, VICSES can support isolated communities through assisting with the transport of essential items to isolated communities and assisting with logistics functions.

Resupply operations are to be included as part of the emergency relief arrangements with VICSES working with the relief agencies to service communities that are isolated.



### 3.10 Essential Community Infrastructure and Property Protection

Essential Community Infrastructure and Property (e.g. residences, businesses, roads, power supply etc.) may be affected in the event of a flood.

The Benalla Rural City Council maintains a small stock of sandbags and back-up supplies are available through the VICSES Regional Headquarters. The IC will determine the priorities related to the use of sandbags, which will be consistent with the strategic priorities.

If VICSES sandbags are becoming limited in supply, then priority will be given to protection of Essential Community Infrastructure. Other high priorities may include for example the protection of historical buildings.

Property may be protected by:

- Sandbagging to minimise entry of water into buildings
- Encouraging businesses and households to lift or move contents
- Construction of temporary levees in consultation with the CMA, LGA and VICPOL and within appropriate approval frameworks.

The IC will ensure that owners of Essential Community Infrastructure are kept advised of the flood situation. Essential Community Infrastructure providers must keep the IC informed of their status and ongoing ability to provide services.

Contact your local VICSES representative for the most current Sandbag Guidelines or download it from IMT Toolbox in EMCOP- Operations.

Refer to **Appendix C** for further specific details of essential infrastructure requiring protection and location of sandbag collection point(s).

### 3.11 Disruption to Services

Disruption to services other than essential community infrastructure and property can occur in flood events. Refer to **Appendix C** for specific details of likely disruption to services and proposed arrangements to respond to service disruptions in Benalla Rural City.

### 3.12 Road Closures

Benalla Rural City Council and VicRoads will carry out their formal functions of road closures including observation and placement of warning signs, road blocks etc. to its designated local and regional roads, bridges, walking and bike trails. Benalla Rural City Council staff should also liaise with and advise VicRoads as to the need or advisability of erecting warning signs and / or of closing roads and bridges under its jurisdiction. VicRoads are responsible for designated main roads and highways and councils are responsible for the designated local and regional road network.

VICROADS and Benalla Rural City Council will communicate community information regarding road closures. Information will be updated on the VIC Traffic website: <https://traffic.vicroads.vic.gov.au/>

Refer to **Appendix C** for specific details of potential road closures.

### 3.13 Dam Spilling/ Failure

DELWP is the Control Agency for dam safety incidents (e.g. breach, failure or potential breach / failure of a dam), however VICSES is the Control Agency for any flooding that may result.

DELWP have developed Dam Safety Emergency Plans for municipalities where it is applicable.

Major dams with potential to cause structural and community damage within the Municipality are contained in **Appendix A**.

### 3.14 Waste Water related Public Health Issues and Critical Sewerage Assets

Inundation of critical sewerage assets including septic tanks and sewerage pump stations may result in water quality problems within the Municipality. Where this is likely to occur or has occurred the responsibility agency for the critical sewerage asset should undertake the following:

- Advise VICSES of the security of critical sewerage assets to assist preparedness and response activities in the event of flood;
- Maintain or improve the security of critical sewerage assets;
- Check and correct where possible the operation of critical sewerage assets in times of flood;
- Advise the ICC in the event of inundation of critical sewerage assets.

It is the responsibility of the Benalla Rural City Council Environmental Health Officer to inspect and report to the MEMO and the ICC on any water quality issues relating to flooding.

### 3.15 Access to Technical Specialists

VICSESSES Manages contracts with private technical specialists who can provide technical assistance in the event of flood operations or geotechnical expertise. Refer to VICSES SOP061 for the procedure to engage these specialists.

### 3.16 After Action Review

VICSESSES will coordinate the after action review arrangements of flood operations as soon as practical following an event.

All agencies involved in the flood incident should be represented at the after action review.

## **Part 4. AFTER: Emergency relief and recovery arrangements**

### **4.1 General**

Arrangements for recovery from a flood incident within the Benalla Rural City Council are detailed in the Benalla Rural City Council MEMP Recovery Sub-plan.

### **4.2 Emergency Relief**

The decision to recommend the opening of an emergency relief centre sits with the IC. The IC is responsible for ensuring that relief arrangements have been considered and implemented where required under the State Emergency Relief and Recovery Plan of the SEMP.

The range and type of emergency relief services to be provided in the response to a flood event will be dependent upon the size, impact, and scale of the flood. Refer to the SEMP for details of the range of emergency relief services that may be provided.

Suitable relief facilities identified for use during floods are detailed in Benalla Rural City Council MEMP.

Details of the relief arrangements are available in the MEMP.

### **4.3 Animal Welfare**

Matters relating to the welfare of livestock and companion animals (including feeding and rescue) are to be referred to Agriculture Victoria.

Requests for emergency supply and/or delivery of fodder to stranded livestock or for livestock rescue are passed to Agriculture Victoria.

Matters relating to the welfare of wildlife are to be referred to DELWP.

Refer to Benalla Rural City Council MEMP for animal shelter compound locations.

### **4.4 Transition from Response to Recovery**

VICSES as the Control Agency is responsible for ensuring effective transition from response to recovery. This transition will be conducted in accordance with existing arrangements as detailed in the SEMP or are available in the Benalla Rural City Council MEMP. Appendix A: Flood threats for Benalla Rural City Municipality.

## Appendix A: Flood threats for Benalla Rural Municipality

The catchment area of the Broken River upstream of the Benalla is around 1,450km<sup>2</sup> (145,000 hectares).

The township of Benalla is located in North East Victoria and is the hub for the Benalla Rural City Council area. Benalla and the surrounding district are prone to flooding due to their location on the floodplain of the Broken River and other nearby waterways such as Holland and Blind Creeks.

The Broken River flows through the centre of Benalla, splitting the town into east and west. During big floods, even the Monash Bridge that connects both sides of town can be underwater. Hollands Creek joins the Broken River near Jaycee Island and Blind Creek flows into Hollands Creek just upstream of Big Casey Island.

Benalla has a history of flooding that has impacted people, homes, businesses, farms, and livestock since European settlement in the late 1800's- well before official flood records began.

Big floods have affected the area in 1870, 1916, 1917, 1918, 1921, 1924, 1933, 1954, 1966, 1974, 1975, 1981, 1993 and 2010. The "Big Flood of 1993" caused significant damage to homes and businesses as well as important community buildings and infrastructure. The total damage is estimated to be about \$38 million in 1993 dollars.

Benalla Township lies close to where the Broken River and Holland Creek join. Either waterway can bring flooding into the town from the hills in the upper catchments. The Broken River catchment collects rainfall from as far away as Swanpool and Lake Nillahcootie to the Mansfield area. Holland Creek's catchment collects rainfall from Molyullah and Ryan's Creek to the Tolmie side of the Alpine National Park.

Floods in Benalla vary depending on where and how much rain has fallen, which waterway is flooding, if they are flooding at the same time and if more than one peak (highest water level) arrives in Benalla at the same time. Regardless of where the rain falls, flooding can follow within hours, giving residents no or limited time to act.

The 1993 flood measured 5.5 metres (m) on the Broken River gauge at Benalla, the largest flood recorded in the area in the last 120 years. It caused extensive damage and disruption across most of the North East, especially in the Benalla, Baddaginnie and surrounding rural areas.

## Historic Floods

Height (metres)	Impact / level
5.69m	<b>1916 flood level.</b> Pre Benalla Weir construction. The water flow rate was about 1/3 less than the 1993 flood.
5.50m	<b>October 1993 flood level and 1% flood level</b> There is a 1% chance of a flood this size occurring in any year. 1993 was the largest flood since records began. Most of Benalla, Baddaginnie and rural farm areas were significantly affected. Many people were evacuated from their homes. Many areas experienced floodwater travelling backwards through the stormwater drains, unexpectedly affecting many homes and properties, eg. In the Thomas St area. If a flood of this height happened today, over 870 homes and 210 businesses are likely to experience above floor flooding. ( More detail can be found below this table)
4.97m	<b>June 1917 Flood level.</b> Before Lake Benalla and Benalla Weir's construction.
4.57m	<b>December 1966 and December 1954 Flood levels.</b>
4.50m	Major flood level
4.36m	<b>September 1933 flood level.</b>
4.28m	<b>May 1974 flood level.</b>
4.26m	<b>September 2010 flood level.</b>
4.00m	<b>July 1981</b> (approximate flood level) About 8 homes and 4 businesses likely to be affected by above floor flooding.
3.70m	Moderate flood level
3.68m	<b>1996 flood level.</b> Floodwater likely to start covering Bridge St near the Rose Gardens.
2.20m	Minor flood level. Access to Ackerly Ave (Stock Bridge) is cut at both ends. Boardwalks and pedestrian tracks around Lake Benalla become impassable.

**The October 1993 flood** was unexpected and resulted in major flooding throughout the Benalla and district area, which caused widespread devastation and significant social and economic costs to the community. The majority of the city was affected, including homes, commercial premises, community facilities and roads. The tangible and intangible costs of the 1993 flood are summarised below:

### *Tangible Costs*

Tangible costs are the direct costs in economic terms of damage to property and possessions. In Benalla this included:

- **Business sector** – Damage to commercial premises, fittings, equipment, stock, industrial buildings and vehicles;
- **Residential sector** – Damage to houses, household fittings, equipment, appliances, personal effects, clothing, furniture, carpets, food, animals and other durables;
- **Infrastructure** – Damage to roads, footpaths, kerbs, bridges, drains, water supply, fencing, recreation reserves, car parks and communication networks;
- **Agricultural** – Loss of stock, damage to fences and property and loss of crops; and
- **Other** – Damage to childcare and community facilities, art gallery, town hall and state and federal government buildings.

It is estimated that the total cost to the community of the October 1993 flood, was between \$30 - \$50 million dollars although some estimates are as high as \$200 million.

### *Indirect Tangible Costs*

The indirect tangible costs arising from the losses above are not so easily quantified and include;

- Instant and continuing loss of income;
- Closure of business;
- Loss of man hours through isolation or health problems;
- Loss of business, during and immediately and resulting from reduced household expenditure; and
- Downturn in the local economy through loss of sales, loss of production, loss of wages and reduction in expenditure.

### *Intangible Costs*

Most intangible costs are associated with trauma and ill-health, arising from damaged property and loss of employment. Specifically in Benalla this incident:

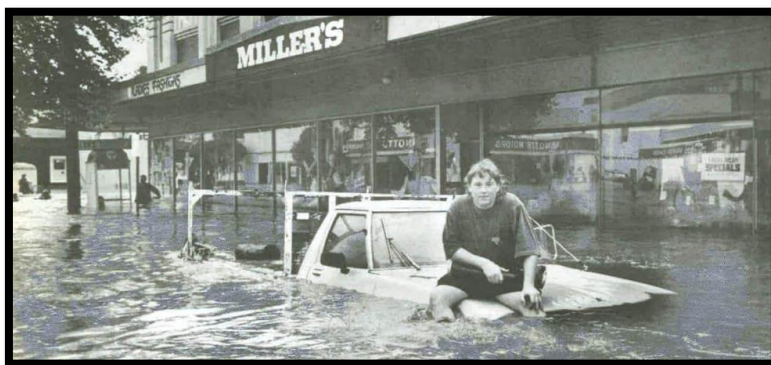
- Family trauma and personal trauma;
- Cancellation of the Benalla show;
- Cancellation of the Benalla races;
- Cancellation of other social events;
- Isolation and shock.

While no deaths directly related with the flood were reported (eg. drowning's), ill-health arising from the disruption to the water supply and other related health problems was widespread.

### Tangible costs of the October 1993 flood

<u>Location / Industry</u>	<u>Items</u>	<u>Estimated Cost</u>
Shire of Benalla	Five (5) Bridges	\$250,000
	Road damages	\$1,000,000
	Water supply, pipelines and sewerage system	\$300,000
City of Benalla	1,200 homes water affected and 180 cars written off	
	Loss of commercial stock	\$4,000,000
	Capital damage	\$2,000,000
Rural	400 kilometres of fencing	\$30,000,000
	Extensive damage to lupin and oat crops	
	Stock losses – 244 cattle, 4,200 sheep, 199 poultry	
Manufacturing	Extensive damage to Benalla Spinners and “Centique”	

Source was the Benalla Ensign: Flood Special, October 1993 – Final Benalla floodplain Management study October 2002.



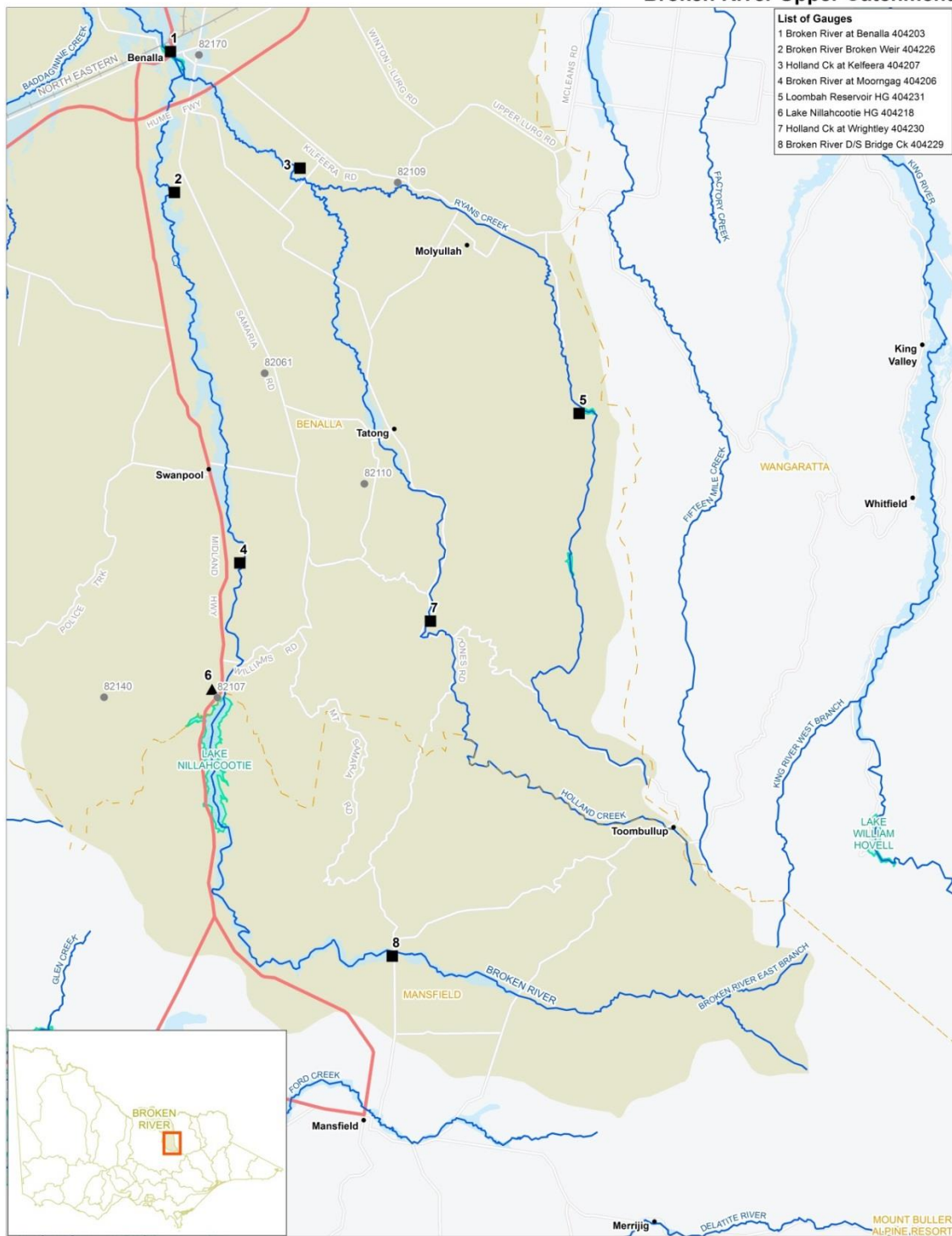
Sept 1993



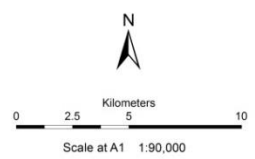
Sept 1921

# Description of Major Waterways and Drains

## Broken River Upper Catchment



- List of Gauges**
- 1 Broken River at Benalla 404203
  - 2 Broken River Broken Weir 404226
  - 3 Holland Ck at Kelfeera 404207
  - 4 Broken River at Moorgag 404206
  - 5 Loombah Reservoir HG 404231
  - 6 Lake Nillahcootie HG 404218
  - 7 Holland Ck at Wrightley 404230
  - 8 Broken River D/S Bridge Ck 404229



