Alpine Shire

Flood and Storm Emergency Plan

A Sub-Plan of the Municipal Emergency Management Plan

For the Alpine Shire
And
VICSES Bright, Myrtleford & Falls Creek Units

Version V2.2
March 2026

VICTORIA State Government

ALPINE SHIRE COUNCIL

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Acknowledgment of Traditional Owners

The Alpine Shire Municipal Emergency Management Planning Committee respectfully acknowledges the Traditional Owners of the land and waters of Alpine Shire. We pay our respects to Elders past, present and emerging, and are committed to working with Aboriginal and Torres Strait Islander communities to achieve a shared vision of safer and more resilient communities.

Authority

The plan has been prepared in accordance with and complies with the requirements of the EM Act 2013 including having regard to the guidelines issued under section 77, *Guidelines for Preparing State, Regional and Municipal Emergency Management Plans* and was endorsed by the Hume Regional Emergency Management Planning Committee as a sub-plan to the State Emergency Management Plan and approved by the Emergency Management Commissioner.

Authorised and published by

Authorised and published by the Victorian Government Melbourne: January 2026

If you would like to receive this publication in an accessible format please email *emergencyplanning@emv.vic.gov.au.* This document is also available in PDF format at emv.vic.gov.au.

Document information

Date of REMPC approval: March 2026

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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, Department of Transport and Planning (VicRoads), DFFH, relevant utilities, MERC, RERC, Police station, VICSES Units, VICSES Regional office, FRV district office, FRV stations, CFA brigades, CFA regional office.

Document Transmittal Form / Amendment Certificate

This Municipal Flood and 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 Regional Office via:

Hume Region
Victoria State Emergency Service
64 Sydney Road, Benalla,
Victoria 3672
Phone: (03) 9256 9650
Fax: (03) 9256 9671
Email: 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
V0.2	17th April 14	Steve Schneider	Initial draft for MFEP sub committee consultation
V0.4	11th August 14	Sara-Jane Bowering	Local knowledge feedback from Bright Unit
V0.5	Aug 2015	Steve Schneider	MFEP sub committee review
V0.6	Jan 2016	Steve Schneider	Incorporated amendments from EMP review
V1.0	July 2016	Steve Schneider	Final
V1.1	Sept 2020	Toby Richards	Updated plan to new Template
V1.2	Aug 2021	Charlie Sexton	Update intel card actions and changes to the EMLA Act 2018 and references to the new SEMP
V1.3	Oct 2021 Nov 2021	Charlie Sexton Tim Loffler Karen van Huizen MEMPC	Review and update Intelligence cards, catchment systems, mitigation structures and actions Sign off and adoption by MEMPC
V1.4	Dec 2025	Scott Richter	Update plan to new Template Ensure consistency with Alpine MEMP Add township summaries Add river gauge information

			Update flood intelligence Additional 1% Flood Inundation maps Updated community consultation Draft for review by MEMPC
V2.0	Feb 2025	Scott Richter	Final version
V2.1	Jan 2026	Scott Richter	REMPC feedback and amendments. Update to Harrietville Levee and Flood Intelligence. Date change from January 2025 to January 2026
V2.2 Final	March 2026	Scott Richter	REMPC Endorsement. Redated to March 2026 for final version

This Plan will be published on the VICSES website at www.ses.vic.gov.au/get-ready/your-local-flood-information located with the associated local flood guides, and www.alpineshire.vic.gov.au/

List of Abbreviations & Acronyms

The following abbreviations and acronyms are used in the Plan:

The following abbreviations and acronyms are used in the Plan			
AAR	After Action Review	IIA	Initial Impact Assessment
AEP	Annual Exceedance Probability	IMS	Incident Management System
AHD	Australian Height Datum (the height of a location above mean sea level in metres)	IMT	Incident Management Team
AIDR	Australian Institute of Disaster Resilience	JSOP	Joint Standard Operations Procedure (as issued by the Emergency Management Commissioner)
AIIMS	Australasian Inter-service Incident Management System	LSIO	Land Subject to Inundation Overlay
AoCC	Area of Operations Control Centre / Command Centre	MEMO	Municipal Emergency Management Officer
ARI	Average Recurrence Interval	MEMP	Municipal Emergency Management Plan
ARMCANZ	Agricultural & Resource Management Council of Australia & New Zealand	MEMPC	Municipal Emergency Management Planning Committee
AV	Ambulance Victoria	MERC	Municipal Emergency Response Coordinator
BoM	Bureau of Meteorology	MERO	Municipal Emergency Resource Officer
CEO	Chief Executive Officer	MFSEP	Municipal Flood & Storm Emergency Plan

CERA	Community Emergency Risk Assessment	MFEPC	Municipal Flood Emergency Planning Committee
CFA	Country Fire Authority	MRM	Municipal Recovery Manager
CMA	Catchment Management Authority	PMF	Probable Maximum Flood
DEECA	Department of Energy, Environment and Climate Action	RAC	Regional Agency Commander
DFFH	Department of Families, Fairness and Housing	RCC	Regional Control Centre
DH	Department of Health	RDO	Regional Duty Officer
DJSIR	Department of Jobs, Skills, Industry and Regions	RERC	Regional Emergency Response Coordinator
DTP	Department of Transport and Planning	RERCC	Regional Emergency Response Coordination Centre
EMLO	Emergency Management Liaison Officer	REMP	Regional Emergency Management Plan
EMT	Emergency Management Team	SAC	State Agency Commander
EMV	Emergency Management Victoria	SBO	Special Building Overlay
ERC	Emergency Relief Centre	SCC	State Control Centre
ERV	Emergency Recovery Victoria	SDO	State Duty Officer
FO	Floodway Overlay	SEMP	State Emergency Management Plan
FRV	Fire Rescue Victoria	SEWS	Standard Emergency Warning Signal
IC	Incident Controller	SOP	Standard Operating Procedure
ICC	Incident Control Centre	VicPol	Victoria Police
IEMT	Incident Emergency Management Team	VICSES	Victoria State Emergency Service

Part 1. INTRODUCTION

1.1 Approval and Endorsement

The Alpine Shire MEMPC is the owner of this Municipal Flood and Storm Emergency Plan (MFSEP), pursuant to Part 6A of the Emergency Management Act 2013 (as amended). If the certificate of assurance is signed and dated, then the Hume REMPC has approved this plan.

In accordance with its roles and responsibilities set out in the State Emergency Management Plan (SEMP), the Victoria State Emergency Service (VICSES) has prepared this plan in collaboration with the Municipal Flood & Storm Planning Committee with the authority of the Alpine Shire Municipal Emergency Planning Committee.

This MFSEP is a sub plan to the Alpine Shire Municipal Emergency Management Plan 2024 - 2027 (MEMP). It is consistent with the SEMP and the Victorian Floodplain Management Strategy (2016).

The plan is also consistent with and subordinate to:

- SEMP Flood Sub-Plan, SEMP Storm sub-plan
- The Hume Region Emergency Management Plan
- The North East (Hume) Region Emergency Response Plan - Flood Sub Plan
- The North East (Hume) Region Emergency Response Plan - Storm Sub Plan

This MEMPC prepared this plan in alignment with the Guidelines for Preparing State, Regional and Municipal Emergency Management Plans, including formal consultation and statement of assurance.

It also takes into account the outcomes of the Community Emergency Risk Assessment (CERA) process undertaken by the Municipal Emergency Management Planning Committee (MEMPC).

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

This Plan requires the approval of the Hume Regional Emergency Management Planning Committee.

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

The MFSPC has consulted with the following people and organisations about the arrangements contained within this plan:

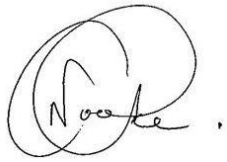
Alpine Shire Council	Alpine Resilience Partnership
CFA District 24	North East Catchment Management Authority
DEECA (Department of Energy, Environment and Climate Action)	Department of Families, Fairness and Housing
Victoria Police	Ambulance Victoria
VICSES Bright Unit	VICSES Falls Creek Unit
VICSES Myrtleford Unit	

1.2 Certificate of Assurance

Plan Preparer: The Victoria State Emergency Service prepared this sub-plan on behalf of the Municipal Emergency Management Planning Committee

I certify that the attached sub-plan complies with the requirements of the *Emergency Management Act 2013,* including having regard to any relevant guidelines issued under section 77 of that Act, to the extent outlined in the attached checklist.

The MEMPC last conducted a review of the plan on 24 February 2024. Due to delay in REMPC endorsement, the Plan was updated to V2.1.

On behalf of the Municipal Emergency Management Planning Committee:  **Nathalie Cooke** **Chair, Municipal Emergency Management Planning Committee** **5/05/2025**	**On behalf of the Victoria State Emergency Service (VICSES)**  **Cameron Rothnie** **Assistant Chief Officer - Unit Support, Emergency Management, Community Engagement, VICSES Eastern Region** **15/02/2025**

1.3 Purpose and scope of this flood/storm emergency plan

The purpose of this MFSEP is to detail the arrangements for managing a flood and / or storm emergency before, during and after it occurs or potentially occurs within the Alpine Shire.

As such, the scope of the Plan is to:

- identify the local flood and storm 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 planning arrangements with a specific emphasis on those relevant to flood.

1.4 How to read this plan

This is a sub-plan and therefore should be read in conjunction with the:

- SEMP, SEMP flood Sub-plan and SEMP Storm Sub-plan
- The Hume Region Emergency Management Plan
- Alpine Shire MEMP

1.4.1 Linkages and hyperlinks

This plan refers to a range of existing resources relating to floods/storms, including documents and websites. This plan does not seek to duplicate the information contained in these resources and instead provides links to where the reader can obtain further information.

For more operational or sensitive information, a log-in may be required, such as for documents saved on the Emergency Management Common Operating Picture (EM-COP), including Joint Standard Operating Procedures (JSOPs).

Documents or resources that are referred to frequently throughout this plan (such as the SEMP) may not hyperlinked in each instance.

All hyperlinks were accurate at time of publication and currency of the linked content remains the responsibility of the host agency.

1.5 Requirements of EMP guidelines

Emergency Management Victoria has published guidelines for preparing emergency management plans including municipal plans. In accordance with section 3.1 (Requirements) this plan has been:

- prepared collaboratively, efficiently and effectively (section 60AA(1))
- is consistent with other existing in force EMPs and where possible not duplicate or conflict with those plans (section 60AC)1
- has adopted an integrated, coordinated and comprehensive approach to emergency management (sections 60AD, 60ADA and 60ADB)
- • contain arrangements for mitigation, response, and recovery plus roles and responsibilities (section 60AE)
- Has been assured, approved and published every three years, or more frequently if required (sections 60AG, 60AH, and 60AI).

1.6 Municipal Flood and Storm Planning Committee (MFPC)

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

- Chairperson - VICSES Operations Officer Emergency Management
- VICSES (Unit Controllers from VICSES Bright, Myrtleford and Falls Creek Units)
- Alpine Shire Council (Municipal Emergency Management Officer)
- Victoria Police (Municipal Emergency Response Coordinator)
- North East Catchment Management Authority
- Department of Families, Fairness and Housing
- Department of Energy, Environment and Climate Action as required

- Water Authorities as required
- Bureau of Meteorology as required
- List other agencies as required
- Local community representatives

1.7 Responsibility for planning, review & maintenance of this plan

To remain effective and to place the community at centre of its planning, the MEMPC must ensure it maintains the MFSEP.

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 MEMPC will ensure that the MFSPC review the plan following:

- a new flood study
- a significant change in flood mitigation measures
- after the occurrence of a significant flood event within the municipality
- three years elapsing after the last review.

