

# Towong Shire

## FLOOD & STORM EMERGENCY PLAN

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

For Towong Shire Council  
and

VICSES Unit(s) Tallangatta, Corryong and Mitta Mitta

Version 1.0, June 2023



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## Distribution of MFSEP

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

## Document Transmittal Form / Amendment Certificate

This Municipal Flood & Storm Emergency Plan (MFSEP) 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 Hume Region Office via:

Operations Officer – Emergency Management (North East)  
Victoria State Emergency Service - Hume Region  
64 Sydney Road, Benalla,  
Victoria 3672

Phone: (03) 9256 9650

Email: [ust.northeast@ses.vic.gov.au](mailto:ust.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
0.1	December 2016	C Sexton	<b>Input all available data into new draft plan</b>
0.2	June 2017	C Sexton	<b>Input flood data and mapping</b>
0.3	February 2019	C Sexton T Loffler	<b>Input MFEP into new template – Additions from NECMA</b>
0.4	August 2022	C Sexton	<b>Addition of Storm Risk and Upper Murray Flood Intel Report 2021</b>
0.5	May 2023	C Sexton	<b>Final Draft developed</b>
1.0	June 2023	MEMPC	<b>Plan approved</b>

This Plan will be maintained on the VICSES website at <https://www.ses.vic.gov.au/plan-and-stay-safe/flood-guides> and Towong Shire website [www.towong.vic.gov.au](http://www.towong.vic.gov.au)

# List of Abbreviations & Acronyms

The following abbreviations and acronyms are used in the Plan

<b>AAR</b>	After Action Review	<b>IC</b>	Incident Controller
<b>ABC</b>	Australian Broadcasting Commission	<b>ICC</b>	Incident Control Centre
<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>IMT</b>	Incident Management Team
<b>AIDR</b>	Australian Institute of Disaster Resilience	<b>IMS</b>	Incident Management System
<b>AIIMS</b>	Australasian Inter-service Incident Management System	<b>IWO</b>	Information & Warnings Officer
<b>ARI</b>	Average Recurrence Interval	<b>JSOP</b>	Joint Standard Operations Procedure
<b>AV</b>	Ambulance Victoria	<b>LSIO</b>	Land Subject to Inundation Overlay
<b>BoM</b>	Bureau of Meteorology	<b>MEMO</b>	Municipal Emergency Management Officer
<b>CERA</b>	Community Emergency Risk Assessment	<b>MEMP</b>	Municipal Emergency Management Plan
<b>CFA</b>	Country Fire Authority	<b>MEMPC</b>	Municipal Emergency Management Planning Committee
<b>CMA</b>	Catchment Management Authority	<b>MERC</b>	Municipal Emergency Response Coordinator
<b>RERC</b>	Regional Emergency Response Coordinator	<b>MFSEP</b>	Municipal Flood & Storm Emergency Plan
<b>DFFH</b>	Department of Families, Fairness and Housing	<b>MFSEPC</b>	Municipal Flood & Storm Emergency Planning Committee
<b>DEDJTR</b>	Department of Economic Development, Jobs, Transport, Resources	<b>MRM</b>	Municipal Recovery Manager
<b>DEECA</b>	Department of Energy, Environment and Climate Action	<b>PIO</b>	Public Information officer
<b>DRA</b>	Dynamic Risk Assessment	<b>PMF</b>	Probable Maximum Flood
<b>EA</b>	Emergency Alert	<b>PV</b>	Parks Victoria
<b>EMCOP</b>	Emergency Management Common Operating Picture	<b>RAC</b>	Regional Agency Commander
<b>EMLO</b>	Emergency Management Liaison Officer	<b>RCC</b>	Regional Control Centre
<b>EMT</b>	Emergency Management Team	<b>RDO</b>	Regional Duty Officer
<b>EMV</b>	Emergency management Victoria	<b>RFEP</b>	Regional Flood Emergency Plan
<b>ERC</b>	Emergency Relief Centre	<b>RRV</b>	Regional Roads Victoria
<b>ESO</b>	Emergency Service Organisations	<b>SAC</b>	State Agency Commander
<b>FO</b>	Floodway Overlay	<b>SBO</b>	Special Building Overlay
<b>FRV</b>	Fire Rescue Victoria	<b>SCC</b>	State Control Centre
<b>IIA</b>	Initial Impact Assessment	<b>SDO</b>	State Duty Officer

<b>SEMP</b>	State Emergency Management Plan	VICPOL	Victoria Police
<b>SEWS</b>	Standard Emergency Warning Signal	<b>VICSES</b>	Victoria State Emergency Service
<b>SOP</b>	Standard Operating Procedure		



# Part 1. Introduction

## 1.1 Approval and Endorsement

This Municipal Flood & Storm Emergency Plan (MFSEP) has been prepared by Municipal Flood & Storm Planning Committee Towong Shire Municipal Flood Emergency Committee and with the authority of the Towong Shire Municipal Emergency Management Planning Committee –pursuant to Section 20 of the Emergency Management Act 1986 (as amended).

The Towong Shire MFSPC has undertaken community consultations regarding the content of this plan with the he Towong Shire MEMPC community representatives.

This MFSEP is a sub plan to the Towong Shire Municipal Emergency Management Plan (MEMPC), is consistent with the Emergency Management Legislation Amendment Act 2018 (EMLA Act) 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 MFSEP is consistent with the Regional Flood Emergency Plan (RFEP) and the State Emergency Management Plan (SEMP) – Flood sub-plan.

This MFSEP is a result of the cooperative efforts of the MFSPC and its member agencies.

This Plan is approved by the VICSES Eastern Region Assistant Chief Officer - Unit Support, Emergency Management, Community Engagement

This Plan is endorsed by the Towong Shire MEMPC as a sub-plan to the MEMPC.

### Approval



Cameron Rothnie ..... Date ...24/8/2023.....

VICSES Eastern Region Assistant Chief Officer - Unit Support, Emergency Management,  
Community Engagement

### Endorsement



.....  
Amanda Pagan

Date 1/09/2023

Chair – Municipal Emergency Management Planning Committee

## 1.2 Purpose and Scope of this Flood & Storm Emergency Plan

The purpose of this MFSEP is to detail agreed arrangements for managing a flood and storm emergency before, during and after it occurs within Towong Shire.

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 & Storm Planning Committee (MFSPC)

Membership of the Towong Municipal Flood & Storm Planning Committee (MFSPC) comprises of the following representatives from the following agencies and organisations:

- VICSES (i.e. Unit Controller and Operations Officer – Emergency Management) **(Chair)**,
- Council (i.e. Municipal Emergency Management Officer) (MEMO)
- Victoria Police (i.e. Municipal Emergency Response Co-ordinator) (MERC),
- North East Catchment Management Authority (NECMA),
- Department of Families, Fairness and Housing (DFFH) as required,
- Department of Energy, Environment and Climate Action (DEECA) as required,
- Water Authorities as required,
- Bureau of Meteorology as required,
- Local community representatives

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

This MFSEP must be maintained to remain effective.

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

The MFSPC 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 MFSEP will be released to the community through; local media, any Flood and Storm engagement initiatives and websites (VICSES and the Municipality) upon formal adoption by VICSES and the Towong Shire MEMPC.

VICSES with the support of Towong Shire Council and North East CMA will coordinate and deliver targeted community flood engagement programs within the council area, including local flood guides

Refer to appendix H - LFG Storm and Flood Information.

### 2.2 Structural Flood Mitigation Measures

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

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

- Levees (location, owner, condition, and maintenance responsibility and protection levels).
- Retarding Basins (location, owner, condition, maintenance responsibility and protection levels) etc.

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 MFSEP is exercised on annual basis and reviewed in line with Section 1.4.

#### 2.3.2 Flood & Storm Warnings

Arrangements for Bureau of meteorology issued Flood Watch, Flood Warning and Storm Warnings products are contained within the SEMP Sub Plan – Flood ([www.ses.vic.gov.au/em-sector/viceses-emergency-plans](http://www.ses.vic.gov.au/em-sector/viceses-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**.

#### 2.3.4 Snap Send Solve – Flood Observations

Snap Send Solve is an existing app currently used by the community to notify local councils and other authorities of issues that need addressing such as cracked pavements, parking problems, dumped rubbish, graffiti etc.

The existing functionality of the smartphone app has been adapted for VICSES in a well presented and user friendly way. The app is used to capture flood observations by filling in a simple form on your smartphone and using the camera to upload photos, this information is then displayed through an administration portal in EMCOP to collate and view the flood data.

The app component has been made available to flood observers in VICSES Units with plans for other emergency services and trusted members of the community. Their observations will be visible in EMCOP where Intelligence personnel in IMT's can access them during flood events under DATA-OBSERVATIONS-SNAP SEND SOLVE.

The intent is that better access to local knowledge and near real time impacts will add to information sources in order to maximise public information communications and flood response efforts.

# 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 Hume Region or Regional Agency Commander (RAC).

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

### 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 or storm within the Towong Shire. These agencies will be engaged through the EMT.

The roles and responsibilities of supporting agencies are as agreed within the: SEMP, Table 10 – Response support agencies and SEMP Sub Plan – Flood/storm and Regional Flood/storm Emergency Plan.

### 3.1.1 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.

### 3.1.2 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 MFSEP 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.

Table 9 – Roles and Responsibilities in the SEMP prepared under the ELMA Act 2018, identifies VICSES as the Control Agency for Flood and Storm. It also identifies a number of support agencies in Table 10. A more detailed explanation of roles and responsibilities can be found in the tables on the EMV website.

The SEMP identifies DEECA 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 available on the EMV website

All flood response activities within the Towong Shire 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).

Pre-determined ICC locations are available in the Towong Shire MEMP

Incident Level	Location	ICC Location	Facility owner	Key contact
2 (Storm)	VICSES Hume Regional Office	64 Sydney Road, Benalla	VICSES	Benalla SES ICC (03) 9256 7799 or RAC
2 & 3	CFA District 24 Headquarters	55 Moorefield Park Dr, West Wodonga	CFA	Wodonga ICC (02) 6043 4400 or CFA duty officer
2 & 3	CFA District 23 Headquarters	1 Ely Street, Wangaratta	CFA	Wangaratta ICC (03) 5720 2300 or CFA duty officer

### 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
Wodonga DCP – SES Wodonga LHQ, 172 Victoria Cross Parade, Wodonga VIC 3690	Wodonga DCP – SES Wodonga LHQ, 172 Victoria Cross Parade, Wodonga VIC 3690

VICSES Field Operations Vehicles (FOVs) are also available for deployment where appropriate through the VICSES Hume RDO.

### 3.2.5 Incident Management Team (IMT)

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

Refer 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 or storm 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 Towong Shire 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

VICSES 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:

- 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
- Review flood intelligence to assess likely flood consequences and add to flood warning
- Monitor weather and flood information – [www.bom.gov.au](http://www.bom.gov.au) and BOM Flood Desk
- Assess Command and Control requirements.
- Review local resources and consider needs for further resources regarding personnel, property protection, flood/swift water 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
- Develop media and public information management strategy
- Monitor watercourses and undertake reconnaissance of low-lying areas, initiating Flood Observers
- 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 & Victorian Preparedness Framework 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 such as Emergency Recovery Victoria (ERV).

### 3.4 Preliminary Deployments

When flooding or storms are 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, specialist equipment (e.g. Sandbagging machine), 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 (SEMP) - 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 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 Towong Shire 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 Victoria Police Roles and Responsibilities - Role Statement, as part of the SEMP

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 (DRA) 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 Towong Shire to assist with rescue operations:

Boat	Location
Rescue Boat 528 – Savage Jabiru 470 (Rigid)	VICSES Tallangatta Unit
Rescue Boat 592 – Zodiac 5M Inflatable (Semi Rigid)	VICSES Tallangatta Unit (was Mitta Mitta Unit)

*Other vessels available from neighbouring Units at request of VICSES RDO*

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

- Dartmouth Dam
- Lake Hume

### 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 will establish priorities.

Suitable airbase facilities are located at:

- Albury Airport
- Corryong Airport
- Mitta Mitta Airport

Albury Airport



Overview of the airport from the south-east

IATA: ABX · ICAO: YMAY

Summary

<b>Airport type</b>	Public
<b>Operator</b>	Albury City Council
<b>Serves</b>	Albury, New South Wales, Wodonga, Victoria
<b>Elevation AMSL</b>	539 ft / 164 m
<b>Coordinates</b>	36°04'06"S 146°57'30"E
<b>Website</b>	[1]

Map



Location in New South Wales

Runways

Direction	Length		Surface
	m	ft	
07/25	1,900	6,234	Asphalt

Corryong Airport	
Specifications	
Runway	TORA 1,401 metres gravel surface 30 metres wide with a central 18 metres sealed 06/24
Elevation	963 ft
Operator	Towong Shire Council – Ph: (02) 6071 5100
Permission	No permission required
Pilot details	FIS ML 125.2 CTAF 126.7 NDB CRG 386 see ERSA
Mitta Mitta Airport (Private)	
Specifications	
Runway	910 metres gravel (600 metres) remainder compacted earth
Elevation	820 ft
Operator	R & R Kelly – Ph: (02) 6072 3632
Permission	Permission required
Pilot details	FIS ML 125.2 CTAF 126.7 see AOPA Directory/ERSA
<b>Source</b>	<b><i>Towong Shire (Available on website)</i></b>



### 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 Towong Shire Council may have a small stock of sand available at its depot **but no sand bags (As of July 2023)**. Back-up supplies are available through the VICSES Regional Headquarters. The IC will determine the priorities related 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 Towong Shire.

### 3.12 Road Closures

Towong Shire and Regional Roads Victoria (RRV) 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. Towong Shire Council staff should also liaise with and advise RRV as to the need or advisability of erecting warning signs and / or of closing roads and bridges under its jurisdiction.

RRV is responsible for designated main roads and highways and councils are responsible for the designated local and regional road network.

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

For NSW Road closures please visit Live Traffic NSW: <https://www.livetraffic.com/>

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

### 3.13 Dam Spilling/ Failure

DEECA 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.

DEECA 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 Towong Shire Council Environmental Health officer to inspect and report to the MEMO and the ICC on any water quality issues relating to flooding.

#### 3.14.1 Public Health Issues and Critical Sewerage Assets

Inundation of sewerage assets including sewerage pump stations during surface flooding may result in water quality problems within the municipality. Where this is likely to or has occurred, the relevant Water Corporation will be responsible for:

- Identification and monitoring critical assets to assist preparedness and response activities in the event of flooding
- Advising VICSES/ICC of any potential or current service delivery continuity threats to critical sewerage infrastructure
- Developing action plan(s) in consultation with the Incident Controller to protect critical sewerage infrastructure assets

Inundation of septic tank systems may also result in similar water quality problems. In the event of flood waters contaminated by septic tank systems, the Towong Shire Council Environmental Health officer is to advise the ICC and relevant Water Corporation. Assessment and actions are detailed above.

North East Water on-call Duty Officer or Duty Manager support can be made via the MEMP contact list

### **3.14.2 Preventing Illness from Contaminated Water**

Drinking water (potable reticulated water supply systems) have the capacity to deal with flood situations due to protective barriers such as positive pressure and chlorine unless there is damage to key infrastructure, or the system experiences a mains failure during the flood event. The relevant Water Corporation will be responsible for:

- Monitoring the performance and capacity of their respective potable water supply system
- Providing advice to the Incident Controller (IC) of any potential threat to supply or critical infrastructure
- Advising the IC whether town water (potable) supply is at risk, in consultation with the Incident Controller and Department of Health and Human Services will notify consumers and the community if the water is not safe to drink, including issuing the necessary advice (e.g. Boil Water Advisory Notice)
- Developing an action plan in consultation with the IC to protect critical water supply assets

The Towong Shire Council Environmental Health Officer will provide oversight and assistance for private domestic systems and support the relevant Water Corporation as needed.

The Incident Controller will develop drinking water warnings in consultation with the relevant Water Corporation(s) (e.g. North East Water for urban supplies and Goulburn-Murray Water for non-town water users for stock and domestic), Towong Shire Council Environmental Health Officer and Health Commander

## **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 VICSESSES SOP061 for the procedure to engage these specialists.

## **3.16 After Action Review**

VICSESSES or EMV 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 Towong Shire are detailed in the Towong Shire MEMP.

### 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 SEMP.

The range and type of emergency relief services to be provided in 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 **Appendix D** and in the Towong Shire 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 (AgVic).

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

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

Refer to **Appendix D** 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 the Towong Shire MEMP.

# Appendix A: Flood threats for Towong Shire

## Overview

This Appendix is to provide a broad overview of flood risk within the Municipality. Detailed Flood Risk Information for Individual Communities is be detailed in Appendix C.

- C1 – River System Overview & Schematics (Upper Murray, Mitta Mitta Rivers & Tallangatta Creek)
- C2 – Flood Intelligence Card – Murray River at Biggara
- C3 – Flood Intelligence Card – Murray River at Bringenbrong
- C4 – Flood intelligence Card – Murray River at Jingellic
- C5 – Flood intelligence Card – Mitta Mitta River (includes Colemans, and Tallandoon)
- C6 – Flood Intelligence Card – Tallangatta Creek
- C7 – Significant Flood Exposures – Other waterways

## Description of Major River Systems

Towong Shire encompasses the Upper Murray River and the majority of the Victorian tributary catchments upstream of Lake Hume. Comprising the following major catchments and waterways (refer Figure 1):

- The Murray River from the headwaters to Lake Hume
- The Victorian tributaries of the Murray River upstream of Lake Hume including:
  - Thowgla Creek
  - Corryong Creek (incl. Wheeler Creek and Simpson Creek)
  - Cudgewa Creek
  - Sandy Creek and Walwa Creek
  - Burrowye Creek
  - Koetong Creek
- The Mitta Mitta River from Lake Dartmouth to Lake Hume (Mitta arm) including:
  - Lightning Creek and Snowy Creek
  - Little Snowy Creek
  - Little Scrubby Creek
  - Fairyknowe Creek
- Tallangatta Creek which enters Lake Hume (Mitta arm)

The headwaters of the major waterways are contained within public land with limited flood prone assets or infrastructure.

### Upper Murray River

The Upper Murray River flows north from Tom Groggin to Tintaldra before turning west towards Lake Hume and the Hume Dam (completed in 1936) which is one of the major water storages for the Murray River system. Floods in the Upper Murray area result from heavy rainfall, generally continuing for two or more days. Flooding can be influenced by snowmelt from snowfields in New South Wales



and Victoria and water releases from the Khancoban Pondage, part of the Snowy Hydro Scheme. In addition, the smaller creeks and valleys are prone to flash flooding after heavy localised rainfall.

Floods in this area have often destroyed or damaged roads and bridges. Large trees and plant debris regularly block waterways. When these blockages give way, this can create powerful surges of water and unexpected rises in river levels.

## **Mitta Mitta River**

Rising on the high plains beneath Mount Bogong, the upper reaches and tributaries of the Mitta Mitta River drain through deeply dissected forests. The main channel of the Mitta Mitta forms at the confluence of Cobungra River and the Big River, and then flows northwards through near-pristine forest to Dartmouth Dam. The dam is the largest storage in the Murray - Darling Basin and has the capacity to hold up to 40% of the water for the River Murray system. After Dartmouth Dam, the Mitta Mitta meanders north-west through a wide valley to the south arm of the Hume Dam.

The Mitta Mitta catchment is less than 1% of the area of the Murray–Darling Basin but it provides almost 10% of inflow to the River Murray system. Very little of the water generated in the catchment is used within the catchment.

The Mitta Mitta River is a declared heritage river area in its mountain reaches, from Glen Valley to Lake Dartmouth. The dam has strongly affected the hydrology of the lower river but there are good floodplain, billabong and wetland habitats downstream of Tallandoon on the lower reaches of the river.

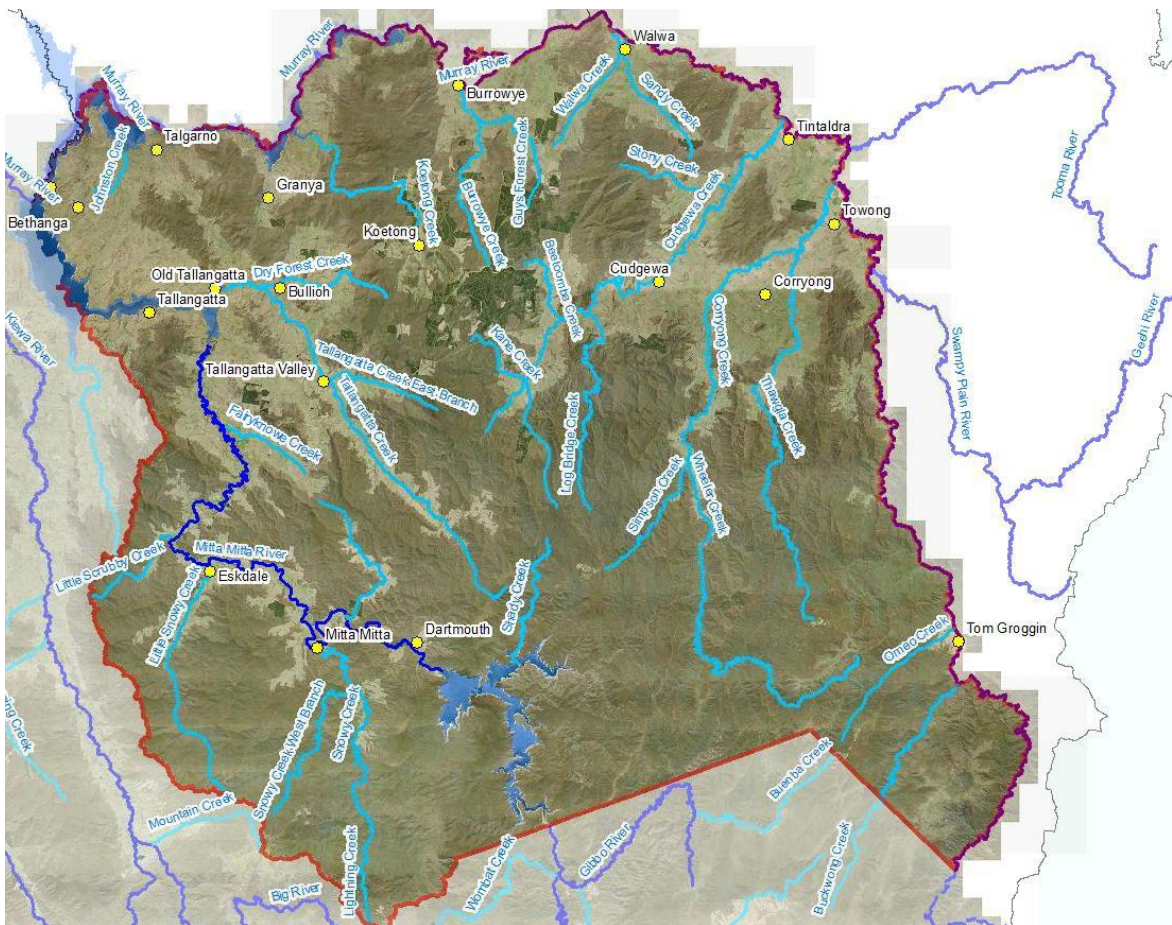
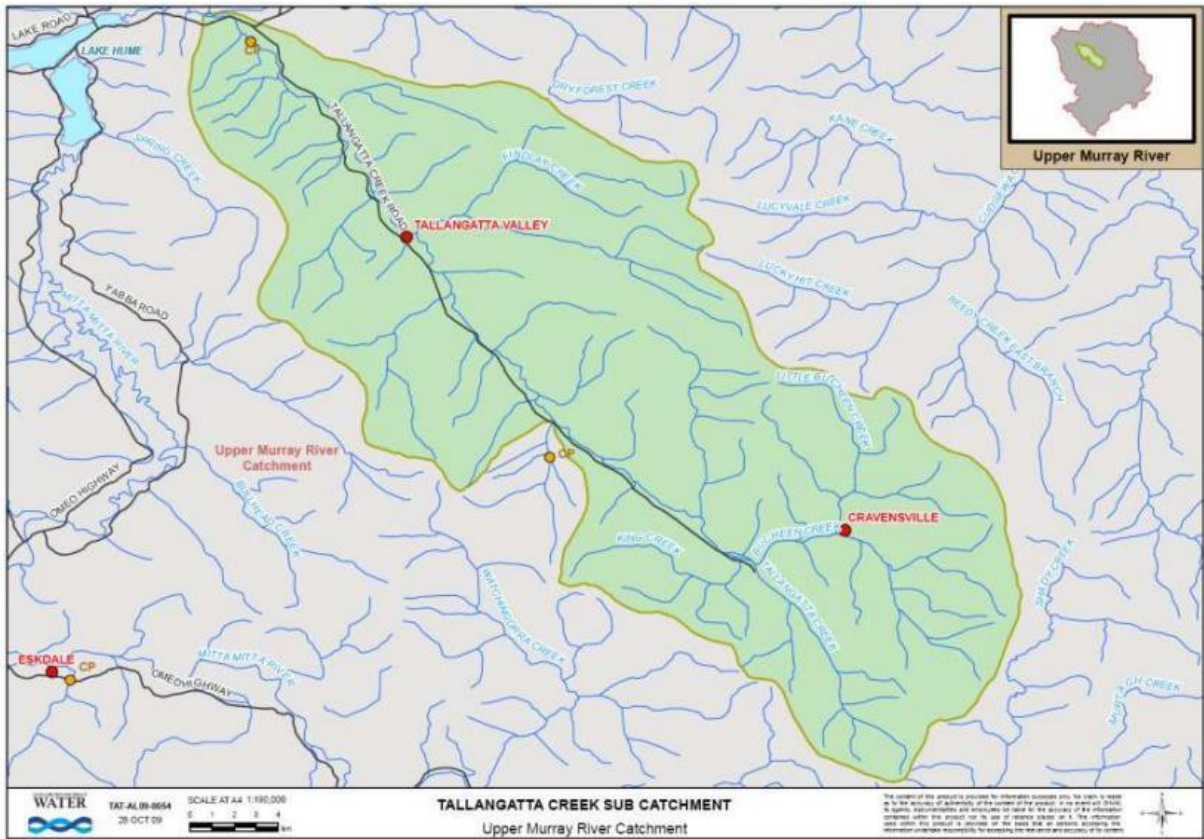
There are small towns and farming communities in the Mitta Mitta catchment but about 70% of the region is steep forested hills and mountains. The dairy industry is a major source of income and employment in the region, and to a lesser extent, timber and beef production. Tourism is important to the region, with a focus on fishing, camping and 4-wheel driving.