- Combined Gauge
- ▲ River Gauge
- Rain Gauge
- Township
- Rail Line
- Major Road
- Secondary Road
- River/Creek
- 1% AEP Flood
- Broken River Catchment
- Lake/Swamp
- LGA Boundary

**DISCLAIMER**  
 This map publication is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The State Emergency Service disclaims any liability (including for negligence) to any person in respect of anything and the consequences of anything, done, or not done of any kind including damages, costs, interest, loss of profits or special loss or damage, arising from any error, inaccuracy, incompleteness or other defect in this information, by any such person in whole or partial reliance upon the whole or part of the information in this map publication. Flood information is provided by Colubum Broken CMA, 2012. VicMap data sourced from DSE, November, 2012.



Waterway or Drain	Description
<b>Broken River</b>	The Broken River is a minor river in Victoria, Australia that is a part of the larger Murray-Darling Basin. It rises in the mountains near Mansfield before flowing 225 kilometres into the Goulburn River near Shepparton. The origin of the name is likely to have come from the fact that the river in times of drought would be reduced to a series of water holes. The Broken River should not be confused with Broken Creek, another nearby watercourse flowing into the Murray River near Barmah.
<b>Broken Creek</b>	Broken Creek is a creek in northern Victoria, Australia. The creek diverges from Broken River immediately downstream from the former Lake Mokoan (now decommissioned) near Benalla and flows in a north-west direction. The creek passes through the towns of Numurkah and Nathalia before entering the Murray River upstream from Barmah.
<b>The Winton Wetlands reserve (Lake Mokoan)</b>	Lake Mokoan was an artificial lake in Victoria, Australia. It was created in 1971 when water from Broken River and Hollands Creek was diverted into Winton Swamp roughly 7 km from Benalla. The lake is characterised by dozens of dead trees emerging from its depths. Although a popular tourist destination, the Victorian government decommissioned the lake in 2009 and restored the area to its original wetland state. (Winton Wetlands)
<b>Hollands Creek</b>	The Hollands Creek drainage system has a catchment area of 540 km <sup>2</sup> . Hollands Creek is fed by several tributaries including Wild Dog, Bog, Stony, Kangaroo, Ryans, Blind and Spring Creeks. The headwaters of the Holland Creeks originate just south-east of Tolmie, it continues to flow north until Ryans Creek runs into it and then veers north-west; flowing into the Broken River system at Benalla. The upper catchment is predominantly forested with little intensive land use. Throughout most of the Demonstration Reach (between Tatong and Spring Creek) the riparian zone consists of a discontinuous thin strip, through predominantly cleared agricultural land. Land use in the area is primarily dryland agriculture, mostly grazing.

**Ryan's Creek**


Ryan's Creek is one of the major streams of the Broken River tributary system draining, with Holland Creek the north, north-west slopes of the Tolmie - Archerton plateau. The highlands gradually decrease in elevation to the north and the streams flow in a general northerly direction to join the Broken River. Following the course of Ryan's Creek upstream from Loombah Weir, the catchment may be divided into three units.

## Dam Spilling/ Failure

Flooding resulting from spilling or failure of the following dams is likely to cause significant structural and community damage

DELWP is the Control Agency for dam safety incidents (e.g. breach, failure or potential breach / failure of a dam). VICSES is however the Control Agency for any flooding that may result.

Within the Benalla Rural City Municipality area there are four significant dams: Lake Nillacootie, Loombah, McCall Say reservoirs and Lake Benalla. Each of these water locations has an agency that manages the structure and produces plans / procedures to address the risk.

Location	Owner	Dam Height	Dam Capacity	Comments
Lake Nillacootie 	Goulburn – Murray Water Lake	34 Metres	40,400 ML	
Loombah Reservoir 	North East Region Water Authority	13.5 Metres	611 ML	
McCall-Say Reservoir 	North East Region Water Authority		1,136 ML	
Lake Benalla 				Is an artificial lake created in the 1970s by the then Delatite Shire Council.

## Appendix B: Typical flood peak travel times

Location From	Location To	Typical Travel Time	Comments
<b>Holland Creek @ Kelfeera</b>	Benalla	5-6 h.	Little to no flood warning in upper reaches.
<b>Broken River @ Moorngag</b>	Benalla	5-6 h.	Little to no flood warning in upper reaches.
<b>Broken River @ Benalla</b>	Casey's Weir	9-10 h	This occurred in 1993
<b>Broken River @ Casey's Weir</b>	Shepparton	57 h.	This occurred in 1993

# Appendix C1: Benalla Flood Emergency Plan

## Overview of Flooding Consequences

The township of Benalla is located in North East Victoria and is the hub for the Benalla Rural City Council area. Benalla and the surrounding district are prone to flooding due to their location on the floodplain of the Broken River and other nearby waterways such as Holland and Blind Creeks.

The Broken River flows through the centre of Benalla, splitting the town into east and west. During big floods, even the Monash Bridge that connects both sides of town can be underwater. Hollands Creek joins the Broken River near Jaycee Island and Blind Creek flows into Hollands Creek just upstream of Big Casey Island.

Benalla has a history of flooding that has impacted people, homes, businesses, farms, and livestock since European settlement in the late 1800's- well before official flood records began.

Big floods have affected the area in 1870, 1916, 1917, 1918, 1921, 1924, 1933, 1954, 1966, 1974, 1975, 1981, 1993 and 2010. The "Big Flood of 1993" caused significant damage to homes and businesses as well as important community buildings and infrastructure. The total damage is estimated to be about \$38 million in 1993 dollars.

Benalla township lies close to where the Broken River and Holland Creek join. Either waterway can bring flooding into the town from the hills in the upper catchments. The Broken River catchment collects rainfall from as far away as Swanpool and Lake Nillahcootie to the Mansfield area. Holland Creek's catchment collects rainfall from Molyullah and Ryan's Creek to the Tolmie side of the Alpine National Park. So take notice if heavy rain falls in these areas. Information can be found on the Bureau of Meteorology website under Rainfall and River conditions. Floods in Benalla vary depending on where and how much rain has fallen, which waterway is flooding, if they are flooding at the same time and if more than one peak (highest water level) arrives in Benalla at the same time. Regardless of where the rain falls, flooding can follow within hours, giving residents no or limited time to act.

During big floods, many areas of Benalla can experience extensive damage to property and infrastructure. Even if your property will not flood, you may be indirectly affected by flooding as roads may be closed and power, water, sewage and telephone services may be cut off, turned off or damaged and the shopping district significantly impacted.



AEP%	Properties Affected	Number of properties	Description of risk	Warning Time	Road Closure	Bus Route disruption
Benalla guage						
20%				6 Hours		
3.46m						
10%	YMCA outdoor pool  Under the Art Gallery  Under Benalla library and surrounding car parks and skate bowl.  Workshop below Art Gallery  Brock Pavilion in Benalla Gardens.  Rose Garden Pavilion.  Benalla Basketball Pavilion  CFA LCF.  Art Gallery surrounds and spreads through Rose Gardens, ovals and enters Cricket and Hard-court Tennis Clubrooms.  Floodwater covers Jaycee			6 Hours	Ackerly Ave	
4.06m						

	Island and Benalla Showgrounds					
5% 4.53m		57		6 Hours		
2% 5.25m	Lawn Tennis Clubrooms  Central Business District,  Benalla Bowls Club	499	approx 60 homes and businesses at risk of overfloor flooding.	6 Hours	Ackerly Ave. Psaltis Parade Crockford St Market St. Neil Ave St Arundel St Bridge St east CBD. Arundel St Nunn St Carrier St Walker St Smythe St	
1% 5.69m	Areas that are particularly susceptible to flood impacts are Bridge Street, Witt Street, Gay Street, Kilfeera Road, Samaria Road	1,085	Benalla sewerage plant. Main shopping strip, Art Gallery, Rose Gardens, Shire offices	6 Hours	Major isolation can occur during major floods when the old Hume Highway is flooded on the west side of the Bridge at the rose gardens and to the east through the main street.	

## Asset register

	Asset Name and location	Observed Rainfall	AEP % of flood	Water level Broken River at Benalla	Consequence / Impact	Mitigation/ Action
October 1993	Benalla CBD		1.3%	5.50	<ul style="list-style-type: none"> <li>• Business sector – Damage to commercial premises, fittings, equipment, stock, industrial buildings and vehicles;</li> <li>• Residential sector – Damage to houses, household fittings, equipment, appliances, personal effects, clothing, furniture, carpets, food, animals and other durables;</li> <li>• Infrastructure – Damage to roads, footpaths, kerbs, bridges, drains, water supply, fencing, recreation reserves, car parks and communication networks;</li> <li>• Agricultural – Loss of stock, damage to fences and property and loss of crops; and</li> <li>• Other – Damage to childcare and community facilities, art gallery, town hall and state and federal government buildings.</li> </ul>	Warnings only
			4%	4.80	Many parts of the Central Business District (CBD) likely to experience above floor flooding	Warnings Only

The October 1993 flood was unexpected and resulted in major flooding throughout the Benalla and district area, which caused widespread devastation and significant social and economic costs to the community. The majority of the city was affected, including homes,



commercial premises, community facilities and roads. The tangible and intangible costs of the 1993 flood are summarised below:

### *Tangible Costs*

Tangible costs are the direct costs in economic terms of damage to property and possessions. In Benalla this included:

- **Business sector** – Damage to commercial premises, fittings, equipment, stock, industrial buildings and vehicles;
- **Residential sector** – Damage to houses, household fittings, equipment, appliances, personal effects, clothing, furniture, carpets, food, animals and other durables;
- **Infrastructure** – Damage to roads, footpaths, kerbs, bridges, drains, water supply, fencing, recreation reserves, car parks and communication networks;
- **Agricultural** – Loss of stock, damage to fences and property and loss of crops; and
- **Other** – Damage to childcare and community facilities, art gallery, town hall and state and federal government buildings.

It is estimated that the total cost to the community of the October 1993 flood, was between \$30 - \$50 million dollars although some estimates are as high as \$200 million.

## **Flood Mitigation**

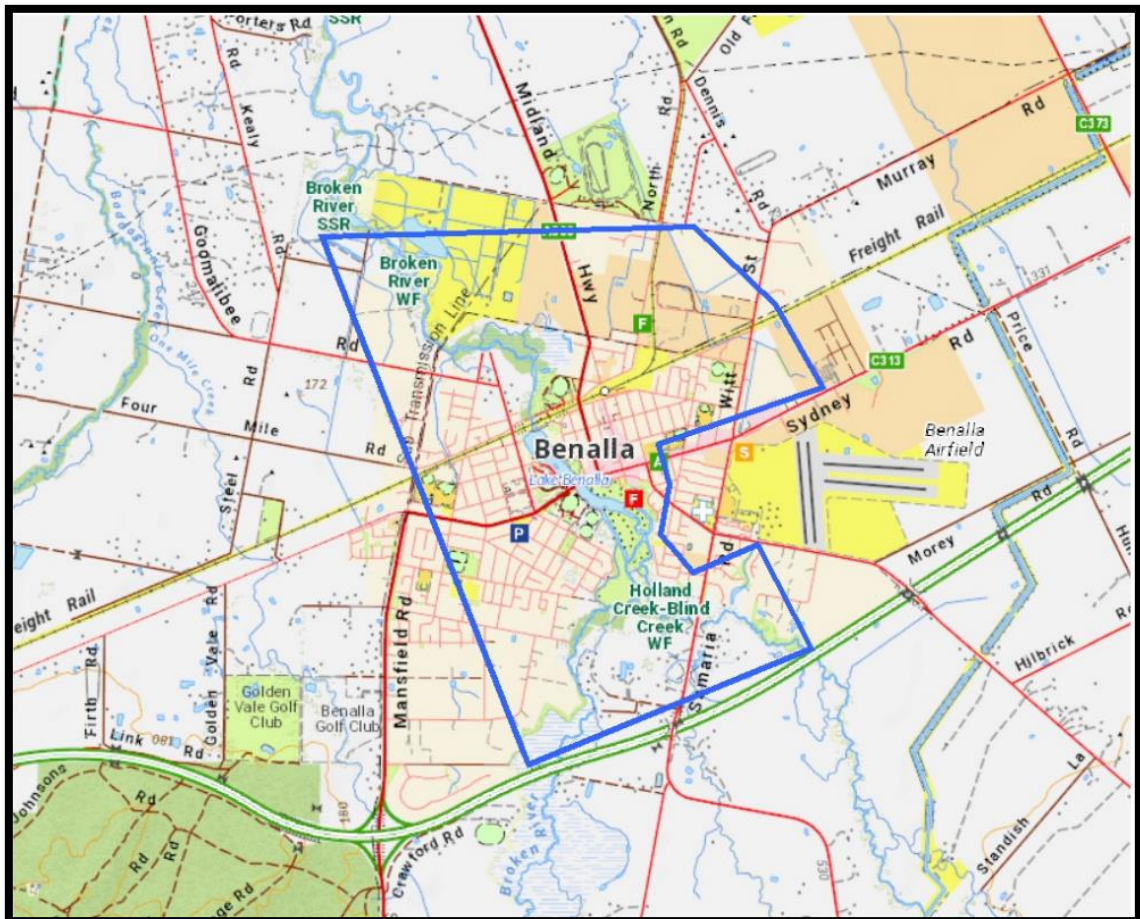
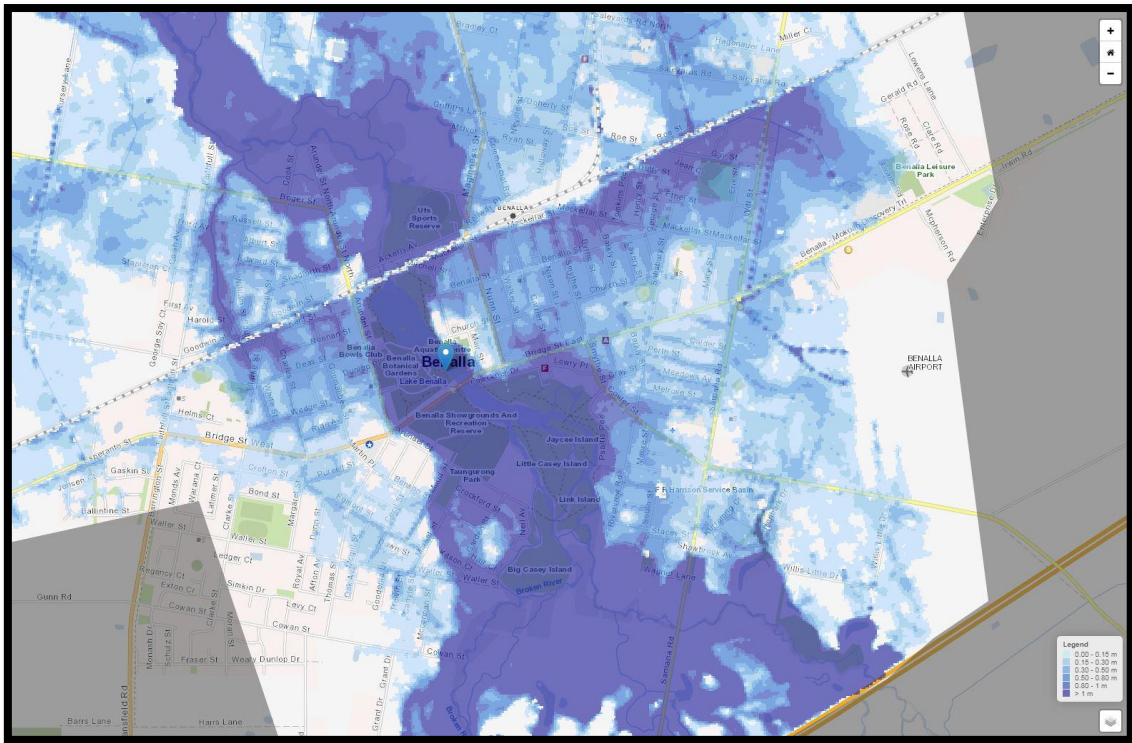
**Sandbag supplies** for Benalla Municipality are held at the Benalla SES unit, Devenish CFA, Baddaginnie CFA, Benalla Council and SES regional Headquarters.