1.8 Community consultation in developing or review of the plan

The MEMPC via the MFSPC has undertaken community consultation on this plan via the following mechanisms:

- Direct engagement with specific community groups including:

Community / Group	Nature of Consultation
Myrtleford	- Caravan Parks visit - Targeted Community Members discussion
Towonga	- Caravan Parks and business visit - Targeted Community Members discussion
Mount Beauty	- Caravan Park and business visit - Targeted Community members discussion
Alpine Resilience Partnership	- Via MEMPC

Part 2. BEFORE: PREVENTION / PREPAREDNESS ARRANGEMENTS

2.1 Community Awareness for all Types of Flooding and Storms

Upon formal adoption by the MEMPC the community will have access to the details of this MFSEP via:

- The Victora State Emergency Service (VICSES) website
- any Be Flood Ready or Storms - Plan and stay safe engagement initiatives and websites
- Alpine Shire Council Plan and Prepare webpage

VICSES with the support of Alpine Shire will coordinate targeted community flood engagement programs within the council area.

Refer to Appendix H. LFG and Be Flood Ready Information.

2.2 Structural flood mitigation measures

Structural flood mitigation measures are any physical construction to reduce or avoid possible impacts of flood hazards, or the application of engineering techniques or technology to achieve flood hazard resistance and resilience in structures or systems[1]. The following is a summary of structural flood mitigation measures that exist within the Council area:

Summary:

Mitigation	Description	Protection	Comments
Ovens & King River systems			
Happy Valley Creek Diversion Channel (Upstream of Myrtleford)	Constructed Diversion Channel	Effective up to 5.0m on the Ovens River at Eurobin Gauge (below Moderate Flood Class Level)	Diversion channel assists in diverting floodwater from the Happy Valley Creek to the Ovens River
Rail Trail vehicle bypass	Single-lane bypass suitable for carrying vehicles up to a 20 tonne gross mass between Myrtleford & Bright	Access for community and emergency services vehicles between Bright and Myrtleford during floods	A 976 metre section of the Murray to Mountains Rail Trail upgraded to a single-lane bypass suitable for carrying vehicles up to a 20 tonne gross mass.

[1] United Nations Office of Disaster Risk Reduction

Harrietville Levees	Earth levees: • Left bank of Ovens River East branch between Bon Accord Track and Feathertop Lane. • Right bank of Ovens River (downstream of confluence)	East Branch levee is above 1% AEP level, Floodwaters break out from East Branch (around and downstream of School Bridge) to land behind the east bank levee at approximate 20% AEP	Levees constructed during gold mining operations in the 1950s. The levees are not constructed to modern standards and may be prone to erosion or breach.

Myrtleford

Flood mitigation works for Myrtleford were investigated as part of the Myrtleford Floodplain Management Study (2000). A Community Based Committee was subsequently appointed to develop a Water Management Scheme under the *Water Act 1989*. The Water Management Scheme subsequently adopted (Option H) which includes the following components:

- Construction of a diversion channel from Happy Valley Creek to the Ovens River on the upstream side of Myrtleford.
- Sealing of openings in a section of the Rail Trail embankment.
- Excavation and re-shaping of natural depressions in combination with road crossing structure upgrades to form a network of floodways.
- Construction of a new 1.6 km levee on the town side of Happy Valley Creek.
- Reconstruction of an existing levee along the southern side of Happy Valley Creek.
- Removal of two short sections of existing levees.
- Extensive waterway management works on the Ovens River and Happy Valley Creek.

The diversion channel from Happy Valley Creek to the Ovens River was constructed in 2009 and opened in 2010, prior to the flood events of September 2010. The remaining works, were investigated through a consultancy managed by Alpine Shire in 2015 but did not proceed following a review of cost estimates and community consultation.

Works were undertaken in 2018 to provide a single lane bypass route around an area of frequent flooding over the Great Alpine Road at Eurobin (east of Wobonga Lane), providing for vehicle movement (<20T) under traffic control.

2.3 Non-structural flood mitigation measures

Non-structural flood mitigation measures[1] are measures not involving physical construction which use knowledge, practice or agreement to reduce disaster risks and impacts, in particular through policies and laws, public awareness raising, training and education. The following are a summary of non-structural flood mitigation measures in the municipality.

2.3.1 Planning controls

Alpine Shire Council has a Planning Scheme in place to evaluate planning applications for all types of development in the municipality. This is undertaken by the council's Statutory Planning Team.

The Planning Ordinance in place ensures that any development on areas prone to flooding are adequately assessed by the Planning Team.

To identify waterways, major floodpaths, drainage depressions and high hazard areas which have the greatest risk and frequency of being affected by flooding.

To ensure that any development maintains the free passage and temporary storage of floodwater, minimises flood damage and is compatible with flood hazard, local drainage conditions and the minimisation of soil erosion, sedimentation and silting.

To reflect any declarations under Division 4 of Part 10 of the *Water Act, 1989* if a declaration has been made.

To protect water quality and waterways as natural resources by managing urban stormwater, protecting water supply catchment areas, and managing saline discharges to minimise the risks to the environmental quality of water and groundwater.

To ensure that development maintains or improves river and wetland health, waterway protection and flood plain health.

Alpine Shire Council has available mapping systems to provide overlays for Floodways and Land Subject to Inundation to efficiently assess areas at risk.

2.3.2 Exercising the plan

The MEMPC is responsible for arranging for the exercising of this plan, which should occur annually. Ideally, the MEMPC will schedule the exercise shortly prior to the highest risk period for flooding.

2.3.3 Flood intelligence

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

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

DEECA maintains the FloodZoom flood intelligence platform. Inquiries regarding FloodZoom access should be directed to accounts@floodzoom.vic.gov.au.

2.3.4 Flood warning

The SEMP Flood Sub Plan (www.ses.vic.gov.au/em-sector/vicses-emergency-plans) and on the Bureau of Meteorology (BoM) website www.bom.gov.au, detail the arrangements for BoM issued Flood Watch and Flood Warning products.

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

2.3.5 Local knowledge

Local knowledge is a critical element of planning. The community and other organisations can provide valuable local information about hazards, incidents and how they may evolve. This information is commonly referred to as local knowledge. This plan aims to ensure that planners and responders capture appropriate local knowledge before, during and after incidents.[2]
Field 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.

As an incident escalates from local control to a larger incident management structure, it is essential that local knowledge capability is retained within the overall structure. This should include how local subject matter experts are embedded in to divisional and sector command structures.

[2] VICSES Policy 10.02 Local Knowledge V4.0

Part 3. DURING: RESPONSE / RELIEF ARRANGEMENTS

3.1 Introduction

3.1.1 Activation of Response

VICSES may be notified of flood and storm incidents through several sources, but the most common source is calls received via 132 500 or if the emergency is life threatening, Triple Zero (000). Other sources are via other emergency management agencies and local government. In most cases, these events are of a small scale (a level 1 incident[3]), which local VICSES units manage without significant outside support.

In the case of more significant level 2 (regional level) or level 3 (an incident that has high complexity and may have statewide implications) Flood and storm 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/RAC will activate agencies as required as documented in the SEMP Flood sub-plan or SEMP Storm sub-plan.

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 Alpine Shire. These agencies will be engaged through the IEMT.

The general roles and responsibilities of supporting agencies are as agreed within the: MEMP, SEMP role statement and SEMP Flood sub-plan - and Regional Flood Emergency Plan.

For flood events, agreed roles of supporting agencies can be found in the MEMP.

3.1.3 Municipal 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 or ICC will liaise with the centre directly if they have not established division or sector command arrangements.

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

3.1.4 Escalation

Many flood or storm 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

[3] For a detailed definition of the levels of incidents, refer to Table 3 Levels of Incidents within the State Emergency Management Plan.

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 State emergency management priorities

The State Emergency Management Priorities shall form the basis of incident action planning processes.

3.3 Command control coordination consequences communication and community

Arrangements in this MFSEP must be consistent with the 6 C's detailed in SEMP, the State and Regional Flood Emergency Sub-Plans and the MEMP. For further information, refer to the Emergency management phases in the SEMP and a one page summary on the 6 C's.

3.3.1 Control

Sections 5(1)(b) and 5(1)(c) of the *Victoria State Emergency Service Act 2005* detail the authority for VICSES to plan for and respond to storms and floods.

The Role Statement within the SEMP identifies VICSES in its response functions as the Control Agency for flood and storm. It identifies DEECA as the Control Agency responsible for dam safety as well as reticulated water and wastewater (sewerage) service.

Whilst dam safety incidents are the responsibility of DEECA and the dam owner, any consequential flooding would be the control responsibility of VICSES.

3.3.2 Incident Controller (IC)

On the advice of the Bureau of Meteorology (BoM) or other reliable source, that a flood or storm event will occur or is occurring, VICSES as the control agency will appoint an Incident Controller (IC). The IC is typically from VICSES but may be from another agency when resources are constrained. The IC will lead and manage incident-tier response control including:

- controlling the operational elements of the response
- providing operational leadership during the incident at a static location or a dynamic incident, including the tactical resolution.

The IC responsibilities are as defined in the SEMP. While providing support to the IC, support agencies retain command of their own people.

3.3.3 Incident Control Centre (ICC)

As required, the IC will establish an Incident Control Centre (ICC). The ICC is where they manage the incident response command and control functions from. The IC will make the decision to activate the ICC and when it should commence operations. The ICC may be activated in advance based on the severity of warnings and in accordance with VICSES readiness arrangements:

VICSES readiness and activation levels - flood

VICSES readiness and activation levels – severe weather

For Incidents where an Incident Control Centre has not been established, VICSES may establish a Regional Operations Centre (ROC) where region wide support is provided to VICSES Units who are responding to local incidents.

Local VICSES units may also establish a local Incident Control Point (ICP) for localised incidents.

Pre-determined ICC locations are:

Incident Level	Location	ICC Location	Facility owner	Key contact
3	VICSES Hume Region Office - Benalla	64 Sydney Rd, Benalla	VICSES	Benalla SES ICC 9256 7799 or RAC
3	CFA District 23 Headquarters	1 Ely Street, Wangaratta	CFA	Wangaratta ICC 5720 2300 or CFA Duty Officer
3	CFA District 24 Headquarters	55 Moorefield Park Drive, Wodonga	CFA	Wodonga ICC (02) 6043 4400 or CFA Duty officer

3.3.4 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. Divisions and Sectors are established under the Australasian Inter-service Incident Management System (AIIMS) arrangements and assist to breakdown an area of operations into geographical or functional segments as a means to manage span of control of the incident.

The location of Divisions and Sectors are chosen based on their suitability for maintaining operations during a flood and may differ from those used in other types of emergencies. The IC may establish Divisions and Sectors at the following locations to assist with the management of flooding within the Municipality:

Division	Sector
Bright Fire Brigade (CFA) – If Alpine CEOC operating alternately report to Wangaratta Div Com)	Bright Unit LHQ – 16 Churchill Ave, Bright, VIC 3741 03 5755 2099
	Myrtleford Unit LHQ – 16 Jubilee St, Myrtleford VIC 3737 03 5752 2122

	Mt Beauty (CFA) - Lakeside Ave, Mount Beauty VIC 3699 03 5754 4060
Wangaratta DCP – SES Wangaratta LHQ, 36 Handley Street, Wangaratta VIC 3676 03 5722 1900	Wangaratta DCP – SES Wangaratta LHQ, 36 Handley Street, Wangaratta VIC 3676 03 5722 1900

3.3.5 Maintenance of local knowledge and subject matter expertise in Divisions and Sectors

The plan recognises that personnel operating division and sector command points will often be from an agency that is not VICSES (the control agency) and may lack local knowledge associated with the nature of storms or flooding, and what resources are best deployed to certain types of requests for assistance.

To account for this, planning and rostering should seek to have local SES personnel with local knowledge embedded into to the Divisions / Sectors to ensure that local knowledge is available to assist with situational awareness and decision making.

Division and Sector Commanders will be required to consider local knowledge input to all decision making. This includes ground truthing and checking forecast and predictions alongside local knowledge and on the ground intel from the community.