## **Tallangatta Creek**

The Tallangatta Creek flows into Lake Hume at Old Tallangatta and encompasses an area of approximately 453 km<sup>2</sup>. The catchment is bound to the east by the Cudgewa Creek catchment and the west by the Mitta Mitta River catchment.

Significant tributaries of the Tallangatta Creek include Findlay, Honeysuckle, Cascade, Rogers, Matthews and Buckeen Creeks.

The main townships in the catchment include Tallangatta Valley and Bucheen Creek. The catchment is predominantly forested in the upper and middle catchments. The creek valleys have been cleared for agriculture and lead down to the cleared lower plains. The main industries with the catchment are tourism and dryland farming.



**Figure 1 Towong Shire waterways and townships**

## Townships

The townships and localities on each waterway are summarised in Table 1. The largest townships (Corryong and Tallangatta) have no identified riverine flood risk. Localised flood risk applies to many of the other towns and localities however no towns are substantially flood prone. The most significant impact is to farming properties distributed along the floodplains of the major waterways. Isolation of communities also occurs due to flooding along the major road routes which generally follow the river valleys (refer Table 2).

**Table 1 Locations and waterways**

Main Waterway	Secondary Waterway	Towns / Localities	Population (ABS 2021 <sup>1</sup> Census data)
<b>Murray River</b>		Biggara	61
	Corryong Creek	Towong	143
		Tintalra	66
	Walwa and Sandy Creeks	Walwa	191
		Burrowye	24
<b>Corryong Creek</b>		Nariel Valley	87
		Colac Colac	61
	Thowgla Creek	Thowgla Valley	70
	Thowgla Creek	Corryong	1352 (Urban Centre/Locality)
<b>Cudgewa Creek</b>		Lucyvale	25
		Berringama	35
		Cudgewa	254
<b>Mitta Mitta River</b>		Dartmouth	130
	Snowy Creek	Mitta Mitta	171
	Little Snowy Creek	Eskdale	238
	Little Scrubby Creek	Tallandoon	92
		Tallangatta South	142
	Adjacent Lake Hume	Tallangatta	1175 (Urban Centre/Locality)
<b>Tallangatta Creek</b>		Tallangatta Valley	194
<b>No major waterway</b>		Bethanga	198 (Urban Centre/Locality)
		Granya	88

## Overview of Flooding Consequences

Towong Shires predominant riverine flood risk is to the Walwa Riverside Caravan Park ( who have an Evacuation Plan for flood) and surrounding area into the north end of Walwa township. Closely followed access and egress issues to a number of farming properties across the shire in predominantly in the Murray, Mitta Mitta River floodplains and the Tallangatta Creek floodplain.

Access and Egress issues are the primary consequences of flooding in Towong Shire and the earliest impacted. There are only a few major transport routes into the townships in the municipality and can be closed in minor and moderate level floods creating isolation and access/Egress issues. For the community and emergency services.

<sup>1</sup> <https://abs.gov.au/census/find-census-data/search-by-area>



Further information on general flood consequences for Towong Shire can be found in the Appendix A's following here and specific flood consequences and actions in the Appendix C's

## Major Road routes and flood impacts

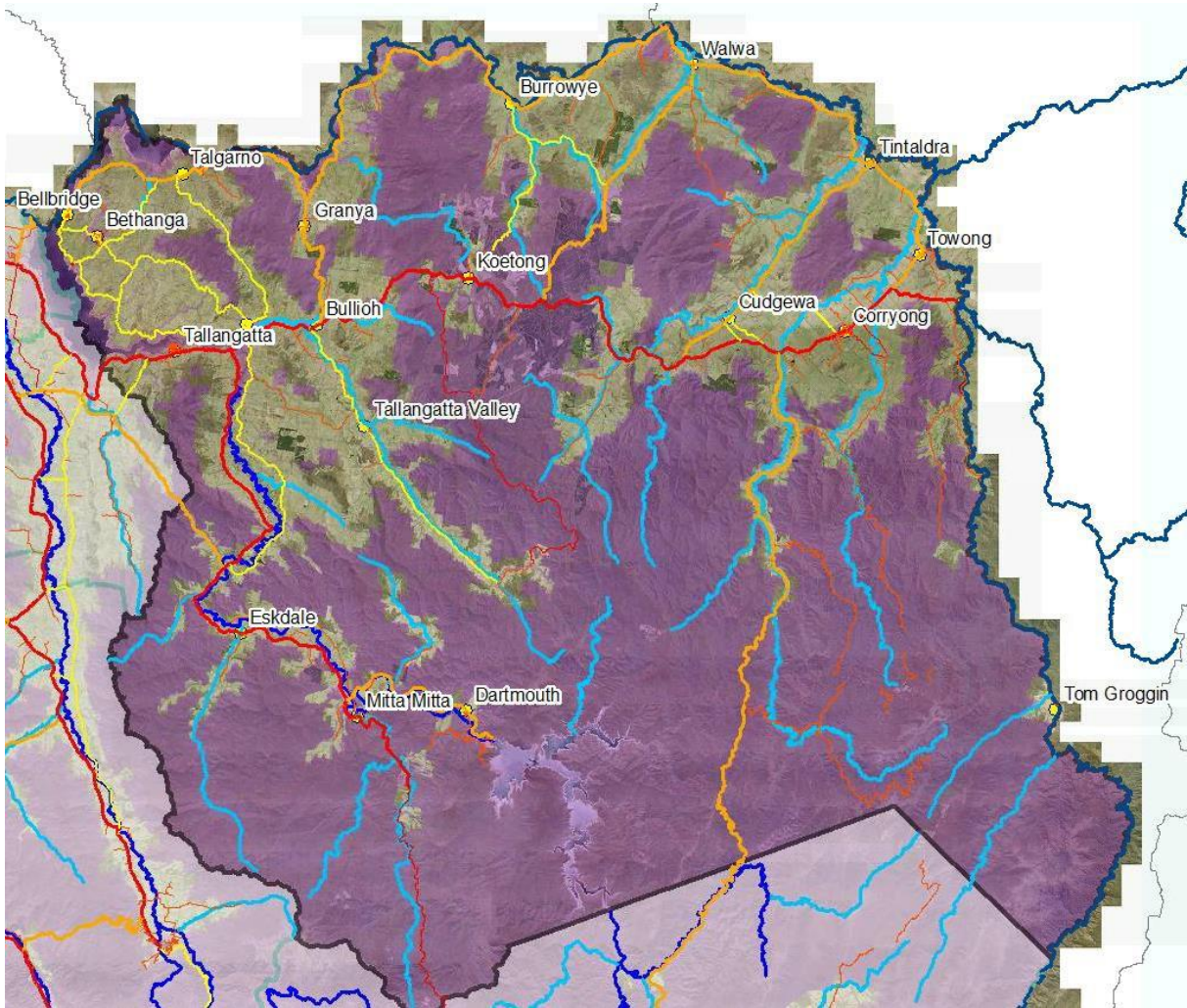
With a small population and large areas of public land, the road network in Towong Shire comprises a number of main routes with only a sparse network of secondary roads (Figure 2). The Murray River Road and Omeo Highway follow the major river valleys. The Murray Valley Highway traverses Towong Shire from west to east and provides access to the other arterial roads which are aligned along the creek valleys. Geographic isolation in the event of flooding is thus likely during major flood events. Recognising this isolation potential, the expected flood impacts on the main roads are described below (Table 2).

**Table 2 Major Road routes and flood impacts**

Road class	Road and connected towns	Description and flood impacts <sup>2</sup>	Actions
Highway	Murray Valley Highway <ul style="list-style-type: none"> <li>Tallangatta</li> <li>Bullioh</li> <li>Koetong</li> <li>Corryong</li> <li>(Towong)</li> </ul>	Traverses west-east across Towong Shire from Tallangatta to the Murray River approximately 5 km south of Towong <ul style="list-style-type: none"> <li>Crosses the Mitta Mitta arm of Lake Hume (raised embankment above FSL – no flood impact).</li> <li>Crossing of <b>Tallangatta Creek</b> floodplain is subject to shallow overtopping in the 1% AEP event.</li> <li>Flooding from Dry Forest creek appears unlikely but cannot be quantified.</li> <li>Shallow flooding from <b>Cudgewa Creek</b> at Berringama is likely in the 1% AEP event.</li> <li>Flooding from <b>Corryong Creek</b></li> <li>Flooding from <b>Thowgla Creek</b> north-east of Corryong occurred March 2012 (Figure 10).</li> </ul>	RRV/Towong Shire Council/SES to monitor road and determine if closures needed
	Omeo Highway <ul style="list-style-type: none"> <li>Tallangatta</li> <li>Eskdale</li> <li>Mitta Mitta</li> <li>Dartmouth</li> <li>(Omeo)</li> </ul>	Extends from Murray Valley Hwy east of Tallangatta to Mitta Mitta and onward to Omeo <ul style="list-style-type: none"> <li>Follows the Mitta Mitta River</li> <li>Subject to water over road from Moderate Flood level approx. 5.2m on the Mitta Mitta River @ Tallandoon Gauge</li> </ul>	RRV/Towong Shire Council/SES to monitor road and determine if closures needed
Arterial	Murray River Road <ul style="list-style-type: none"> <li>Bellbridge</li> <li>Talgarno</li> <li>Burrowye</li> <li>Walwa (and Jingellic)</li> <li>Tintaldra</li> <li>Towong</li> </ul>	Extends along the Murray River from Lake Hume (Murray River arm) to Towong <ul style="list-style-type: none"> <li>Flooded at <b>Cudgewa Creek</b> crossing (immediately west of Tintaldra) in Mar 2012 (Figure 12).</li> <li>Flooded by <b>Corryong Creek</b> at Towong in March 2012 (Figure 4).</li> <li>Flooded immediately to east of Walwa in Oct 2010, March 2012.</li> </ul>	RRV/Towong Shire Council/SES to monitor road and determine if closures needed
	Granya Road <ul style="list-style-type: none"> <li>Bullioh</li> <li>Granya</li> <li>Murray River Road</li> </ul>	Connects Murray Valley Hwy and Murray River Rd <ul style="list-style-type: none"> <li>No major waterway crossings</li> </ul>	VICSES units to respond on a request by request basis
	Shelley Road	Connects Murray Valley Hwy and Murray River Rd <ul style="list-style-type: none"> <li>Crosses headwaters of Guys Forest Creek but no known flood impacts.</li> </ul>	VICSES units to respond on a request by request basis
	Cudgewa Valley Road <ul style="list-style-type: none"> <li>Cudgewa</li> <li>Tintaldra</li> </ul>	Connects Murray Valley Hwy and Murray River Rd Follows Cudgewa Creek <ul style="list-style-type: none"> <li>No known flooding over road in March 2012 (largest event on record for Cudgewa Creek @ Cudgewa North)</li> </ul>	VICSES units to respond on a request by request basis

<sup>2</sup> Considering major waterways only. Impact from small local catchments at numerous crossings (culverts and bridges) cannot be quantified.

	Benambra-Corryong Road	Extends south from Murray Valley Hwy near Cudgewa to Benambra <ul style="list-style-type: none"> <li>• Follows Corryong Creek</li> <li>• Extensively flooded from <b>Corryong Creek</b> (March 2012)</li> </ul>	VICSES units to respond on a request by request basis
<b>Sub-arterial</b>	Yabba Road	On the east bank of the Mitta Mitta River, extends from MVH east of Tallangatta to Yabba	
	Tallangatta Creek Road	Extends south from Murray Valley Hwy at Bullioh along the Tallangatta Valley to Bucheen Creek	
	Burrowye Road and Guys Forest Road <ul style="list-style-type: none"> <li>• Koetong</li> <li>• Burrowye</li> </ul>		



**Figure 2 Road routes**

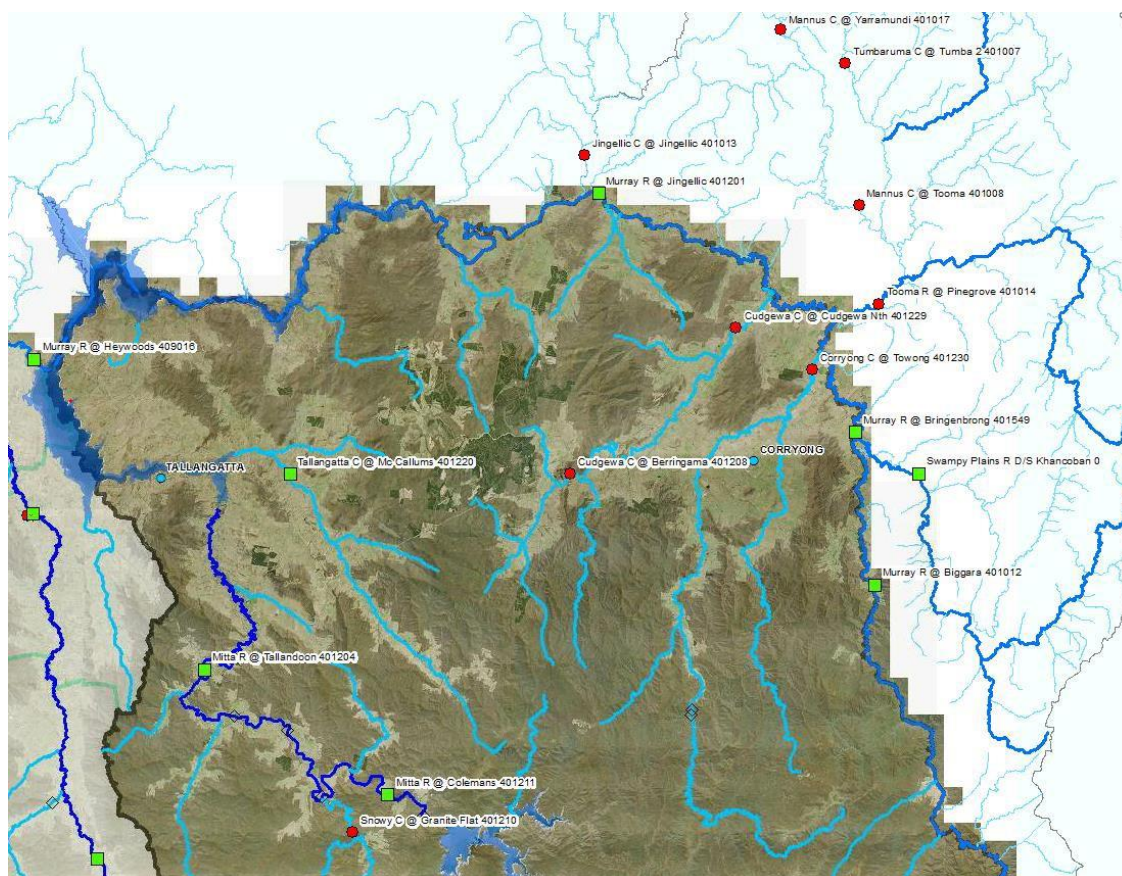


## Flood Warning Gauge Network

The flood warning gauge network within Towong Shire (and adjacent catchments) is summarised in Table 3 and shown in Figure 3.

**Table 3 Stream gauge network**

Gauge	Gauge ID	Flood Class Level Min / Mod / Maj (m) (Where defined)	Start year
<b>Murray River (R) and tributaries (Trib)</b>			
<b>Murray R @ Biggara</b>	401012	2.0 / 2.6 / 3.0	Jul-1948
Trib – Swampy Plains R downstream Khancoban	600183	Y	
<b>Murray @ Bringenbrong</b>	401549	3.0 / 3.4 / -	Feb-1956
Trib – Corryong Ck @ Towong	401230		Aug-1993
Trib – Tooma R @ Pinegrove	401014		Feb-1955
Trib – Cudgewa Ck @ Berringama	401208		Sep-1967
Trib – Cudgewa Ck @ Cudgewa Nth	401229		Aug-1993
<b>Murray @ Jingellic</b>	401201	4.0 / 5.5 / 7.5	May-1890
Trib – Jingellic Ck @ Jingellic	401013		Jun-1965
<b>Murray R @ Heywoods</b>	409016		
<b>Tallangatta Creek</b>			
<b>Tallangatta Ck @ McCallums</b>	401220	1.6 / 2.0 / 2.3	Mar-1976
<b>Mitta Mitta River</b>			
<b>Mitta R @ Colemans</b>	401211	3.4 / 4.2 / 6.4	Sep-1968
Trib – Snowy Ck @ Granite Flat	401210		Oct-1932
<b>Mitta R @ Tallandoon</b>	401204	4.2 / 4.9 / 5.6	Jul-1974



**Figure 3 Stream gauge network (flood warning)**

## Historic Floods

The stream gauge record on the Upper Murray River and tributaries is less extensive than on other river systems, with many of the gauges which remain active commencing operation between 1930 and 1970 (refer Table 3). The Murray River at Jingellic has the most extensive record, extending back to 1890.

Up until 2010, floods in October 1992 and September 1998 were the largest on record for the Murray River and tributaries upstream of Jingellic. For the Murray River at Jingellic the largest was October 1974. New records were set at all gauges by a series of flood events in September, October and December 2010. Of the 2010 floods, the October 2010 event was generally the largest, excluding Murray River @ Biggara and Corryong Creek @ Towong where September was the larger event and Cudgewa Creek @ Berrington where December 2010 was the largest of the 2010 events.

The record 2010 floods were subsequently exceeded again in March 2012, with new record levels reached at:

- Murray River @ Biggara
- Murray River @ Bringenbrong
- Murray River @ Jingellic
- Corryong Creek @ Towong
- Cudgewa Creek @ Cudgewa North

Of the remaining Upper Murray gauges, March 2012 was:

- Second largest for Tooma River @ Pinegrove (exceeded only by October 2010)
- Second largest for Jingellic Creek @ Jingellic (exceeded only by October 2010)
- Third largest for Cudgewa Creek @ Berrington (exceeded by December 2010 and October 2010)

The recent flood events (2010 onwards) thus provide a basis for assessment of the impacts of the largest floods on record for the upper Murray River and tributaries. The most significant impacts were around Walwa (and Jingellic on the NSW side of the river), with a small number of dwellings, Walwa Caravan park, many farms, riverside camping areas and sportsgrounds in and around Walwa flooded for several days.

For Tallangatta Creek, October 1992 remains the largest flood on record (noting that the gauge record commenced only in 1976). For the Mitta Mitta River the flood of October 1934 (prior to the construction of Dartmouth Dam) is the largest on record ... larger floods on tributaries.

Year	Waterway or Drain	Description
2022	Murray, Mitta Mitta and Tallangatta Creek	A third LaNina season in a row lead to widespread multiple flood events across North East Victoria. Through Winter/Spring 2022 a number of flood events across the shire occurred with November 2022 seeing the most impacts. Walwa Caravan Park was inundated multiple times with evacuation of visitors. Agricultural flood plain and loss of pasture, hay and silage and fencing occurred. Roads were flooded and impacts to access and egress on major routes. Two bridges damaged, one in the Tallangatta Creek Valley, another at Mchargs Road, Walwa and many roads damaged. Dartmouth Dam spilled for the first time since 1996 creating a spectacle and increased visitation but no flood issues experienced.
2012	Murray River	2012 flood level. In Walwa the low-lying areas of the township were evacuated, one house was flooded and people were rescued from the caravan park. Flooding caused damage to caravan park facilities, golf

		course and football ground.
2010	Murray River	October 2010 flood. In Jingellic, this flood caused flooding of low-lying areas including Jingellic camping ground which was covered in 2m of water. Nearly all roads cut. In Walwa, homes in O'Halloran Street were isolated by floodwater. The caravan park, golf course and football ground were flooded. Across Towong Shire, many roads were closed and bridges were damaged. The Murray River Bridge at Towong was cut for two days.
1996	Mitta Mitta River	Rainfall lead to the spill of the Dartmouth dam
1991 (Jan)	Towong & Tintaldra	108mm of rain fell in 1.5hrs leading to flash flooding causing damage to 4 homes

## Historic Peak Flow Events Mitta Mitta River

Dartmouth Dam was constructed over the period 1972 – 1979. Storage fill commenced in November 1977.									
Year	Colemans			Tallandoon					
Incident	Rank	Peak flow ML/d	ARI (1 in Y)	Rank	Peak flow ML/d	ARI (1 in Y)			
October 1934	1	73,700	45	2	102,000	50			
August 1955	4	40,600	7	1	108,000	60			
April 1956		41,200		3	69,800	19			
August 1970	3	45,200	10		53,600				
September 1973	7	19,558	<3		31,700				
July 1974	2	59,655	25	4	62,500	15			
October 1974	6	31,500	5	6	40,000	6			
September 1975	5	32,600	5	5	47,300	8			
Post Dartmouth construction and fill									
August 1983	3	400		2	17,000	<3			
October 1993	2	16,600	2	1	28,400	3			
October 1996	1	19,331	<3		30,500				

Source: GMW Dartmouth Dam Flood Incident Management Plan – 2016

2022 Flood event peak flows									
Year	Colemans			Tallandoon					
Incident	Rank	Peak Flow ML/d	ARI	Rank	Peak Flow ML/d	ARI			
October 2022	2	13,448		2	17,878				
November 2022	1	22,356		1	32,881				



SiteID	Short_Name	Site_Start_Date	Area_km <sup>2</sup>	Minor_FCL	Mod_FCL	Maj_FCL	Min ML/D	Mod ML/D	Maj ML/D	Min ARI	Mod ARI	Maj ARI	Rank 1 Event	ML/D	Hist gauge	Rank 2 Event	ML/D	Hist gauge	Rank 3 Event	ML/D	Hist gauge	Rank 4 Event	ML/D
401012	Murray R @ Biggara	21/07/1948	1165	2.0	2.6	3.0	7760	13600	18400	0.8	5.5	26.3	Mar-2012	26281	3.53	Sep-2010	24137	3.41	Oct-2010	19531	3.05	Sep-1998	
401549	Murray R @ Bringenbrong	23/02/1956	2323	3.0	3.4	-	17300	28800					Mar-2012	48751	3.68	Oct-1981	43696	0.00	Sep-2010	43559	3.61	Oct-1992	
401230	Murray R @ Bringenbrong	17/08/1993	976										Mar-2012	24960	3.76	Sep-2010	14075	3.49	Oct-2010	13785	3.48	Sep-1998	
401014	Tooma R @ Pinegrove	4/02/1955	1845				0	0	0	0.2	0.2	0.2	Oct-2010	52205	4.11	Mar-2012	35016	3.81	Oct-1992	26088	3.63	Dec-2010	
401208	Cudgewa C @ Berrigama	29/09/1967	350										Dec-2010	22774	4.52	Oct-2010	21234	4.40	Mar-2012	16106	3.98	Sep-1998	
401229	Cudgewa C @ Cudgewa Nth	18/08/1993	837				14.2	14.2	14.2	1.0	1.0	1.0	Mar-2012	15683	2.89	Oct-2010	14895	2.84	Dec-2010	11896	2.59	Sep-2005	
401201	Murray R @ Jingellic	1/5/1890	6527	4.0	5.5	7.5	33700	58200	0	2.2	4.5	0.9	Mar-2012	160000	7.91	Oct-2010	140000	7.68	Oct-1974	137000	7.51	Oct-1917	
401013	Jingellic C @ Jingellic	30/06/1965	390										Oct-2010	72807	7.82	Mar-2012	19182	4.50	Oct-1975	16791	3.23	Aug-1983	
409016	Murray R @ Heywoods																						
401220	Tallangatta C @ Mc Callums	24/03/1976	464	1.6	2.0	2.3	3090	5950	8890	2.1	4.4	9.1	Oct-1992	16210	2.86	Oct-2010	13557	2.68	Sep-2005	8716	2.25	Aug-1983	
401211	Mitta R @ Colemans	17/09/1968	3634	3.4	4.2	6.4	15200	23200	54000	11.6	38.4	3814.8	Oct-1934	73700	7.53	Jul-1974	59655	6.69	Jun-1952	58800	6.6	Aug-1936	
401210	Snowy C @ Granite Flat	10/10/1932	407										Sep-1998	18187	3.82	Oct-1934	13900	2.86	Sep-2010	12726	2.93	Oct-1993	
401204	Mitta R @ Tallandoon	1/07/1934	4716	4.2	4.9	5.6	15200	22300	49000	6.0	9.2	46.4	Oct-1934	102243	5.34	Aug-1955	98784	5.11	Apr-1956	70379	5.1	Jul-1974	

## Dam Spilling/ Failure

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

The following supporting documentation is available through Goulburn Murray Water Dam Safety Manager:

- Dartmouth Dam Safety Emergency Plan Document DM3377182 – 2016\*
- Khancoban Dam (Pondage) Dam Safety Emergency Plan Document DM3304269 – May 2012\*

Emergency contact details are available in the Towong MEMP.