**Sandbagging points** for Benalla will vary dependent on the size of the flooding occurring around Benalla.

- North Benalla will be at Denny Street car park dependent flooding predictions.
- South Benalla will be behind the Police station at Martin Place

# Flood Impacts and Required Actions

## 5.69 metres at the Benalla gauge with essential services identified



Created: Thursday 06 November 2020

### Private and Public Land

Area (ha)	% of incident covered	
166.2 (ha)	Public Land	11.5%
1,280.5 (ha)	Private Land	88.5%

### Land Tenure

Area (ha)	Land Tenure	% incident by land tenure	Details
72.7 (ha)	Other Land Tenure	5.0%	COMMUNITY USE AREA - 66.8 (ha) - 4.6% UNCATEGORISED PUBLIC LAND - 6.0 (ha) - 0.4%
52.2 (ha)	Natural Features Reserve	3.6%	BROKEN RIVER WATER FRONTAGE - 34.6 (ha) - 2.4% BROKEN RIVER FRONTAGE - 13.3 (ha) - 0.9% HOLLAND CREEK WATER FRONTAGE - 3.4 (ha) - 0.2% HOLLAND CREEK - BLIND CREEK WATER FRONTAGE - 0.9 (ha) - 0.1% BROKEN RIVER K26 SS.R. - 0.0 (ha) - 0.0%
41.3 (ha)	Services and Utilities	2.9%	-13.7 (ha) - 0.9% NORTH EASTERN RAILWAY - 7.7 (ha) - 0.5% BENALLA DNRE OFFICE - 5.0 (ha) - 0.3% BENALLA - YARRAWONGA RAILWAY - 4.3 (ha) - 0.3% BENALLA STATION - NORTH EASTERN RAILWAY - 4.3 (ha) - 0.3% BENALLA CIVIC CENTRE & CAR PARK - 2.5 (ha) - 0.2% MUNICIPAL DEPOT RS 8203 - 1.2 (ha) - 0.1% BENALLA PUBLIC BUILDINGS & COURT HOUSE - 1.0 (ha) - 0.1% MELBOURNE-SYDNEY RAIL LINE - 0.9 (ha) - 0.1% DRAIN - 0.3 (ha) - 0.0% RAIL YARDS BENALLA - 0.3 (ha) - 0.0%

### Land Manager

Area (ha)	Custodian	% incident by custodian
166.1	Other Land Manager	11.5%
.1	Water Authority	0.0%

## Life

Townships	1
Properties	4254
Hospitals	0
Health Care Facilities	0
Care Facilities	9
Retirement Villages	1
Schools/Pre-schools	6
Prisons	0
Camp Grounds	0
Caravan Parks and Group Camps	0
Neighbourhood Safer Places	0
Cultural Centres	3
Community Venues	2
Census - Population	7750
Census - Dwellings	3973

## Economic

Apiary	0
Vineyards	0
Industrial Facilities	1
Plantations	0.0 (ha)
Intensive Animal Production	0.0 (ha)
Irrigated Horticulture	0.0 (ha)
General Farming / Grazing	2099 (ha)
EPA Stockpile Sites	0

## Assets / Infrastructure

Power Facilities	0
Power Company Boundaries	1
Major Transmission Lines	7.4 (km)
Oil Pipelines	0.0 (km)
Gas Pipelines	0.0 (km)
Road Bridges	5
Foot Bridges	7
Major Roads	6.5 (km)
Major Rail	10.6 (km)
Wind Farms	0
Solar Farms	0
Emergency Services - Police, Fire, Ambulance, SES	5
Communication Services	1
Proclaimed Water Supply Catchments	0.0 (ha)
Water Asset (point)	14
Water Asset (line)	0.0 (km)
Water Asset (polygon)	0.0 (ha)
Water Infrastructure (point)	0
PTV School Bus Route	11
PTV Metro Bus Route	0
PTV Regional Bus Route	4
PTV Regional Coach Route	29

## Life

Townships	1	Benalla
Properties	4254	
Hospitals	0	
Health Care Facilities	0	
Care Facilities	9	Benalla Kids Cottage (child care) Benalla P-12 College Avon Street Campus (child care) Bernard Briggs Kindergarten (child care) Greater Hume Children Services (child care) Gum Nuts Resort (child care) Munro Avenue Preschool (child care) Ride Avenue Preschool (child care) Royal Freemasons Benalla (aged care) St Joseph Parish After School Care Benalla (child care)
Retirement Villages	1	St Josephs Villas
Schools/Pre-schools	6	Benalla P-12 College - Avon Street Campus (primary school) Benalla P-12 College - Clarke Street Campus (primary/secondary school) Benalla P-12 College (primary/secondary school) Edspace (special school) Fcj College (secondary school) St Josephs School (primary school)
Prisons	0	
Camp Grounds	0	
Caravan Parks and Group Camps	0	
Neighbourhood Safer Places	0	
Cultural Centres	3	Benalla Art Gallery (art gallery) Benalla Costume And Pioneer Museum (museum) Benalla Library (library)
Community Venues	2	Benalla Town Hall (hall) None (senior citizens)
Census - Population	7750	
Census - Dwellings	3973	

## Economic

Apiary	0	
Vineyards	0	
Industrial Facilities	1	Timber Mill
Plantations	0.0 (ha)	
Intensive Animal Production	0.0 (ha)	
Irrigated Horticulture	0.0 (ha)	
General Farming / Grazing	209.9 (ha)	Mixed farming and grazing (generally more than 20ha)
EPA Stockpile Sites	0	

## Assets / Infrastructure

Power Facilities	0	
Power Company Boundaries	1	SP AusNet
Major Transmission Lines	7.4 (km)	None
Oil Pipelines	0.0 (km)	
Gas Pipelines	0.0 (km)	
Road Bridges	5	Ackerly Av Bridge St West Gillies St Samaria Rd
Foot Bridges	7	Unnamed

## Assets / Infrastructure

Major Roads	6.5 (km)	Bridge St East Bridge St West Commercial Rd Coster St Maginness St Midland Hwy Nunn St Samaria Rd Smythe St
Major Rail	10.6 (km)	BENALLA-TATONG RAILWAY NORTH EASTERN RAILWAY None OAKLANDS LINE
Wind Farms	0	
Solar Farms	0	
Emergency Services - Police, Fire, Ambulance, SES	5	Benalla Ambulance Station Benalla Fire Station Benalla Local Command Facility Benalla Police Station Hvp Delatite Plantations Cfa Forest Industry Brigade
Communication Services	1	Benalla Telephone Exchange
Proclaimed Water Supply Catchments	0.0 (ha)	
Water Asset (point)	14	BENALLA SEWER WASTEWATER PURIFICATION PLANT, BENALLA (SEWERAGE) PS01 - COMMERCIAL ROAD PUMP STATION, BENALLA (SEWERAGE) PS02 - KENT STREET PUMP STATION, BENALLA (SEWERAGE) PS04 - FAITHFUL STREET PUMP STATION, BENALLA (SEWERAGE) PS05 - GAY STREET PUMP STATION, BENALLA (SEWERAGE) PS06 - ERIC STREET PUMP STATION, BENALLA (SEWERAGE) PS07 - SALISBURY STREET PUMP STATION, BENALLA (SEWERAGE) PS08 - SALEYARDS ROAD PUMP STATION (TANNERY), BENALLA (SEWERAGE) PS09 - CORREA CLOSE PUMP STATION, BENALLA (SEWERAGE) PS11 - MCCONNAN STREET PUMP STATION, BENALLA (SEWERAGE) PS12 - MIDWAY(GREENFREIGHT) FREIGHT PUMP STATION, BENALLA (SEWERAGE) PS14 - WTT STREET PUMP STATION, BENALLA (SEWERAGE) PS15 - ASCOT COURT PUMP STATION, BENALLA (SEWERAGE) PS16 - PARK PLACE PUMP STATION (RIVERGUM), BENALLA (SEWERAGE)
Water Asset (line)	0.0 (km)	
Water Asset (polygon)	0.0 (ha)	
Water Infrastructure (point)	0	
PTV School Bus Route	11	Baddaginnie - Benalla (Fallon's Bus Service P/L, 5772 1768) Goomalibee - Benalla (Read & Brack P/L, 9459 3000) Mansfield - Benalla (Read & Brack P/L, 9459 3000) Samaria - Benalla (Fallon's Bus Service P/L, 5772 1768) St James - Benalla (Read & Brack P/L, 9459 3000) Taminick - Benalla (Fallons Wangaratta Pty Ltd as Trustee for Fallon Wangaratta Family Trust, 5722 9255) Tatong - Benalla (Fallon's Bus Service P/L, 5772 1768) Thoona - Benalla (Fallon's Bus Service P/L, 5772 1768) Tungamah - Benalla (Read & Brack P/L, 9459 3000) Upper Lurg - Benalla (Read & Brack P/L, 9459 3000) Violet Town - Benalla (Read & Brack P/L, 9459 3000)
PTV Regional Bus Route	4	Benalla East (Benalla Bus Lines) Benalla West (Benalla Bus Lines)
PTV Regional Coach Route	29	Albury - Melbourne Via Seymour (V/Line) Bendigo - Albury Via Shepparton & Wangaratta (V/Line) Melbourne - Mulwala Via Seymour & Benalla (V/Line) Sydney - Adelaide Via Albury (V/Line)
PTV Night Bus Route	0	
Chair Lifts	0.0 (km)	
PV Camping Grounds	0	
PV Infrastructure Assets	0	
PV Building Assets	0	
PV Access Infrastructure	0	
PV Visitor Facility Assets	0	
PV Aquatic Assets	0	
Recweb Sites	0	

## Cultural Heritage

Ruins	0	
Historical Places	0	
Heritage Register	11	BENALLA BOTANIC GARDENS,1772,None BENALLA WATER SUPPLY DEPOT,3829,None BROAD GAUGE RAIL BRIDGE OVER BROKEN RIVER,3830,None FORMER BENALLA COURTHOUSE,3826,None FORMER LANDS OFFICE BENALLA,4753,None FORMER SHIRE OFFICES,44982,None GRANDSTAND BENALLA SHOWGROUNDS,4621,None HOLY TRINITY ANGLICAN CHURCH,3827,None NATIONAL BANK BENALLA,3828,None ROAD BRIDGE OVER BROKEN RIVER BENALLA,4609,None ST JOSEPHS CATHOLIC CHURCH,122,None
Heritage Inventory	0	
PV Cultural Heritage	0	

## Flood intelligence card-

### Gauge Location: Broken River at Location Benalla

River Height (m) and or River Flow (ML/d)	Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action <small>Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.</small>
2.2m		Access is cut to Ackerly Avenue (Stock Bridge) both from the north and south.	BRCC to arrange the closure of the road to traffic and notify RRV for Web notification
2.5m 10,400ML/D	Minor Flood Level % AEP ( <2 year ARI)	Floodwater starts to cover roads and paths in the Rose Gardens	BRCC to organise emergency signage of water over paths
2.74m		Floodwater flows into YMCA outdoor pool and under the Art Gallery	YMCA / Council to prepare facility for potential flooding and enact flood emergency plan.
3.05m		Floodwater enters area below Benalla Library, surrounding car parks and skate bowl.	BRCC to close and ensure all cars are removed from low lying car parks along Fawckner drive.
3.3m		Floodwater enters workshop below Art Gallery, Floodwater enters Brock Pavilion in Benalla Botanical Gardens.	The Art Gallery to implement flood emergency plan.
3.38m		1998 flood level	



<b>3.45m 28,500ML/D</b>	%20 AEP (5 year ARI)	Floodwater enters the Rose Garden Pavilion. Water starts inundate roads in Arundel ST STH, Market St and Benson St.	BRCC to erect road closed signs.
<b>3.5m</b>		Floodwater enters Benalla Basketball Pavilion and enters the CFA grounds	Benalla Basketball organisation to enact flood emergency plans to either lift or relocate to higher ground.
<b>3.60m</b>		Floodwater surrounds Art Gallery, spreads through Rose Gardens, ovals and enters Cricket and Hard-court Tennis Clubrooms.	Art gallery, Cricket and Tennis organisations to enact flood emergency plans, lift or relocate to higher ground. Benalla Council to erect closed signs to Rose garden.
<b>3.68</b>		Floodwater starts to cover Bridge St near the Botanical Gardens	Regional Roads Victoria to erect road closed signs.
<b>3.70m 34,600ML/D</b>	Moderate Flood Level % AEP (6 year ARI)		
<b>3.85 m</b>	1975 Sept flood level	<ul style="list-style-type: none"> <li>• Floodwater covers Jaycee Island and starts to enter the</li> <li>• Benalla Showgrounds, the UFS Reserve in Ackerly Ave and</li> <li>• Foreshore area of Lake Benalla near the Civic Centre.</li> </ul>	BRCC to erect closed road and closed area signs.
<b>4.06m 45,200ML/D</b>	% 10 AEP (10 year ARI)		