3.3.6 Incident Management Team (IMT)

The Incident Controller will form an Incident Management Team (IMT) to support the IC in managing the incident-tier operational response to the emergency. This includes the functional areas of planning, intelligence, public information, operations, investigation, logistics and finance functions. Where possible, the IMT will be joint-agency, pre-planned and include personnel with relevant local knowledge.

For more detail, refer to the SEMP on IMTs and Incident Management Systems (IMSs) and relevant Joint Standard Operating Procedures.

3.3.7 Incident Emergency Management Team (IEMT)

The IC will establish a multi-agency Incident Emergency Management Team (IEMT) to support the IC in managing the effects and consequences of the flood or storm emergency.

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 can provide the IC with high level strategic guidance and policy advice for consideration in developing incident management strategies.

Organisations, including Alpine 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.

The MERC or the appointed Control Agency Incident Controller can request EMLO's from relevant agencies and organisations as required, as per the arrangements set out in the MEMP.

For more detail refer to the SEMP for guidance on IEMTs.

3.3.8 On Receipt of a Flood Watch / Severe Weather Warning

Pleased note some links in this section require access to internal VICSES systems. Links are included here for easy access for VICSES staff, however should other organisations require access this can be sourced from your local VICSES contact.

SES SOP008 Severe Weather Notification and Activation Process and SES SOP009 Flood Notification and Activation Process outline in detail the actions that VICSES will undertake upon receipt of a Severe Weather Warning or Flood Watch/Flood Warning.

The following are links to the current VICSES readiness:

VICSES readiness and activation levels - flood

VICSES readiness and activation levels – severe weather

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

- Review flood intelligence to assess likely flood consequences.
- Monitor weather and flood information using the range of intelligence tools including– www.bom.gov.au and Melbourne Water Rainfall and river levels.
- Assess Command and Control requirements.
- Review local resources and consider needs for further resources regarding personnel, property protection, flood rescue and air support. Keeping in mind geographic extent of warning area and the potential for resource constraints if there may be wide-ranging effects across the region or state.
- Notify and brief appropriate officers. This includes Regional Control Centre (RCC) (if established), State Control Centre (SCC) (if established), Council, other emergency services through the EMT.
- Assess ICC readiness (including staffing of IMT and IEMT) and open if required.
- Ensure flood warnings and community information is prepared and issued to the community where required.
- Flood (Riverine and flash) Warnings are managed by the RDO/RAC.
- Severe Weather/ Thunderstorm warnings are managed by SDO/SAC.
- Develop media and public information management strategy.
- Monitor watercourses and undertake reconnaissance of low-lying areas (consider field 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.

3.3.9 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).** The IC/VICSES RDO will undertake the following considerations:

- Develop an appreciation of current flood levels and predicted levels. Are floodwaters rising, steady, peaking or falling?
- Review flood intelligence to assess likely flood consequences.

Consider What areas may be at risk of:

- inundation
- isolation
- indirect affects as a consequence of
    - power
    - gas
    - water
    - telephone
    - internet
    - sewerage
    - health
    - transport
    - emergency service infrastructure interruption.

Consider 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 (such as water, power utilities, telecommunications)

Implement response strategies as required based upon flood consequence assessment.

Continue to monitor the flood situation – www.bom.gov.au/vic/flood/.

Continue to conduct reconnaissance of low-lying areas.

Liaise with relevant flood mitigation infrastructure managers.

3.4 Community information and warnings including media comms

Guidelines for the distribution of community/public information and warnings are contained in the VICSES Hume flood and storm emergency sub-plans and state flood and storm emergency sub-plans.

Refer to **appendix J** for more details on public information and warnings for the municipality.

The IC, through the Public Information Unit established at the ICC, will manage media communication. If the ICC is not established, the VICSES RDO will manage all media communication. The Alpine Shire Council will work with the IC/VICSES RDO to assist with the dissemination of public messaging and/or warnings to ensure that consistent and timely messaging occurs.

3.5 Initial Impact assessment

In accordance with the SEMP and SEMP flood sub-plan (3.6.11 Initial impact assessment), the IC should initiate an initial impact assessment during the first 48 hours of an emergency. It should capture the nature and scale of the flood impact on people, community infrastructure, and the economic, natural, and built environments, in order that emergency relief and early recovery activities can commence. This information may then be used to provide the basis for further needs assessment and recovery planning by Emergency Recovery Victoria (ERV) and recovery agencies.

Agencies that typically support initial impact assessment in the municipality are:

- Country Fire Authority (CFA)
- Alpine Shire Council
- Local DEECA resources

3.6 Preliminary deployments to flooding

When flooding is expected to be severe enough to cut access to towns, suburbs and/or communities the IC will consult with relevant agencies to ensure that resources are in place if required to provide emergency response. These resources may include but not limited to emergency service personnel, food items and non-food items such as medical supplies, shelter, assembly areas, relief centres.

3.7 Response to flash flooding

Flash flooding can be defined as flooding that occurs within six hours or less of the flood-producing rainfall within the affected catchment. This may result in isolation of individuals and communities as time to warn and respond to flash flooding is limited[4]. The safest place to be in a flash flood is well away from the affected area. Accordingly, pre-event planning for flash floods should commence

[4] AFAC Emergency Planning and Response to Protect Life in Flash Flood Events – Guideline v2.0

with an assumption that evacuation is the most effective strategy, provided evacuation can be safely implemented.

Emergency management response to flash flooding should be consistent the SEMP Storm Sub-Plan.

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

Determine if there are barriers to evacuation by considering warning time, safe routes and resources available.

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.

Where it is likely people will become trapped by floodwaters due to limited evacuation time or options the IC needs to ensure they provide safety advice to people at risk. This advice should advise people not to attempt to flee by entering floodwater. If people become trapped, it may be safer to seek the highest point within the building and to telephone 000 if they require rescue.

where this plan has identified buildings that are known to be structurally unsuitable, the plan needs to provide for an earlier evacuation trigger (return to step 1 of this cycle).

If an earlier evacuation is not possible then the IC must make specific preparations to rescue occupants trapped in structurally unsuitable buildings either pre-emptively or as occupants call for help.

Contact the Alpine 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. While this is normal practice it should not be used as a reason for not adopting evacuation.

Refer to **Appendix C** for response arrangements for flash flood events.

3.8 Evacuation for all flooding

Where practical, evacuation is the primary strategy for ensuring the safety of at-risk communities. The purpose of evacuation is for people to relocate temporarily from areas at risk of the consequences of flooding, to places of safety. It is essential to assess risks involved in undertaking an evacuation, as evacuation may not always be the most appropriate action. This will ensure that people are not exposed to more hazardous environments because of their evacuation, for example, travelling through deep, fast-flowing floodwater[5].

The decision for Evacuation Recommendation can only be made by the incident controller. For an Urgent Evacuation the Incident Controller can immediately disseminate the recommendation to evacuate. The Incident Controller should consult the Police Commander, Health Commander, Responsible Road Authorities and support agencies. Under the SEMP, Victoria Police (VicPol) has the responsibility for evacuation (Evacuation Manager) – in consultation with the control agency

[5] AUSTRALIAN DISASTER RESILIENCE HANDBOOK COLLECTION Flood Emergency Planning for Disaster Resilience - **First edition 2020**

and other expert advice. EMV has developed a standardised procedure for evacuation under JSOP J03.12.

The IC decides whether to warn people to evacuate within a specified timeframe or whether it is necessary to advise them to evacuate immediately. The IC must make this decision having regard for the requirements of the JSOP.

Once the IC makes a decision to recommend evacuation, VicPol's Evacuation Manager is 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 **Appendix D** of this Plan and the MEMP for additional local evacuation considerations for the municipality.

Except in limited circumstances, evacuation is not compulsory in Victoria[6]. Recent historic floods that were managed under current legislation and emergency management arrangements, demonstrated that some people will choose not to evacuate. Therefore, this plan must consider arrangements for managing these people in the event they require assistance or rescue.

Considerations include:

- Registering persons who intend not to evacuate
- Providing additional information that may assist them in making a decision to evacuate.
- Identifying vulnerable people who may be willing to evacuate if assisted.
- IMT's should engage with community leaders, indigenous leaders, disability support organisations and multicultural organisations to support appropriate and effective engagement with these vulnerable groups in the community.

3.9 Flood rescue

Under the SEMP Response table 9 the control agency for rescue from land and water is VicPol, which operates the Rescue Coordination Centre. VICSES is a support agency for search and rescue on land and water evacuations and incidents involving mass casualties.

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.

[6] Powers to compel evacuation rely on the Minister making a declaration of a State of Disaster under section 23(2)(e) of the Emergency Management Act 1986. However, section 23(7) prevents these powers be used to compel a person to evacuate if they have a pecuniary interest in the land or building or goods or valuables on the land or in the building.

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

Victoria Police Rescue Coordination Centre should be notified of any rescues that occur: (03) 9399 7500. On occasion, VicPol may opt to respond a field capability of its rescue coordination centre to a location near the emergency. It may also work with the Triple Zero Victoria to deploy its dispatch capability to the same location to enhance rescue coordination and dispatch. Details in this plan may assist VicPol and Triple Zero Victoria in undertaking this function in the field or from the primary rescue coordination centre.

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

Resource type	Unit / resource name	Location	Activation
There are NIL vessels within the Alpine Shire. The next closest assets are listed below			
Victorian Resources			
Boat Inflatable AchiliesSG - 140	Wangaratta Rescue Boat – RB574	VICSES Wangaratta LHQ – 36 Handlet Street, Wangaratta	Via Triple Zero '000' or VICSES Hume RDO via SES Dispatch 1800 899 927
Boat Rigid Stabicraft 1410 Frontier	Wodonga Rescue Boat - RB507	VICSES Wodonga LHQ - 172 Victoria Cross Parade, Wodonga	Via Triple Zero '000' or VICSES Hume RDO via SES Dispatch 1800 899 927
Boat Semi-Rigid Gemini A500	Wodonga Rescue Boat - RB583	VICSES Wodonga LHQ - 172 Victoria Cross Parade, Wodonga	Via Triple Zero '000' or VICSES Hume RDO via SES Dispatch 1800 899 927
Land Based Swift Water Rescue Kit	LBSWR Kit – Wodonga	VICSES Wodonga LHQ - 172 Victoria Cross Parade, Wodonga	Via Triple Zero '000' or VICSES Hume RDO via SES Dispatch 1800 899 927
Aircraft	Various	Various	Via Police and State Air Desk
NSW Resources			
Boat Bow Loading Punt	NSWSES Boat – ABX741	NSWSES Albury Unit – 1 Hoffmann Road, Thurgoona NSW	NSWSES Southern Zone Duty Officer – (02) 4247 8098

Boat V-Nose Punt	NSWSES Boat – H21	NSWSES Albury Unit – 1 Hoffmann Road, Thurgoona NSW	NSWSES Southern Zone Duty Officer – (02) 4247 8098
Boat Gemini Rigid 5.5m	NSWSES Boat – M28	NSWSES Albury Unit – 1 Hoffmann Road, Thurgoona NSW	NSWSES Southern Zone Duty Officer – (02) 4247 8098
Land Based and In-Water Rescue Kit	Various Kit including inflatable Ark Angle Rescue Raft	NSWSES Albury Unit – 1 Hoffmann Road, Thurgoona NSW	NSWSES Southern Zone Duty Officer – (02) 4247 8098
Boat	VRA Boat – VRA785	Albury VRA Unit - 398 Kiewa Street, Albury NSW	RFSFCC (Rural Fire Service Fire Control Centre) on 1800 268 747
Boat	VRA Boat – VRA786	Albury VRA Unit - 398 Kiewa Street, Albury NSW	RFSFCC (Rural Fire Service Fire Control Centre) on 1800 268 747
Boat	VRA Boat – VRA787	Albury VRA Unit - 398 Kiewa Street, Albury NSW	RFSFCC (Rural Fire Service Fire Control Centre) on 1800 268 747

Additional Flood Rescue assets may be available via request of the VICSES RDO.