\*these documents are only released by Goulburn Murray Water in hard copy and are tightly controlled. A hard copy of each plan is available at the VICSES Hume Regional Office in Benalla

Location	Owner	Dam Height	Dam Capacity	Comments
<b>Dartmouth Dam</b>	Goulburn-Murray Water	180 metres (Embankment)	3,856,232 ML	<p>Dartmouth Dam is located downstream of the confluence of the Mitta Mitta and Dart Rivers, approximately 24 km east of Mitta Mitta in North-Eastern Victoria and is Victoria's largest Dam.</p> <p>Dartmouth Dam was constructed by the Victorian Rural Water Commission on behalf of the then River Murray Commission, the forerunner to today's MDBA. Construction began in 1973 and was completed in 1979.</p> <p>The primary purpose of Dartmouth Dam is the storage of water for irrigation and domestic and stock use in Victoria and New South Wales.</p> <p>In dry seasons, the storage supplements releases from Lake Hume and increases supplies to the River Murray system.</p>
<b>Khancoban Pondage (Dam) NSW</b>	Snowy Hydro	18 metres (Embankment)	629ML	<p>Khancoban Dam is a major ungated earth fill embankment dam with a controlled spillway across the Swampy Plain River in the Snowy Mountains region of New South Wales, at Khancoban.</p> <p>The dam's main purpose is for the generation of hydro-power and is one of the sixteen major dams that comprise the Snowy Mountains Scheme.</p> <p>Failure of Khancoban and/or Tooma Dam could result in low flood water levels impacting on the Municipality area immediately downstream of Bringenbrong Bridge</p>
<b>Tooma Dam</b>	Snowy Hydro		28,124ML	<p>Tooma Dam is located approximately 21km from the township of Khancoban, or 95km from Thredbo Village in NSW. The dam wall comprising 111,100 cubic metres of concrete is 67 metres high and 305 metres long. At 100% capacity the dam wall holds back 28,124ML of water. catchment area is 152 square kilometres. The spillway is capable of discharging 1,246 cubic metres per second.</p> <p>Failure of Khancoban and/or Tooma Dam could result in low flood water levels impacting on the Municipality area immediately downstream of Bringenbrong Bridge</p>

## Flood Mitigation

Dartmouth Dam possesses significant flood mitigation properties. The storage's design (fixed crest) created the ability to surcharge water over its large surface area (6,566ha), enabling an outflow or spill containing smaller peak flows over long periods rather than high peak flows of shorter duration. This was evident during the flood in October 1996, which is currently the largest flood to pass the structure. The 1996 flood included a peak inflow of 44,342ML/d and due to the mitigation capacities of Dartmouth Dam; peak outflows were significantly lower at 19,629ML/d. The Dam was in spill for a total of 53 days.

In September 2022, Dartmouth Dam spilled for the first time since 1996 after significant rainfall from 3 consecutive LaNina weather years. The spill lasted nearly 12 weeks.

# Appendix A1: Upper Murray River

## Description of Major Waterways and Drains

The Murray River within Towong Shire extends from the headwaters upstream of Tom Groggin and Biggara to the backwaters of Lake Hume downstream of Burrowye. Between Biggara and Lake Hume (approximately 144 km along the river or 95 km by road), Towong, Tintaldra, and Walwa are the only river front towns. Both Towong and Tintaldra are on elevated land overlooking the Murray River floodplain with minimal flood impact on town infrastructure or residences in events up to 1% AEP. Walwa is less elevated and in significant flood events (most recently March 2012), flooding can impact properties along River Road in proximity to the Walwa Recreation Reserve.

## Headwaters upstream of Biggara

The Murray River @ Biggara gauge is located approximately 5 km upstream of Biggara and is the most upstream Murray River flood warning gauge. The gauge is located near the upstream limit of private land and provides an indication of conditions in the Murray River upstream of the Swampy Plains River, a significant NSW tributary carrying releases from Khancoban Dam.

The Murray River upstream of Biggara is predominantly in public land and confined upland setting with only limited private land interface at Tom Groggin and Bunroy Road. Localised flood impact at Tom Groggin Station is possible however there are no other known private infrastructure impacts in this reach.

## Biggara to Bringenbrong

The Murray River floodplain is approximately 1 km in width through this reach.

Conditions in this reach are best represented by the Murray River @ Biggara gauge. Bunroy Creek, Biggara Creek and Spring Creek (Victorian tributaries) enter the Murray River downstream of the Biggara gauge but are small relative to the catchment upstream of Biggara.

The Upper Murray Road, which extends south from the Murray Valley Highway near Towong to Biggara, provides access to farming properties between Towong Upper and Biggara. None of the dwellings in this reach are subject to flooding in events up to 0.2% AEP however the Upper Murray Road is subject to flooding in events of approximate 10% AEP (subject to confirmation from Upper Murray flood study).

## Bringenbrong to Towong

The Murray River @ Bringenbrong gauge is located a short distance downstream of the Murray Valley Highway / Alpine Way crossing of the Murray River floodplain, 6 km south-east (upstream) of Towong. The gauge is located downstream of the Swampy Plains River confluence and thus reflects releases from Khancoban Pondage (part of the Snowy Hydro scheme).

The floodplain width increases from a typical width of 1 km upstream of Towong Upper to 1.5-2 km between the Bringenbrong gauge and Towong. The majority of the floodplain is engaged in events above approximately 20% AEP.

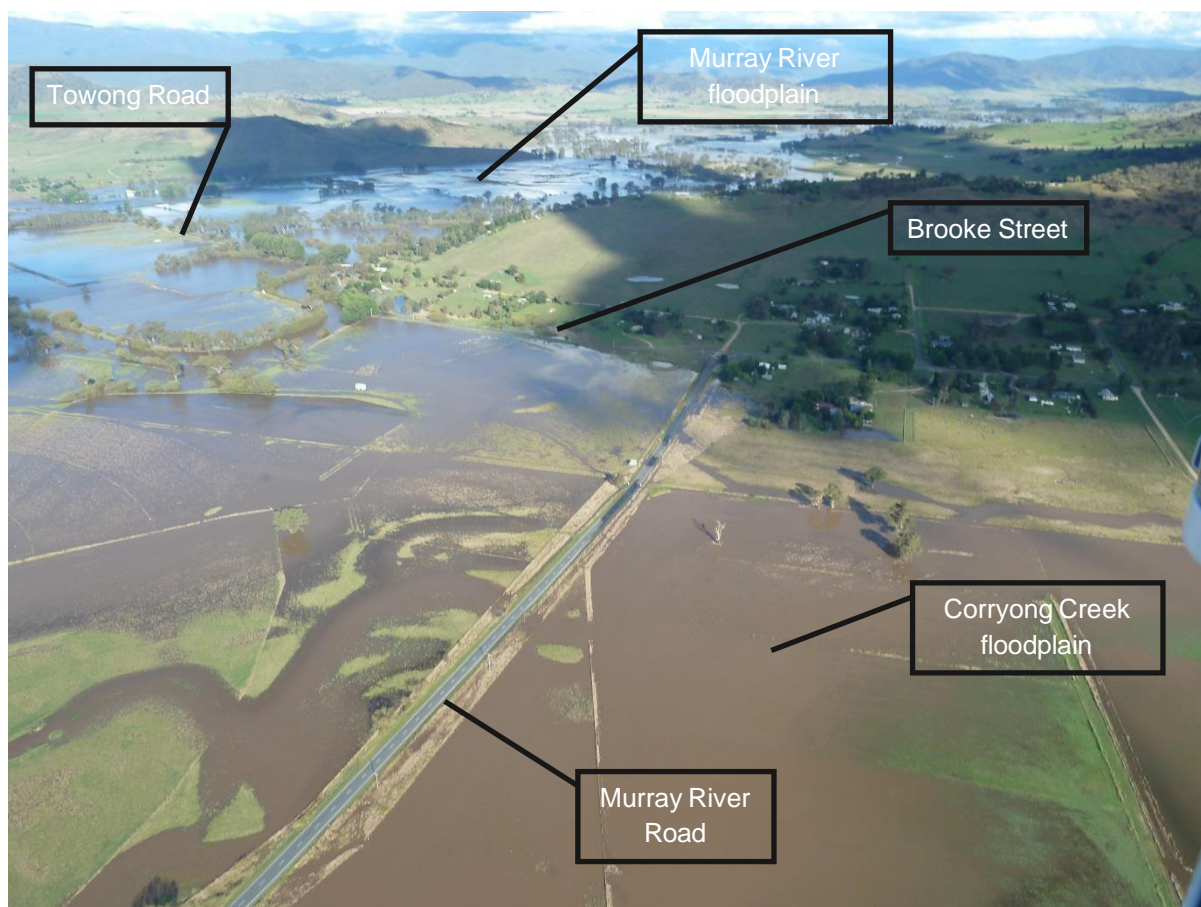
There are no known floodplain dwellings (up to 0.2% AEP) between Bringenbrong gauge and Towong. Towong Hill Road (between Towong and the Murray Valley Highway) is not subject to flooding.

**Towong** is located adjacent the Murray River floodplain immediately upstream of the Corryong Creek floodplain. The dwellings fronting the Murray floodplain are located along Sullivan Street and Thomas

Mitchell Place and are all flood free, with 0.2% AEP flood extent remaining below Towong Hill Road at the base of the hillslope.

Brooke Street, between Murray River Road and Sullivan Street, was subject to shallow flooding from Corryong Creek (influenced by backwater from the Murray River) in March 2012. No dwellings in the area are subject to impact in events of this magnitude however flooding occurs within the rear of 7 and 9 Brooke Street, 2 Sullivan Street and properties fronting Macadam Street.

The Towong Road, which runs across the Murray floodplain between Towong and the Tooma Road (NSW) is subject to flooding from approximately 120 m east of Brooke Street.



**Figure 4** Looking south toward Towong. Murray River (left and top, flowing toward viewer) and Corryong Creek (foreground, flowing right to left) at Towong (March 2012)

## Towong to Tintaldra

The timing and magnitude of flooding at Tintaldra is significantly influenced by inflows from Corryong Creek (Corryong Creek @ Towong), the Tooma River (Tooma River @ Pinegrove) and Horse Creek (ungauged).

Within the Murray River reach between Towong and Tintaldra (29 km by river or 13 km by road) the Murray floodplain width varies from approximately 1 km to around 3 km near the Corryong Creek and Tooma River confluences. Flooding from Corryong Creek and the Murray River impacts the Murray River Road over a length of approximately 4 km immediately to the north of Towong.



There is one identified flood prone dwelling in this reach (12158 Murray River Road, approximately 350 m south of the Corryong Creek crossing of Murray River Road)

**Tintaldra** is located adjacent the Murray River floodplain approximately 2 km south (upstream) of the Cudgewa Creek confluence. The township area is well elevated, with impact in the flood of March 2012 restricted to shallow flooding immediately to the north of Back Tintaldra Road but no known impact on dwellings located to the south of Back Tintaldra Road.

The Tintaldra Road, which extends east from Tintaldra to cross the Murray River floodplain before joining the Tooma Road in NSW, was subject to flooding in October 2010 and March 2012 (Figure 5 and Figure 6).



**Figure 5** Looking south-east toward Tintaldra (Oct 2010)



**Figure 6** Looking north over Tintaldra to the Murray floodplain (March 2012)

## Tintaldra to Walwa

The Murray River reach between Tintaldra and Walwa (33 km by river or 24 km by road) receives inflows from Cudgewa Creek (Cudgewa Creek @ Cudgewa North) immediately downstream of Tintaldra, along with smaller ungauged inputs from Walwa and Sandy Creek at Walwa. These inflows are reflected in the Murray River @ Jingellic gauge, located approximately 4 km downstream of Walwa. The Murray River @ Jingellic is the most relevant gauge for flood impacts at Walwa.

The Murray River Road borders the Murray floodplain between Tintaldra and Walwa. The road is generally above Murray floodplain level however it is subject to flooding:

- at Cudgewa Creek
- immediately east of 9812 Murray River Road (just above 2012 level)
- approximately 500 m west of 9750 Murray River Road (just above 2012 level)

There is a single potentially flood prone dwelling in this reach (9301 Murray River Road, approximately 1.5 km east of Walwa). This dwelling (which may be derelict) is on land marginally above estimated 1% AEP flood level however it is subject to flooding in larger events and is isolated from Murray River Road in events larger than approximate 20% AEP due to flooding over the driveway. Other dwellings in the reach are located on high ground adjacent the Murray River Road.

**Walwa** is identified as the most flood-prone of the towns on the Murray River above Lake Hume, with the northern part of the town (along River Road) subject to flooding in March 2012.

Other impacts around Walwa include:

- The March 2012 event resulted in flooding of the Walwa Recreation Reserve and clubrooms, netball court and tennis courts. A multi-purpose community facility has since been constructed on marginally higher ground to the south-west of the oval.
- The March 2012 event also flooded around the perimeter of the wastewater treatment ponds to the north-east of the oval.
- The Walwa Caravan Park, located adjacent the Murray River at the north end of River Road was subject to complete flooding, in 2010 and 2012, requiring evacuation of residents.
- The Walwa Golf Club (located near Jingellic, approximately 5 km downstream of Walwa township) was extensively flooded in March 2012 however land around the clubrooms is understood to have been subject to only shallow flooding.
- In 2022 the Walwa Caravan Park required evacuation during October as it was subject to flooding. The park was closed, and other visitors required relocation to the township. The managers residence came within 10cm of above floor flooding. Two boats and a swift water team responded into the park to assist people out.

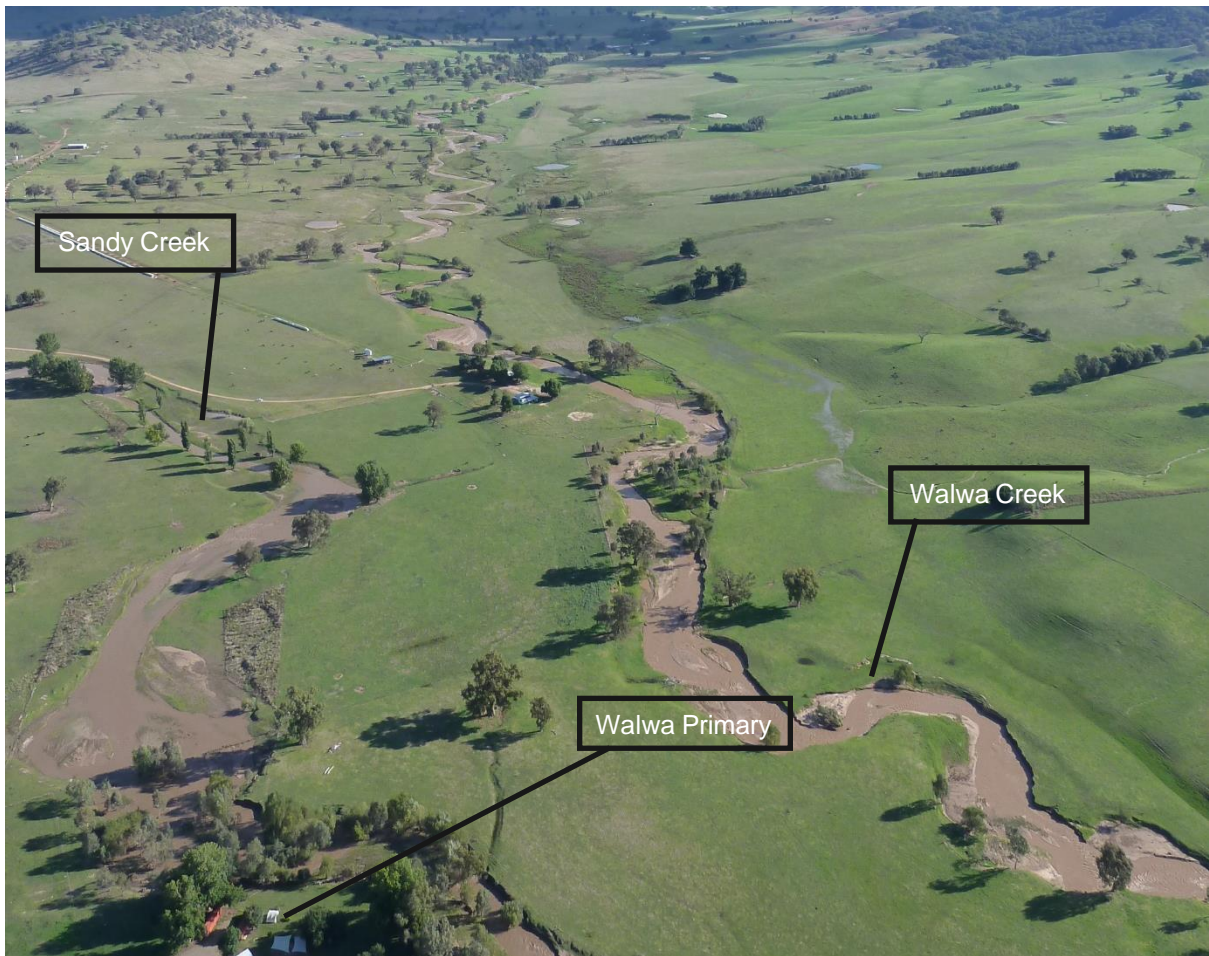
In addition to the impacts from the Murray River, the western part of Walwa may be subject to flood impact from Sandy Creek and Walwa Creek which cross the Murray Valley Highway to the west of town. These tributaries (ungauged) did not experience overbank flooding upstream of the Murray Valley Highway in the 2010 and 2012 events. The Walwa Primary School is immediately adjacent Sandy Creek and Walwa Bush Nursing Centre is approximately 150m to the east. Neither of these assets are known to have been flood impacted in past events however overbank flows would potentially impact both sites with possible impacts on dwellings in Hallinan Court and Hunt Court.



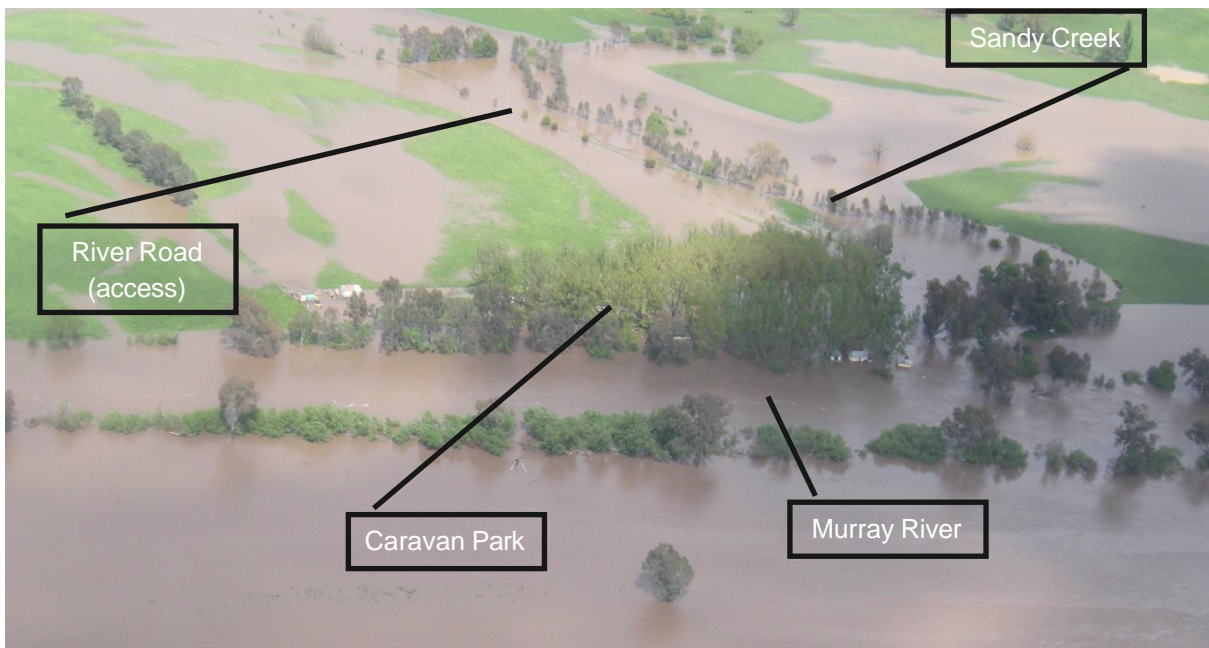


**Figure 7** Walwa overview (March 2012)





**Figure 8** Looking south (upstream) along Walwa Creek (right) and Sandy Creek (left). Walwa Primary School at bottom left (March 2012)



**Figure 9** Walwa Caravan Park, looking south-west (Oct 2010)

## Walwa to Lake Hume

The Murray River reach between Walwa and the backwaters of Lake Hume at Burrowye (43 km by river or 35 km by road) receives inflows from Jingellic Creek (NSW) and Burrowye Creek (Vic) and smaller tributaries on both sides. The Jingellic Creek at Jingellic is the only stream gauge in this reach. The Murray River at Jingellic is the most relevant gauge for flood impacts within the Murray River reach downstream of Walwa. The Victorian side of the Murray River floodplain is generally less than 500 m width in this reach with flooding generally restricted to flooding of agricultural land however there are 2 potentially flood prone / isolated dwellings immediately downstream of Jingellic. The Murray River Road between Walwa and Burrowye is generally above Murray River 1% AEP flood level however it may be subject to flooding around Nursery Lane at Jingellic and around Guys Forest Road at Burrowye.