<b>4.25m</b>		Evacuation notifications start	Victoria Police evacuation manager enacts evacuation procedures for Zones (Refer to VicPol Evac plan)
<b>4.26 m</b>	2010 flood level.		
<b>4.27m 52,400ML/D</b>	May 1974 (13 year ARI)	Approximately 60 homes and businesses are at risk of over floor flooding. Floodwater starts to enter properties in Lowry Place and the Lawn Tennis Clubrooms Ackerly Ave.	BRCC to erect closed road and closed area signs. Vic Pol to consider preparedness for evacuation.
<b>4.30 m</b>		Floodwater starts to enter properties in Psaltis Parade	BRCC to erect closed road and closed area signs. Vic Pol to consider preparedness for evacuation.
<b>4.40 m</b>		Floodwater starts to flow into lower areas of the Central Business District, Carrier and Bridge Street.  Crockford and Market Streets.	<ul style="list-style-type: none"> <li>The stormwater opening is to be sealed via the floodgate at the stormwater outlet, Lake end of Carrier Street – place sandbags on sewer manhole covers subject to flooding.</li> <li>Water may also enter Benalla east via McKellar Street stormwater system and if so, seal opening with sandbags</li> <li>BRCC to erect closed road and closed area signs.</li> </ul>
<b>4.48 m</b>		(Investigate) Floodwater starts to enter properties in Neil Ave and	BRCC to erect closed road and

		Arundel St	closed area signs.
<b>4.50m 60,900ML/D</b>	Major Flood Level 7.7% AEP (13 year ARI)	Floodwater starts to enter properties and businesses in Bridge St east CBD.	BRCC to erect closed road and closed area signs.
<b>4.65 m</b>		Floodwater starts to enter properties in Arundel St, Nunn St	BRCC to erect closed road and closed area signs.
<b>4.70 m</b>		Floodwater starts to enter properties and businesses in Carrier St, Walker St and Smythe St	BRCC to erect closed road and closed area signs.
<b>4.80 m</b>		Many parts of the CBD Central Business District likely to experience inundation/overflow flooding. Benalla Bowls Club starts to flood.	Benalla Bowls Club to enact flood emergency plans to either lift or relocate to higher ground.
<b>4.85 m</b>		approx 200 homes and businesses at risk of overflow flooding.	Victoria Police evacuation manager enacts evacuation notifications for Zone 2 and Sectors 1 - 5
<b>4.90 m</b>		Many homes and businesses in Benalla West and Benalla East are likely to experience overflow flooding or isolation.	
<b>5.25m 96,500ML/D</b>	2% AEP (50 year ARI)		
<b>5.50m 112,000ML/D</b>	1993 Oct flood level. 1.3% AEP (74 year ARI)	Many areas experienced floodwater travelling through the stormwater drain system and	

		affecting many homes and properties. At this height over 540 homes and businesses at risk of over floor flooding	
<b>5.69m 124,000ML/D</b>	1% AEP (100 year ARI)		
<b>x.xx</b>	0.5% AEP (200 year ARI) SS		
<b>x.xx</b>	Probable Maximum Flood (PMF)		

Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Institute of Disaster Resilience (AIDR) Handbook series on managing the Floodplain.

# Appendix C2: Granite Creeks Floodplain

## IMPORTANT NOTES:

The flood intelligence for the Granite Creeks Floodplain included in this Appendix is based on flood modelling undertaken by Water Technology as part of the Granite Creeks Regional Flood Study (2018).

## 1. Introduction

The Granite Creeks Floodplain is a general term that encompasses all tributaries of the Goulburn and Broken Rivers passing under the Hume Freeway between Hughes Creek in the south along to Baddaginnie Creek in the north. These tributaries rise on the northern slopes of the Strathbogie Ranges, before passing under the Hume Freeway onto relatively flat floodplains before flowing into the Goulburn and Broken Rivers, with a total catchment area of 4,070 km<sup>2</sup>. The following section refers to the general area outside of major townships of Euroa, Violet-Town, Nagambie and Avenel.

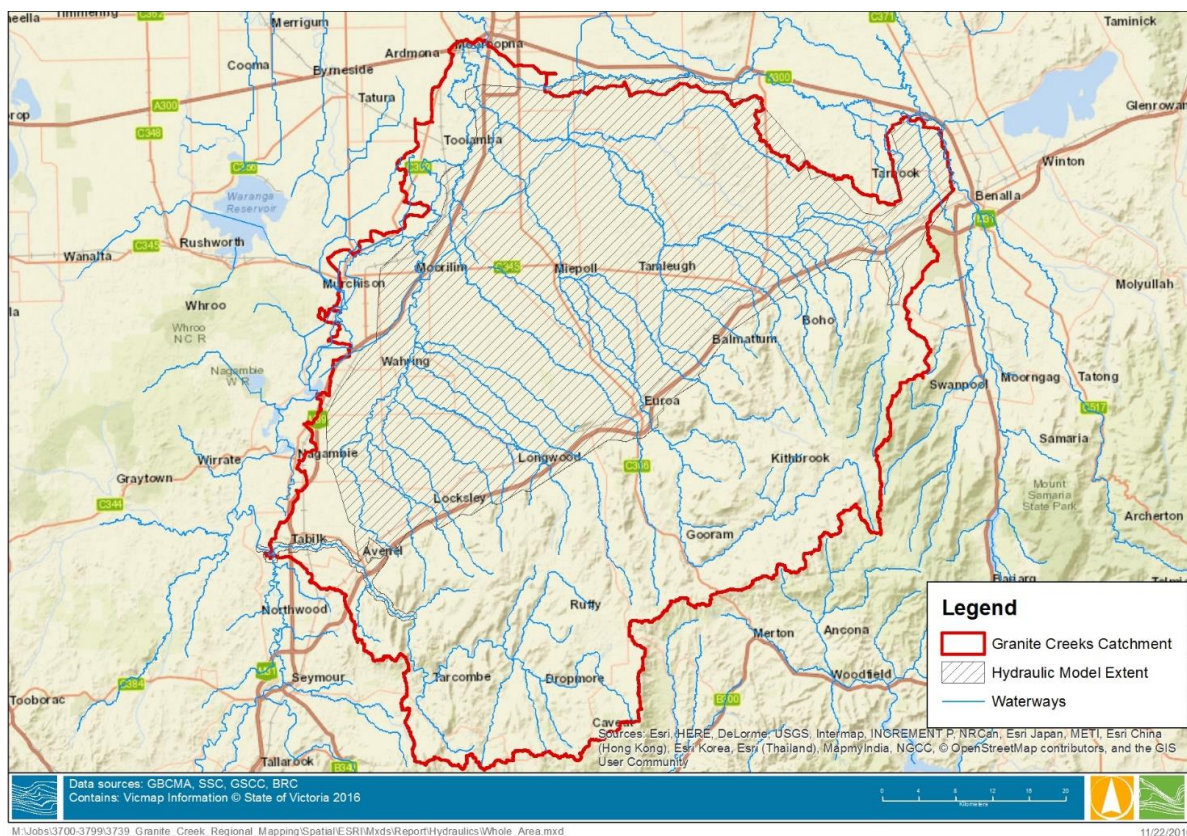


Figure 1 Granite Creeks Study Area

## 2. Overview of Flooding

The relatively flat nature of the floodplain downstream of the Hume Freeway and Strathbogie Ranges results in floodwaters spreading out-of-bank across the floodplain to neighbouring

waterways. Previous flood studies on larger towns along the Hume Freeway such as Euroa and Violet Town have identified that the waterways which pass through these towns (Seven Creeks and Honeysuckle Creek) are prone to out-of-bank flooding during large rainfall events in the Strathbogie Ranges. Two other larger waterways which drain the catchment are Pranjip Creek which drains a number of the waterways in the southern part of the catchment, and Castle Creek which runs almost parallel to Seven Creeks and also flows through Euroa before flowing to the Goulburn River at Arcadia.

The relatively flat nature of the lower floodplain leads to road and rail embankments, channels and levees becoming important hydraulic controls across the floodplain. The East Goulburn Main Channel traverses the lower floodplain resulting in a constriction during large flow events.

Although according to the Granite Creeks Regional Flood Mapping (Water Technology, 2019), much of this region is covered by 1% Annual Exceedance Probability (AEP) flood extents, the reliability of these extents varies widely. There is also limited information for flood events of different magnitudes other than the 1% AEP flood event. This limits the quality of decisions that can be made relating to land use planning, emergency response, community education and awareness, and flood risk insurance.

Significant flooding has occurred in the Granite Creeks area in 1916, 1973, 1974, 1975, 1992, 1993, 2010 and 2017, however there are a number of significant localised events for each of the tributaries that may differ across the study area.

## 2.1. Roads Flooded

The following table (Table 1) summarises the roadways which are flooded by several key waterways in Granite Creek Floodplain, with a range of designed flood events (from 20% AEP to 1% AEP).

**Approach** – the road approaching the bridge is flooded so that the access to the bridge is cut off, but the bridge itself is above the water level.

**Bridge** – the water level in the channel overtops the bridge deck.

**Table 1 - Main Roads Inundated**

Waterway	Roadway	20% AEP	10% AEP	5% AEP	2% AEP	1% AEP
Branch Creek	Mogolonemby Road (Council)	Approach Cut	Approach Cut	Approach Cut	Approach Cut	Approach Cut
Castle Creek	Pranjip Road (Council)	-	Approach Cut	Approach Cut	Approach Cut	Approach Cut
Castle Creek	Murchison-Violet Town Road (RRV)	-	-	Approach Cut	Approach Cut	Approach Cut
Creightons Creek	Longwood-Pranjip Road (Council)	-	-	-	Approach Cut	Approach Cut

Honeysuckle Creek	Euroa-Shepparton Road (RRV)	-	-	-	Approach Cut	Bridge Overtopped
Pranjip Creek	Longwood-Pranjip Road (Council)	-	Approach Cut	Bridge Overtopped	Bridge Overtopped	Bridge Overtopped
Riggs Creek	Murchison-Violet Town Road (RRV)	-	-	-	-	Bridge Overtopped
Seven Creeks	Mogolonemby Road (Council)	Approach Cut	Approach Cut	Approach Cut	Approach Cut	Approach Cut
Sheep Pen Creek	Dookie-Violet Town Road (RRV)	Approach Cut	Approach Cut	Approach Cut	Approach Cut	Approach Cut
Stony Creek	Shepparton-Violet Town Road (Council)	-	-	-	Approach Cut	Approach Cut
Wormangal Creek	Dargalong Road (Council)	-	Approach Cut	Bridge Overtopped	Bridge Overtopped	Bridge Overtopped

## 2.2. Properties Flooded

Based on the model developed in Granite Creeks Regional Flood Mapping Project (Water Technology, 2019), the number of properties inundated and isolated within the area are identified with corresponding flood event and summarised in Table 2 below.

**Properties Inundated** – properties (mainly residential buildings) are affected during a flood event.

**Properties Isolated** – road access to the building is cut off from accessing any major transport networks or from major towns.

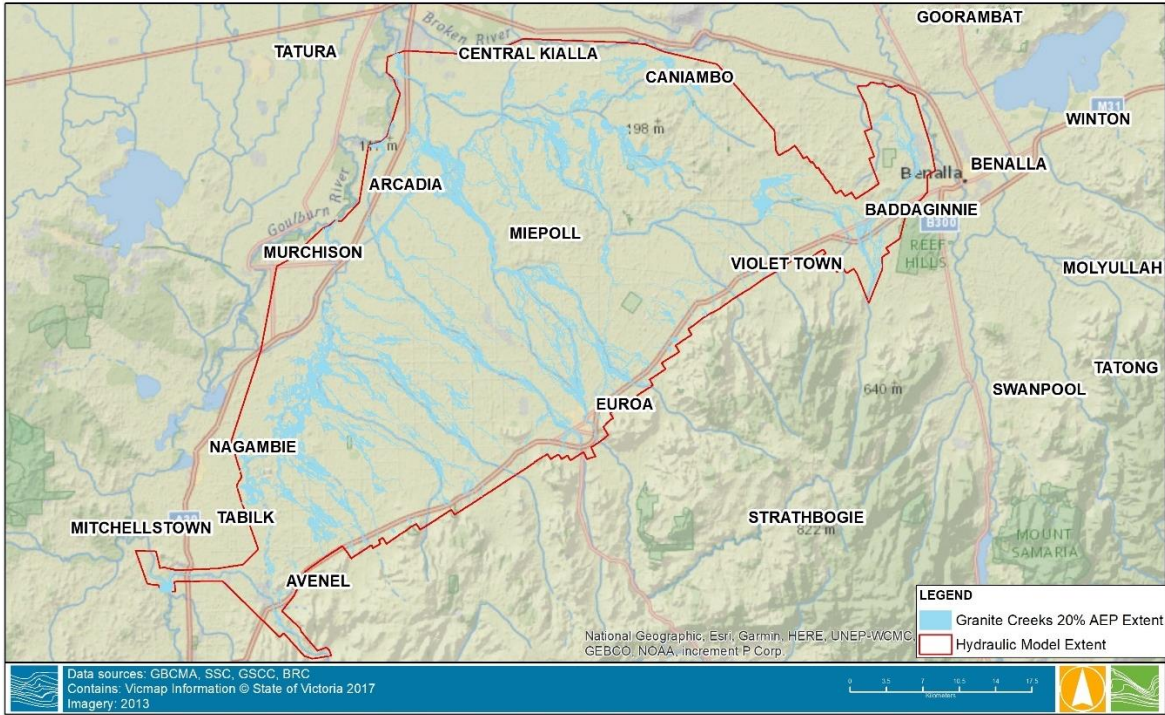
**Table 2 Granite Creeks Properties and Inundated**

Flood Event	Number of Properties Inundated	Number of Properties Isolated
20% AEP	29	42
10% AEP	42	61
5% AEP	61	98
2% AEP	106	112
1% AEP	149	154
0.5% AEP	183	188
0.2% AEP	241	225