3.10 Aircraft management

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

the IC controls the conduct of Air support operations.

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

Airbase name	Type of facility (such as fixed wing/rotary wing capability)	Location
Albury Airport	Wing/rotary wing capability	121 Airport Drive, East Albury, NSW, 2640

	Regional Airport with facilities to accommodate wide range of aircraft and operations.	
Wangaratta Airport	Wing/rotary wing capability	Brian Higgins Drive, Laceby, VIC, 3678
Porepunkah Airfield	Wing/rotary wing capability Small airfield located two nautical miles south of Porepunkah township. Commonly used for recreational aircraft	266 Buckland Valley Road, Porepunkah, VIC, 3740 Duty ARO: 0490 175 178 Porepunkah Airfield Webpage
Mount Beauty Airport	Wing/rotary wing capability Small airfield located approx. one kilometre north of Mount Beauty township. Commonly used for recreational aircraft	25 Embankment Drive, Mount Beauty, VIC, 3699 Mount Beauty Airport webpage

3.11 Resupply

Communities, neighbourhoods or households can become isolated during floods and in some cases, storms. This can be 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.

3.12 Essential community infrastructure and property protection

Essential community infrastructure and property such as residences, businesses, roads and utilities, may be affected in the event of a flood.

The Alpine Shire Council maintains a small stock of sandbags. The Council will use these sandbags for strategic asset protection. These are primarily for Council use on council assets. The IC can negotiate use of this stock with Council, however they may not be available for Emergency Services to utilise so should not be assumed to be available.

Alpine Shire Council can provide supplies of bulk sand, along with plant to assist with movement of sand, such as a load to top fill a sandbag machine.

Sandbag 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.

The VICSES Operations Management Manual sets out the principles for sandbag use and allocation to the community. These principles do not apply to the use of sandbags by VICSES to construct and/or alter a levee. Refer to Sandbag filling and collection point guide and SOP036 Construction, Removal or Altering of Levee and Removal of Debris for further detail.

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.

3.13 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 Alpine Shire.

3.14 Road closures

Alpine Shire and Department of Transport and Planning (DTP) will carry out their formal functions of road closures including observation and placement of warning signs, road-blocks to its designated local and regional roads, bridges, walking/bike/shared trails. Alpine Shire staff should also liaise with and advise DTP as to the need or advisability of erecting warning signs and/or of closing roads and bridges under its jurisdiction. DTP are responsible for designated main roads and highways and councils are responsible for the designated local and regional road network.

DTP and Alpine Shire will provide community information direct to the public regarding road closures. Information will be updated on the VIC Traffic website: https://traffic.vicroads.vic.gov.au/

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

3.15 Dam spilling/ failure

The Department of Energy, Environment and Climate Action (DEECA) is the control agency for dam safety incidents. This includes breach, failure or potential breach/failure of a dam. However, VICSES is the control agency for any resultant flooding.

DEECA has 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 described in **Appendix A**. from page 27.

3.16 Wastewater 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 responsible 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 Alpine Shire Environmental Health Officer to inspect and report to the MEMO and the ICC on any water quality issues relating to flooding.

3.17 Access to technical specialists

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

3.18 Relief

Relief is the provision of assistance to meet the essential needs of individuals, families and communities during and in the immediate aftermath of an emergency.

As per the role statement for municipal councils within the SEMP, municipal councils are responsible for municipal relief coordination.

3.19 Activation of emergency relief

The IC is responsible for activating relief arrangements through the Municipal Recovery Manager (MRM). The decision to recommend the opening of an emergency relief centre sits with the IC.

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 or storm.

Refer to the SEMP Roles and Responsibilities - Relief for more detail of services that may be provided and the responsible coordinating agencies.

Suitable relief facilities identified for use during floods are detailed in **Appendix C** and/or the MEMP.

Details of the relief arrangements are available in the MEMP.

3.20 Animal welfare

Matters relating to the welfare of livestock and companion animals (including feeding and rescue) are to be referred to Department of Energy, Environment and Climate Action (DEECA) - Agriculture Victoria.

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

Matters relating to the welfare of wildlife are also to be referred to DEECA who has developed the Victorian Emergency Animal Welfare Plan.

Refer to **Appendix C** for animal shelter compound locations.

Part 4. AFTER: EMERGENCY RELIEF AND RECOVERY ARRANGEMENTS

4.1 General

As per the role statement for municipal councils within the SEMP, municipal councils are responsible for coordinating local level recovery activities. They are also the lead agency to coordinate post emergency needs assessment to determine long term recovery needs (Post Emergency Needs Assessment).

Arrangements for recovery from a flood and/or storm event within the Alpine Shire is detailed in the Alpine Shire MEMP.

4.2 Transition from response to recovery

The SEMP sets out the transition to recovery arrangements. During the response phase, the IC will ensure they develop a plan for transition from response to recovery. The IC at the municipal tier should take a lead role in facilitating transition to recovery, working with the MRM, as it marks the end of the response phase which the Controller leads and manages.

4.3 After action review – Lessons management

Lessons management is the critical process of learning from how we worked before and during an event, to improve the system for next time.

Depending on the size and scale of the flood event, VICSES will normally coordinate a debrief or after action review of flood operations as soon as practical following an event. Under the VicPol SEMP role statement, it is the responsibility of the Municipal Emergency Response Coordinator (MERC) to ensure that this occurs.

When the flood is being managed as a level 3 event, it may be that Emergency Management Victoria in consultation with VICSES assumes responsibility for debriefing.

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

APPENDIX A - FLOOD THREATS FOR ALPINE SHIRE

This Appendix is to provide a broad overview of flood risk within the Alpine Shire. Detailed Flood Risk Information for Individual Communities found in **Appendix C.**

The Alpine Shire encompasses the upper and middle reaches of the Ovens River and the Kiewa River catchments.

Ovens River

The Ovens River and its tributaries drain from the north-eastern alpine country from Mount Feathertop across to Mount Howitt and Mount Stirling. Within Alpine Shire the Ovens River passes through the townships of Harrietville, Bright, Porepunkah and Myrtleford. Major tributaries within the Alpine Shire are the Buckland River (entering the Ovens River downstream of Porepunkah), Happy Valley Creek (confluence near Ovens) Buffalo River and Buffalo Creek (confluence adjacent and downstream of Myrtleford) and Barwidgee Creek (Myrtleford) and Morses Creek from Wandiligong into Bright.

Downstream of Alpine Shire, the Ovens River meets the King River at Wangaratta then continues north-west to join the Murray River at Bundalong.

The October 1993 flood event in the Ovens River has been recognised as having an equivalent average return interval (ARI) of approximately 60 years (1.7%AEP) at Rocky Point downstream of Myrtleford. while the September 1998 and May 1974 events have an ARI of 45 years (2%AEP) and 15 years (7% AEP) respectively. The flood event of September 2010 was of similar magnitude to the September 1998 event.

The Kiewa River

The east and west branches of the Kiewa River rise in the alpine landscapes of the Great Dividing Range, southeast of Victoria's highest mountain, Mt Bogong. The western branch rises near Mount Hotham, then flows northward, largely unregulated, from the high plains through a steep forested valley. The eastern branch rises as creeks above Falls Creek and its upper reach is impounded by the Rocky Valley storage. Leaving the high plains, the east Kiewa branch flows north through a steep forested valley, delivering water to a series of pondages, tunnels and aqueducts for the largest hydro-electric scheme in Victoria. The east branch of the Kiewa River is joined by the Bogong and Mountain creeks before merging with west branch of the Kiewa north of Mount Beauty.

After Mount Beauty, the Kiewa River flows north along a widening valley, cleared for agriculture, dairy in particular. The valley is some of the most productive land in north-east Victoria. Significant stands or remnant areas of vegetation are found along most of the valley. The lower reaches of the river divert into floodplain wetlands before merging with the River Murray between Lake Hume and Albury-Wodonga.

The landscape of the Kiewa catchment ranges from the high plains of the Great Dividing Range, around 1,600 m high, to the northern floodplains near Albury–Wodonga with an elevation of around 160 metres.

Most of the catchment receives more than 700 mm average annual rainfall, with the Bogong High Plains experiencing much higher falls (to almost 2,500 mm) including snow in winter.

Historic Floods

Year	Waterway	Description
Oct 1993	Ovens River	Major flooding in Ovens Valley (largest on record) Bright, Harrietville, Kiewa Valley, Myrtleford and vast rural areas, resulting in extensive damage to homes, infrastructure and the community.) 90 homes and 32 businesses in Myrtleford flooded above floor level and 202 properties cut off by floodwater.
Oct 1996	Ovens River	Flooding in Myrtleford area
Sept 1998	Ovens & Kiewa River's & Happy Valley Creek	Major flooding in Ovens & Kiewa Valleys (largest on record for Kiewa valley) 112 buildings flooded above floor level in Myrtleford. Extensive flooding in the floodplain between Happy Valley Creek & the Ovens River. Many road closures
Sept 2010	Ovens & Kiewa River's & Happy Valley Creek	Major flooding in the Ovens and Kiewa valley. 18 Low lying houses were evacuated around Myrtleford, water flooded the car park behind Target and impacted shops backing onto Happy Valley Creek.
Dec 2010	Ovens & Kiewa River's & Happy Valley Creek	Moderate flooding in the Ovens and Major Flooding in the Kiewa valley (but smaller than Sept 2010 at Mongans Bridge) 19 People evacuated from the Myrtleford and Arderns Caravan Parks
Oct 2016	Ovens River at Myrtleford	10 properties at risk of flooding when the Ovens River at Eurobin peaked at 6.18m at Major Flood Class Level. Many properties isolated on the Ovens River and Happy Valley Creek Flood Plain. Evacuation message sent as predicted Flood height was well above the Major Flood level
Oct 2022	Ovens River / Happy Valley Creek	While there was widespread flooding across Victoria in 2022, Myrtleford was spared the worst of this flood event, with a peak on the Ovens River at Eurobin of 4.8m. Happy Valley Creek at Rosewhite separately peaked at 2.87m

Oct 2023	Ovens River / Happy Valley Creek	Myrtleford had a peak on the Ovens River at Eurobin of 5.2m. Happy Valley Creek at Rosewhite separately peaked at 2.04m

Description of Major Waterways and Drains

Waterway or Drain	Description
Ovens River	The Ovens River and its tributaries carry run-off from the north-eastern alpine country from Mount Feathertop across to Mount Speculation. The Ovens River passes through the townships of Harrietville, Bright, Porepunkah and Myrtleford. Major tributaries are the Buckland River, Happy Valley Creek, Buffalo Creek, Buffalo River and Barwidgee Creek and Morses Creek. Downstream of Alpine Shire the Ovens River is joined by the King River, Fifteen Mile Creek and Reedy Creek near Wangaratta before continuing north-west to the Murray River at Bundalong.
Buckland River	The Buckland River drains the northern slopes of the Victorian Alps west of Mount Hotham and the east facing slopes of Mt Buffalo. The confluence with the Ovens River is located a short distance downstream of Porepunkah.
Buffalo River and Buffalo Creek	The Buffalo River (and tributaries Catherine River and Rose River) drains the northern slopes of the Victorian Alps between Mt Selwyn and Mt Cobbler and the western slopes of Mt Buffalo. Lake Buffalo located approximately 20 km south of Myrtleford provides limited flood mitigation due to the small size of the storage. The Buffalo River enters the Ovens River at Merriang a short distance downstream of Myrtleford. Buffalo Creek, draining the northern slopes of Mt Buffalo enters the Ovens River floodplain upstream of the Buffalo River Road.
Happy Valley Creek	Happy Valley Creek drains forested and farming land from Rosewhite through to Ovens. Happy Valley Creek enters the Ovens River at the township of Ovens. During significant flood events floodwaters from the Ovens River break out to the northern floodplain of the Ovens River upstream of Selzers Lane and are then conveyed by Happy Valley Creek along the northern margin of the floodplain through to Myrtleford.
Barwidgee Creek	Barwidgee Creek drains the catchment north and north-east of Myrtleford before skirting the northern side of Myrtleford, entering the Ovens River near the Ovens River / Happy Valley Creek confluence.
Kiewa River	The main river is formed by the confluence of the Kiewa River East branch and West Kiewa River at Towonga South. The Kiewa River flows generally

	north northwest, joined by eleven minor tributaries, towards its confluence with the Murray River, southeast of Albury and east of Wodonga.
Morses Creek	Morses Creek drains from the steep catchment around the Wandiligong Valley, including the Wandiligong township. The creek then flows towards Bright, through parts of the town itself (including caravan parks) and joins the Ovens River at Centennial Park in the main CBD of Bright.