- In the 20% AEP event (above the Moderate Flood Level trigger) the campground on Nursery Lane and Murray River Road west of Guys Forrest Road is impacted
- From the 10% AEP event and above, inundation and closure of roads and subsequent isolation occurs
- From the 2% AEP event (above the Major Flood Level trigger) and above, inundation and closure of significant roads and subsequent isolation occurs at a number of locations.
- No known significant impacts to properties (residential, commercial and industrial) or critical infrastructure.

## Overview of Flooding Consequences for the Upper Murray

Parameter	Annual Exceedance Probability (%AEP)						
	0.2%	0.5%	1%	2%	5%	10%	20%
Residential Buildings Flooded Above Floor	4	4	4	4	4	4	0
Commercial Buildings Flooded Above Floor	4	1	1	1	1	1	1
Properties Flooded Below Floor	8	8	8	8	7	4	
<b>Total Properties Flooded</b>	<b>16</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>12</b>	<b>9</b>	<b>1</b>

Parameter	Annual Exceedance Probability (%AEP)							Total
	0.2%	0.5%	1%	2%	5%	10%	20%	
Roads Impacted by water	1	0	3	0	4	6	1	15
Caravan Parks Impacted by floodwater							1	1



# Appendix A2: Murray River Tributaries

## Description of Major Waterways and Drains

### Corryong Creek

Corryong Creek is a tributary of the Murray River, entering the Murray River downstream of Towong. Major tributaries of Corryong Creek are Thowgla Creek and, in the upper reaches Nariel Creek and Simpsons Creek. The only flood warning stream gauge on Corryong Creek is Corryong Creek @ Towong, located immediately upstream of the entry into the Murray River floodplain.

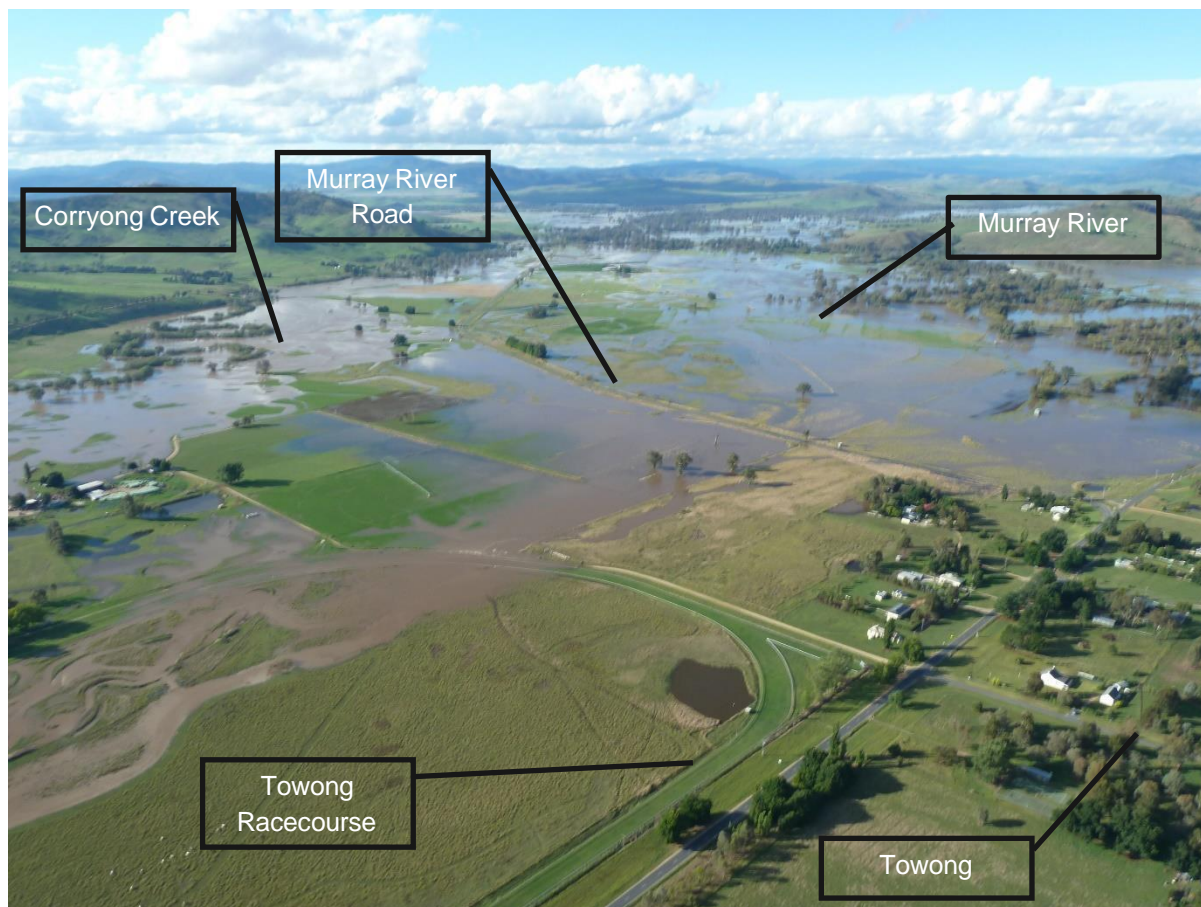
**Corryong** lies on elevated ground between Corryong Creek and Thowgla Creek. Neither creek impacts the township area of Corryong (up to 0.2% AEP). Localised impact from tributaries (Cemetery Creek and un-named tributary to the west) which drain from the hillslopes to the south of Corryong is possible but there is no known history of flash flooding in Corryong.

Flooding over the Murray Valley Highway at Corryong Creek west of Corryong (at Colac Colac) and Thowgla Creek to the east result in potential isolation of Corryong. The Thowgla Creek crossing is known to have flooded in March 2012 (Figure 10). The Corryong Creek crossing at Colac Colac appears to have a higher overtopping threshold, with no known overtopping in March 2012. Current flood mapping indicates that overtopping occurs on the eastern side of the floodplain (east of the Colac Colac Caravan Park) in the 1% AEP event.



**Figure 10** Murray Valley Highway north-east of Corryong, flooding from Thowgla Creek looking south (March 2012)

As noted in Appendix A1: Upper Murray River, Towong lies adjacent Corryong Creek a short distance upstream of the Murray River confluence. The Murray River Road to the north of Towong is subject to flooding from Corryong Creek however Corryong Creek does not result in flooding within the township area. The racecourse and adjacent farming properties are however subject to flooding, most recently in March 2012 (Figure 11).



**Figure 11 Corryong Creek and Murray River adjacent Towong (March 2012)**

## Cudgewa Creek

Cudgewa Creek is a tributary of the Murray River, entering the Murray River immediately downstream of Tintaldra. Major tributaries of Cudgewa Creek are Log Bridge Creek and Beetomba Creek in the upper reaches and Stony Creek between Cudgewa and Tintaldra.

There are two active stream gauges on Cudgewa Creek – Cudgewa Creek @ Berringama (upstream of Cudgewa) and Cudgewa Creek @ Cudgewa North (approximately 5 km south-west of Tintaldra). Flood class levels are not defined for either of these gauges. As noted in Appendix A: Flood threats for Towong Shire – Overview, the three largest flood events at Berringama are Dec 2010, Oct 2010 and March 2012, while at Cudgewa North, March 2012 and Oct 2010 (very nearly the same magnitude) were larger than Dec 2010.

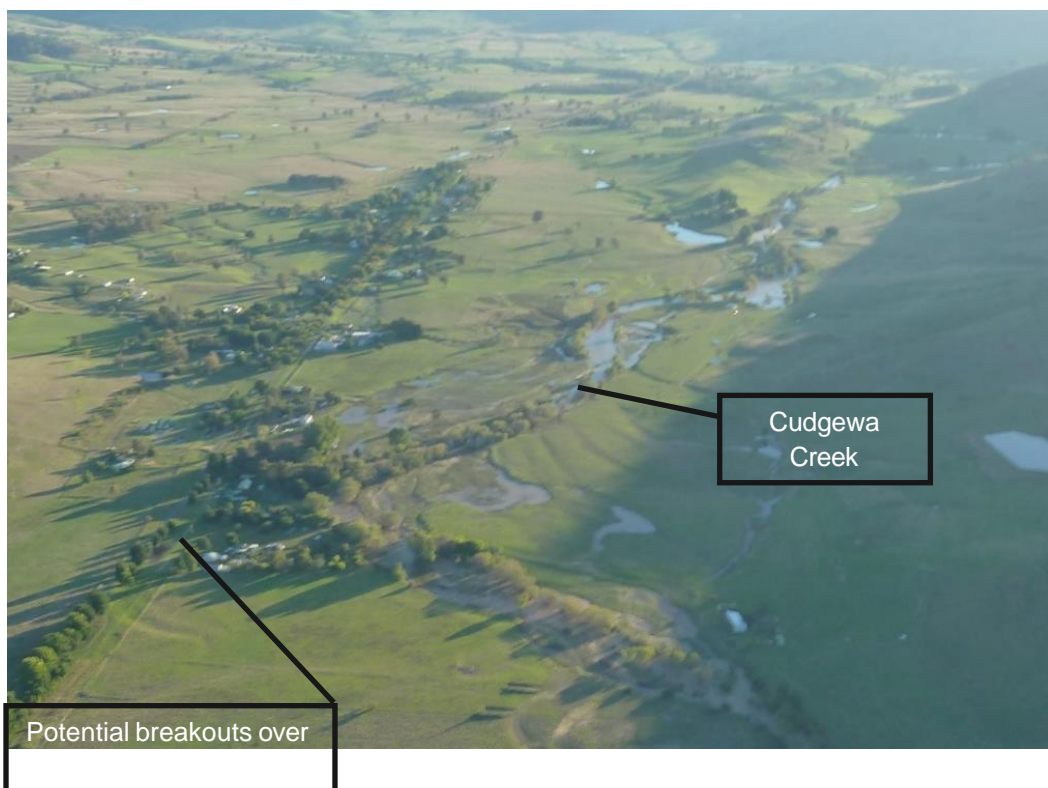
**Cudgewa** township is located along the Cudgewa Valley Road approximately 500 m south-east of Cudgewa Creek. There were no known flood impacts within the Cudgewa township in the record flood events of 2010 and 2012 however current flood mapping indicates potential for shallow breakout flows across the Cudgewa Valley Road in the northern end of the township where Cudgewa Creek most closely abuts the town (around 239 Main Street). Flood depth in the 1% AEP event is assessed to remain shallow (typically < 250 mm depth, with likely limited risk of over floor flooding of properties at 231-239 Main Street).



The floods of 2010 and 2012 resulted in broad scale inundation over the Cudgewa Creek floodplain with resultant impacts on farming properties and road access over much of the reach between Berringama and the Murray River.



**Figure 12 Murray River Road at Tintaldra - looking upstream on Cudgewa Creek (March 2012, after flood peak)**



**Figure 13 Cudgewa township looking south-west – no apparent flood impact (March 2012, after flood peak)**

## Overview of Flooding Consequences

Thowgla Creek, Corryong Creek and Cudgewa Creek are tributaries to the Murray River upstream of Lake Hume. The primary risk in this area is isolation due to access routes (ref to table of info provided).

Mitta Mitta River the townships of Dartmouth, Mitta Mitta and Eskdale have limited flood exposure due to Dartmouth Dam attenuating flows from the upper catchment.

The Tallangatta Creek flows into Lake Hume at Old Tallangatta. Tallangatta township is located adjacent to the Mitta Mitta arm of Lake Hume and is elevated above the top water level of the Lake.

Parameter	Impacts associated with rainfall resulting in Minor, Moderate & Major flooding			
	Minor	Moderate	Major	Total
Roads Impacted by water	3	5	5	5
Caravan Parks Impacted by floodwater	0	1	0	1

# Appendix A3: Mitta Mitta River & Tallangatta Creek

## Description of Major Waterways and Drains

### Mitta Mitta River

Rising on the high plains beneath Mount Bogong, the upper reaches and tributaries of the Mitta Mitta River drain through deeply dissected forests. The main channel of the Mitta Mitta forms at the confluence of Cobungra River and the Big River, and then flows northwards through near-pristine forest to Dartmouth Dam.

The dam is the largest storage in the Basin and has the capacity to hold up to 40% of the water for the River Murray system. After Dartmouth Dam, the Mitta Mitta meanders north-west through a wide valley to the south arm of the Hume Dam.

The Mitta Mitta catchment is less than 1% of the area of the Murray–Darling Basin but it provides almost 10% of inflow to the River Murray system. Very little of the water generated in the catchment is used within the catchment.

The Mitta Mitta River is a declared heritage river area in its mountain reaches, from Glen Valley to Lake Dartmouth. The dam has strongly affected the hydrology of the lower river but there are good floodplain, billabong and wetland habitats downstream of Tallandoon on the lower reaches of the river.

There are small towns and farming communities in the Mitta Mitta catchment but about 70% of the region is steep forested hills and mountains. The dairy industry is a major source of income and employment in the region, and to a lesser extent, timber and beef production. Tourism is important to the region, with a focus on fishing, camping and 4-wheel driving.

### Tallangatta Creek

The Tallangatta Creek flows into Lake Hume at Old Tallangatta and encompasses an area of approximately 453 km<sup>2</sup>. The catchment is bound to the east by the Cudgewa Creek catchment and the west by the Mitta Mitta River catchment.

Significant tributaries of the Tallangatta Creek include Findlay, Honeysuckle, Cascade, Rogers, Matthews and Buckeen Creeks.

The main townships in the catchment include Tallangatta Valley and Bucheen Creek. The catchment is predominantly forested in the upper and middle catchments. The creek valleys have been cleared for agriculture and lead down to the cleared lower plains. The main industries with the catchment are tourism and dryland farming.

## Overview of Flooding Consequences

Parameter	Flood Class Level			
	Minor	Moderate	Major	Total
Roads Impacted by water	0	6	6	12
Caravan Parks Impacted by floodwater	0	0	0	0
Campgrounds Impacted by floodwater	Most riverside campgrounds begin flooding from the Minor Flood Class Level and require closing			



# Appendix A4: Storm threats for Towong Shire

## Overview

The Towong Shire has experienced and is susceptible to severe weather events all year around. A combination of topography throughout the municipality, the public and private land interface, rural and agricultural settings with smaller townships and major transport routes nestled amongst mature native vegetation and bushland means tree damage during wind events is a significant risk.

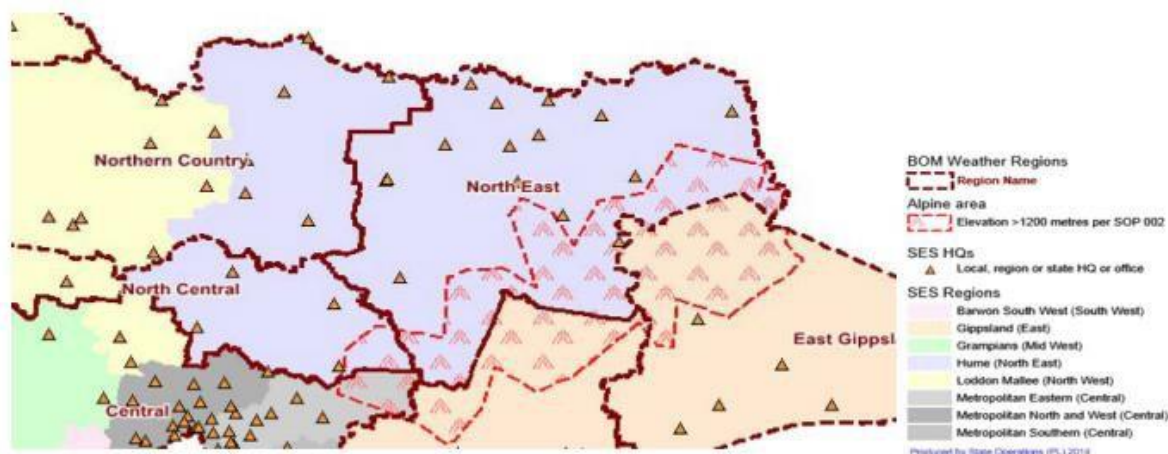
BoM's storm archive ([www.bom.gov.au/australia/stormarchive/](http://www.bom.gov.au/australia/stormarchive/)) and VICSES' records of recent events show the Hume Region to be very susceptible to severe storms, including tornadoes, large hail, flash flooding, severe winds and lightning. Though there are few dust storm events that have specifically impacted this region. There have also been isolated occurrences of atmospheric downbursts/microburst in adjacent municipalities that have been very damaging.

People in the open, under trees or camping, are statistically the most vulnerable to death due to storm.

Older homes may be more susceptible to damage, as can properties undergoing development and renovation. Construction works can interfere, and excavations can interfere with natural drainage or stability of existing trees. Blocked drains and pits, or drainage systems that may be insufficiently sized also contribute to the effects of storm activity. Severe storm activity could result in injuries and an increase in road accidents. Damaging wind events can lead to trees down, with damage to the built and natural environment.

Obstructions across roads could disrupt services, affect community functioning and have great potential for road traffic delays for access and egress of the community and emergency services. Infrastructure near waterways, such as pedestrian and road bridges or their approaches may become damaged either directly or from debris that has been washed into the current.

The VICSES Hume Region (see map below) includes four Bureau of Meteorology (BOM) weather districts (parts or all of): Northern Country, North East, North Central, and the Alpine area. Towong Shire sits within the North East District.



n

## Historic Storm Events

Year	Location	Details
2023	Towong Shire	January 2023 saw the highest 24hr rainfall total recorded for the gauge at Hume weir of 132mm. Although this did not result in any RFA's this was one of many similar events over a 3 year period from 2020 that previously resulted in road damage, and landslide/debris flows following the 2019-20 bushfires in the municipality
2017	Corryong	In March 2017, a significant storm in neighbouring Wodonga and Indigo Shires moved into Towong Shire. Two Microbursts caused significant community impacts including building damage, tree down traffic hazards and power outages in the City of Wodonga. Within Towong Shire the storm began to fade away but resulted in 5 RFA's near Corryong including 2 homes having their rooves removed by strong winds
2011	Bellbridge, Bethanga & Tallangatta	A 'tornado-like' wind event damaged a number of buildings in Bellbridge, Bethanga and Tallangatta.
1996	Berringama	In January 1996 approximately 60 mm of rain fell in the Berringama area within 1 hour, causing extensive flood damage.
1992	Tallangatta & Mitta Valley's	Two separate storms caused extensive flood damage. In the first storm, over 75 mm of heavy rain fell in the mountains upstream of Yabba Road and Tallangatta Valley. A number of houses and buildings suffering major flood damage. Roads, bridges, culverts and fencing in the area were heavily affected. In the second storm, the Omeo Highway was closed due to flooding 3km downstream of "Carey Vale" farm. The road sustained serious damage 5-10m wide gashes of road being washed away and bridge damage

## VICSES Requests for Assistance – Severe Weather – Towong Shire

This data uses Request for Assistance information from the Victoria State Emergency Service (VICSES) to display areas at risk from severe weather events. VICSES Severe Weather Requests for Assistance. The Victoria State Emergency Service records requests for assistance made by the public during severe weather events. Additional calls may have been made directly to Council during these events.

The Table below is a breakdown of requests for assistance (RFA) by type during the period 2017-2022 in relation to severe weather and storm events

### VICSES Storm and Flood Requests for Assistance (RFA's) by type 2017-2022

Type	2017-18	2018-19	2019-20	2020-21	2021-22	Grand total
BLD DAMAGE - INT / EXT	-	-	-	-	2	2
BLD DAMAGE - ROOF - MULTI	-	-	-	-	2	2
BLD DAMAGE - ROOF - SINGLE	-	-	1	-	10	11
BUILDING DAMAGE	5	3	2	-	-	10
FLOOD - ENT. PREMISES	-	-	-	-	5	5
FLOOD - POT TO ENT. PREMISES	-	-	1	-	4	5
FLOODING	5	3	-	-	-	8
LANDSLIDE	-	-	1	-	-	1
LANDSLIDE / HAZARDS	-	-	4	2	7	13
LOOSE DEBRIS / OBJECTS	-	2	1	-	2	5
TREE DOWN	8	10	3	-	-	21
TREE DOWN - NO THREAT	-	-	1	5	9	15
TREE DOWN - ON VEHICLE	-	-	-	-	1	1
TREE DOWN - POWER LINES	-	-	1	1	4	6
TREE DOWN - RESTRICT ACCESS	-	-	-	2	2	4
TREE DOWN - STRUC - SINGLE	-	-	-	1	4	5
TREE DOWN - TRAFFIC HAZ	-	-	37	39	99	175
TREE DOWN TRAFFIC HAZ	50	54	22	-	-	126
Grand total	68	72	74	50	151	415

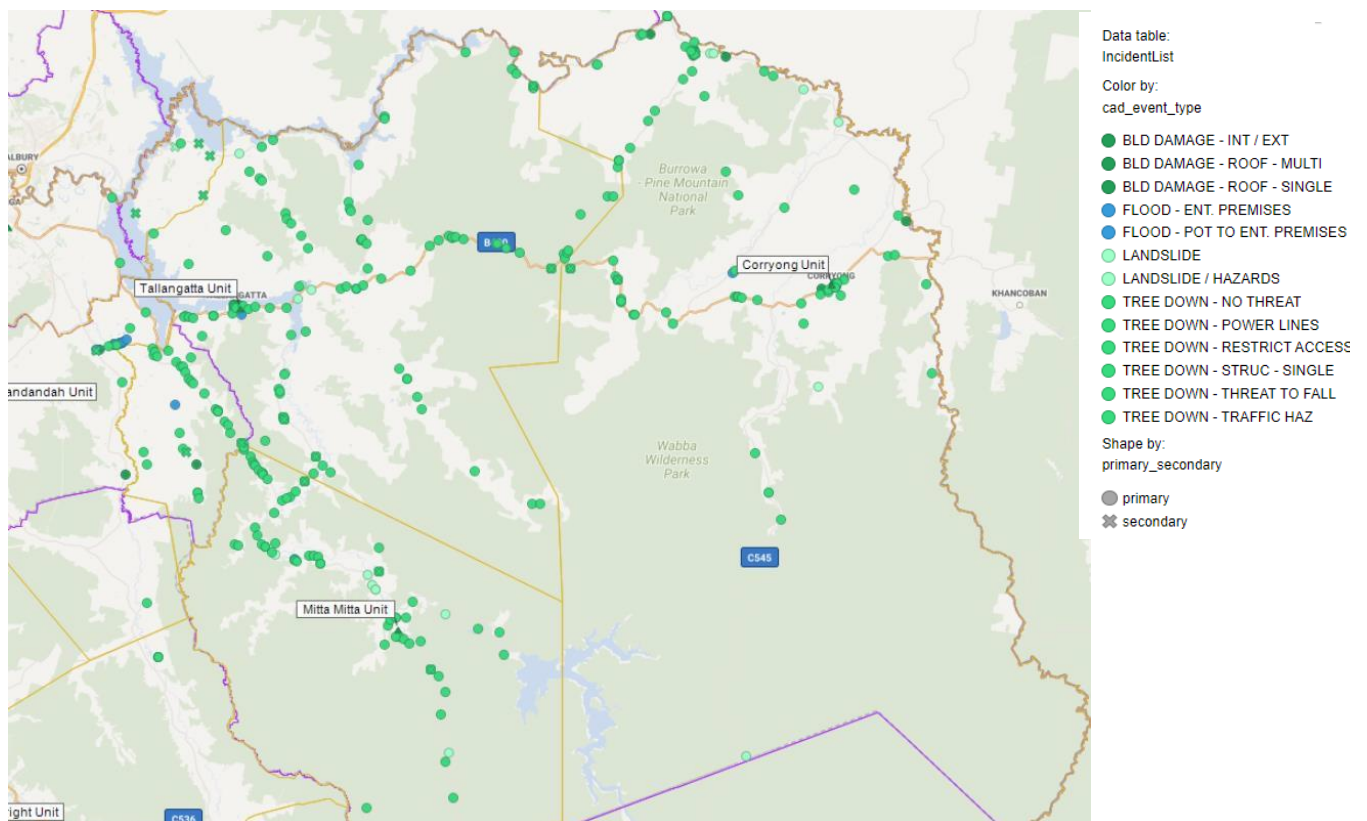
## Flood & Storm Requests for Assistance (RFA's) per location & Priority 2017- 2022