## 4.5 Design Maps

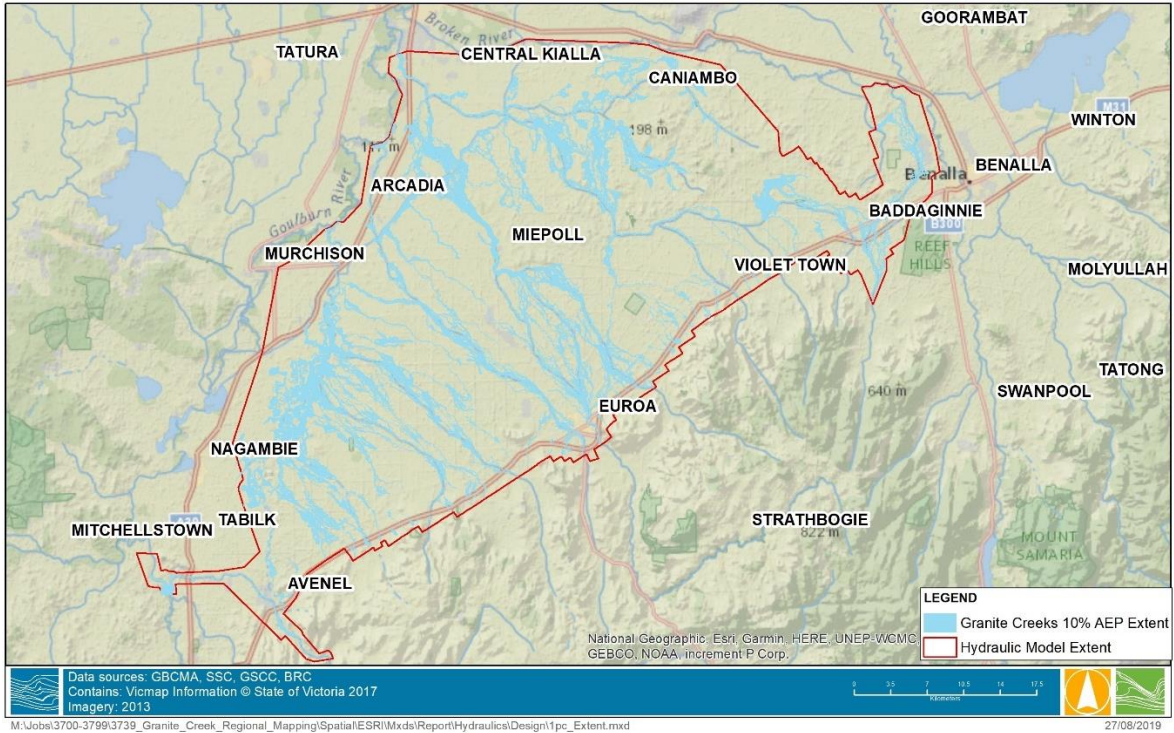
This section shows the flood extent maps with designed flood events, which are aimed to identify the flood behaviour in a large scale. The total area of the flood extents varies in a wide range with different designed event.

## Granite Creeks–20% AEP (5 year ARI) Flood Extents

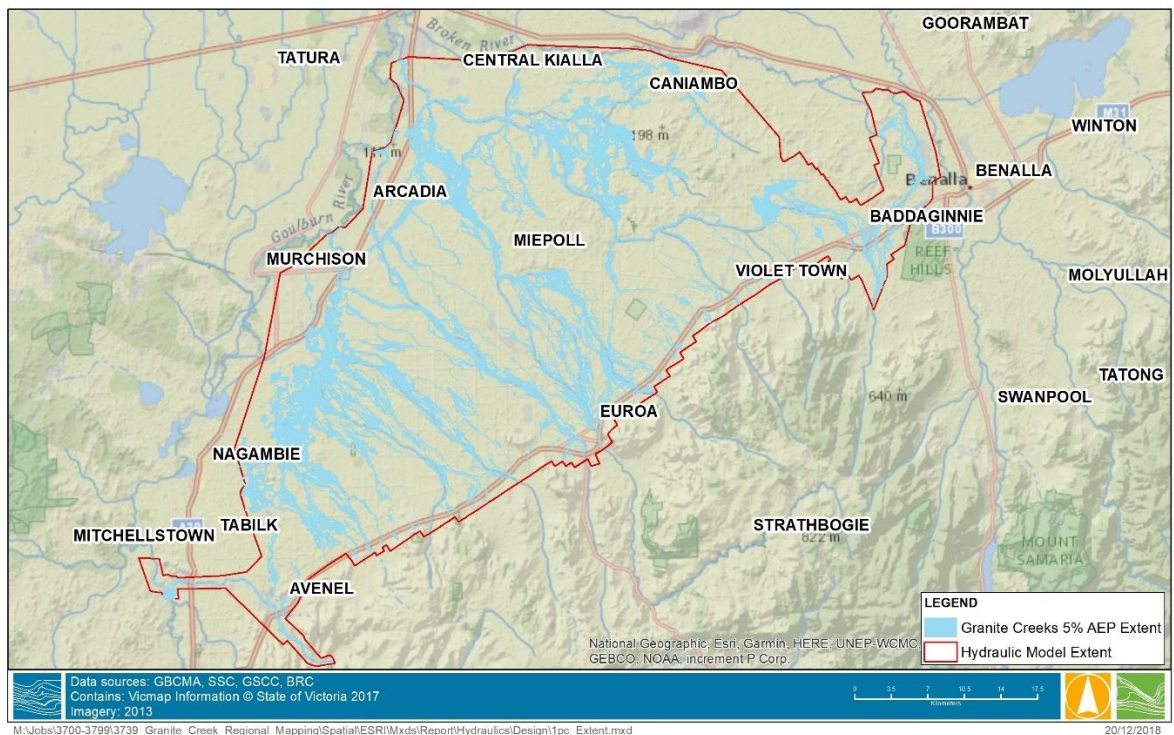




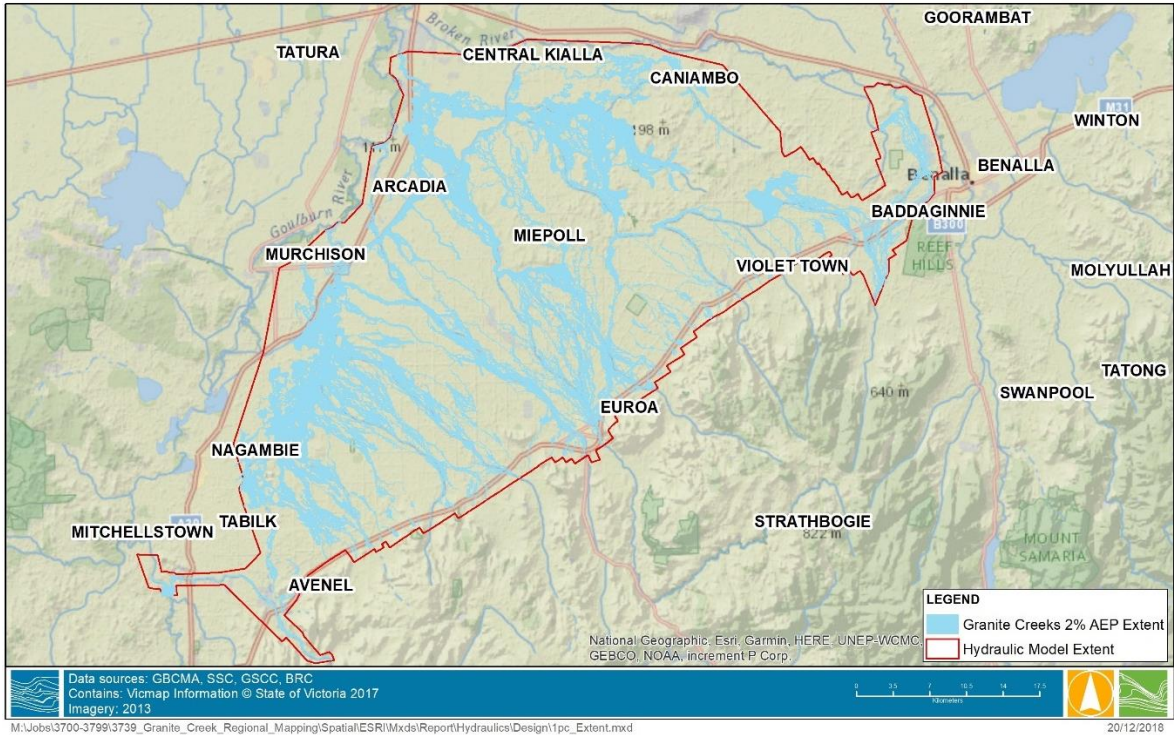
## Granite Creeks–10% AEP (10 year ARI) Flood Extents



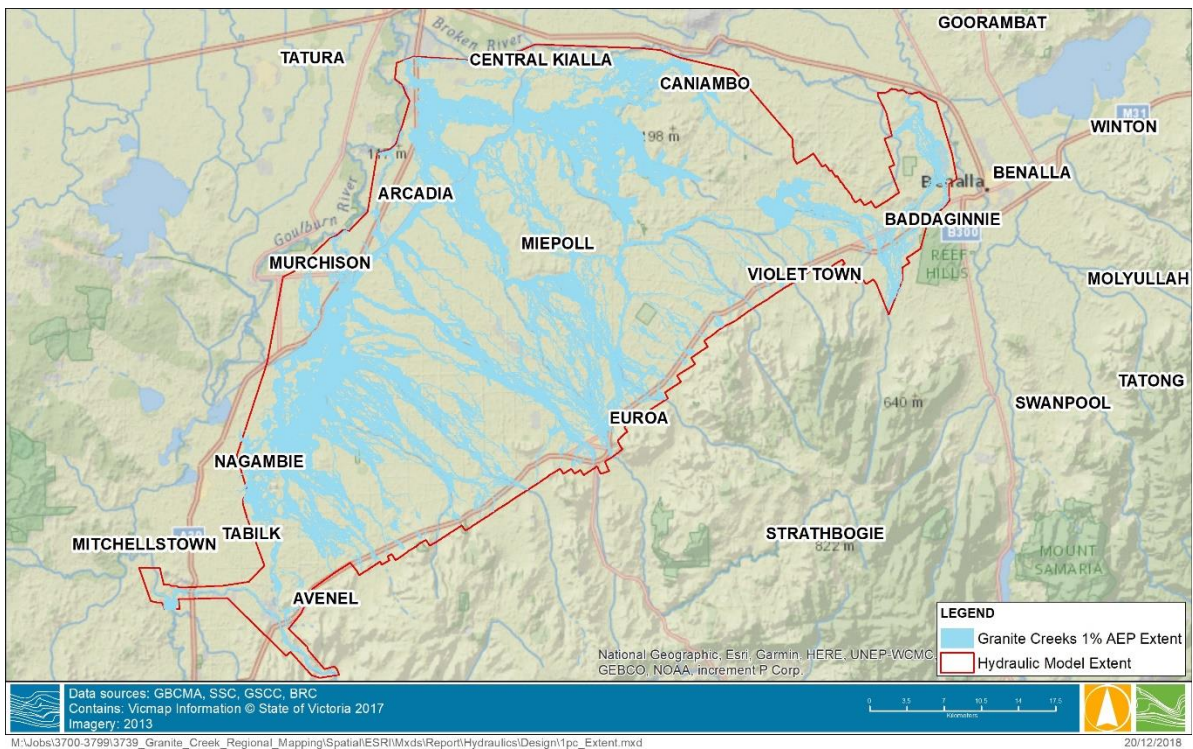
## Granite Creeks–5% AEP (20 year ARI) Flood Extents



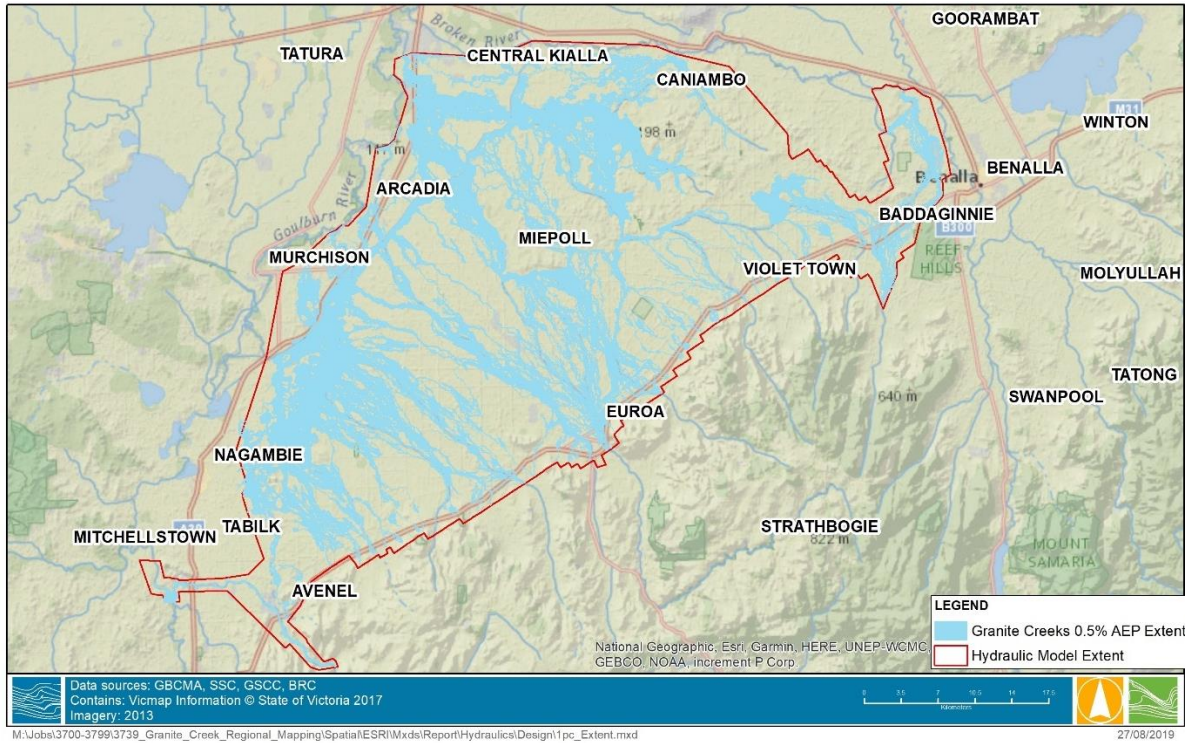
## Granite Creeks–2% AEP (50 year ARI) Flood Extents



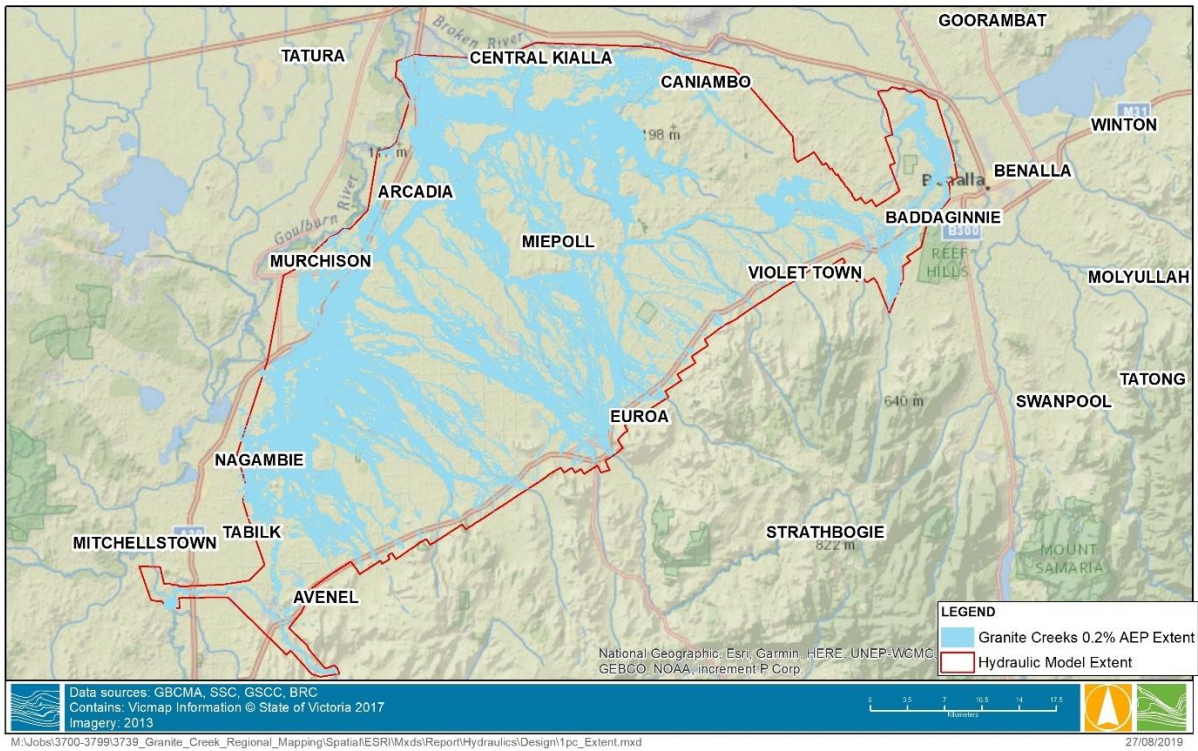
## Granite Creeks–1% AEP (100 year ARI) Flood Extents



## Granite Creeks–0.5% AEP (200 year ARI) Flood Extents



## Granite Creeks– 0.2% AEP (500 year ARI) Flood Extents



# Appendix D: Flood evacuation arrangements

## Phase 1 - Decision to Evacuate

The decision to evacuate is to be made in consultation with the MEMO, MERC, DFFH, Health Commander and other key agencies and expert advice (CMA's and Flood Intelligence specialists).