Flash flooding and overland flows

Short Duration, high intensity rainfall (usually associated with thunderstorms) can also cause localised flooding within the municipality, along overland flow paths when the local urban drainage system surcharges. Such events, which are mainly confined to the summer months, do not generally create widespread flooding since they only last for a short time and affect limited areas. Flooding from these storms occurs with little warning and localised damage can be severe.

High intensity rainfall such as associated with thunderstorms giving average rainfall rates of more than 20mm/hour for an hour or more is likely to lead to flash flooding and / or overland flows, across the urbanised parts of the municipality.

Blocked or capacity impaired stormwater drains can also lead to overland flows and associated flooding: the drain surcharges and excess water flows above ground.

Dam spilling or failure

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

DEECA is the control agency for dam safety incidents (such as breach, failure or potential breach/failure of a dam). VICSES is however the control agency for any resultant flooding.

Within the municipality there are the following dams / water storages:

Ovens River Catchment				
Location	**Owner**	**Dam Height**	**Dam Capacity**	**Comments**
Lake Buffalo	Goulburn Murray Water	Embankment height 31m	24,000 ML	Located on the Buffalo River at the foot of the western slope of Mount Buffalo National Park.

Kiewa River Catchment				
Location	**Owner**	**Dam Height**	**Dam Capacity**	**Comments**
Rocky Valley Dam	AGL Energy (Operator)	30.5 m	29,110 ML	Located on Rocky Valley Creek, a tributary of the Kiewa River East Branch. Provides headwater storage for McKay Creek Power Station.
Pretty Valley Dam	AGL Energy (Operator)	8.2 m	350 ML	Located on Pretty Valley Creek, a tributary of the Kiewa River East Branch. Provides headwater storage for McKay Creek Power Station.
Junction Dam (Lake Guy)	AGL Energy (Operator)	26 m	1630 ML	Located on Kiewa River East Branch, receives discharge from McKay Creek PS via Bogong PS and acts and acts as headwater storage for Clover PS
Clover Dam	AGL Energy (Operator)	20 m	290 ML	Located on Kiewa River East Branch, receives discharge from Clover PS and acts as headwater storage for diversion of flows to West Kiewa PS.
Mt Beauty Regulating Pondage	AGL Energy (Operator)	6.1 m	900 ML	Receives outfalls from West Kiewa PS (diversion from Clover Dam on Kiewa River East Branch) and regulates flows prior to release to Kiewa River West Branch at Mt Beauty

APPENDIX B - TYPICAL FLOOD PEAK TRAVEL TIMES

In using the information contained in this appendix, consideration needs to be given to the time of travel of the flood peak. A flood on a 'dry' waterway will generally travel more slowly than a flood on a 'wet' waterway (for example, the first flood after a dry period will travel more slowly than the second flood in a series of floods). Therefore, recent flood history, soil moisture and forecast weather conditions all need to be considered when using the following information to direct flood response activities.

Note that flooding will start some time ahead of the time indicated by the following travel times – these are the time between the flood peaks at respective sites.

Typical travel times have been collated from recorded historical events.

Typical travel times

Location from	Location to	Typical travel time	Comments
Ovens River			
Start of rainfall event (upper catchment)	Harrietville	Between 10 and 20 hours	Will Vary depending on duration and intensity of rainfall event and catchment conditions. Saturated catchments will respond more quickly, whereas very dry catchments will respond more slowly.
Harrietville	Bright	7 hours	Will vary depending on which is the dominant tributary leading to peak at Bright (Morses Creek can cause significant peak at Bright). - In 2012 flood event, recorded flow time was just under 4 hours. - 1998: 6 hours - 1993: 10 hours
Bright	Porepunkah	1 hour	
Porepunkah	Eurobin	2 hours	Eurobin is also substantially influenced by Buckland River flows so early peak may occur.
Eurobin	Myrtleford	6 hours	Eurobin gauge is the most effective warning gauge for Myrtleford impacts
Myrtleford	Rocky Point	2 hours	Peak at Rocky Point is also influenced by timing of Buffalo River peak
Rocky Point	Wangaratta	Between 12 and 15 hours	Wangaratta timing will also be influenced by King River peak.

Location from	Location to	Typical travel time	Comments
Morses Creek			
Start of rainfall event (upper catchment)	Wandiligong	Between 6 and 22 hours	Will Vary depending on duration and intensity of rainfall event and catchment conditions. Saturated catchments will respond more quickly, whereas very dry catchments will respond more slowly.
Wandiligong	Bright	1 hour	

Location from	Location to	Typical travel time	Comments
Buckland River			
Start of rainfall event (upper catchment)	Buckland River at Upper Buckland/ Twelve Mile	Between 12 and 30 hours	Will Vary depending on duration and intensity of rainfall event and catchment conditions. Saturated catchments will respond more quickly, whereas very dry catchments will respond more slowly.
Buckland River at Upper Buckland/ Twelve Mile	Harris Lane	Between 1 and 4 hours	Upper Buckland is not a strong predictor of Harris Lane peak. Upper Buckland and Harris Lane often peak very nearly simultaneously due to runoff from intervening catchment (Mt Buffalo). Harris Lane is approx. 4km south-west of Porepunkah (as crow flies)
Harris Lane	Ovens River at Eurobin	3 hours	

Location from	Location to	Typical travel time	Comments
Buffalo River			
Buffalo downstream of Rose River	Buffalo D/S	3 Hours	Timing of peak downstream of Lake Buffalo is variable dependent but typically < 5 hours after peak of upstream tributaries.
Buffalo D/S of Lake Buffalo	Rocky Point	Between 6 and 8 hours	Nominal 7-hour travel time on Buffalo River but Rocky Point peak time influenced by timing of Ovens and Buffalo peaks. - Flow time in 2012 flood event was just under 3 hours. - 1998: 8.7 hours - 1993: 6.5 hours

Location from	Location to	Typical travel time	Comments
Kiewa River			
Kiewa River West Branch @ U/S of offtake	Mt Beauty	2 hours	Timing of peak at Mt Beauty is influenced by both East Branch (no gauge) and West Branch
Mt Beauty	Mongans Bridge	6 hours	
Mongans Bridge	Kiewa	17 hours	Timing of peak may be influenced by other tributaries

Appendix C: Alpine Shire Flood Emergency Plan

This section contains information on Flood Class Levels, river gauge information and community-based flood emergency plans and intelligence cards for streams and communities within Alpine Shire Council.

Summary of Communities

The below table provides a summary of all the communities / townships in Alpine Shire along with a brief description and level of flood risk (based on the *Regional Risk Assessment* within the *North East Regional Floodplain Management Strategy 2018 – 2028*.

Community / Township	Description	Flood Risk
Ovens River Catchment		
Harrietville	Harrietville is situated in the upper reaches of the Ovens River catchment and straddles the confluence of the Ovens River east and west branches. A levee on the left bank of the Ovens River East Branch was constructed during gold mining operations which provides some flood protection; this is not a formally managed or maintained structure. In 2025 a review of the levee was undertaken and identified that it would be prone to failure via scouring during high velocity flood events modelled at the 1%AEP. A levee failure could have catastrophic consequences for the Harrietville community due to the risk of there being nil warning.	High
Freeburgh	Located adjacent the Ovens River between Bright and Harrietville, the caravan park and a number of dwellings in the township and adjacent reaches are flood prone.	Medium
Wandilligong	Wandiligong is located on Morses Creek approximately 5 km south of Bright. There are a small number of flood prone properties and flood onset is rapid with no warning service available.	High
Bright	Bright is located on the Ovens River upstream of its confluence with the Buckland River. Whilst located on the Ovens River, impact on residential properties is low – one house in Canyon Lane flooded in 1993. The main flood risks and impacts are associated with Ovens River tributaries which pass through developed areas – particularly Morses Creek, Stackey Gully and Bakers Gully. Significant flooding from these occurred in 1993 and 1998. Limited culvert and drain capacity can result in significant overland flows through the town centre and residential areas.	High

Harris Lane	A small subdivision (approximately 22 dwellings) located nearby on the Buckland River (Wallace Drive / Harris Lane) is significantly flood prone. Flooding occurs through overtopping of Harris Lane near the intersection of Harris Lane and Wallace Drive and through overtopping of the river bank downstream of the Harris Lane Bridge. The area remains accessible from Porepunkah, however, the depth and velocity of floodwaters through Wallace Drive is such that wading access is not feasible and vehicular or boat access may not be safe.	High
Myrtleford	Myrtleford is located on the northern edge of the Ovens River floodplain. At Myrtleford, the majority of flood flows are carried in the northern part of the floodplain due to breakout flows to the Happy Valley Creek system upstream of Selzers Lane. These flows impact on the urban centre near the Great Alpine Road and through the outlying urban development around Maude Street and Lewis Avenue to the south of Happy Valley Creek, resulting in isolation and above-floor flooding of residential properties. The Whalleys Lane diversion channel diverts small flood flows from Happy Valley Creek back to the Ovens River upstream of the town centre to reduce the frequency of impact. In addition to the Ovens River impacts, a number of waterways drain through parts of the town or adjoining areas. These waterways (Barwidgee Creek, Nil Gully, Buffalo Creek and Buffalo River) contribute to local and floodplain-scale flood risks and impacts. Access from Myrtleford to both Wangaratta and Bright can be cut due to flooding over the Great Alpine Road south of the Snow Road and at Eurobin. Access along the Myrtleford-Yackandandah Road may be impacted by flooding from Barwidgee Creek. Access to properties along the Buffalo River and Buffalo Creek is cut due to flooding over Buffalo River Road on the Ovens River floodplain.	High
Kiewa River Catchment		
Mount Beauty & Tawonga South	Mt Beauty town centre is located on elevated ground between the Kiewa River East Branch and Kiewa River West Branch. The town centre and residential area does not experience flooding from either waterway, however, local flooding can result from stormwater and runoff from the adjacent hillslopes to the south-east. Peripheral flooding occurs around the industrial area and aerodrome to the north of the Mount Beauty pondage. Simmonds Creek enters the Kiewa River West Branch at Mt Beauty. Breakout flows impact a number of residential and commercial properties to the west of the Mount Beauty pondage and flooding from the Kiewa River impacts the Mount Beauty Caravan Park and Holiday Centre. The most upstream flood warning gauge on the Kiewa River is at Mongans Bridge approximately 20 km downstream of Mount Beauty. Thus, no flood warning service is provided for the Upper Kiewa River.	Medium

Warnings and Gauges

The Bureau of Meteorology currently provides flood forecasts for Ovens River and Buffalo River.

Warnings are available for flooding expected along the Ovens River and Buffalo River which include areas adjacent to the river. Flood class levels for the Ovens River, Buffalo River and Happy Valley Creek gauges are detailed in table C1.2 and are used in the issuing of a flood warning for. These and other gauge details within the catchment are contained within table C1.3.