Location	2	3	Grand total
TALLANGATTA	17	27	44
MITTA MITTA	15	18	33
TALLANDOON	17	15	32
CHARLEROI	13	11	24
WALWA	11	10	21
ESKDALE	8	12	20
TALLANGATTA SOUTH	10	8	18
KOETONG	9	8	17
SANDY CREEK	6	10	16
CORRYONG	3	12	15
BULLIOH	8	6	14
TALLANGATTA VALLEY	6	8	14
TANGAMBALANGA	4	10	14
GRANYA	6	7	13

## Flood and Storm RFA's per Unit per Financial year 2017 - 2022

Unit	8	2018-19	2019-20	2020-21	2021-22	Grand total
TALLANGATTA	37	42	43	22	82	226
CORRYONG	18	13	16	13	41	101
MITTA MITTA	13	17	15	15	28	88
Grand total	68	72	74	50	151	415

## VICSES Severe Weather RFA's Mapping – Towong Shire – June 2019 – Feb 2023



## Appendix B: Typical flood peak travel times

	Location From	Location To	Typical Travel Time	Comments
<b>Murray River</b>	Murray River at Biggara	Murray River at Bringenbrong		
	Murray River at Bringenbrong	Murray River at Jingellic		
	Murray River at Jingellic	Murray River at Heywoods (downstream of Hume Dam)		
<b>Cudgewa Creek</b>	Cudgewa Creek at Berringama	Cudgewa Creek at Cudgewa North	Dec 2010 - 10hrs Oct 2010 – 10.5 hrs Sept 1998 – 9.5 hrs	
<b>Tallangatta Creek</b>	Tallangatta Creek at McCallums	Lake Hume		
<b>Mitta Mitta River</b>	Mitta Mitta River @ Hinnomunjie	Dartmouth Head Gauge	18hrs	GMW Flood Incident Management Plan 2016
	Mitta Mitta River @ Hinnomunjie	Mitta River @ Colemans	Sept 2010 – 9 hrs July 1974 – 9.5hrs	
	Dam Head Gauge	Mitta River @ Colemans	2 hrs	GMW Flood Incident Management Plan 2016
	Mitta River @ Colemans	Mitta River @ Tallandoon	July 1974 - 22.5 Hrs	
	Mitta River @ Tallandoon	Lake Hume		
	Dam Head Gauge	Tallangatta	12hrs	GMW Flood Incident Management Plan 2016
<b>Snowy Creek</b>	Snowy Creek @ Granite Flat	Tallandoon	7-10 hrs	GMW Flood Incident Management Plan 2016

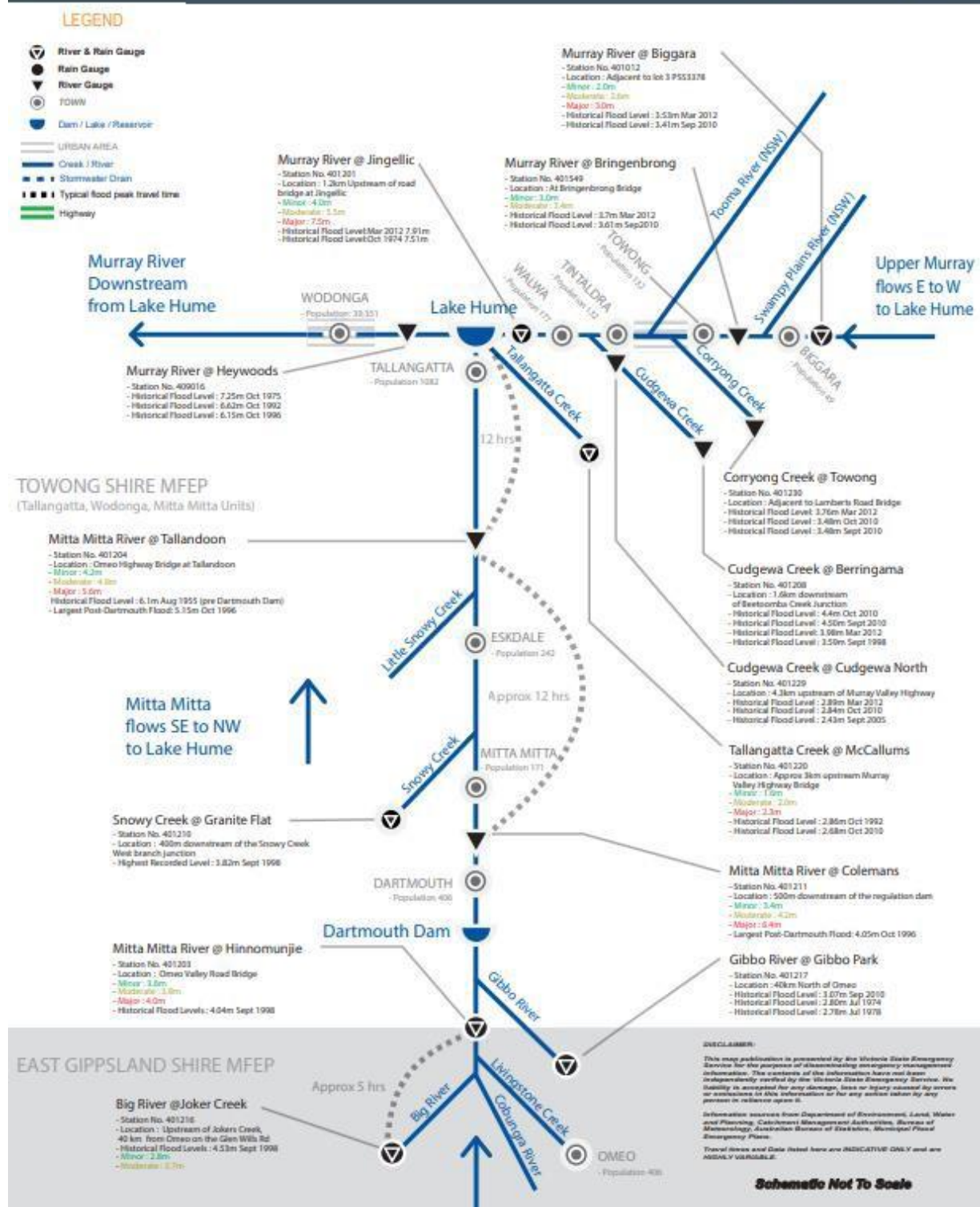


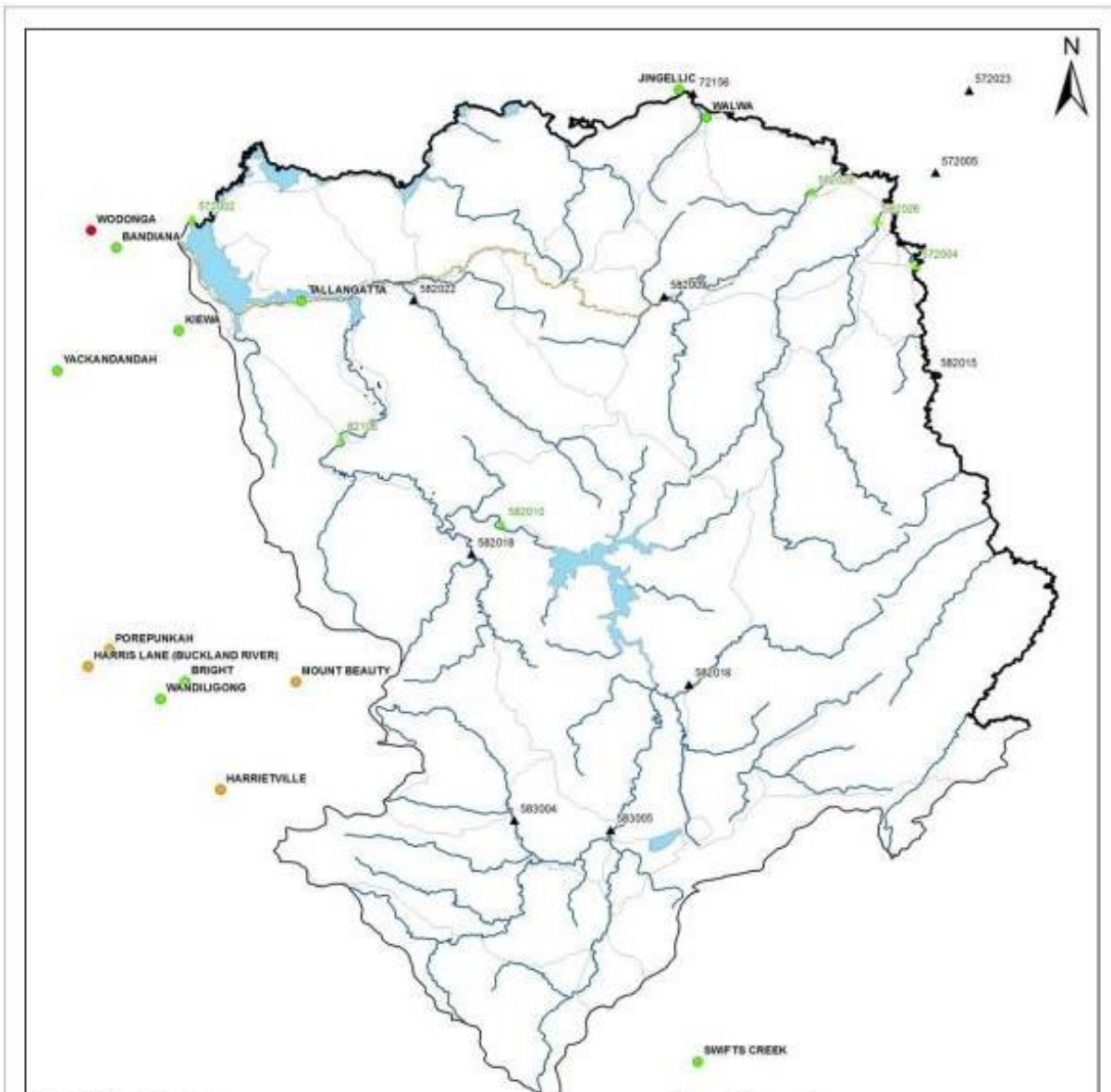
# Appendix C1: River System Overview & Schematics (Upper Murray, Mitta Mitta Rivers & Tallangatta Creek)



## Upper Murray & Mitta Mitta River Catchment Schematic

Version 4 - September 2020





**Mitta Mitta River Gauges**

BOM Gauge Number	Site Name
82106	Mitta Mitta River at Tallandoon
572002	Murray River at Heywards
582010	Mitta Mitta River at Colemans
582016	Gibbo River at Gibbo Park
582018	Snowy Ck at Granite Flat
582022	Tallangata Ck at McCallums
583004	Big River at Joker Ck
583005	Mitta Mitta River at Hinnomunjie

**Upper Murray Gauges**

BOM Gauge Number	Site Name
572004	Murray River at Bringenbrong
582026	Corryong Ck at Towong
582028	Cudgewa Ck at Cudgewa North
72156	Murray River at Jingellic
572005	Tooma River at Pinegrove
572023	Maragele Creek at Maragle
582009	Cudgewa Ck at Berringama
582015	Murray River at Biggara

19th January, 2012  
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While all reasonable care has been taken to ensure information contained in the report is up to date and accurate, no warranty is given to the information contained on this map is free from error or omission. Any reliance placed on such information shall be at the sole risk of the user. Please verify the accuracy of the information prior to using it.

**LEGEND**

- Levees
- Major Roads
- Rail
- Waterbodies
- Major Waterways

**Tier**

- - Tier 1
- - Tier 2
- - Tier 3

**Gauge Type**

- River
- ▲ Combined River and Rainfall

0 10 20 30 40 50  
Kilometers

**Upper Murray River & Mitta Mitta River Basins**

## Appendix C2: Flood Intelligence Card - Murray River at Biggara

Gauge Location: Adjacent to lot 3 PS53378 (Murray River Reserve) - Biggara

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Murray River at Biggara	2.0m	Minor Flood Level -% AEP (- year ARI)			BOM will issue and VICSES to publish Minor flood warning to community with tailored information from this plan  The Hume Region Duty Officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response to suit the level of the incident	
	2.6m	Moderate Flood Level			VICSES to consider Base IMT rostered/standby or Base IMT in place or ROCC depending on forecast  BOM will issue and VICSES to publish Moderate flood warning to community	
	2.69m	20% AEP		<b>Water Over Road</b> <ul style="list-style-type: none"> <li>- Upper Murray Road South of Indi Road</li> <li>- Indi Road between Upper Murray Road and Indi North Road (NSW) (Damm's/Maguire's Bridge closed)</li> <li>- Murray Valley Highway/Alpine Way between Upper Murray Road and Tooma Road (VIC/NSW)</li> <li>- Indi Road at Biggara Bridge (NSW side)</li> <li>- Unnamed road at Indi Bridge (NSW Side)</li> </ul>	VicRoads/RRV/Towong Shire Council/ Snowy Valleys Council (NSW) to close roads identified  VICSES units to respond on a request by request basis	SES - Strategic flood intelligence reports summary – Upper Murray & Mitta Mitta
	2.78m			August 2022 Peak Flood Height		
	2.79m			Peak Height, August 1974 flood event		
	2.89m	10% AEP				
	2.95m			Peak height, October 1993 flood event		
	3.00m	Major Flood Level		<b>Water over Road</b> <ul style="list-style-type: none"> <li>• Murray Valley Hwy (near Miller Hill) Between Corryong and Khancoban turnoff</li> <li>• Towong Bridge Flooded</li> <li>• Floodplain around Tintalra inundated</li> </ul>	BOM will issue and VICSES to publish Major flood warning to community  VICSES to consider Base IMT in place or Core in place with observed activity	
	3.01m			Peak height, September 1998 flood event		

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Murray River at Biggara	3.10m	5% AEP				
	3.38m	2% AEP				SES - Strategic flood intelligence reports summary – Upper Murray & Mitta Mitta
	3.4m			Peak height, September 2010 flood event		
	3.54m	1% AEP		<b>Properties Inundated</b> <ul style="list-style-type: none"> <li>4 dwellings impacted in NSW - Indi Rd, Alpine Way</li> </ul>	Notify NSWSES if homes impacted	NECMA
	3.66m	0.5% AEP				
	3.86m	0.2% AEP				

**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 C3: Flood Intelligence Card - Murray River at Bringenbrong

Gauge Location: At Bringenbrong Bridge

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Murray River at Bringenbrong	3.0m	Minor Flood Level		Clarks Lagoon Camping Reserve flooded	BOM will issue and VICSES to publish Minor flood warning to community with tailored information from this plan  The Hume Region Duty Officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response to suit the level of the incident	
	3.4m	Moderate Flood Level			VICSES to consider Base IMT rostered/standby or Base IMT in place or ROCC depending on forecast  BOM will issue and VICSES to publish Moderate flood warning to community  VICSES Tallangatta Unit to enact Flood contact list plan	
	3.45m			August 2022 Peak Flood Height  Water begins to flow into low lying areas and the entry roadway of Walwa Caravan Park	VICSES units to respond on a request by request basis	Intelligence gathered - Aug 2022 Event
	3.67m			March 2012 Flood Peak Height  Flooding from Corryong Creek (influenced by backwater from the Murray River) No dwellings in the area are subject to impact in events of this magnitude however flooding occurs within the rear of 7 and 9 Brooke Street, 2 Sullivan Street and properties fronting Macadam Street.	VICSES units to respond on a request by request basis	NECMA

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Murray River at Bringenbrong	TBC	20% AEP		<p>Camp ground at Neil's Reserve, Pine Mountain (Between Tintaldra &amp; Walwa) inundated</p> <p>Telephone exchange on Murray River Road impacted (Location?)</p> <p>Property at Risk:</p> <ul style="list-style-type: none"> <li>- 12158 Murray River Road (350m South Corryong Creek)</li> </ul> <p><b>Water Over Road</b></p> <ul style="list-style-type: none"> <li>- Murray Valley Highway/Alpine Way between Upper Murray Road and Tooma Road</li> <li>- Towong Road between Brooke Street and Towong Flat Road</li> <li>- Lamberts Road</li> <li>- Murray River Road between Lambert Road and Ranch Road</li> <li>- Tintaldra Road between Murray River Road and Welaregang Road</li> <li>- Murray River Road between Back Tintaldra Road and Settlement Road</li> <li>- Settlement Road</li> <li>- Murray River Road between Settlement Road and Pine Mountain Creek Road</li> <li>- River Road</li> <li>- Burrowye Rd between Murray Valley Hwy &amp; River Road ( Tallangatta SES)</li> </ul> <p>Murray River Road between Hanna Street and Old Tip Road</p>	<p>Parks Vic or DEECA to close Neil's Reserve</p> <p>Telstra to consider impacts on telephone exchange</p> <p>VICSES units to respond on a request by request basis</p> <p>VicRoads/RRV/Towong Shire Council/ Snowy Valleys Council (NSW) to close roads identified</p>	<p>Upper Murray &amp; Tributaries Flood Intel Report – Cardno -2021</p> <p>NECMA (Property at Risk confirmation)</p>
	TBC	10 % AEP				
	TBC	5 % AEP		<p><b>Water Over Road</b></p> <ul style="list-style-type: none"> <li>- Murray River Road between Eighty Acre Road and Harvey Street</li> </ul>	<p>VicRoads/RRV/Towong Shire Council/ Snowy Valleys Council (NSW) to close roads identified</p> <p>VICSES units to respond on a request by request basis</p>	<p>Upper Murray &amp; Tributaries Flood Intel Report – Cardno -2021</p>
	TBC	2% AEP		<p><b>Properties impacted</b></p> <ul style="list-style-type: none"> <li>- Walwa Community Health Centre (Main Street)</li> </ul>	<p>VICSES units to respond on a request by request basis</p>	<p>Upper Murray &amp; Tributaries Flood Intel Report – Cardno -2021</p>
	TBC	1% AEP		<p><b>Properties impacted</b></p> <ul style="list-style-type: none"> <li>- 1 dwelling - Towong Flat Rd in NSW</li> </ul>		NECMA

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Murray River at Bringenbrong	TBC	0.5% AEP		<b>Water Over Road</b> <ul style="list-style-type: none"> <li>Hanna Street between Main Street and Church Street, Walwa ( Could be from rainfall in upper catchments and flow from the Sandy Creek, Not the Murray River)</li> </ul>	IMT to consider deploying Snap Send Solve Field Observers to determine Sandy Creek Impacts  VicRoads/RRV/Towong Shire Council/ Snowy Valleys Council (NSW) to close roads identified  VICSES units to respond on a request by request basis	Upper Murray & Tributaries Flood Intel Report – Cardno -2021
		No Major Flood Class level				

**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 Flood plan.**

# Appendix C4: Flood Intelligence Card - Murray River at Jingellic (Use for Walwa)

Gauge Location: 1.2km upstream of Road Bridge at Jingellic

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Murray River at Jingellic		<b>Below Flood Class Levels</b>		<ul style="list-style-type: none"> <li>Tintalra Station flood plains flooded below this level in low lying area between Jingellic and Bringenbrong</li> </ul>		
	4.0m	<b>Minor Flood Level</b>		<ul style="list-style-type: none"> <li>From minor level, water may start to enter the Walwa Riverside Caravan Park</li> </ul>	<p>BOM will issue and VICSES to publish Minor flood warning to community with tailored information from this plan</p> <p>The Hume Region Duty Officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response to suit the level of the incident</p> <p>Walwa Riverside caravan park to enact phase 1 of their flood plan checklist - move residents in low lying areas to higher ground in park when a prediction of 5.0M is met</p> <p>SES to call Walwa Riverside Caravan Park to enact flood plan and discuss potential flood heights. ( Heidi &amp; Kevin Conway 02 6037 1388 or 0413 872 120) <a href="mailto:stay@walwariversidecaravanpark.com.au">stay@walwariversidecaravanpark.com.au</a></p> <p>110 River Road, Walwa, VIC, 3709</p>	Upper Murray & Tributaries Flood Intel Report – Cardno -2021
	5.0m			<ul style="list-style-type: none"> <li>Water starts flowing over Murray River road near Tintalra (subject to flows in Cudgewa Creek), Towong (influenced by flows in Corryong Creek) and Ournie</li> </ul>	VICSES/RRV to monitor for potential road closure	Upper Murray & Tributaries Flood Intel Report – Cardno -2021
	5.15m			<p><b>Water Over Road</b></p> <ul style="list-style-type: none"> <li>Murray River Road maybe inundated between Tintalra and Towong</li> </ul>	<p>VICSES NEDO/IWO to add to Minor Flood warning impacts at this level</p> <p>VicRoads/RRV/Towong Shire Council to close Murray River Road</p>	
	5.36m			<ul style="list-style-type: none"> <li>August 2022 Flood Peak</li> <li>Water enters low lying areas and the entrance to Walwa Caravan Park</li> </ul>	VICSES units to respond on a request by request basis	2022 Flood observations

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Murray River at Jingellic	5.5m	Moderate Flood Level		<p>Flood water begins to compromise access/egress from Walwa Riverside Caravan Park</p> <p>Flood levels from Moderate give enough time for people to leave the caravan park prior to a formal evacuation.</p> <p>Burrowye Reserve and Kennedys Reserve Camping Area begins to inundate (No phone reception)</p>	<p>VICSES to consider Base IMT rostered/standby or Base IMT in place or ROCC depending on forecast</p> <p>BOM will issue and VICSES to publish Moderate flood warning to community</p> <p>Walwa Riverside Caravan Park to enact Phase 2 of their Flood emergency Plan Checklist – Close the park to the public and evacuate all guests when a moderate predicted height of 6.0M is met</p> <p>Engage Walwa Police regarding need to close and evacuate Caravan Park</p> <p>IC/VICPOL/Towong Shire Council to discuss if relief is required for closure of caravan park</p> <p><b>SES to call Walwa Riverside Caravan Park to enact phase 2 of the Flood plan, discuss evacuation of guests and discuss potential flood heights (Heidi &amp; Kevin Conway 02 6037 1388 or 0413 872 120) <a href="mailto:stay@walwariversidecaravanpark.com.au">stay@walwariversidecaravanpark.com.au</a></b></p> <p><b>110 River Road, Walwa Vic 3709</b></p>	
	5.64m			<ul style="list-style-type: none"> <li>Jingellic Riverside Campground starts to flood</li> </ul>	VICSES NEDO/IWO to add to Moderate Flood warning impacts at this level	
	5.76m			<ul style="list-style-type: none"> <li>15 November 2022 Flood Peak Height</li> </ul>		
	5.90m			<ul style="list-style-type: none"> <li>Sept 2021 Flood Peak Height</li> </ul>		
	6.0m			<ul style="list-style-type: none"> <li>Access/egress to Walwa Riverside Caravan Park now compromised</li> </ul> <p><b>Water over Road</b></p> <ul style="list-style-type: none"> <li><b>River Road, Walwa</b></li> </ul>	<p>Walwa Riverside Caravan Park determine to close park and ask all patrons to relocate (Heidi &amp; Kevin Conway 02 6037 1388 or 0413 872 120) <a href="mailto:stay@walwariversidecaravanpark.com.au">stay@walwariversidecaravanpark.com.au</a>, 110 River Road, Walwa Vic 3709</p> <p>Caravan Park managers to relocate to higher cabin in caravan park</p> <p>VICSES units to respond on a request by request basis</p>	Upper Murray & Tributaries Flood Intel Report – Cardno -2021