The Incident Controller may make the decision to evacuate an at-risk community under the following circumstances:

- Properties are likely to become inundated;
- Properties are likely to become isolated and occupants are not suitable for isolated conditions;
- Public health is at threat as a consequence of flooding and evacuation is considered the most effective risk treatment. This is the role of the Health Commander of the incident to assess and manage. Refer to the State Health Emergency Response Plan (SHERP) for details;
- Essential services have been damaged and are not available to a community and evacuation is considered the most effective risk treatment.

The following should be considered when planning for evacuation:

- Anticipated flood consequences and their timing and reliability of predictions;
- Size and location of the community to be evacuated;
- Likely duration of evacuation;
- Forecast weather;
- Flood Models;
- Predicted timing of flood consequences;
- Time required and available to conduct the evacuation;
- Evacuation priorities and evacuation planning arrangements;
- Access and egress routes available and their potential flood liability;
- Current and likely future status of essential infrastructure;
- Is cross border assistance required or evacuation to another municipality relief centre?;
- Resources required and available to conduct the evacuation;
- Shelter including Emergency Relief Centres, Assembly Areas etc.;
- Vulnerable people and facilities;
- Transportation;
- Registration;
- People of CALD background and transient populations;
- Safety of emergency service personnel;
- Different stages of an evacuation process.

The table below details triggers for evacuation, if these heights are predicted or are likely to occur evacuation should be considered

Sector	Gauge	Trigger
Zone 1 Sector 1	4.25 – 3.7 Metres Benalla	Co-ordinated check list on residents visited can be conducted and recorded. Evacuation
Zone 1 Sector 2	4.25 – 3.7 Metres Benalla	Co-ordinated check list on residents visited can be conducted and recorded. Evacuation
Zone 2 Sector 1	4.85 Metres Benalla	Co-ordinated check list on residents visited can be conducted and recorded. Evacuation
Zone 2 Sector 2	4.85 Metres Benalla	Co-ordinated check list on residents visited can be conducted and recorded. Evacuation
Zone 2 Sector 3	4.85 Metres Benalla	Co-ordinated check list on residents visited can be conducted and recorded. Evacuation
Zone 2 Sector 4	4.85 Metres Benalla	Co-ordinated check list on residents visited can be conducted and recorded. Evacuation
Zone 2 Sector 5	4.85 Metres Benalla	Co-ordinated check list on residents visited can be conducted and recorded. Evacuation

The table below details time required to evacuate established areas.

Sector	Likely time required for evacuation (including resource assumptions)
Zone 1 Sector 1	Arundel Street South (b/w Market St & Neil Ave) Benson Street (b/w Garden St & Neil Ave) Crockford Street Hair Crescent Market Street (b/w Arundel St & Crockford St)

	Neil Avenue Quantrill Avenue
Zone 1 Sector 2	Arundel Street (b/w Deas St & Wedge St) Bennison Court Bridge Street (b/w Smythe St & Nunn St) Fawckner Drive Nunn Street (b/w Mackellar St & Church St) Psaltis Parade Rebbechi Court Smythe Street (b/w Mackellar St & Church St) Walker Street (b/w Mackellar St & Church St)
Zone 2 Sector 1	Arundel Street (b/w Wedge St & Market St) Benson Street (b/w Garden St & Maud St) Dunn Street Egmont Street (b/w Thomas St & Margaret St) Garden Street (b/w Crockford St & Egmont St) Margaret Street (b/w Bridge St & Bond St) Martin Place Maud Street (b/w Arundel St & Egmont St) Purcell Street
Zone 2 Sector 2	Albert Street Amos Street Arundel Street (b/w Deas St & the railway line) Boger Street Bourke Street Charles Street Coish Avenue Cook Street (b/w Shadforth St & Boger St) Deas Street (b/w Arundel St & Charles St) Dunlop Place Edward Street Faithful Street (b/w Deas St & Kent St) Graeme Court Kent Street Mathieson Court Noonan Street Russell Street Second Avenue Shadforth Street Stapleton Street Swanlea Avenue Third Avenue

	William Street Nth William Street Sth
Zone 2 Sector 3	Ackerley Avenue Chiswell Court Commercial Road Cunningham Street Doherty Street Duffy Street Ethel Court George Street Gillies Street Gordon Street Griffiths Lane Hannah Street Henry Street Holloway Street Howard Street Jean Court Maginness Street McIvor Street Railway Place Roe Street Ryan Street Salisbury Street (b/w Gay St & Mackellar St) Tompkins Parade
Zone 2 Sector 4	Barkley Street Benalla Street Byrne Street Carrier Street Church Street (b/w Walker St & Salisbury St) Coster Street (b/w Riverview Rd & Gray St) Hiscock Court Killena Avenue King Street Lavery Street Mackellar Street Nixon Street Sharp Street
Zone 2 Sector 5	Ascot Court Calder Street Coster Street (b/w Riverview Rd & Samaria Rd) Elizabeth Street Herons Court Hope Street Ibis Court Ironbark Drive Kathryn Street Kilfeera Road (to Willis Little Drive)

	Kingfisher Court Kurrajong Court Meadows Avenue (eastern half to Samaria Rd) Melrose Street (eastern half to Samaria Rd) Moore Street Park Place Parkview Parade Peppermint Place Perth Street (eastern half to Samaria Rd) Rivergum Avenue Riverview Road Stacey Street Samaria Road (b/w Calder St & Shawbrook Ave) Short Street Stewart Street South Street Tower Road Union Street Wattletree Grove
--	---

## Phase 2 – Warning

Warnings may include a warning to ‘prepare to evacuate’ and a warning to ‘evacuate now’. Once the decision to evacuate has been made, the at-risk community will be warned to evacuate. Evacuation warnings should be disseminated via methods listed in appendix D of this plan.

## Phase 3 – Withdrawal

VICPOL is the responsible agency for evacuation. VICSES will provide advice regarding most appropriate evacuation routes and locations for at-risk communities to evacuate to.

VICSES, CFA, AV and Local Government will provide resources where available to support VICPOL/VICROADS with route control and may assist VICPOL in arranging evacuation transportation.

VICPOL will control security of evacuated areas.

Evacuees will be encouraged to move using their own transport where possible. Transport for those without vehicles or other means will be arranged

Possible Evacuation Routes to be used:

Sector	Evacuation Route	Evacuation route closure point and gauge height of closure
Zone 1 Sector 1	South from Broken River	



Zone 1 Sector 2	North from Broken River	
Zone 2 Sector 1	South from Broken River	
Zone 2 Sector 2	South from Broken River	
Zone 2 Sector 3	North from Broken River	
Zone 2 Sector 4	North from Broken River	
Zone 2 Sector 5	North from Broken River	

Landing zones for helicopters (if possible) are located at: Benalla Airport

**BENALLA**

**ELEV 569**

**AVFAX CODE 3030**

VIC

UTC +10

YBLA

S 36 33.2

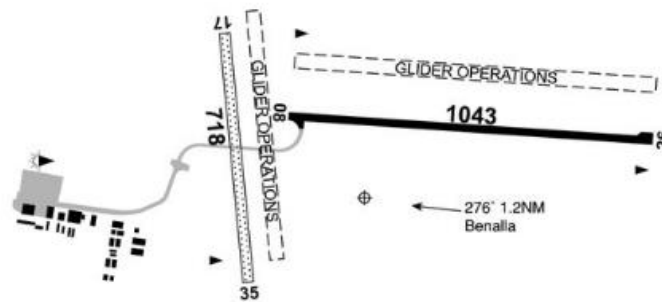
E 146 00.5

VAR 12 DEG E

REG

AD OPR Benalla Rural City Council, PO Box 227, Benalla, VIC, 3672. PH 03 5760 2600.

Fax 03 5762 5537.



**REMARKS**

AD Charges: All AVTUR ACFT.

**HANDLING SERVICES AND FACILITIES**

Gliding Club of Victoria: D 2300-0700 (2200-0900 HDS), 1 HR PN. Phone 03 5762 1058, Fax 5762 5599. AVGAS, O117. No Carnet. AC, BC, V, MC.

**AERODROME OBSTACLES**

- 30FT PWR line 365DEG 0.2NM FM RWY 17 THR.
- 79FT water tower 248DEG 0.85NM FM RWY 08 THR.
- Unlit 100FT radio tower 272DEG 0.94NM FM RWY 08 THR.

**PHYSICAL CHARACTERISTICS**

08/26	083	34c	PCN 10 /F /B /450 (65PSI) /U Grass. Central	WID 30	RWS 90
			18(60) sealed.		
17/35	164	24c	5700/450 (65PSI) Grass slit clay.	WID 30	RWS 90

**AERODROME AND APPROACH LIGHTING**

RWY 08/26 LIRL PAL 123.4

RWY 08/26 PTBL(1)

(1) EMERG only

**ATS COMMUNICATIONS FACILITIES**

FIA MELBOURNE CENTRE 125.2 Circuit area

Special needs groups will be/are identified in Council's 'residents at risk' register. This can be done through community network organisations. Further information on Council's 'residents at risk' register can be obtained from Victoria Police and Benalla Rural City Council.

## Phase 4 – Shelter

Relief Centres and/or assembly areas which cater for people's basic needs for floods may be established to meet the immediate needs of people affected by flooding. The flood relief centres and/or Assembly Areas are listed in the table below and for a detailed list of capacity, please refer to the Benalla MEMP Relief centre list:

Sector	Shelter type (Relief Centre/ Assembly Area (include address))	Comments
South	P12 College stadium Faithfull St, Benalla VIC 3672	In a significant flood this could be the Primary Relief Centre
North	BPACC 57 Samaria Rd, Benalla VIC 3672	In a significant flood this could be the Secondary Relief Centre

VICPOL in consultation with VICSES will liaise with Local Government and DFFH (where regional coordination is required) via the relevant control centre to plan for the opening and operation of relief centres. This can best be achieved through the Emergency Management Team (EMT).

## Animal Shelter

Animal shelter compounds will be established for domestic pets and companion animals of evacuees. These facilities may be located at locations detailed below and coordinated by BRCC who has a contract with RSPCA Wangaratta for the responsibility of housing displaced and lost / stray companion animals (refer Benalla Rural City Council Animal Welfare Plan located in Crisisworks)

## Caravans

Caravans or caravan parks may be relocated to the following locations: The Benalla Holiday Park and Benalla Tourist Park and Motel Sydney Road, would be suited to stay in situ during a Major flood. Access and Egress to the Hume freeway will not be lost during flooding.

## Phase 5 – Return

The Incident Controller in consultation with VICPOL will determine when it is safe for evacuees to return to their properties and will arrange for the notification of the community.

VicPol will manage the return of evacuated people with the assistance of other agencies as required.

Considerations for deciding whether to evacuate include:

- Current flood situation;
- Status of flood mitigation systems;
- Size and location of the community;
- Access and egress routes available and their status;
- Resources required to coordinate the return;
- Special needs groups;
- Forecast weather;
- Transportation particularly for people without access to transport

## Disruption to Services

Disruption to a range of services can occur in the event of a flood. This may include road closures affecting school bus routes, truck routes, water treatment plant affecting potable water supplies etc.

Service	Impact	Trigger Point for action	Strategy/ Temporary Measures
Benalla Health CNR Coster Street and Samaria Road, Benalla	Isolation and or inundation	5% AEP	Relocate and or coordinate with Hospital management or Health Commander
Electricity Sub-Station CNR Baddaginnie- Benalla Road and	Isolation and or inundation.	5% AEP	Coordinate with electricity facility owner (AusNet)

Mansfield Road, Benalla	Loss of electricity		
Benalla Sewerage Treatment Facility Holdsworth Road, Benalla	Isolation and or inundation  Loss of Sewerage	5% AEP	Coordinate facility owner with (North East Water)
Benalla Airport Samaria Road, Ryans Creek	Isolation and or inundation  Potential loss medical evacuation	2% AEP	Coordinate facility owner with (Benalla Rural City Council)
CBD	Loss of business stock / service for the Benalla community	1% AEP	Early warning and businesses enacting flood actions to reduce stock loss and damage.

## Essential Community Infrastructure and Property Protection

Essential Community Infrastructure and properties (e.g. residences, businesses, roads, power supply etc.) that require protection are:

Facility	Impact	Trigger Point for action	Strategy/ Temporary Measures
Benalla CFA  20 Fawckner Drive, Benalla	Isolation	1% ARI	Relocate
Rural Ambulance Victoria  142 Bridge Street, Benalla	Isolation	1% ARI	Relocate
Benalla SES Unit  1 Samaria Road, Benalla	Isolation and or inundation	1% ARI	Relocate
CBD	Loss of business stock / service for the Benalla community	1% AEP	Early warning and businesses enacting flood actions to reduce stock loss and

			damage.
--	--	--	---------

Benalla Rural City Council and VicSES will establish a sandbag collection point at (Location may change)

- North Benalla – Will Be in Denny Street
- South Benalla – Will be behind the Police Station in Martin Place

## Public Information and Warnings

VICSES uses EM-COP Public Publishing to distribute riverine and flash flood warnings in Victoria. The platform enables automatic publishing to the VicEmergency app, website and hotline (1800 226 226). Communities can also access this information through VICSES social media channels (Victoria State Emergency Service on Facebook and VICSES News on Twitter) and emergency broadcasters, such as Sky News TV and various radio stations (current list available via the [EMV website](#)).