	River/creek flood class level		
Gauge / River Name	**Minor**	**Moderate**	**Major**
Ovens River at Eurobin (for Myrtleford)	4.5m	5.5m	6.0m
Ovens River at Bright	3.0m	3.6m	4.3m
Buckland River at Harris Lane	2.8m	3.5m	4.2m
Buffalo River downstream of Lake Buffalo	3.2m	5.0m	6.3m
Kiewa River at Mongans Bridge	2.4m	3.5m	4.5m
The below locations have no set Flood Classification Level. The heights below are for guidance for determining the use of an Ungauged Flood Warning.			
Morses Creek at Wandiligong	2.04m	3.46m	From 3.46m
Happy Valley Creek at Rosewhite	1.3m	3.3m	4.4m
Ovens River at Harrietville	2.37m	2.8m	From 2.8m
Buckland River at Upper Buckland	2.9m	-	-

Table C1.2 – Gauges with established Flood Class Levels within the Ovens River Catchment

At these sites within the Ovens River catchment, the Bureau of Meteorology (the BoM) will issue flood warnings if levels reach those classified above. Warnings will be placed on the Bureau's website (bom.gov.au/vic/warnings/index.shtml?ref=hdr) and the VicEmergency website emergency.vic.gov.au.

For waterways where there is no set Flood Classification Level, issue of a Flood Warning is completed by VICSES using an Ungauged Flood Warning.

Ungauged Flood location Warnings

Where there are no set Flood Class Levels for a gauge, VICSES NEDO/IWO will need to consider issuing "Ungauged Flood warnings" (Minor to Major) with confirmed impact examples at each level.

Impact Guide below:

A Minor Flood Warning means floodwater can:	A Moderate Flood Warning means floodwater can:	A Major Flood Warning means floodwater can:
Spill over river banks and cover nearby low lying areas.	Spill over river banks and cover larger areas of land.	Cause widespread flooding.
Come up through drains in nearby streets.	Reach above floor levels in some houses and buildings.	Many houses and businesses are inundated above floor level.
Require the removal of stock in some cases.	Require evacuation in some areas.	Cause properties and whole areas to be isolated by water.
Cover riverside camping areas and affect some low-lying caravan parks.	Affect traffic routes.	Closes major roads and rail routes.
Cover minor roads paths, tracks and low level bridges.	Require the removal of stock in rural areas.	Require many evacuations.
Affect backyards and buildings below floor level.		Affect utility services (power, water, sewage etc).

This table provides guidance on the BoM definitions of each warning category.

Note: In Flash Flood areas without gauges, it will only be possible to provide a general description of likely flood impacts.

Gauges and Locations

Ovens River

Gauge	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Map Reference
Ovens River at Harrietville	403244	Travelling north from Harrietville along the Great Alpine Rd, the turn off to the site is approximately 600 m before crossing Howards Bridge. The access track is past a set of holiday flats called "Highlander Flats". "68" is marked on a concrete post	✓	✓	MapName: WAN/NE Easting: 505562.326 Northing:5917970.886 Latitude:-36.884 Longitude: 147.062 LocalMap: 403244B

Ovens River at Bright	403205	From Bright travel north along Gavan St which turns into Ovens Hwy/Great Alpine Road. At approximately 1.5 km turn NE onto Fraser Rd. Instrument Housing 200 m along at end of road	✓	✓	MapName: WAN/NE Zone: 55 Easting: 495767.004 Northing: 5935547.000 Latitude: -36.726 Longitude: 146.953 LocalMap: 403205C
Ovens River at Eurobin	403210	6268 Great Alpine Rd (access is via private property) Verbal approval for access given - Baltazar Vineyards, turn at Baltazar vineyards. Follow track past vineyards to station.	✓	✓	MapName: WAN/NE Easting: 487225.001 Northing: 5943668.000 Latitude: -36.652 Longitude: 146.857 LocalMap: 403250A
Happy Valley Creek at Rosewhite	403214	Heading south along Ovens Highway from Myrtleford, turn west at Happy Valley Road (C534). Turn north at Carrolls Road. Station is another 800m next to bridge	✓	✓	MapName: WAN/NE Easting: 483901.999 Northing: 5951970.000 Latitude: -36.577 Longitude:146.820 LocalMap: 403214A

Buckland River

Gauge	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Map Reference
Buckland River at Upper Buckland (12 Mile)	403253	From Porepunkah roundabout take Buckland River Road for approx. 20km. Guage is near camp ground known as “Camp Flat”.	✓	✓	MapName: WAN/NE Easting: 487468.920 Northing: 5921195.528 Latitude: -36.855 Longitude: 146.859 LocalMap: 403253A
Buckland River at Harris Lane	403233	Travelling along the Oven Highway near Porepunkah, take Buckland Valley Road at major roundabout. Travel 3.6 km from roundabout and turn west onto Harris Lane. Turn north onto street travelling past houses. Go through locked gate at end of road to site	✓	✓	MapName: WAN/NE Easting: 489467.000 Northing: 5936001.999 Latitude: -36.721 Longitude: 146.882 LocalMap: 403233A

Buffalo River

Gauge	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Map Reference
Buffalo River downstream of Lake Buffalo	403220	From Myrtleford travel towards Lake Buffalo on the Buffalo River Rd. From the crossing of the Ovens River travel 18.35km. Opposite the GMW office, turn west through gate and follow track to station. Locked gate and key required from GMV.	✓	✓	MapName: WAN/NE Easting: 470391.524 Northing: 5937054.064 Latitude: -36.712 Longitude: 146.668 LocalMap: 403220B

Morses Creek

Gauge	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Map Reference
Morses Creek at Wandiligong	403232	At roundabout on main street in Bright, take Deacon Rd. Turn onto Coronation Aveneue which turns into Wandiligong Road. Site is approximately 150 from Dougherty Bridge	✓		MapName: WAN/NE Zone: 55 Easting: 498159.000 Northing: 5932703.000 Latitude: -36.751 Longitude: 146.979 LocalMap: 403232A

Kiewa River

Gauge	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Map Reference
Kiewa River at Mongans Bridge	402203	Travelling north along Kiewa Valley Highway from Mt Beauty, turn east onto Bay Creek Lane at Coral Bank. 300 m from intersection, turn south onto Mullagong/Redbank/Mongans Rd immediately after Morgans Bridge. Site is 1.5 km further down road.	✓	✓	MapName: WAN/NE Easting: 508976.998 Northing: 5949994.000 Latitude: -36.595 Longitude: 147.100 LocalMap: 402203A

Table C1.3 – Gauges within the Ovens River catchment within the Alpine Shire

Appendix C2: Harrietville – Germantown Flood Emergency Plan

Overview of Flooding Consequences

Harrietville

Harrietville is located on the Great Alpine Road at the confluence of the East and West Branches of the Ovens River. The town occupies the valley floor surrounded by the steep slopes of the adjacent ranges. Isolation of the community can occur, in particular due to flooding over the Great Alpine Road around Frosty Corner / Stony Creek to the north of Harrietville (threshold for road flooding between approx. 20% AEP)

Significant flood events have impacted Harrietville as summarised below. The onset of flooding is rapid given the location of the town at the base of the adjacent hills.

The stream form of the Ovens River around Harrietville was modified by historic gold dredging (1940s to 1954) and the alignment of the East Branch of the river was modified. A levee (comprising non-cohesive alluvial material) extends along the western bank of the East Branch between Bon Accord Track and Feathertop Lane. A smaller levee extends along the eastern bank of the Ovens River (downstream of the confluence)

Downstream of the East Branch levee (principally between Feathertop Lane and the School Bridge on the Great Alpine Road) flows may break out from the East Branch with resultant impact on properties between the East and West Branch.

The levee downstream of the Ovens River confluence provides protection for properties between the Ovens River and Great Alpine Road up to approximate 10% AEP however in the 5% AEP event flows break out from the Ovens River East Branch upstream of the confluence to impact properties along the Great Alpine Road.

Neither levee is subject to overtopping in the 1% AEP event (as modelled) however the steep stream gradient, high flow velocity, mobile sediment and potential for debris blockages result in unstable flow conditions and a risk of levee erosion and overtopping with resultant impact on properties.

The Harrietville Levee between Bon Accord Track and Feathertop Lane is subject to failure in modelled flood events of approximately 1% AEP, with community evacuation required. There is a real risk of levee failure, and should the levee breach it will result in a rapid avulsion of the east branch of the Ovens River through the township.

The Ovens River in this location has no gauge or flood warning system in place, meaning there would be no warning of a flood event that may compromise the levee.

A recent assessment of the levee (November 2025) as indicated that levee failure is “Probable” and the consequences would be “Catastrophic” with potential loss of life and property.

The most likely levee failure method is via scour if exposed to high velocity flows, rather than an overtopping event. The levee has not been formally maintained, with numerous large trees located within the levee embankment. In one area, a fallen tree has created a hollow within the embankment face. The porous type materials that have been used in the construction are unlikely to prevent seepage and possible failure where it is required to resist water inundation over an extended period of time.

Modelled 1% AEP flood velocities (2.9 m/s) exceed erosion thresholds and there is a high risk of active scour occurring during 1% AEP or greater floods across the entire levee length.

In September 1998 approximately 80 properties, both residential and commercial premises, experienced inundation within the property and approximately 11 with over floor flooding.

Downstream of Harrietville the Ovens River heads north and north-west through Smoko, Freeburgh and Germantown. The floodplain width in this reach varies from less than 100 m to around 700 m. The floodplain is predominantly agricultural land with scattered residences and flood depths outside of the Ovens River channel are generally shallow.

Flood impacts throughout this reach are described based on the Ovens River @ Harrietville stream gauge.