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Murray River at Jingellic	6.06m	20% AEP		<ul style="list-style-type: none"> <li>Low lying campgrounds become inundated including: <ul style="list-style-type: none"> <li>Campground on Nursery Lane impacted (Vic side of Jingellic)</li> <li>Campground on Murray River Road west of Guys Forrest Road impacted</li> </ul> </li> </ul> <p><b>Properties at Risk</b></p> <ul style="list-style-type: none"> <li>Houses along O'Halloran Street &amp; River Road, Walwa may begin to see water enter property</li> <li><b>Dwelling (?) at 9301 Murray River Road potentially isolated.</b></li> <li><b>Dwelling at 8419 Murray River Road, Walwa potentially isolated)</b></li> <li>If flooding occurs from Sandy &amp; Walwa Creeks water may begin to enter the property around Walwa primary School and dwelling at 2 Main Street, Walwa</li> <li>Flooding of low parts of Walwa Caravan Park – including entrance off River Road</li> </ul> <p><b>Water over Road</b></p> <ul style="list-style-type: none"> <li>River Road, Walwa</li> <li>Murray River Road between Hanna Street and Old Tip Road, Walwa, If flooding occurs from Sandy &amp; Walwa Creeks ( Not a Murray River Flood)</li> <li>Towong Road across Murray River @ Towong</li> <li>Tintalra Road across Murray River @ Tintalra</li> <li>Murray Valley Hwy / Alpine Way U/S of Towong</li> </ul>	<p>VICSES NEDO/IWO to add to Moderate Flood warning impacts at this level</p> <p>SES/VICPOL to check campgrounds for campers and have them move to a safer location</p> <p>VICSES to consider deployment of crews and Snap Send Solve Flood Observers to determine property impacts</p> <p>VICSES units to respond on a request by request basis</p> <p>VicRoads/RRV/Towong Shire Council to close Murray River Road</p>	Upper Murray & Tributaries Flood Intel Report – Cardno -2021
	6.80m	10% AEP		<p><b>Water Over Road</b></p> <ul style="list-style-type: none"> <li>Nursery Lane, Walwa</li> </ul> <p><b>Properties at Risk</b></p> <ul style="list-style-type: none"> <li>Dwelling at 8507 Murray River Road Walwa likely isolated</li> </ul>	Towong Shire Council to Close Nursery Lane	Upper Murray & Tributaries Flood Intel Report – Cardno -2021
	7.06m			<ul style="list-style-type: none"> <li>2 November 2022 Flood Peak Height</li> <li>River increased in height 1.60m in approx. 8 hrs from 5.4m (6pm 1/11) to 7.06m (245am 2/11)</li> </ul> <p><b>Water Over Road</b></p> <ul style="list-style-type: none"> <li>9812 Murray River Rd, Walwa</li> <li>Near 9750 Murray River Road, Walwa</li> <li>Nursery Lane, Walwa</li> </ul>	<p>Flood water close to entering Walwa Caravan Park managers residence</p> <p>VICSES units to respond on a request by request basis</p>	2022 flood obs
	7.1m			<ul style="list-style-type: none"> <li>Walwa Riverside Caravan Park flooded including cabins</li> <li>Sept 2010 Flood Peak Height</li> </ul>	Walwa Riverside Caravan Park managers to evacuate (have their own boat)	2022 flood obs



Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Murray River at Jingellic	7.11m			<ul style="list-style-type: none"> <li>September 2010 Flood Peak Height</li> <li>Sept 2010 Required the Walwa Caravan Park to be evacuated and one house was sandbagged</li> </ul>	<p>VICSES NEDO/IWO to add to Moderate Flood warning impacts at this level</p> <p>VICSES to consider deployment of crews and Snap Send Solve Flood Observers to determine property impacts</p> <p>VICSES units to respond on a request by request basis</p>	Upper Murray LFG
	7.19m	5% AEP		<p><b>Properties at Risk</b></p> <ul style="list-style-type: none"> <li><b>Dwelling at 1258 Murray River Road Towong likely impacted</b></li> </ul>		
	7.5m	Major Flood Level		<ul style="list-style-type: none"> <li>1975 flood peak height</li> </ul>	<p>BOM will issue and VICSES to publish Major flood warning to community</p> <p>VICSES to consider Base IMT in place or Core in place with observed activity</p>	
	7.64m			<ul style="list-style-type: none"> <li>October 2010 flood peak height</li> <li>Low lying areas including Jingellic Camping Grounds receive 2m of flood water</li> </ul> <p><b>Properties at Risk</b></p> <ul style="list-style-type: none"> <li>River Road, Walwa north of O'Halloran Street (Homes become isolated by floodwater)</li> <li>Walwa Caravan Park inundated</li> <li>Walwa Football Ground Inundated</li> </ul>	<p>VICSES NEDO/IWO to add to Major Flood warning impacts at this level</p> <p>IC &amp; VICPOL Evacuation Manager to consider Evacuation of Walwa Caravan Park</p> <p>Towong Shire Council to identify Relief requirements for evacuations VICSES to consider deployment of crews and Snap Send Solve</p>	Upper Murray & Tributaries Flood Intel Report – Cardno -2021
	7.64m			<ul style="list-style-type: none"> <li>Walwa Golf Club Inundated</li> </ul> <p><b>Water over Road</b></p> <ul style="list-style-type: none"> <li>Murray River Bridge at Towong</li> </ul>	<p>Flood Observers to determine property impacts</p> <p>VICSES units to respond on a request by request basis</p> <p>VicRoads/RRV/Towong Shire Council ( to assist) to close Murray River Road</p>	
	7.80m	2% AEP		<ul style="list-style-type: none"> <li>Walwa Community Health Centre (Main Street) impacted ( most likely impacted by rainfall on Walwa &amp; Sandy Creeks – (Not related to Murray River Flood)</li> </ul> <p><b>Water over Road</b></p> <ul style="list-style-type: none"> <li>Murray River Road between Factory Lane and Nursery Lane, Walwa</li> <li>Murray River Road between Nursery Lane and Holbrook Road, Walwa/Jingellic</li> <li>Murray River Road between Mt Alfred Road and Guys Forest Road, Mount Alfred</li> <li>Guys Forest Road between Millers Road and Murray River Road, Burrowye</li> <li>Murray River Road Between Guys Forest Road and</li> </ul>	<p>VICSES NEDO/IWO to add to Major Flood warning impacts at this level</p> <p>VicRoads/RRV/Towong Shire Council to close roads identified VICSES units to respond on a request by request basis</p>	Upper Murray & Tributaries Flood Intel Report – Cardno -2021

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Murray River at Jingellic	7.80m	2% AEP		<ul style="list-style-type: none"> <li>Stockyard Creek Track, Tholongolong</li> <li>Hunt Road, Walwa (Sandy &amp; Walwa Creek impacts)</li> </ul> <p><b>Properties at Risk</b></p> <ul style="list-style-type: none"> <li>Dwelling at Nursery Lane and Factory Lane, Walwa</li> </ul>		
	7.91m			<ul style="list-style-type: none"> <li>2012 Flood Peak Height – rescues conducted from Caravan Park during this event</li> <li>Low lying areas of Walwa impacted, and evacuation occurs for low lying areas</li> <li>Damage to Caravan Park, Football club and Golf course amenities occurs</li> <li>The Walwa Golf Club (located near Jingellic, approximately 5 km downstream of Walwa township) was extensively flooded in March 2012 however land around the clubrooms is understood to have been subject to only shallow flooding.</li> </ul> <p><b>Properties at Risk</b></p> <ul style="list-style-type: none"> <li>Walwa Golf Club clubrooms subject to shallow flooding</li> </ul> <p><b>Water over Road</b></p> <ul style="list-style-type: none"> <li>Murray River Bridge at Towong</li> </ul>	<p>VICSES NEDO/IWO to add to Major Flood warning impacts at this level</p> <p>IC &amp; VICPOL Evacuation Manager to consider Evacuation of Walwa Caravan Park</p> <p>VicRoads/RRV/Towong Shire Council to close roads identified VICSES units to respond on a request by request basis</p>	
	8.00m	1% AEP (100 year ARI)		<p>Properties at Risk:</p> <ul style="list-style-type: none"> <li>9301 Murray River Road (approximately 1.5 km east of Walwa).</li> </ul> <p>This dwelling (which may be derelict) is on land marginally above estimated 1% AEP flood level however it is subject to flooding in larger events and is isolated from Murray River Road in events larger than approximate 20% AEP due to flooding over the driveway. Other dwellings in the reach are located on high ground adjacent the Murray River Road.</p>	<p>VICSES units to respond on a request by request basis</p> <p>VICSES to consider deployment of crews and Snap Send Solve Flood Observers to determine property impacts</p>	NECMA
	8.37m	0.5% AEP		<p><b>Water over Road</b></p> <ul style="list-style-type: none"> <li>Murray River Road between Holbrook Road and Redbank Track, Walwa</li> <li>Murray River Road between Redbank Track and Mt Alfred Road, Walwa</li> <li>Hanna Street between Main Street and Church Street, Walwa</li> </ul>	<p>VicRoads/RRV/Towong Shire Council to close roads identified VICSES units to respond on a request by request basis</p>	Upper Murray & Tributaries Flood Intel Report – Cardno -2021

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Murray River at Jingellic	8.69m	0.2% AEP		<ul style="list-style-type: none"> <li>impacts in Main Street, Walwa and Hanna Street which could include</li> </ul> <p><b>Properties at Risk</b></p> <ul style="list-style-type: none"> <li>Walwa Maternal/Child Health Centre (Main Street)</li> <li>Walwa hospital complex (Main Street)</li> <li>Walwa Police Station (Hanna Street)</li> </ul>	<p>VICSES NEDO/IWO to add to Major Flood warning impacts at this level</p> <p>IC &amp; VICPOL Evacuation Manager to consider Evacuation of Walwa</p> <p>VICSES units to respond on a request by request basis</p>	
	x.xxm	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 C5: Flood Intelligence Card - Mitta Mitta River

Gauge Location: At the Omeo Valley Road Bridge

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Mitta Mitta River at Hinomunjie	3.6m	Minor Flood Level	32,000	Nil Data	BOM will issue and VICSES to publish Minor flood warning to community with tailored information from this plan  The North East Duty Officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response to suit the level of the incident	GMW Flood Incident Management Plan 2016
	3.8m	Moderate Flood Level	36,000		VICSES to consider Base IMT rostered/standby or Base IMT in place or ROCC depending on forecast  BOM will issue and VICSES to publish Moderate flood warning to community	GMW Flood Incident Management Plan 2016
	4.0m	Major Flood Level	41,800		BOM will issue and VICSES to publish Major flood warning to community  VICSES to consider Base IMT in place or Core in place with observed activity	GMW Flood Incident Management Plan 2016

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.

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference	
Mitta Mitta River at Colemans	3.40m	Minor Flood Level	15,000M L/d		BOM will issue and VICSES to publish Minor flood warning to community with tailored information from this plan  The North East Duty Officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response to suit the level of the incident		
	3.57m		16,600M L/d	Oct 1993 Peak Flood Height		Towong Shire Flood Plan June 2006	
	4.20m	Moderate Flood Level	23,00ML /d		VICSES to consider Base IMT rostered/standby or Base IMT in place or ROCC depending on forecast  BOM will issue and VICSES to publish Moderate flood warning to community	GMW Flood Incident Management Plan 2016	
			31,500M L/d	October 1974 Flood Peak Height, Omeo Highway cut near Bowler Lane, Eskdale		VICSES units to respond on a request by request basis	Towong Shire Flood Plan June 2006
	6.40m	Major Flood Level	54,000M L/d	Egress from Mitta Valley is compromised at this flow	BOM will issue and VICSES to publish Major flood warning to community  VICSES to consider Base IMT in place or Core in place with observed activity	GMW Flood Incident Management Plan 2016	

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.

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Mitta Mitta River at Tallandoon		<b>Below Flood Class Level</b>	<b>10,000</b>	<ul style="list-style-type: none"> <li>MDBA shall distribute initial advice regarding high flows and possible flooding to immediate downstream landholder</li> </ul>		
	4.20m	<b>Minor Flood Level</b>	16,500 15,000 (GMW)		<p>BOM will issue and VICSES to publish Minor flood warning to community with tailored information from this plan</p> <p>The North East Duty Officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response to suit the level of the incident</p>	GMW Flood Incident Management Plan 2016
	4.27		17,200	<ul style="list-style-type: none"> <li>12 October 1996 Flood Peak Height</li> </ul>		Towong Flood Emergency Plan Dartmouth Dam & Mitta Mitta River
	4.75m		25,200	<ul style="list-style-type: none"> <li>24 September 1998 Flood Peak Height</li> </ul>	VICSES units to respond on a request by request basis	Towong Flood Emergency Plan Dartmouth Dam & Mitta Mitta River
	4.90m	<b>Moderate Flood Level</b>	27,700 22,000 (GMW)	<ul style="list-style-type: none"> <li>Widespread inundation of farmland downstream of Tallandoon</li> </ul>	<p>VICSES to consider Base IMT rostered/standby or Base IMT in place or ROCC depending on forecast</p> <p>BOM will issue and VICSES to publish Moderate flood warning to community</p>	GMW Flood Incident Management Plan 2016
	5.02m			<ul style="list-style-type: none"> <li>3 November 2022 Flood Peak Height</li> </ul>	VICSES units to respond on a request by request basis	Towong Shire Flood Plan June 2006
	5.13m		30,400	<ul style="list-style-type: none"> <li>4 October 1996 Peak Flood Height – highest since Dartmouth Dam Construction (as at Sept 2022)</li> </ul>	VICSES units to respond on a request by request basis	



Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Mitta Mitta River at Tallandoon			31,000	<b>Water over Road</b> <ul style="list-style-type: none"> <li>▪ Leys Rd, Eskdale</li> </ul>	Towong Shire Council to Consider closing the road	Flow rate based on Colman's or Tallandoon?
	5.20m			<b>Water over Road</b> <ul style="list-style-type: none"> <li>• Lockhart's Gap Road</li> </ul>	RRV to inspect and close Lockhart's Gap Rd	NECMA Obs 2022
	5.26m			<ul style="list-style-type: none"> <li>• 15 Nov 2022 Flood Peak Height</li> </ul> <b>Water over Road</b> <ul style="list-style-type: none"> <li>• Omeo Highway north of Lockhart's Gap Road</li> <li>• Omeo Highway with multiple areas of inundation</li> </ul>	RRV to inspect and close Omeo Highway near Lockhart's Gap Rd VICSES units to respond on a request by request basis	NECMA Obs 2022
	5.37m		40,000	<ul style="list-style-type: none"> <li>▪ Lockhart's Gap Road not accessible near Omeo Highway</li> <li>▪ October 1974 Flood Peak Height</li> </ul> <b>Water over Road</b> <ul style="list-style-type: none"> <li>▪ Omeo Highway south of Lockhart's Gap Road</li> <li>▪ Omeo Highway Downstream of Tallandoon</li> <li>▪ Goddes Rd near little Scrubby Creek</li> </ul>	RRV to inspect and close Omeo Highway Y Lockhart's Road Consider impacts and isolation to Mitta Mitta, Dartmouth & Eskdale townships VICSES units to respond on a request by request basis	Towong Shire Flood Plan June 2006
	5.48m		47,300	<ul style="list-style-type: none"> <li>▪ September 1975 Flood Peak Height</li> </ul>		Towong Shire Flood Plan June 2006
	5.55m		52,400	<ul style="list-style-type: none"> <li>▪ Omeo Highway inundated for 8km's downstream of Tallandoon</li> </ul>	RRV to inspect and close Omeo Highway VICSES units to respond on a request by request basis	Towong Shire Flood Plan June 2006

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
Mitta Mitta River at Tallandoon	5.60m	Major Flood Level	60,000 49,000 (GMW)	<ul style="list-style-type: none"> <li>Access to Dartmouth township cut</li> </ul>	<p>BOM will issue and VICSES to publish Major flood warning to community</p> <p>VICSES to consider Base IMT in place or Core in place with observed activity</p>	GMW Flood Incident Management Plan 2016
	5.97m		93,000	<ul style="list-style-type: none"> <li>August 1955 recorded as 108,000ML/d</li> </ul>		Towong Flood Emergency Plan Dartmouth Dam & Mitta Mitta River
			100,000	<p><b>Water over Road</b></p> <ul style="list-style-type: none"> <li>Goddes Road, Tallandoon</li> <li>Hagertys Road, Tallandoon</li> <li>Yabba Road 4.5 km south of Spring Creek Road, Tallangatta South</li> <li>Yabba Road north of Spring Creek Road, Tallangatta South</li> </ul>	<p>Towong Shire Council to Close roads identified</p> <p>VICSES units to respond on a request by request basis</p>	

**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 C6: Flood Intelligence Card - Tallangatta Creek at McCallums

Gauge	River Height (m)	Flood Class Level & Annual Exceedance Probability (%AEP)	Flow ML/D	Consequence / Impact	Action <small>Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible</small>	Reference
Tallangatta Creek at McCallums	1.60m	Minor Flood Level			BOM will issue and VICSES to publish Minor flood warning to community with tailored information from this plan  The North East Duty Officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response to suit the level of the incident	
	1.67m			<ul style="list-style-type: none"> <li>Flood peak height after 148mm rainfall in 24hrs 30 Jan 2023</li> </ul>	VICSES units to respond on a request by request basis	
	2.00m	Moderate Flood Level		<ul style="list-style-type: none"> <li>Low Lying Flood plains become inundated</li> <li>Tallangatta Creek Reserve at Bullioh may be flooded</li> </ul>	VICSES to consider Base IMT rostered/standby or Base IMT in place or ROCC depending on forecast  BOM will issue and VICSES to publish Moderate flood warning to community	
	2.30m	Major Flood Level	55,000M L/d	Properties at Risk <ul style="list-style-type: none"> <li>8078 Murray Valley Hwy, Bullioh</li> <li>8091 Murray Valley Hwy, Bullioh</li> </ul>	BOM will issue and VICSES to publish Major flood warning to community  VICSES to consider Base IMT in place or Core in place with observed activity	
	2.35m			<ul style="list-style-type: none"> <li>13 Nov 2022 Flood Peak Height</li> <li>Significant agricultural flooding of the Valley</li> <li>Machinery shed impacted?</li> </ul>	VICSES units to respond on a request by request basis	
			1%AEP?	<ul style="list-style-type: none"> <li>October 1993 Flood Peak Height</li> <li>Bridge damaged at Bullioh</li> </ul> Properties at Risk <ul style="list-style-type: none"> <li>1 Property at risk of inundation – Details unknown</li> </ul> Water over Road <ul style="list-style-type: none"> <li>Murray Valley Highway at Tallangatta Creek</li> </ul>	VICSES units to respond on a request by request basis	Towong Shire Flood Plan June 2006

**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 C7: Significant Flood Exposures – Other waterways

Waterway	Asset / location	Spatial Vision Map Book Grid Reference	Consequence / Impact	Action <small>Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible</small>	Reference
<b>Events associated with rainfall resulting Minor Level flooding</b>					
Cemetery Creek, Corryong	Galleon Park, Murray Valley Hwy	Hansen St	Heavy rainfall in the Corryong area may result in water through park and possibly over Murray Valley Highway (Mian Street of Corryong)	VICSES to respond on a request by request basis RRV/Towong Shire to close Murray Valley Hwy	VICSES Corryong Unit Flood plan details & Contacts - 2010
Unknown	Murray Valley Hwy B/W Colac Colac Caravan Park and Cudgewa Cemetery	731927	Heavy rainfall resulting in local Minor level flooding may flood the MVH near Back Cudgewa Rd intersection	VICSES to respond on a request by request basis RRV/Towong Shire to close Murray Valley Hwy	
Corryong Creek	Benambra - Corryong Rd, Narial Valley	746888	Heavy rainfall resulting in local Minor level flooding may result in water over the road near the folk festival site	VICSES to respond on a request by request basis RRV/Towong Shire to close Murray Valley Hwy	
<b>Events associated with rainfall resulting Moderate Level flooding</b>					
Cudgewa Creek	Leakes Rd Bridge North Rd Bridge School Bridge Hamilton's Bridge Old Fuel Depot, Cudgewa	776052 751030 737049 724052 684 939	Water over road	Towong Shire Council to close Murray Valley Hwy  VICSES to respond on a request by request basis	VICSES Corryong Unit Flood plan details & Contacts - 2010
Corryong Creek	Colac Colac Caravan Park	756922	In heavy rainfall resulting in localised Moderate level flooding, the Caravan park can begin to be inundated by floodwater, Impacts unknown	VICSES to respond on a request by request basis	

Waterway	Asset / location	Spatial Vision Map Book Grid Reference	Consequence / Impact	Action Actions may include Evacuation, closure of road, sandbagging, issue warning and who is responsible	Reference
<b>Events associated with rainfall resulting Major Level flooding</b>					
Thowla Creek	Murray Valley Hwy near Miller Hill and Murray Goulburn Fuel	846772 838962	<ul style="list-style-type: none"> <li>In heavy rainfall resulting in localised Major level flooding water over road near Miller Hill and the Fuel station</li> </ul>	RRV/Towong Shire Council to close Murray Valley Hwy VICSES to respond on a request by request basis	VICSES Corryong Unit Flood plan details & Contacts - 2010
unknown	Parish Lane/Briggs Gap Rd, Corryong	790950	<ul style="list-style-type: none"> <li>Water over road</li> </ul>	RRV/Towong Shire Council to close Murray Valley Hwy	
Tooma River (NSW)	Tintaldra Rd, Greg Greg	934110	<ul style="list-style-type: none"> <li>Water Over Road</li> </ul>		

# Appendix D - Flood evacuation arrangements & Triggers

## Phase 1 - Decision to Evacuate

The decision to evacuate is to be made in consultation with the MEMO, MERC, DFFH, the Municipality, 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

Location	Evacuation Trigger	Action
WALWA  Murray River at Jingellic Gauge	4.0m	Walwa Riverside Caravan Park, to enact phase one of their evacuation plan - Move all visitors and residents to higher ground in Caravan Park  VICSES to liaise with Caravan Park to ensure phase one undertaken and discuss flood level predictions. Access is compromised from about 5.0m on the Gauge.
	5.5m	Walwa Riverside Caravan Park, to enact Phase 2 of their Evacuation Plan - Evacuate all guests from Park and close to the public  VICSES RDO/RAC to hold an EMT between SES, VICPOL and Towong Shire Council to determine any additional actions
	7.1m	Walwa Riverside Caravan Park managers to self evacuate and relocate to friends in Walwa  VICSES RDO/RAC to hold an EMT between SES, VICPOL and Towong Shire Council to determine any additional actions
COLAC COLAC	1.5m	Caravan park? No details on evac needs however. From 1.0m on the Nariel Creek Gauge at Upper Nariel results in water in low lying areas of the park with guests needing to move to higher ground or relocate.  No evac trigger determined. IC/RAC/RDO to contact caravan park to determine actions if required.

The table below details time required to evacuate established areas.

Sector	Likely time required for evacuation (including resource assumptions)
Walwa Riverside Caravan Park	6 hrs – Business resources only

## 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 section 3.3 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 during an I/EMT meeting.

Possible Evacuation Routes to be used:

Sector	Evacuation Route	Evacuation route closure point and gauge height of closure
Walwa	River Rd or  Walwa-Shelley Rd	River Rd B/w Tintaldra & Corryong maybe inundated from 5.0M on the Jingellic Gauge (Minor flood) and Moderate Flood Class Level (3.4m) on Bringenbrong Gauge  Walwa – Shelley Rd could be closed due to debris flow and trees down after heavy rainfall events

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

- Albury Airport
- Corryong Airport
- Mitta Mitta Airstrip

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 Towong Shire 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 primary flood relief centers and/or Assembly Areas are listed in the table below with further sites identified in the MEMP :

Shelter type (Relief Centre/ Assembly Area (include address))	Comments
Relief Centre – Upper Murray Events Centre (Corryong Football Ground) Strzelecki Way, Corryong	Refer to Section 8 of the Towong Shire MEMP
Relief Centre – Magorra Park Multipurpose Building, 1784 Mitta North Road, Mitta Mitta	
Tallangatta Memorial Hall, Towong Street, Tallangatta	
Walwa Recovery Centre, 2 O'Halloran St, Walwa	
Eskdale Sports Complex, 3645 Omeo Hwy, Eskdale	

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 Towong Shire.