VICSES Regions (or ICCs where established) lead the issuing of warnings for riverine flood events when pre-determined triggers are met (issuing of a BOM Flood Watch or Warning), and share locally tailored information via the standard VICSES communication channels (social media, traditional media, web and face to face). These activities are coordinated by the VICSES RDO and approved by the VICSES RAC, or the PIO and IC respectively (when an ICC is active).

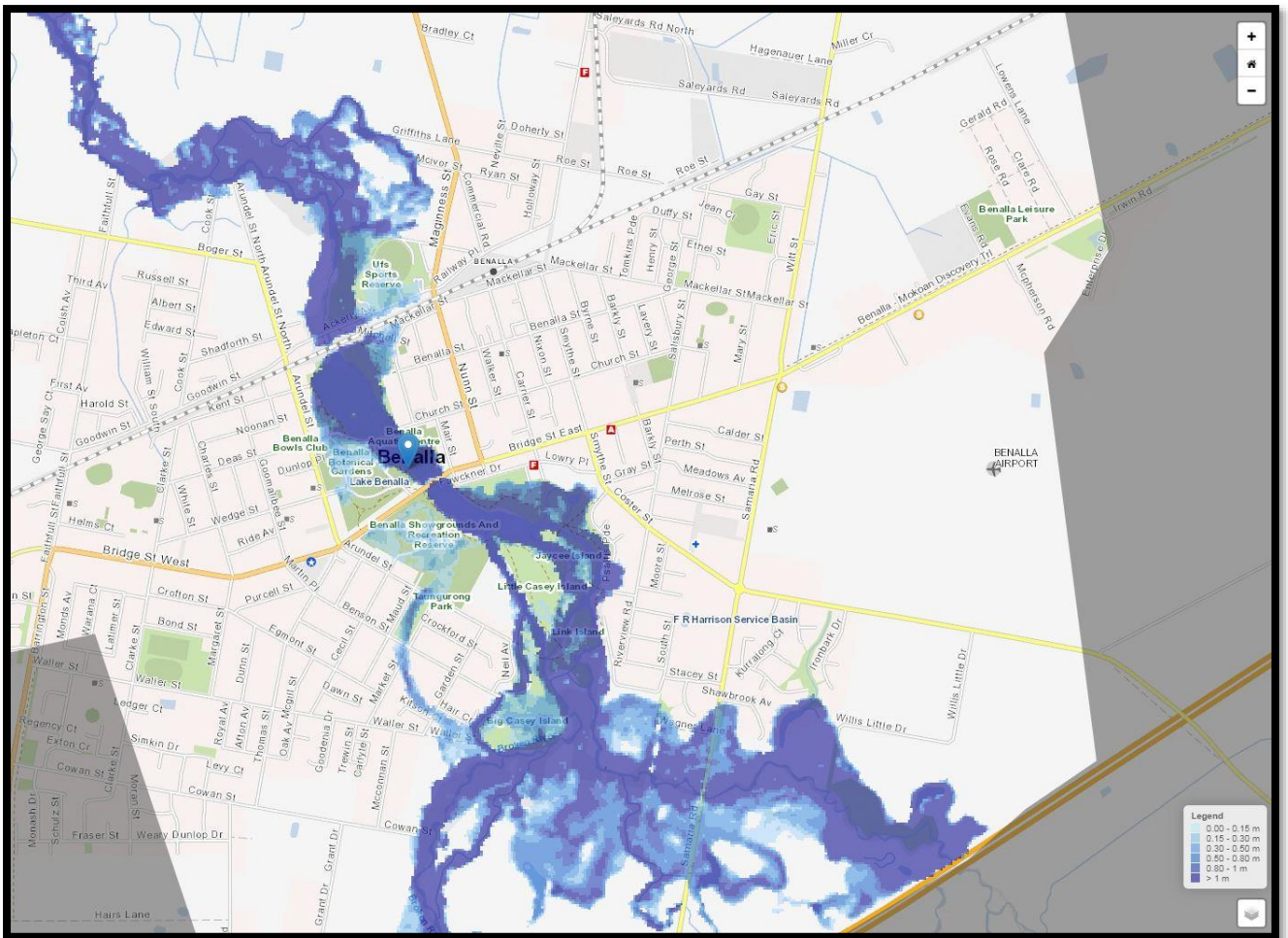
If verified reports are received of flash flooding posing, or resulting in, a significant threat to life or property, VICSES Regions (or ICCs) will issue a flash flood warning product via EM-COP.

VICSES at the state tier (or SCC Public Information Section) plays an important role in sharing riverine and flash flood information via state-based standard communication channels.

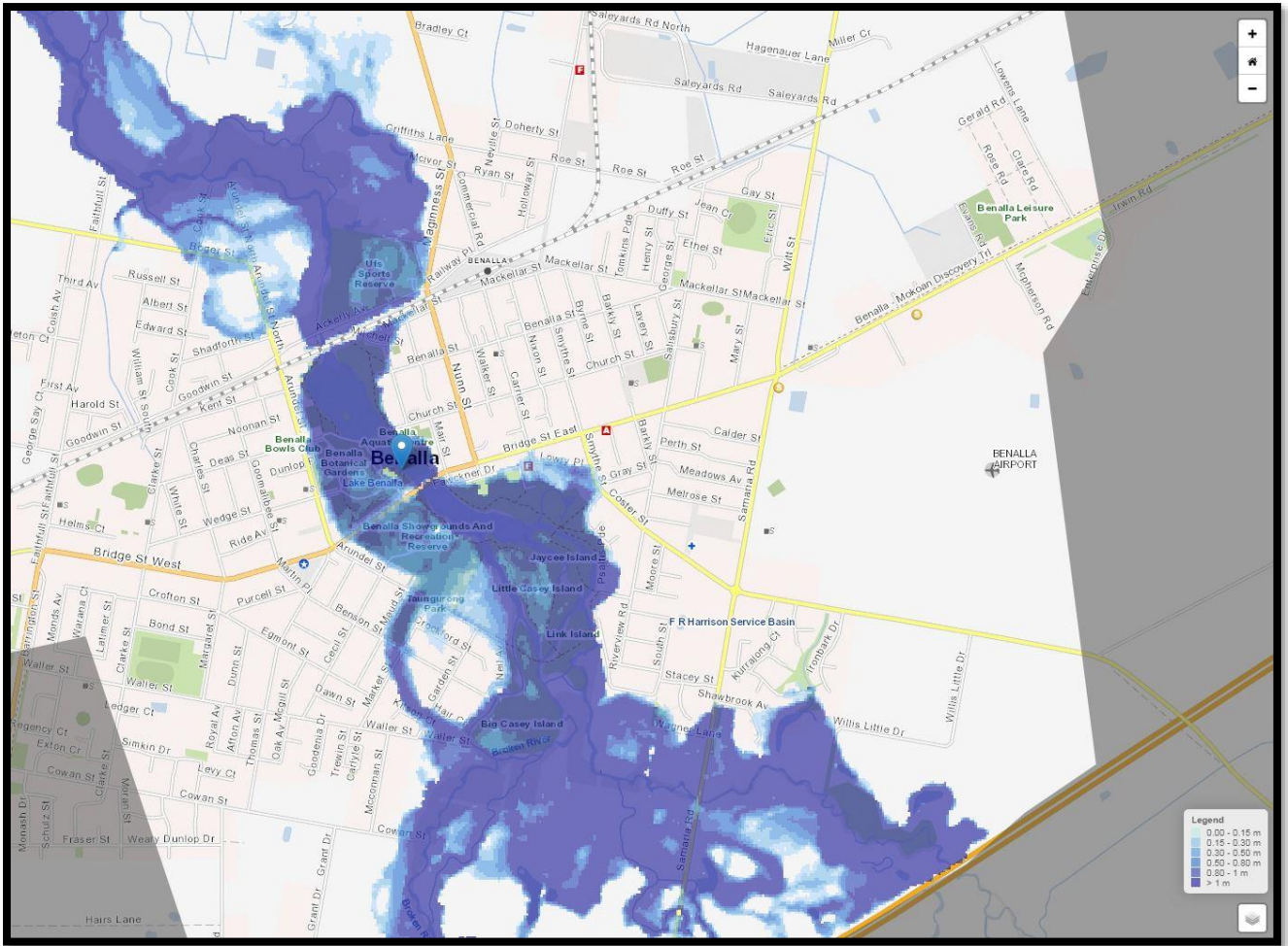
During some emergencies, VICSES may alert communities by sounding a local siren, or by using the Emergency Alert (EA) platform to send an SMS to mobile phones or a voice message to landlines. The use of sirens for higher-end warnings has been pre-determined, and mapped to relevant warning templates in EM-COP.

EM-COP Public Publishing Business Rules for Riverine and Flash Flood are available in the **Public Information tab of the IMT Toolbox**, providing further guidance on specific triggers, roles and responsibilities. VICSES SOP057 and JSOP 04.01 provide further guidance.

# Appendix F: Maps and Schematics

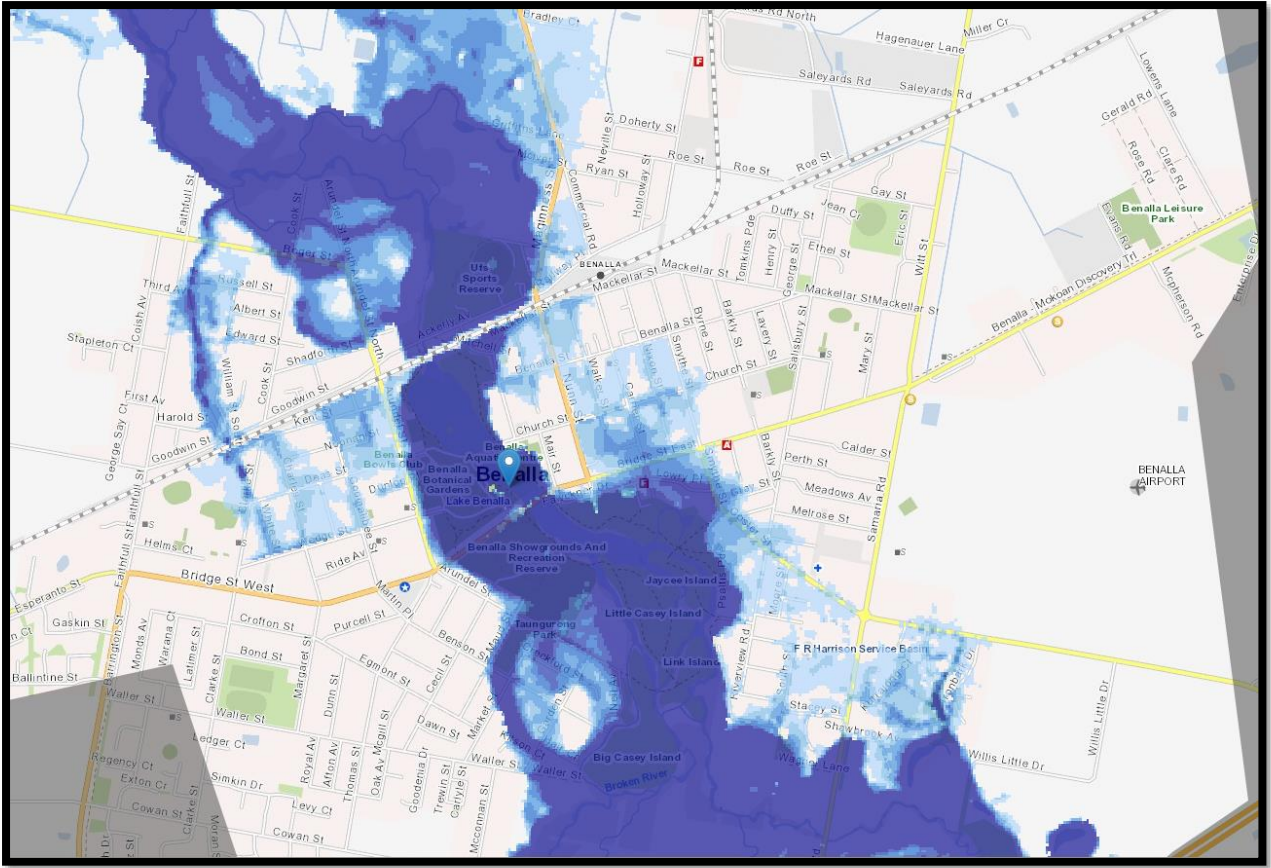


1 in 5 year (20%AEP)

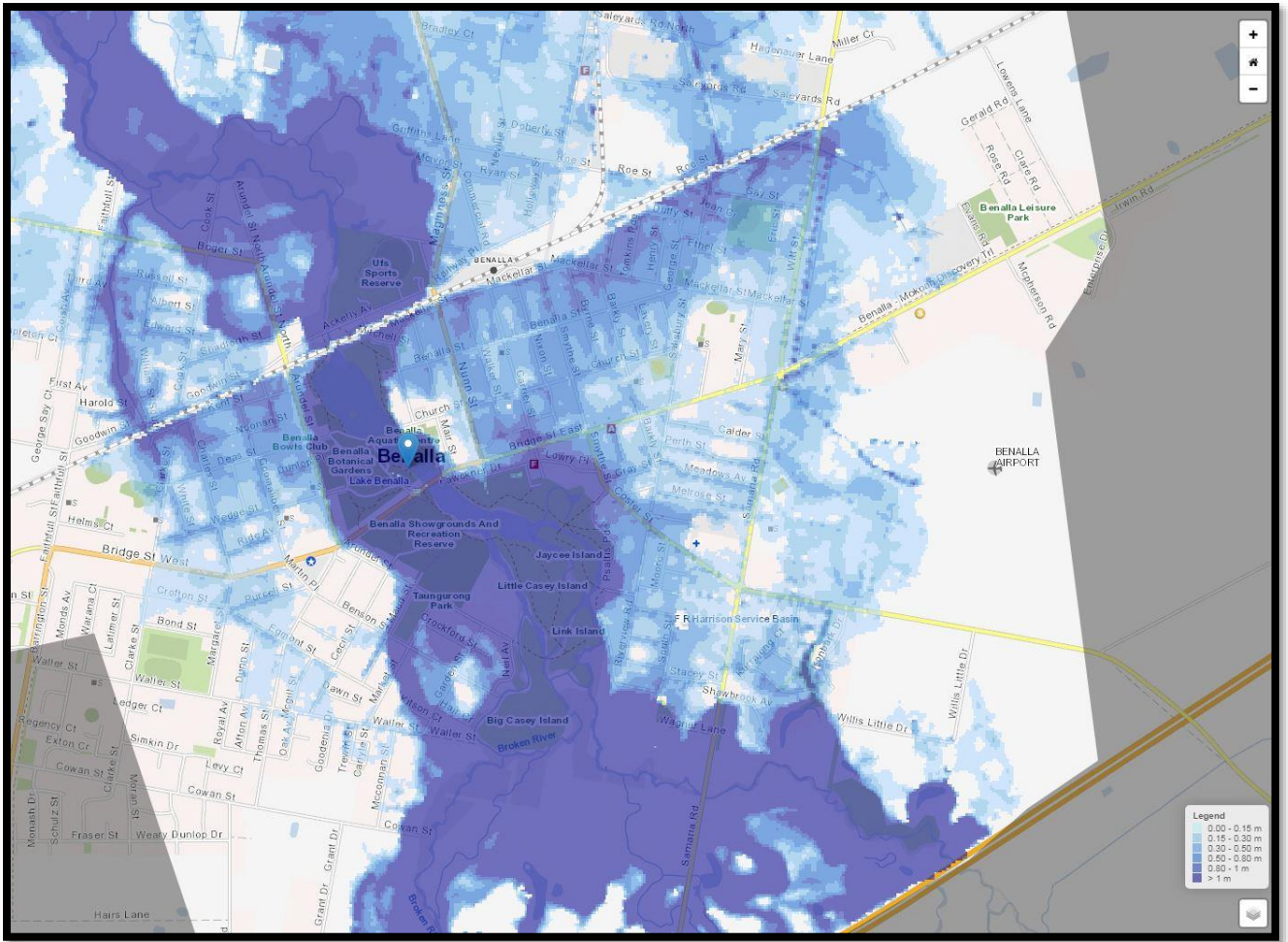


1 in 20 Year (5%AEP)