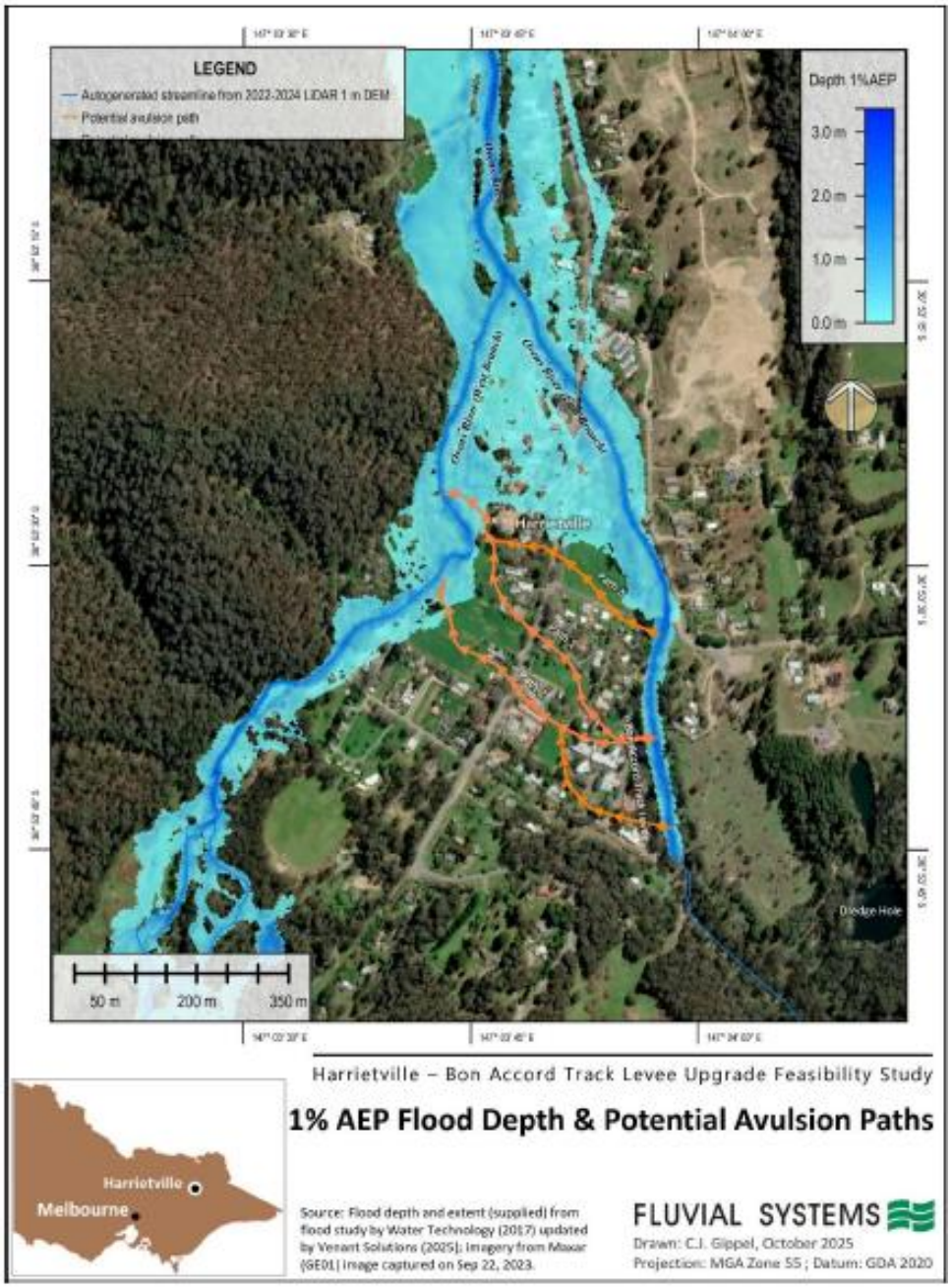


Figure 14. Three potential pathways for an avulsion between the Ovens River Est Branch to the West Branch under the scenario of a levee breach during flood conditions. The avulsion paths originate from chainage 194 m, the point of lowest freeboard. The path alignments are generalised.

Map indicating likely flow paths for a levee failure event resulting from avulsion

Depending on the location of the levee failure, there would be differing consequences. These have been summarised below.

If Avulsion Initiates Near Chainage 380-385 m, Water Treatment Plant:

- Direct destruction of water treatment infrastructure in channel scour path
- Loss of town water supply requiring emergency water trucking or alternative supply
- Avulsion channel would cross Great Alpine Road near water treatment plant
- Approximately 2-4 residential properties potentially in direct flow path

If Avulsion Initiates at Chainage 170-240, Feathertop Chalet - School Camp:

- Multiple school camp buildings destroyed in channel scour zone
- Church potentially in direct flow path depending on exact alignment
- Hotel and accommodation buildings at risk [7 commercial/public structures]
- Great Alpine Road crossed at two potential locations
- Approximately 4-8 residential properties in potential flow path
- Shops and commercial buildings are potentially affected

If Avulsion Initiates at Chainage 0-80, Private Properties:

- Primarily residential properties affected, estimated 3-6 properties in direct path
- Great Alpine Road crossing near Feathertop Lane

Flood Intelligence Card – Ovens River at Harrietville (Harrietville-Germantown)

Gauge Location: Ovens River at Harrietville

As there are no set FCL for this gauge, VICSES NEDO/IWO to consider issuing “Ungauged Flood warning templates” (Minor to Major) with confirmed impact examples at each level.

This table provides guidance on the BoM definitions of each warning category.

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
			No Flood Class Levels at this Gauge		As there are no set FCL for this gauge, VICSES to consider issuing Ungauged Flood warning with confirmed impacts at each level.	
Ovens River at Harrietville	**2.32**	2,830	**20%**	• Minor breakouts in Harrietville along West Ovens Branch with water over Charlie Miley Walk. • Shallow flooding into the lower sites / camping areas of Harrietville Caravan Park (Camping Park Road) • Potential isolation of properties on west bank of Ovens River West Branch upstream of Mountain View Walk • No impact from Ovens River East Branch upstream of Great Alpine Road / School Bridge - flooding constrained to park and car-park (Pioneer Park and Tavare Park). • Breakout to cleared land west of Ovens River between Ovens River confluence and Monarch Lane - potential impact around dwellings at Monarch Lane • Shallow breakout to land around dwellings at 48 and 50 Great Alpine Road (near Howards Lane)	- Active monitoring of the levee should be undertaken from 20%AEP flood events which is approximately 2.32m. - Monitoring for scouring of the levee, seepage or other indicators of failure. - Professional engineering assessment of the levee may be necessarily, especially if there is any sign of seepage or scouring. - Where levee integrity is compromised above this level, early evacuation should be considered. - VICSES to consider issuing Minor Level Ungauged Flood warning with confirmed impacts at this level. - Alpine Shire close Charlie Miley Walk	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Harrietville	**2.37**	2,830	**20%**	• Flooding over Great Alpine Road north and south of Stony Creek Road ("Frosty Corner") - threshold likely to be higher than this based on recent events - not apparently overtopped Oct 2016 with 2.7m peak. • Flooding over Bibby Lane, cuttting access to one dwelling • Flooding over un-named lane (private access) around 600m north of Bibby Lane (impact confirmed by Oct 2016 oblique imagery) • Flooding over McMahons Ln, Smoko (river side of plantation) • Breakout flows to agricultural land including around dwellings around and downstream of 1255 Great Alpine Road, Smoko. • Floodwaters break out from East Branch (around and downstream of School Bridge) to land behind the east bank levee at approximate 20%AEP along the old levee (Levees constructed during gold mining operations in the 1950s. The levees are not constructed to modern standards and may be prone to erosion or breach) **Water over Road** • Great Alpine Road at Stoney Creek Road ("Frosty Corner") • Great Alpine Road at Northwest Spur Track south of Smoko (modelling shows flooding at this level but no impact observed in recent events).	RRV to determine if road closure of Great Alpine Road at Northwest Spur Track / Stony Creek Road/Frosty Corner south of Smoko near trout farm required Placement of sandbags and sand at Harrietville CFA for community use. Should be sandbags in storage (1000 bags) however need to validate before possible road closures. Planning for community isolation and emergency access arrangements, in the event that community isolation occurs with further river rises.	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018
	2.57	3,720	**10%**	• Flooding over Monarch Lane, Harrietville - to west of Ovens River • Flooding around 68 Great Alpine Road, Harrietville • Flooding around shed to north-east of 2179 GAR, Harrietville with breakout flows over the river flats • Breakout resulting in shallow flooding around dwelling / sheds at 1640-1721 GAR Smoko, observed Oct 2016 after 2.7m peak (consistent with 10% AEP mapping).	Refer to 10% Flood Inundation map in Appendix F. As there are no set FCL for this gauge, VICSES to consider issuing Minor Level Ungauged Flood warning with confirmed impacts at this level.	

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Harrietville	**2.57**	3,720	**10%**	• Breakout resulting in shallow flooding around dwelling / sheds at 1069-1083 and 837-839 GAR Freeburgh, observed Oct 2016 after 2.7m peak (consistent with 10% AEP mapping) • First modelled impact onto Discovery Parks - Bright Caravan Park (Websters Lane, Freeburgh) • Breakouts in Harrietville begin to enter land at several residential properties located along the east branch between Feathertop Lane and the School Bridge • Minor breakouts of the Ovens River begin to enter residential and commercial properties upstream of Howards Bridge between the Great Alpine Road and the Ovens River. • Increased flow across the floodplain between Smoko and Freeburgh; shallow flooding at several residences on rural properties. • Shallow flooding on rural properties. • Shallow flooding over Great Alpine Road near Smoko Campground **Water over Road** • Great Alpine Road at Stoney Creek Road ("Frosty Corner") • Monarch Lane, Harrietville	RRV to determine if road closure of Great Alpine Road at Stony Creek Rd (Frosty Corner) and Monarch Lane VICSES to visit affected properties and assess if protection can be implemented.	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018
	2.80	5,120	**5%**	• Shallow breakouts from Ovens River East Branch upstream of confluence resulting in flooding around 195-197 GAR and overtopping of GAR upstream of School Bridge • Breakouts on east side of Ovens River from near the confluence impacting multiple residential lots on west side of GAR between 168 and 72 GAR and overtopping of GAR upstream of Monarch Lane / Newmans Lane before discharge to dredge hole. All shallow flooding.	As there are no set FCL for this gauge, VICSES to consider issuing Minor Level Ungauged Flood warning with confirmed impacts at this level VICSES to Consider the use of Snap, Send, Solve Flood observers for Intelligence gathering	

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Harrietville	**2.80**	5,120	**5%**	• Shallow breakout from Ovens River upstream of river crossing at Howards Bridge - shallow flooding around dwellings at 10-20 GAR • Breakout downstream of School bridge in Harrietville, inundating land behind the levee and impacting on several residential properties. • Floodwater begins to enter residential properties downstream of Feathertop Lane between Ovens east and west branch • Breakouts upstream of Howards Bridge on the Ovens River enters residential properties between the Ovens River and the Great Alpine Road near Newmans Lane • Floodwater increases into residential properties in Freeburgh between Websters Lane and Old Harrietville Road **Water over Road** • Great Alpine Road upstream of school bridge	As there are no set FCL for this gauge, VICSES to consider issuing Moderate to Major Level Ungauged Flood warning templates with confirmed impacts at this level RRV to close the Great Alpine Road at Stoney Creek Rd (Frosty Corner) IMT required to consider the consequences of closing GAR and access to Harrietville community. IMT to consideration requirement for a relief centre. VICSES to visit affected properties and assess if protection can be implemented.	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018
	3.02	6,570	**2%**	• Breakout across Great Alpine Road south of Howards Bridge, increasing significantly at 1% AEP • Increased flood extent in Discovery Parks - Bright (Websters Lane Freeburgh) • Breakouts through Harrietville along Mountain View Walk. **Water over Road** • Great Alpine Road south of Howards Bridge; and north of McMahons Lane, Smoko • Possible Tawonga Gap Road Bridge across the Ovens River (RRV to Check)	As there are no set FCL for this gauge, VICSES to consider issuing Moderate to Major Level Ungauged Flood warning templates with confirmed impacts at this level RRV to investigate the Towonga Road Gap Bridge and Close the Great Alpine Road at Smoko	

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Harrietville	**3.12**	8,290	**1%**	• Spills from Ovens River near Monarch Lane / Newmans Lane extend to dredge hole before re-entering Ovens River downstream of Howards Bridge • Major breakouts through Harrietville with large flows trapped behind the levee and joining the Ovens River downstream of Howards Bridge. • Inundation impacting residential properties on the western side of the Great Alpine Road, downstream of the School Bridge and North of Mountain View Walk between the Ovens West Branch and Ovens East Branch. • East Branch levee is above the 1% level, however the levees were constructed during gold mining operations in the 1950s and are not constructed to modern standards and may be prone to erosion or breach. **Water over Road** • Great Alpine Road, South of Smoko to north of Howards bridge	Evacuation should be undertaken when forecast flood flows at this level. Active monitoring of the levee should be undertaken from 20%AEP flood events which is approximately 2.32m. Refer to comments on page 41.Refer to 1% Flood Inundation map in Appendix F. As there are no set FCL for this gauge, VICSES to consider issuing Major Level Ungauged Flood warning templates with confirmed impacts at this level VICSES to door knock listed properties that may be impacted.	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018
	3.55	15,600	**0.5%**	• Major breakouts through Harrietville impacting residential properties between the Great Alpine Road and the Ovens River downstream of the confluence. • Water overtopping the levee at several locations. • Major breakouts impacting residential properties on Great Alpine Road north of Feathertop Lane • Large breakouts from the Ovens River downstream of Howards Bridge impacting rural properties. • Major breakouts downstream of Freeburgh, between Flinn Crescent and Old Harrietville Road impacting residential properties, rural and forested land.	IC & VICPOL Evacuation Manager to consider Evacuation of homes identified As there are no set FCL for this gauge, VICSES to consider issuing Major Level Ungauged Flood warning templates with confirmed impacts at this level	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Harrietville	**3.55**	15,600	**0.5%**	**Properties at Risk** • Great Alpine Road • Newmans Lane • Howards Lane **Water over Road** • Great Alpine Road • Feathertop Track • Mountain View Walk • Newmnas Lane • Millers Track • Stoney Creek Road • Bibby Lane • Miley Lane • Mcmahons Lane • Websters Lane/Bridge • Old Harrietville Road Bridge • Back Germantown Road	As there are no set FCL for this gauge, VICSES to consider issuing Moderate to Major Level Ungauged Flood warning templates with confirmed impacts at this level Alpine Shire/RRV to close road identified IC & VICPOL Evacuation Manager to consider Evacuation of homes identified	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018
	3.67	18,700	**0.2%**	• Howards Bridge over the Ovens River at Harrietville overtopped.		
	4.90	38,800	**PMF**	• Wide floodplain flow along the Ovens River. • Major inundation through Harrietville impacting residential properties North of Bon Accord Track. • The floodwaters are restricted in the east by the ridge along which Feathertop Track runs.	As there are no set FCL for this gauge, VICSES to consider issuing Major Level Ungauged Flood warning templates with confirmed impacts at this level IC & VICPOL Evacuation Manager to consider Evacuation of homes identified	