Sector	Animal Shelter (include address)	Comments
	Relief Centre – Upper Murray Events Centre (Corryong Football Ground) Strzelecki Way, Corryong	Dogs, cats, small companion animals
	Relief Centre – Magorra Park Multipurpose Building, 1784 Mitta North Road, Mitta Mitta	Dogs, cats, small companion animals
	Tallangatta Memorial Hall, Towong Street, Tallangatta	Dogs, cats, small companion animals
	Walwa Recovery Centre, 2 O'Halloran St, Walwa	Dogs, cats, small companion animals
	Showgrounds in town where relief is being provided. Towong Shire to determine	Livestock
	Eskdale Sports Complex, 3645 Omeo Hwy, Eskdale	

## Caravans

Caravans or caravan parks may be relocated to the following locations:

Sector	Caravan evacuation location (include address)	Comments
Walwa Riverside Caravan Park	Colac Colac Caravan Park Lakelands Caravan Park Tallangatta Discovery Parks, Lake Hume, Ebden	
Colac Colac Caravan Park	Lakelands Caravan Park Tallangatta Discovery Parks, Lake Hume, Ebden	

## 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
Transport Route	Closed	Refer Appendix C's	Consult with RRV and Dept of Education
Telephone Exchange Towong	Damage? Inoperable	Above Moderate Flood Level on Bringenbrong Gauge Est 20% AEP	– Determine with NECMA 20% AEP height, Determine if bagging would mitigate service disruption. Speak with Telstra

## 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
Walwa Rec Reserve Building & Relief centre	Potential inundation of flood water	7.64M on the Murray River at Jingellic Gauge or Major Flood level	Alternate location for Relief centre is the Walwa Memorial Hall as identified in the MEMP

Towong Shire will establish a sandbag collection point at

- To be determined at time of event

## Rescue

The following resources are available within Towong Shire to assist with rescue operations:

### **Victoria State Emergency Service (VICSES)**

Corryong SES Unit:

- Corryong Rescue – Toyota Landcruiser 6X6 RAIR
- Corryong Transport – Toyota Wagon 4X4 Transport
- Corryong Storm Trailer X 1

Mitta Mitta SES Unit:

- Mitta Mitta Rescue - Toyota Landcruiser 6X6 RAIR
- Rescue Boat – Zodiac Semi Rigid
- Mitta Mitta Transport – Nissan patrol 4X4
- Rescue trailer – 8X5 tandem
- Mitta Mitta Storm trailer – Enclosed box trailer

Tallangatta SES Unit:

- Tallangatta Rescue – Hino 8 GPT
- Tallangatta Support – Holden Colorado 4X4
- Tallangatta Support 2 – Holden Colorado 4X4
- Rescue Boat 528 – Savage Jabiru 470
- Rescue Boat 592 – Zodiac 5M Inflatable (Semi Rigid) (Mitta Mitta boat)
- Tallangatta Storm trailer

### **Country Fire Authority (CFA):**

Multiple stations throughout D24 and NSWRFNS north of the Murray River

### **Australian Volunteer Coast Guard:**

VF11 Lake Hume, Bonegilla, Victoria

- Vessel CG11
- Vessel CG211
- Vessel CG68
- Vehicle x 2 - 4X4

## Appendix E: Public Information and Warnings

VICSES uses VicEmergency EMCOP Public Publishing and Emergency Alert Telephone warnings to distribute riverine and flash flood (and other hazards) warnings in Victoria.

BoM Flood Warning products and Flood Class Levels can be found on the BoM website. Flood Warning Products include Severe Thunderstorm Warnings, Severe Weather Warnings, Flood Watches and Flood Warnings.

The EMCOP platform enables automatic publishing to the VicEmergency app, website, hotline (1800 226 226) and Emergency Broadcasters. Communities can also access this information through EMV and VICSES social media channels (VicEmergency, Victoria State Emergency Service on Facebook and VICSES News on Twitter etc) and emergency broadcasters, such as Sky News TV, ABC Goulburn Murray radio and various other local emergency broadcaster radio stations (current list available via the EMV website).

Sky News TV (current list available via the EMV website).

VICSES Regional staff (e.g. RDO) (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 EMV (Vic Emergency) and standard VICSES communication channels (VICSES 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 (where this exists) or via media broadcasters by the use of SEWS, 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 EMCOP. Sirens also appear in the warning polygon when drawn over an area where official community alerting sirens exist.

EMCOP 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



## Flood Warning Example



### Advice - Flood

Message reference number: 14767

<b>Issued For:</b>	the Ovens River at Wangaratta
<b>Incident Location:</b>	the Ovens River at Wangaratta
<b>Incident Name:</b>	FloodNorthEastOctober
<b>Issued:</b>	12/10/2020 10:51 AM
<b>Next Update Expected:</b>	13/10/2020 11:00 AM
<b>Contact For Media:</b>	SES - 1300 783 933

This **Minor Flood Warning** is being issued for the Ovens River at Wangaratta.

#### MINOR FLOODING EASING IN THE OVENS AND KING RIVERS.

Minor flooding is easing in the Ovens River and in the King River at Docker Rd Bridge. River levels will continue to fall during Monday.

No significant rain is forecast for the next few days.

#### **Ovens River downstream of Rocky Point:**

Minor flooding is easing along the Ovens River downstream of Rocky Point.

The Ovens River at Wangaratta peaked at 11.91 metres around 04:45 am Monday 12 October (minor flood level 11.90 m) and is currently at 11.88 metres and falling.

River levels will continue to fall during Monday.

#### **Stay informed - monitor yo ur local conditions and remain alert.**

##### **What you should do:**

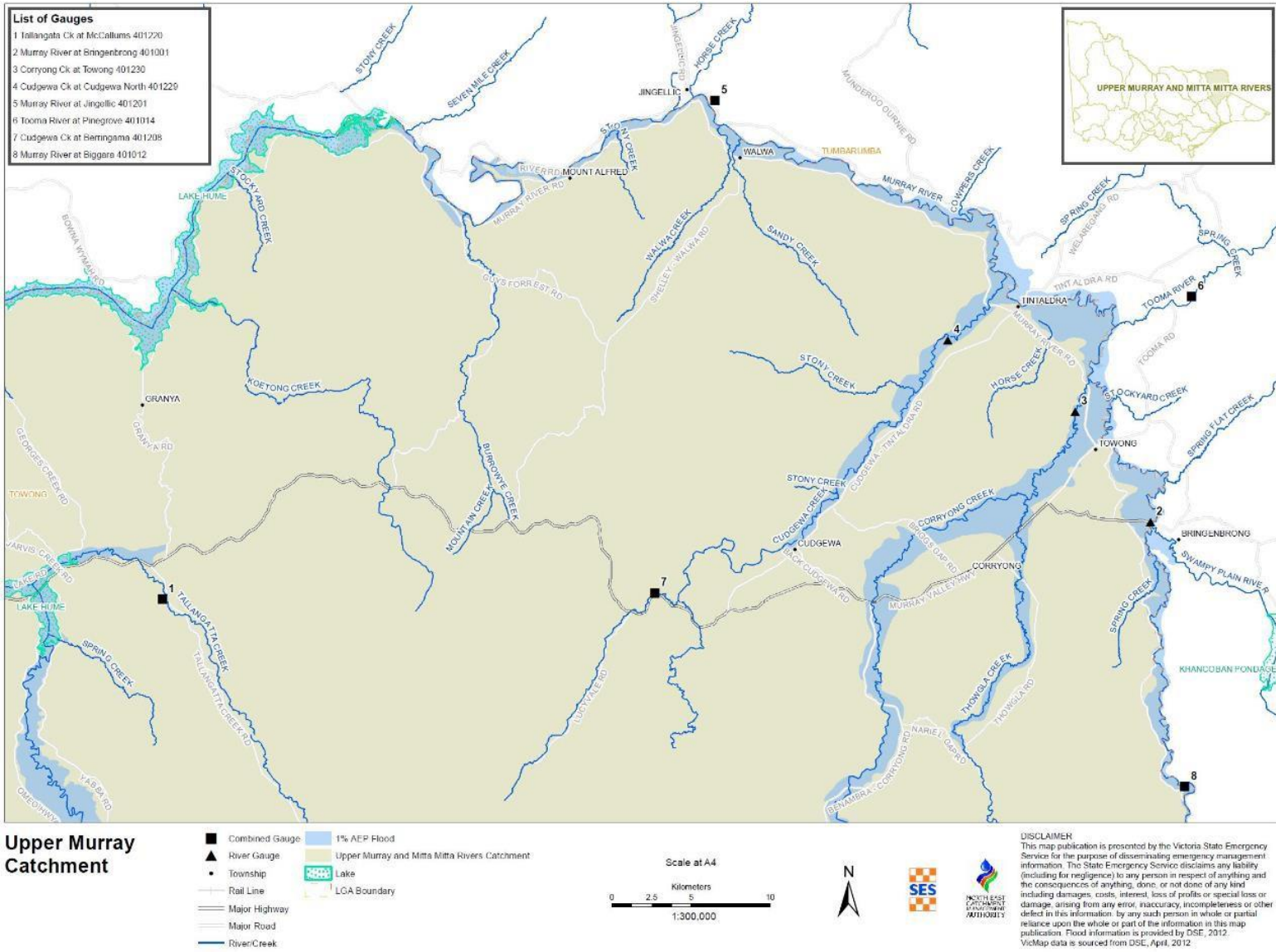
- Listen to emergency broadcasters and monitor warnings.
- Decide what you and your family will do if flooding impacts you.
- For information on how to prepare goto [www.ses.vic.gov.au/get-ready/floodsafe](http://www.ses.vic.gov.au/get-ready/floodsafe) (<https://www.ses.vic.gov.au/get-ready/floodsafe>).
- Review your emergency plan and check your emergency kit is fully stocked, if you have one.
- Farmers should consider moving livestock and machinery to higher ground.
- Floodwater is dangerous - never drive, walk or ride through floodwater.

##### **Impacts in your area:**

- Low lying caravan parks and camping grounds may be flooded.
- Access routes into Lower Ovens National Park cut by flows in Boundary Creek (Francis Ln, Frosts Crossing).
- Heavy rainfall increases the risk of landslides and debris in fire affected areas. Trees damaged by heat or fire may be unstable and more likely to fall in windy or wet conditions.
- Local roads may be closed and low bridges may be underwater.
- At this flood level, inundation of farmland is likely to occur in some locations.
- The Great Alpine Road is closed near Wangaratta due to flooding of Yellow Creek, with detour traffic by Detour Road.
- Riverside carparks are closed due to predicted flooding including; Sydney Beach, Bickerton Street and Baker Street.
- Bike paths and walking tracks around and downstream of Apex Park and the Northern Beaches are closed.

# Appendix F: Maps

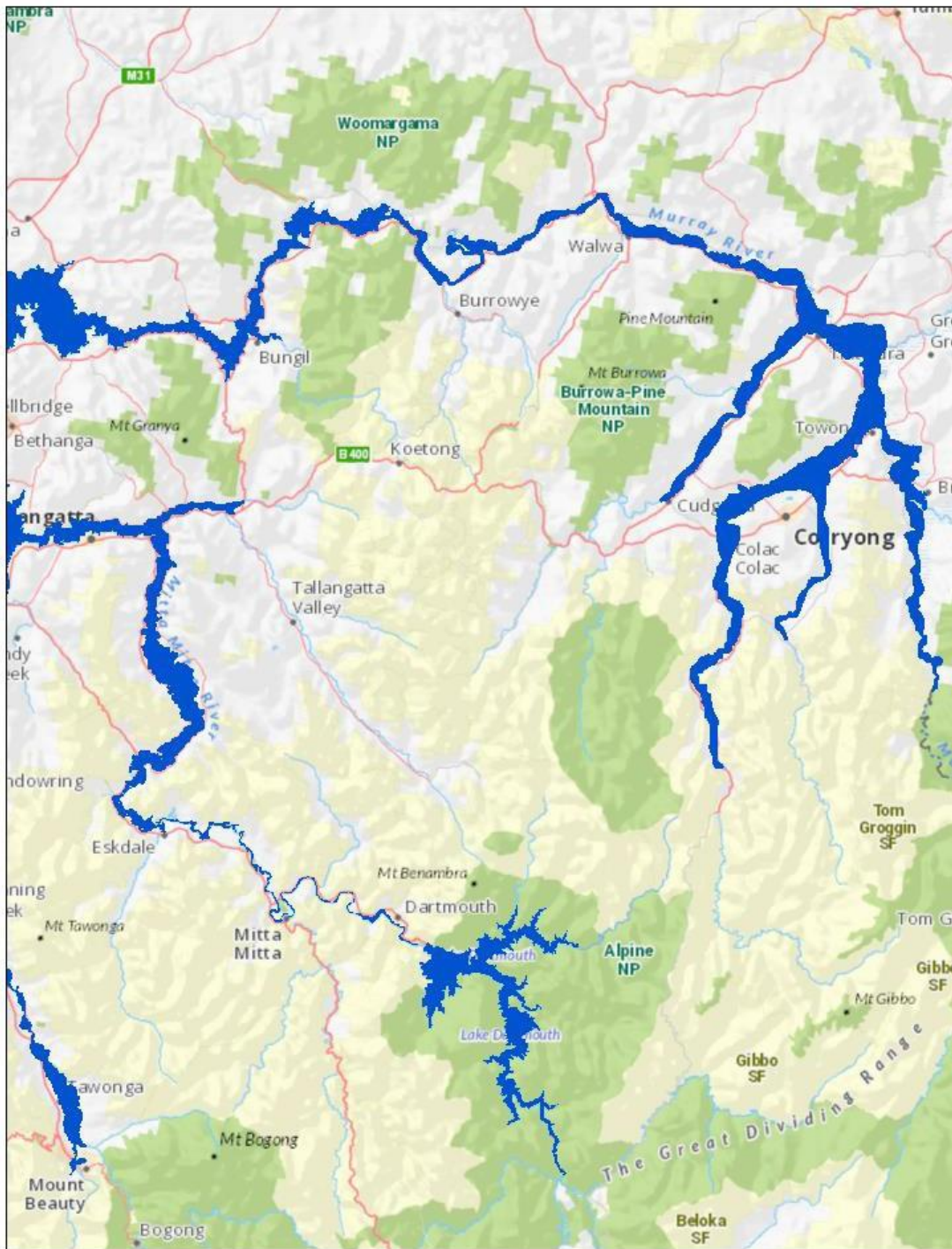
## Upper Murray and Mitta Mitta 1% flood Map



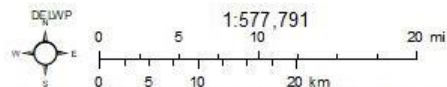
# Upper Murray and Mitta Mitta 1% flood Map



Default View



March 17, 2023



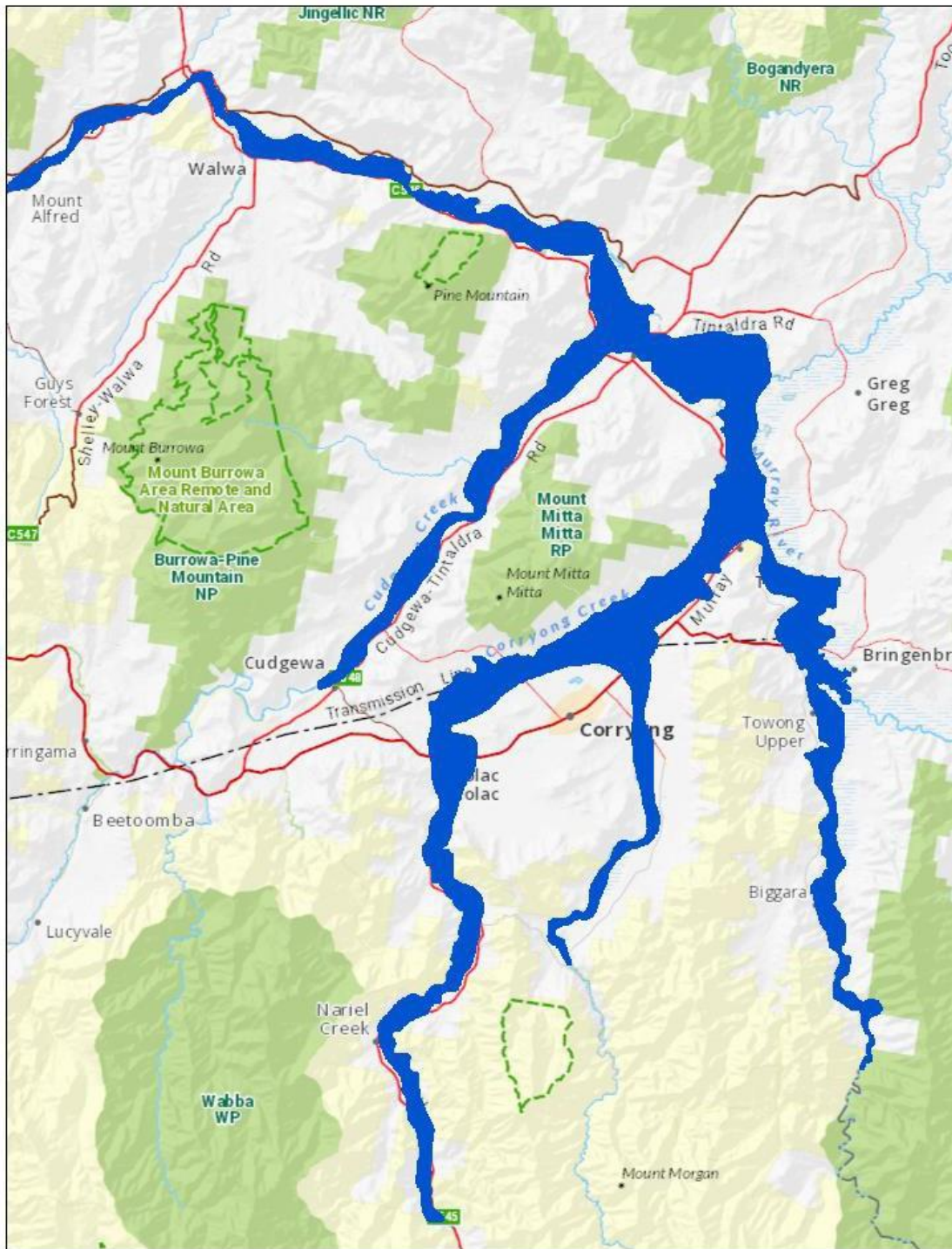
Disclaimer: this map is a snapshot generated from Victorian Government data. This material may be of assistance to you but the State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of the data.



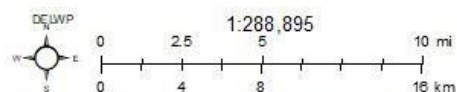
# Corryong and Surrounds 1% flood Map



Default View



March 17, 2023

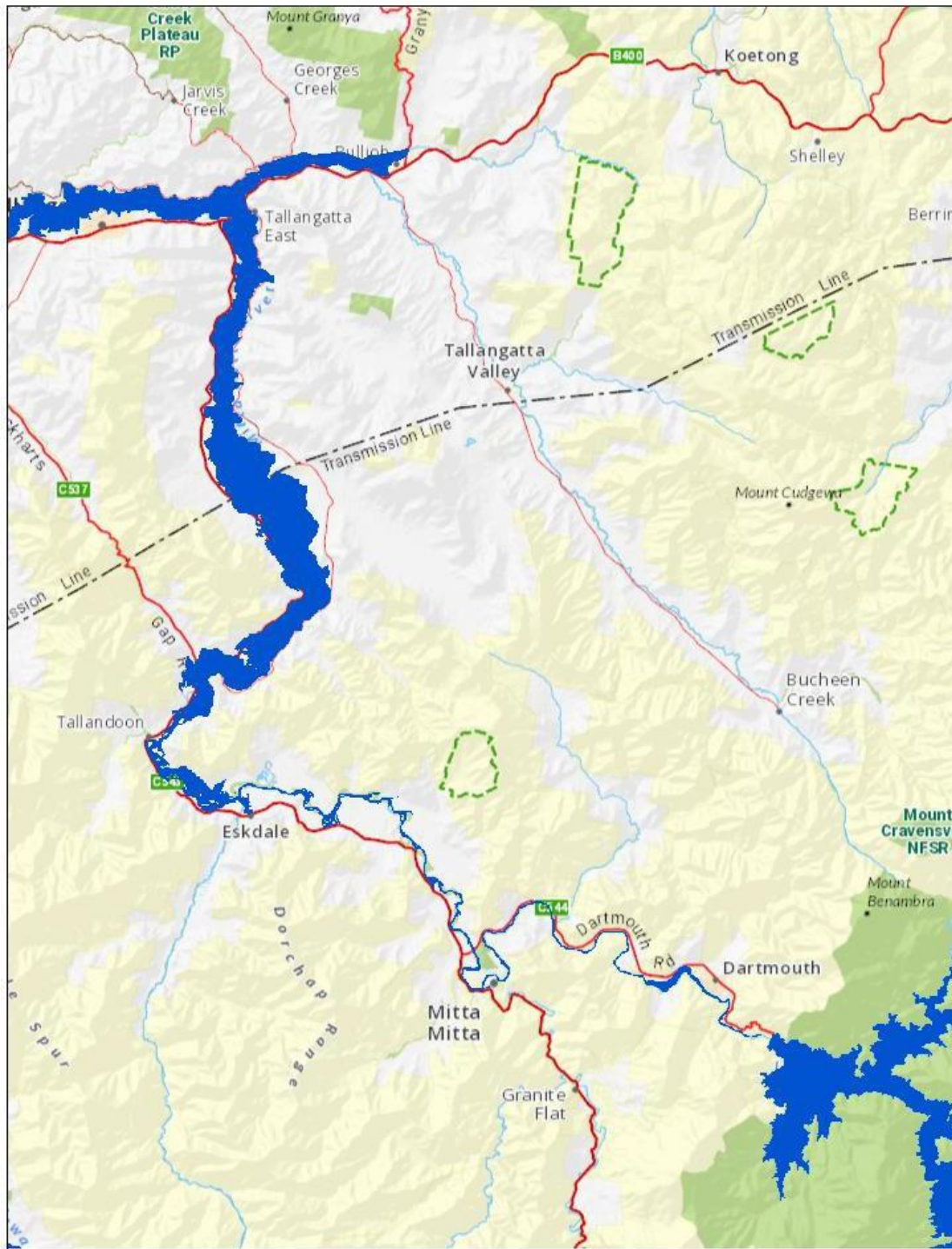


Disclaimer: this map is a snapshot generated from Victorian Government data. This material may be of assistance to you but the State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of the data.

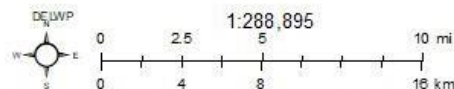
# Mitta Mitta River 1% flood Map



Default View



March 17, 2023



Disclaimer: this map is a snapshot generated from Victorian Government data. This material may be of assistance to you but the State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of the data.