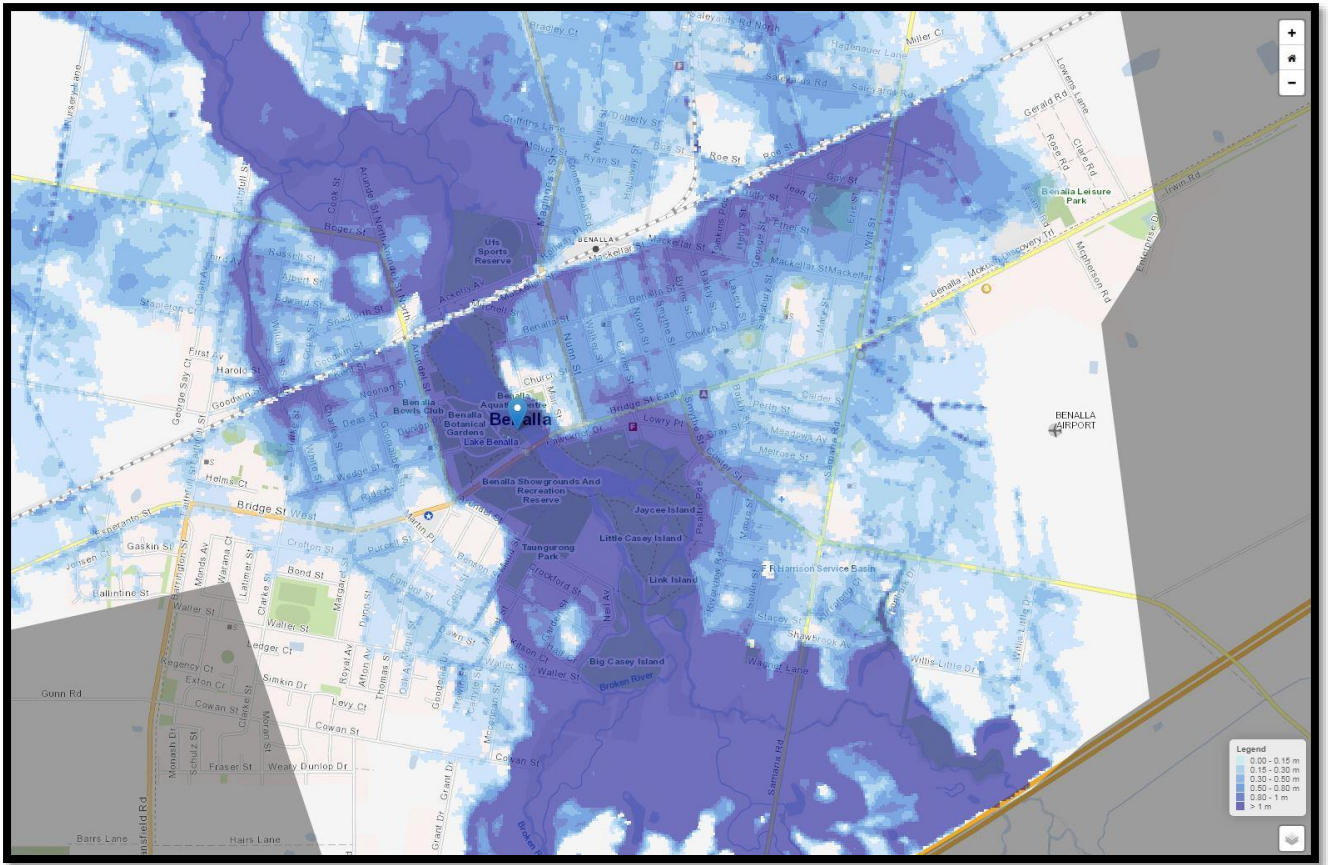




1 in 50year (2%AEP)



1 in 100 year (1%AEP)



1 in 150 year (0.67%AEP)

## Appendix G: Local knowledge arrangements

As control agency for flood in Victoria, VICSES is committed to ensuring the incorporation of local knowledge in decision making before, during and after incidents.

Information from community sources including but not limited to observations, historical information and information about current and possible consequences of an incident may be utilised to help inform the process of incorporating local knowledge into decision making during an incident will help support this process.

LIOs provide a key communication interface to community observers and other sources of local knowledge.

For the Broken River system above Benalla community observers identified are:

Community Observer Name	Community Observer contact details	LIO Contact	Key areas of local knowledge expertise
TBA			

For the Benalla Unit the Local Information Officer identified is:

LIO Name	LIO contact details	Community Observer contacts
Graham Milner	132 500 and request Benalla Unit Duty Officer.	
Alisa McMillan	132 500 and request Benalla Unit Duty Officer.	

For the Broken River system above Benalla other agency networks identified are:

### Important Notes:

These arrangements do not permit community observers and existing agency networks any responsibility for operational decisions and do not permit community observers and existing agency networks to direct operational activity, including the management of flood levees.

Information provided from sources of local knowledge must be processed and validated before it can become intelligence to inform decision making.

### Notes:

*[Develop Appendix G as one appendix within the Municipality or develop multiple plans for each location within Appendix G e.g. G1 – Local Knowledge Arrangements for xxx location, G2 – Local Knowledge Arrangements for xxx location etc.]*

*[It is intended that community observers and LIOs will be contacted and asked to confirm that they are happy for their contact details to be included in this plan. If consent is provided, contact details within this plan may be published to the public. If consent is not provided, contact details will not be published to the public within this plan and will instead will be maintained within a register maintained by the relevant SES regional office].*

# Appendix H: Local flood information

Benalla Local Flood Guide



## Benalla Local Flood Guide

Riverine flood information for the Broken River, Holland River and Blind Creek at Benalla

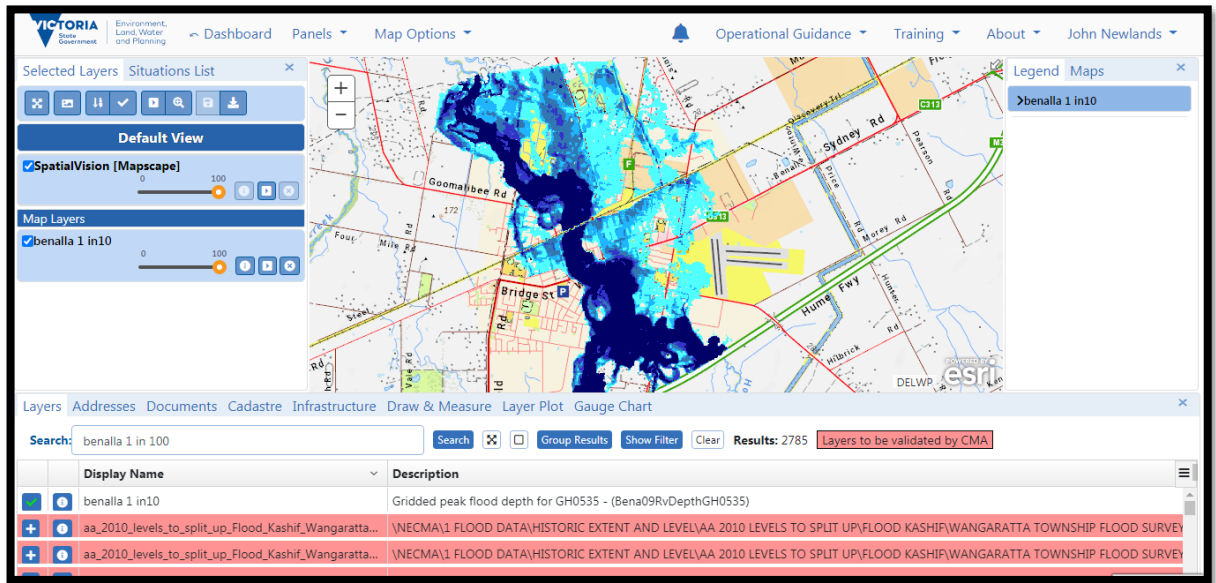


For flood emergency assistance call  
**VICSES** on **132 500**



[www.ses.vic.gov.au/get-ready/your-local-flood-information](http://www.ses.vic.gov.au/get-ready/your-local-flood-information)

## FloodZoom



<https://www.floodzoom.vic.gov.au/FIP.Site/Identity/Login> or contact the SES regional office on how to access this program.

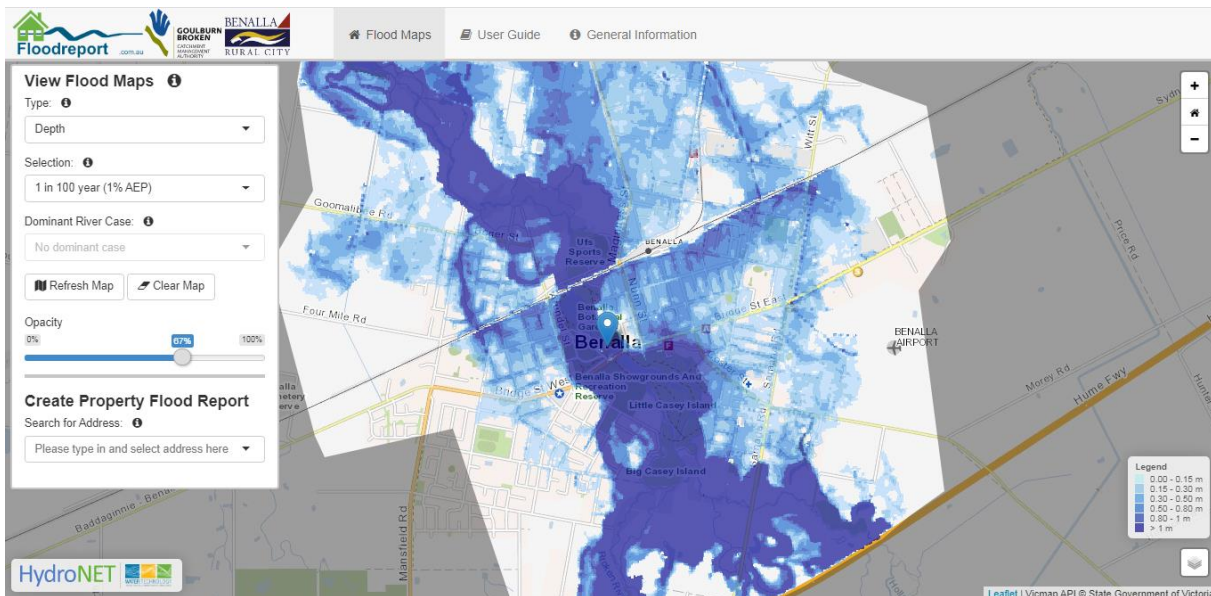
### The Goulburn Broken CMA

The CMA was established in 1997 as the peak natural resource management body in the region to develop and oversee the implementation of the Regional Catchment Strategy (RCS).

The RCS guides efforts to ensure land and water resources are protected and enhanced as well as improving the region's social wellbeing, environmental quality and productive capacity in a sustainable manner.

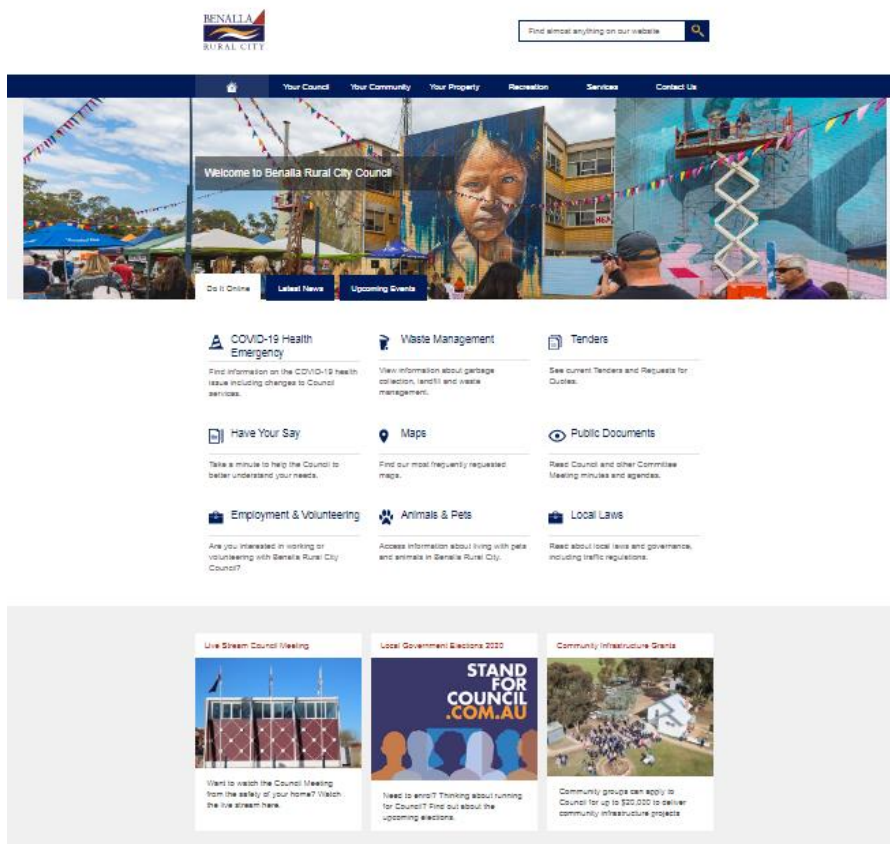
<https://www.gbcma.vic.gov.au/>

## HydroNET and the Benalla Rural City Property Flood Report:



<https://my.floodreport.com.au/Gbcma/>

## Benalla Rural City



<https://www.benalla.vic.gov.au/Home>