# Walwa Township Flood map – March 2012 Event

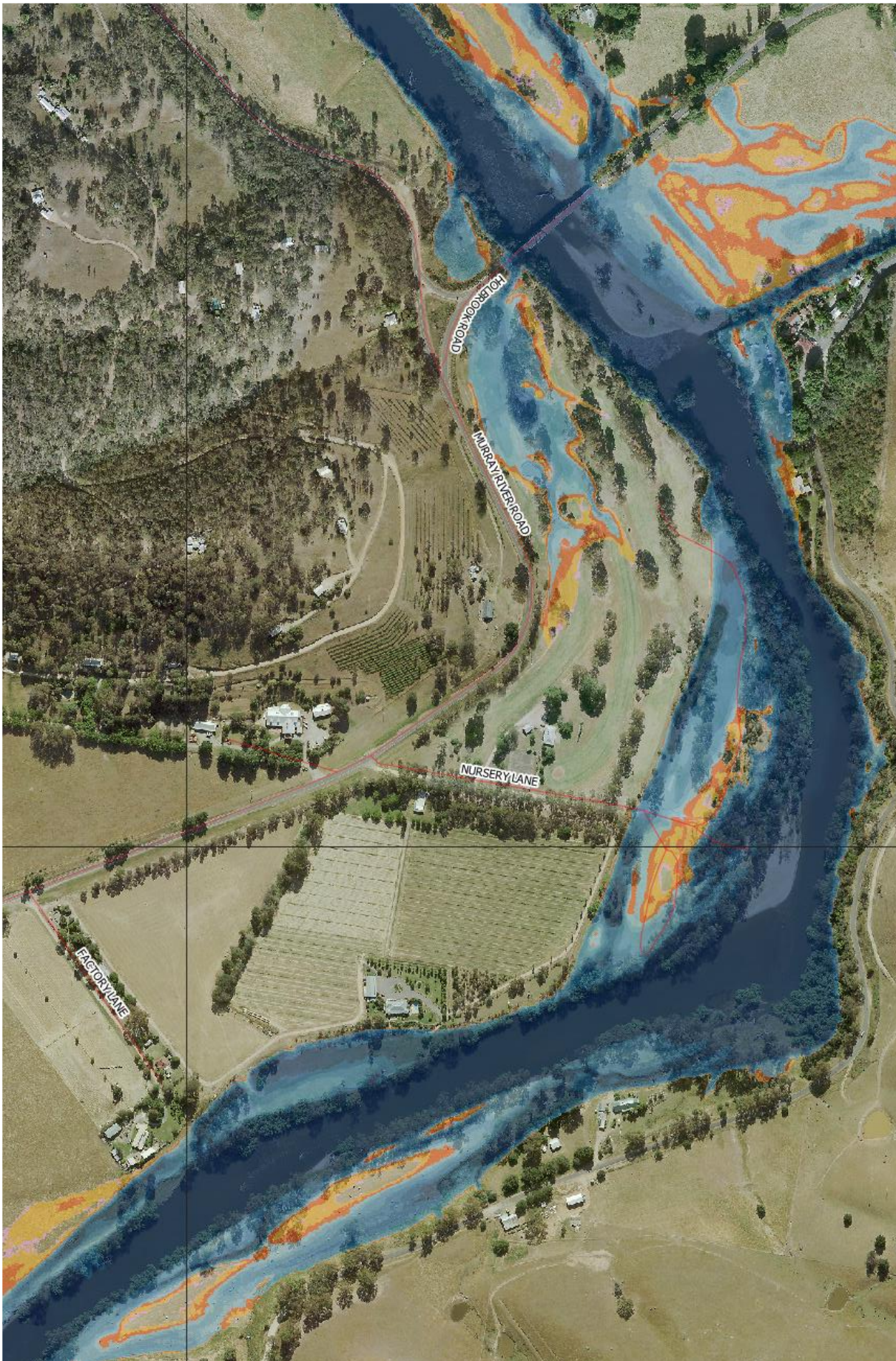
Walwa



**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 NCEMA, April 2013. VicMap Data is sourced from Department of Sustainability and Environment, April 2012.

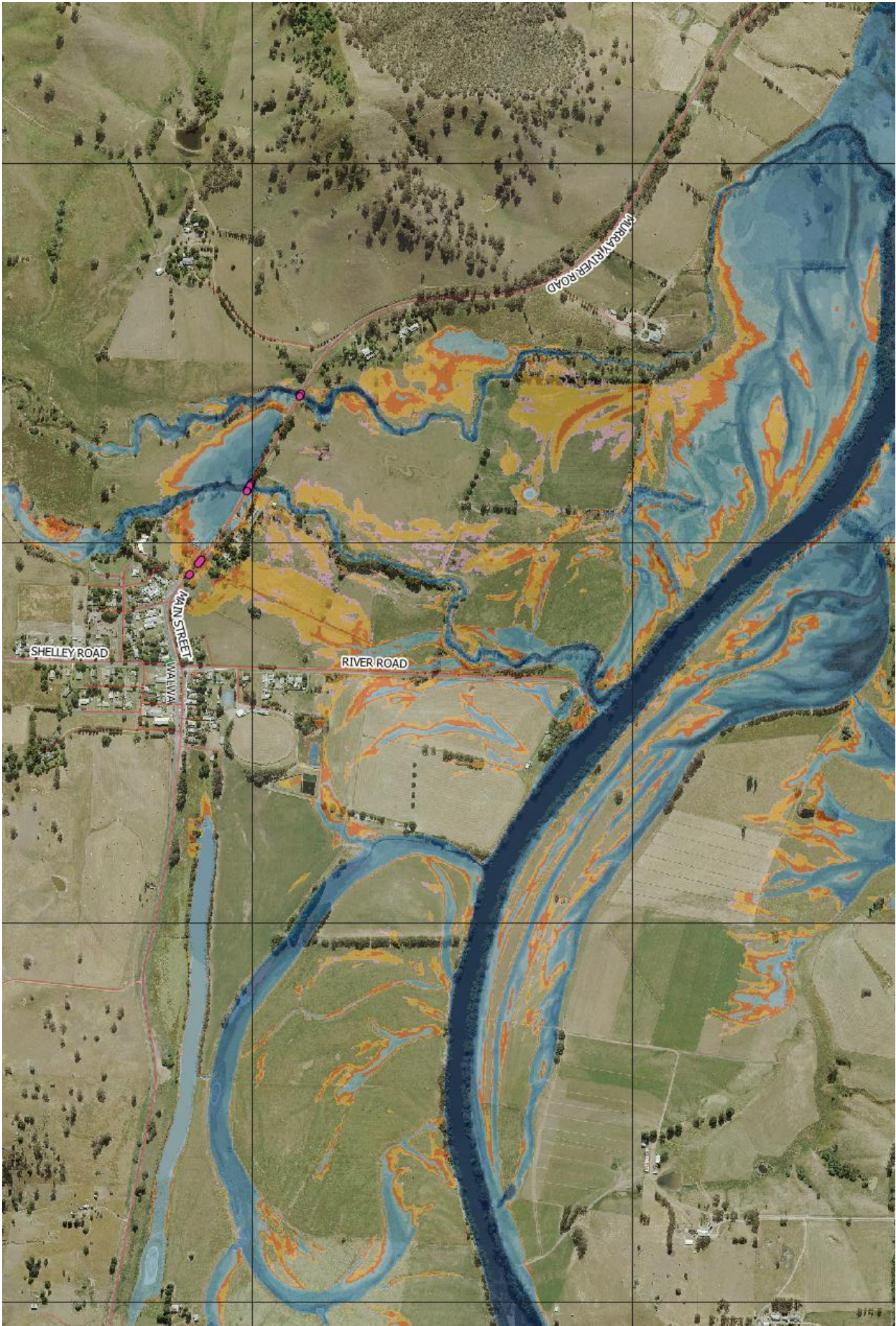


## Jingellic Township Flood map – 20% AEP



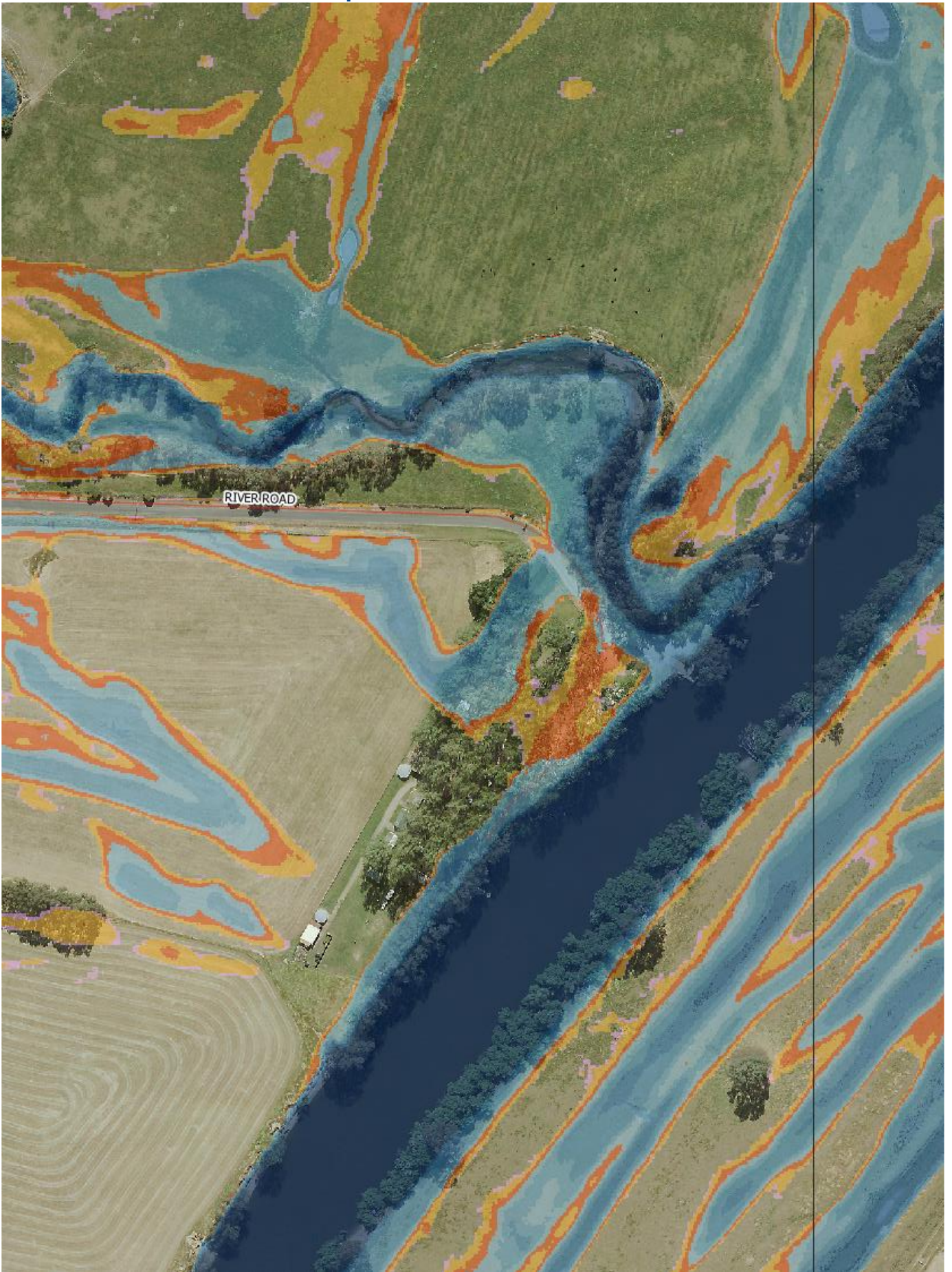


## Walwa Township Flood map – 20% AEP





**Walwa Caravan Park Flood map – 20% 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.

### Snap Send Solve



The gathering of local flood intelligence during an event is varied and inefficient. It creates a frustrating and difficult environment for intelligence teams in an Incident Management Team (IMT) to sift through relevant information. VICSES has teamed up with Snap Send Solve to pilot a flood observation App and Portal.

Snap Send Solve is an existing app currently used by the community to notify local councils and other authorities of issues that need addressing such as cracked pavements, parking problems, dumped rubbish, graffiti etc.

The existing functionality of the smartphone app has been adapted for VICSES in a well presented and user-friendly way. The app is used to capture flood observations by filling in a simple form on a smartphone and using the camera to upload photos, this information is then displayed through an administration portal to collate and view the flood data.

**The app component will be made available to trusted flood observers in the community, and their observations will be visible EMCOP where Intelligence personnel in Incident Management Teams can access them during flood events. The intent is that better access to local knowledge will add to information sources in order to maximise public information communications and flood response efforts.**

Trusted flood observers include both internal and external stakeholders (community members, ESOs e.g. CFA/VICPOL) who can be activated and deployed by the VICSES RDO to use the app during a flood event and to report on valuable flood information with a level of accuracy.

The portal has been successfully integrated with EMCOP, both platforms are available to use in an IMT. The Snap Send Solve logo also appears within the intelligence section on the EM-COP desktop for easy access to the portal.

## Appendix H: Local flood information

### Local Flood Guides

Communities can use local flood guides to identify and better understand their local flood risk. They include information about flood history, how to prepare & respond to floods and who to contact.

**The Upper Murray Local Flood Guide (LFG)** can be found on the VICSES website by visiting the 'Your Local Flood information' section or by visiting the link below:

<https://www.ses.vic.gov.au/documents/8655930/9320199/Upper+Murray+Local+Flood+Guide.pdf/f1383116-8079-20d4-e433-e800cc3b5733?t=1620860427194>

### How to use Sandbags to protect your home

There are a number of things that you can do to make sure you and your property stay safe during flooding.

Sandbags will not stop the water completely but can reduce the amount of water entering your home. During low-level flooding, sandbags placed in the right locations around your home can reduce the impact of flooding.

Further information on Sandbagging can be found on the VICSES website by visiting the 'How to use sandbags to protect your home' section or by visiting the links below:

#### VICSES sandbag quick reference guide

<https://www.ses.vic.gov.au/documents/8655930/8700895/sandbagging+guide.pdf/c1e56ac5-198f-ae1e-8507-70d8e896afba?t=1621231534359>

#### Sandbagging demonstration video

<https://www.youtube.com/watch?v=-T--l3b-34&t=1s>

### Storms – Plan and stay safe

There are a number of things that you can do to make sure you and your property stay safe during storms. For information on how to plan to be safe during a storm, what to do during a storm, and recovery after a storm visit the VICSES website on the link below for more information

<https://www.ses.vic.gov.au/plan-and-stay-safe/emergencies/storm>



# Appendix I: Victoria State Emergency Service State wide Guideline – Sandbags

This document outlines guidelines for the procurement, storage, distribution, use and disposal of sandbags during flood emergencies.

## 1. Introduction

The Victoria State Emergency Service (VICSES) is the control agency for flood emergencies. VICSES' responsibilities include the management of the state-wide procurement and storage of sandbags for flood emergencies. This includes providing sandbags to local areas for distribution based on the requirements identified in the Municipal Flood & Storm Emergency Plan (MFSEP).

The final report of the 2010/2011 Victorian Flood Review observed that during the floods there was inadequate access to sandbags and a lack of knowledge about the filling and use of sandbags. VICSES also noted similar problems during the 2012 North East floods.

Prior to the development of this guideline, sandbag management was not regulated and there was no formal arrangement in place to define the roles and responsibilities for funding the procurement, storage, use and distribution of sandbags.

VICSES, in conjunction with Municipal Association of Victoria (MAV) and local councils, has developed this guideline to assist emergency managers and the community to plan for effective use of sandbags during flood emergencies.

Emergency managers are guided by the state strategic control priorities for flood emergencies. Incident Controllers will apply the strategic control priorities when considering the supply and distribution of sandbags to the community in preparation for and during flood emergencies (Refer to Section 8).

## 2. Purpose

The guideline will assist in ensuring that a consistent approach to the procurement, storage, distribution, safe use and disposal of sandbags is applied at a state level. Further, it is intended to assist in the development of regional and local sandbag guidelines and agreements.

## 3. Use of sandbags for flood emergencies

Sandbags can be used to block doorways, drains and other openings into properties as well as to weigh-down manhole covers, garden furniture and to block sinks, toilets and bath drains to prevent water backing up. They have proven to be successful in keeping water out for short periods of time.

Sandbagging is not always the most effective option and should be considered in the context of a Flood Emergency Plan which includes alternatives for managing flood risk. Other alternatives include moving possessions to higher places, securing objects so they do not float away and placing valuables in water tight containers. The Incident Controller and operational staff in the flood affected community will assess the overall risk to communities and allocate sandbag resources based on risk.

Sandbags have also been used as temporary levees through the construction of sandbag walls.

**This guideline does not address the use of sandbags in the construction of temporary levees**



## 4. Partnership arrangements

The success of this guideline is dependent on establishing strong partnerships at the regional and local level between local councils, CFA, FRV and DEECA to support the sandbag management arrangements. Local councils have a key role to assist VICSES through the flood emergency planning process and their ability to support operations.

Operational arrangements for the procurement, storage and distribution of sandbags at the local and regional level will be included as an appendix in the MFSEP, VICSES is responsible for leading the development of the MFSEP.

### Responsibilities

VICSES responsibilities include:

- The management of the state-wide procurement and storage of sandbags for flood emergencies
- Providing sandbags to local areas for distribution based on requirements identified in the MFSEP
- Identifying distribution arrangements in the MFSEP
- Community Engagement and awareness on sandbag management and safe use
- Identifying Critical Infrastructure and Community Critical Facilities in the MFSEP
- Providing a support role in flood relief and recovery.

Council responsibilities include:

- Supporting VICSES in developing the MFSEP
- Providing a support role during flood response
- Identifying Community Critical Facilities at a municipal level
- Procuring sandbags to protect council owned facilities including Community Critical Facilities managed by council
- Providing locations, plant and equipment, where available and capable, to support sandbagging operations as agreed in the MFSEP
- Coordinating the clean-up and community recovery arrangements (refer to Section 9).

Community Critical Facility owners' responsibilities include:

- Working with VICSES to develop an effective flood mitigation plan for their property as part of the MFSEP with a priority for permanent structures.

Other 'Response' agencies responsibilities include:

- Supporting VICSES in their response role.

Residential and commercial property owners' responsibilities include:

- Understanding their own flood risk
- Preparing an emergency plan for their home or business, including tourism.
- Procurement and storage of sandbags to protect their own property
- Filling and movement of sandbags for to protect their property
- Following advice from their local council regarding the removal of sandbags from their property, as part of the community recovery.

## 5. Community and business Engagement about sandbags

VICSES has an established community Engagement program to support community and business in responding to flood emergencies (see [www.ses.vic.gov.au/prepare/floodsafe](http://www.ses.vic.gov.au/prepare/floodsafe)).

VICSES will use the existing community Engagement tools and programs (such as the Local Flood Guides and the FloodSafe program) to promote:

- Practical information on:
  - The purpose, use and disposal of sandbags [www.ses.vic.gov.au/prepare/floodsafe/floodsafe-resources/sandbag-reference-guide](http://www.ses.vic.gov.au/prepare/floodsafe/floodsafe-resources/sandbag-reference-guide)
  - Obtaining sandbags
  - Safety considerations e.g. OHS, manual handling, safe use and disposal
  - Alternative flood mitigation strategies to sandbagging
  - Where to get information – Phone 1300 842 737 for the VICSES Information Line.
- The responsibilities of critical infrastructure owners, businesses and private individuals to understand their flood risk and develop a flood plan
- Key messages:
  - Emergency response agencies will not always have the capacity to provide sandbags due to other competing priorities
  - Businesses and individuals need to understand the flood risk to their property and, where appropriate, develop a Flood Emergency Plan
  - Sandbagging is only one way of protecting properties against floodwater and not always the most effective option. Sandbagging should be considered in the context of a Flood Emergency Plan which considers alternatives for managing flood risk.

## 6. Procurement of sandbags

VICSES will maintain a supply of sandbags to support the effective readiness and response to flood emergencies as identified in MFSEPs.

The number of sandbags required at a State and regional level will be determined from information provided through the MFSEP planning process. There may be occasions where the supply of sandbags is limited and priorities for distribution will need to be determined through local emergency management arrangements.

VICSES will maintain the current cross-border and mutual aid arrangements for flood emergencies. VICSES will also work with local councils to access the resource sharing arrangements established between councils during emergencies

## 7. Storage of sandbags

Sandbags will be stored by VICSES in appropriate locations across Victoria. Through the application of risk based assessments, VICSES will work with councils to identify the quantities of sandbags required. This process will be aligned to the MFSEP review cycle.

Sandbags will normally be located in a VICSES facility. Arrangements to store sandbags in other facilities will be identified as part of the local MFSEP planning process.

VICSES will monitor the condition of all its sandbags for deterioration.

## 8. Distribution of sandbags

### Priorities for sandbags during flood emergencies

The Incident Controller may make sandbags and sand available for flood mitigation activities during declared flood emergencies.

Sandbags will be issued consistent with the Strategic Control Priorities within the State Flood Emergency Plan, in the following order of priority to protect:

1. Critical Infrastructure and Community Critical facilities identified: (a) in the MFSEP or (b) by the Incident Management Team
2. Residential properties identified in the potential flood area
3. Commercial properties identified in the potential flood area
4. Environmental and conservation areas identified in the potential flood area.

Properties identified as being outside the potential flood area, will be referred to an alternative source of sandbags (e.g. local hardware store or sandbag supplier) by VICSES.

### Distribution points

In preparation for a significant flood emergency, VICSES will work with local councils and other agencies to identify appropriate locations for sandbag collection points. Location considerations will include access, safety, human resources and machinery requirements. These locations and local arrangements will be identified in the MFSEP.

The Floodsafe Sandbag Quick Reference Guide [www.ses.vic.gov.au/prepare/sandbag-reference-guide](http://www.ses.vic.gov.au/prepare/sandbag-reference-guide) provides details to community members about the indicative number of sandbags required for residential property protection and guidance on the safe use, for the filling and laying of sandbags.

As part of the response arrangements, the Incident Controller will track the distribution of sandbags through the Incident Management Team (IMT). This information will be provided to the recovery team as part of the transition from response to recovery.

### Provision of sand

VICSES will have plans in place to acquire sand through its own supply arrangements and where necessary through the emergency management arrangements. These arrangements will be identified in the MFSEP. Sand suppliers may be identified in the MFSEP or MEMP.

## 9. Disposal and relocation of used sandbags

Sandbags may be contaminated after use and local councils should ensure that clean up and disposal is considered as part of recovery. Removal and disposal of sandbags used for flood mitigation shall be dealt with under the clean up and community recovery arrangements as outlined in the Emergency Management Manual Victoria. The disposal of sandbags is a shared responsibility between different agencies.

Incident Controllers will provide information on sandbag locations to councils, to assist with clean-up. VICSES will continue to work with relevant agencies to develop protocols for the safe and environmentally responsible disposal of sandbags.

## 10. Transitioning to this guideline

Successful implementation of this guideline may take several years and progress will be reviewed periodically. VICSES will introduce a process for including the local area arrangements for sandbag management in the MFSEP. This process will then be rolled out as each MFSEP is reviewed.

## 11. Flood Education and Engagement weblinks

- Flood Get Ready homepage: <https://www.ses.vic.gov.au/plan-and-stay-safe/at-home>

VICSES guidelines on the safe use, for filling and laying of sandbags: [www.ses.vic.gov.au/prepare/sandbag-reference-guide](http://www.ses.vic.gov.au/prepare/sandbag-reference-guide)

## 12. Further information

### Contact:

Victoria State Emergency Service  
Victorian Head Office  
168 Sturt Street, Southbank, Victoria 3006

Telephone: **(03) 9256 9000**

Email: [vicSES@ses.vic.gov.au](mailto:vicSES@ses.vic.gov.au)

## SES Regional Sandbag Resource

The region also holds strategic reserves of sandbags at the following locations. In addition, VICSES maintains small community sandbag caches listed in the relevant MFSEPs. The figures below refer to nominal amounts stored subject to refurbishment after an event.

Unit name	Primary contact person	Quantities (refers to individual sandbags)
Alexandra	VICSES Regional Duty Officer	2,500
Beechworth	VICSES Regional Duty Officer	3,000
Benalla	VICSES Regional Duty Officer	9,000
Bright	VICSES Regional Duty Officer	5,000
Chiltern	VICSES Regional Duty Officer	350
Cobram	VICSES Regional Duty Officer	1,500
Corryong	VICSES Regional Duty Officer	100
Euroa	VICSES Regional Duty Officer	8,000
Falls Creek	VICSES Regional Duty Officer	100
Kilmore	VICSES Regional Duty Officer	2,000
Kinglake	VICSES Regional Duty Officer	500
Mansfield	VICSES Regional Duty Officer	1,000
Marysville	VICSES Regional Duty Officer	500
Mitta Mitta	VICSES Regional Duty Officer	50
Murchison	VICSES Regional Duty Officer	2,000
Myrtleford	VICSES Regional Duty Officer	10,000
Numurkah	VICSES Regional Duty Officer	10,000
Rutherglen	VICSES Regional Duty Officer	3,000
Seymour	VICSES Regional Duty Officer	15,000
Shepp SAR	VICSES Regional Duty Officer	5,000
Tallangatta	VICSES Regional Duty Officer	2,500
Tatura	VICSES Regional Duty Officer	2,500
Wangaratta	VICSES Regional Duty Officer	6,000
Wodonga	VICSES Regional Duty Officer	8,000
Yackandandah	VICSES Regional Duty Officer	2,000
Yarrawonga	VICSES Regional Duty Officer	8,000
Wodonga CFA ICC	CFA Duty Officer	32,000
Nathalia Council Works Depot	Moiria Shire MERO	10,000
NE RHQ	VICSES Regional Duty Officer	80,000