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Harrietville	**4.90**	38,800	**PMF**	• Broad floodplain flow through Smoko, Freeburgh and Germantown, inundating a large number of residential properties along the Ovens River. • Bridge over Ovens between Great Alpine Road and Stony Creek Road overtopped • Residential roads in Harrietville inundated; Hoskings Lane, Attridges Lane, Feathertop Lane and Feathertop Track • Multiple sections of Great Alpine Road Inundated between Harrietville and Bright. **Water over Road** • Hoskings Lane • Attridges Lane • Feathertop Lane • Feathertop Track	Alpine Shire to close roads identified	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018

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: Bright Flood Emergency Plan

Overview of Flooding Consequences

Bright

Bright is located adjacent the Ovens River approximately 30 km south-east of Myrtleford. The CBD and the majority of the residential area lies to the south of the Ovens River, with a smaller residential area to the north of the Ovens River.

The CBD and major residential areas are well elevated above Ovens River flood levels however flooding can result from south bank tributaries which pass through Bright – Morses Creek, Bakers Gully Creek and Stackey Gully.

The extensive flood damage which occurred in Bright in the major flood event of October 1993 was predominately a result of flooding from Bakers Gully Creek and Stackey Gully and, to a lesser degree, the Ovens River. With limited rain gauge data and no stream gauging in Bakers Gully and Stackey Gully the 1993 magnitude has not been formally assessed however was likely around 1% AEP based on flooding in the adjacent Morses Creek catchment (Earth Tech, 2004). The 1993 event for the Ovens River at Bright has been assessed as approximately 2% AEP (Water Technology, 2018).

Across Bright and Porepunkah the October 1993 event, was reported (Hydrotechnology, 1995) to have impacted on 70 residential properties, 15 commercial premises, 7 public properties and two Caravan Parks.

Bright can be isolated by floodwaters due to flooding of the Great Alpine Road at Wabonga Lane near Eurobin (limited capacity bypass now available for emergency services via the upgraded Rail trail) and at Stoney Creek / Frosty Corner between Bright and Harrietville. Additional flooding over the Great Alpine Road which may further impact access to and from Bright has occurred within Myrtleford, west of Porepunkah (at One Mile Creek) and on the western end of Bright (around Stackey Gully).

Flood impacts around Bright are best described based on the Ovens River @ Bright gauge and Morses Creek @ Wandiligong gauge. Bakers Gully and Stackey Gully (and other waterways which drain from the steep slopes above the urban area) are ungauged and respond rapidly to rainfall so there is limited ability to provide flood warnings.

Ovens River

Upstream of the Morses Creek confluence (near Mountbatten Avenue) flooding from the Ovens River through Bright is generally confined by the steep topography with no known flood impacts on dwellings or commercial buildings for floods smaller than 0.5% AEP.

Between Morses Creek and Star Road the flood extent increases in width, impacting (in 1993) on the public open space and infrastructure within Centenary Park. The holiday units on Riverside Avenue upstream of Star Road were subject to deep, high velocity flooding in 1993. The lower parts of the Bright Riverside Holiday Park to the north of the Ovens River, are subject to flooding in events approaching the magnitude of the October 1993 flood.

Between Star Road and Canyon Lane flood extents are generally less than 100 m in width but impacting on the rear of properties on Showers Avenue and Gavan Street with at least one house in this area subject to above floor flooding in 1993.

Downstream of Canyon Lane, there is a substantial increase in floodplain width with a broad, undeveloped area south of the Ovens River subject to deep flooding.

Bakers Gully Creek

Bakers Gully is a south bank tributary of the Ovens River, with an 800 ha (8 km2) catchment directly south of Bright. Flooding from Bakers Gully Creek in the 1993 event caused breakaway flows to discharge down Cobden Street, Ireland Street, Wills Street, and Camp Street toward Morses Creek. These breakout flows resulted in shallow but high velocity flooding through much of the commercial area, but sandbagging prevented major damage to commercial properties. Bakers Gully Road was cut where the creek crosses the road (near Sommer Avenue).

The 1995 Hydro Technology report indicates that two culverts in particular (Bakers Gully Road and Wood Street are directly referenced) caused flooding problems. This was in part due to the significant quantities of sediment / gravel exported from the catchment which are reported to have choked the culverts, severely limiting their discharge capacity. The Railway Avenue culvert would however appear to have been the most significant factor in initiating breakaway flows into Cobden Street. The degree of sediment blockage at the Railway Avenue culvert in the 1993 flood is uncertain with varying reports giving conflicting accounts.

In addition to limited discharge capacity, Bakers Gully Creek is characterised by the presence of urban development extending in some locations to the edge of the waterway (e.g. semi impervious fences constructed to the edge of the creek, shedding similarly constructed very close to the creek, and housing located on the adjoining overbank areas). This has continued to occur in recent years (e.g. upstream of Railway Avenue on the east side of the creek). This type of development causes obstruction of floodwaters, which can initiate breakaway flows. It also increases the risk of flooding of houses and other buildings.

Stackey Gully

Stackey Gully has a catchment area of approximately 335 ha (3.3 km2) in a steep forested catchment south of Bright. Within Bright the waterway and culverts has limited capacity, particularly over the 300 m reach between Walnut Grove and the Great Alpine Road / Gavan Street. In 1993 this resulted in breakout flows to the east of Stackey Gully and inundation of properties to the south of the Great Alpine Road between Stackey Gully Road and Walkers Lane.

Morses Creek

Morses Creek in the Wandiligong Valley has a catchment of approximately 130 km2 above Bright. Within the Bright township area (downstream of Coronation Avenue / Morses Creek Road) flood impacts for events up to 1% AEP are confined to public land along Morses Creek frontage with no identified impacts other than flooding of the State Battery site (Morses Creek Road) and some of the lower sites at the NRMA Bright Holiday Park off Cherry Lane) (commencing at 20% AEP with impact on camping sites to the south of Morses Creek) and flooding of the park area (Coronation Park) adjacent the Ovens River confluence.

For events up to 0.2% AEP the extent of flooding within the Holiday Park increases and the Bright Motor Inn and adjacent units on Mountbatten Avenue are subject to flooding from the combined effect of Morses Creek and the Ovens River

The stream flow gauge on Morses Creek (established in 1972) was washed away by floodwaters during the 1993 flood. The 1993 flood is by far the largest flood experienced on Morses Creek in the past 50 years and may possibly have been equivalent to a 1% AEP event (Earth Tech, 2004).

Major damage to upstream road approaches and bridges on Morses Creek, upstream of Bright, occurred during the 1993 flood. A significant quantity of debris and sediment was deposited in the lower reaches of the creek.

Overview of Flooding Consequences

Parameter	Flood Class Level			
	Minor	Moderate	Major	Total
Roads Impacted by water			11 and Bright CBD	11 Plus
Caravan Parks Impacted by floodwater			3	3

Flood Intelligence Card – Ovens River at Bright

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
PLEASE NOTE: Impacts in this intelligence card are aligned with Ovens River Gauge Heights. Majority of impacts in Bright occur from overflowing of the Bakers Gully & Stackey Gully Creeks and must be observed during significant rain events						
Ovens River at Bright	**3.0**	4,480	**Minor Flood Level**		BOM will issue and VICSES to publish Minor flood warning to community with tailored information from this plan. Advice level warning at this level should be appropriate, but consideration needs to be given to forecasts, potential impacts and local changes. VICSES to Consider the use of Snap, Send, Solve Flood observers for Intelligence gathering at all flood levels.	Ovens Catchment Flood Study 2012
	3.6	7,020	**Moderate Flood Level**		VICSES to consider Base IMT rostered/standby or Base IMT in place depending on forecast. BOM will issue and VICSES to publish Moderate flood warning to community.	Ovens Catchment Flood Study 2012
	3.7			**Porepunkah** • Flooding around lower part of playground (shade sail area) at Porepunkah riverside park. Entire park (up to around level of the toilet block) flooded at 5% AEP @ Bright 5.91m • Porepunkah Bridge Caravan Park not flooded but impact is imminent	Recon of the Porepunkah Bridge Caravan Park and pre-warning to park manager. Sandbag store located at Bright SES Unit	October 2016 ground photos (NECMA)
	4.2			**Bright** • Flooding into southern floodplain between Canyon Lane and Fraser Lane, impacting shed at rear of 23 Gavan Street	Recon to the listed properties.	October 2016 ground photos (NECMA)

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Bright	**4.2**			• Ovens River near bank full from Morses Creek to Star Road but no impact on Centenary Park downstream of Morses Creek. • Flooding over footpaths, seats, diving board etc at Morses Creek confluence (upstream of Ovens River weir footbridge). No access to Morses Creek footbridge. Potential shallow flooding of carpark near Sound Shell. • Flooding of lowest camping sites at Bright Riverside Holiday Park (bench below cabins) **Downstream of Bright** • Flooding of riparian forest and golf course downstream of Ashwood Avenue - no impact on other assets. **Porepunkah** • Flooding of most of Porepunkah riverside area, shallow flooding over road.	VICSES to add to Moderate Flood warning impacts at this level Alpine Shire to close Centenary Park, carpark near sound shell in Bright and Porepunkah riverside area Evacuation of lowest camping sites at Bright Riverside Holiday Park to commence. VICSES to reconnaissance impacted areas	October 2016 ground photos (NECMA)
	4.3	10,400	**Major Flood Level**		BOM will issue and VICSES to publish Major flood warning to community	Ovens Catchment Flood Study 2012
	4.41	10,800	**20% AEP**	**Upstream of Bright** • Flooding of pine plantations and forest from Tawonga Gap Road to Larias Lane and Tyntynder Lane to Hawthorn Lane. No impact on assets/infrastructure up to 0.5% AEP (Bright gauge 6.8m) **Bright** • Likely flooding into lower parts of site at 4 Star Road, Bright (holiday units)	Refer to 20% Flood Inundation map in Appendix F. VICSES to add to Major Flood warning impacts at this level	Upper Ovens Regional Flood Mapping Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Bright	**4.41**	10,800	**20% AEP**	• Flooding into camping sites and camp kitchen on south side of Morses Creek - Bright Caravan Park (Morses Creek @ Wandiligong gauge 2.04m). Impact on caravan park increases for larger floods but limited Morses Creek impacts in Bright up to 1% AEP level (impacts to Mountain Bike Park, State Battery etc). • Breakouts from the Ovens River onto the open land behind the Bright Sports Centre and into Centenary Park • Breakouts from the Ovens River enters the Bright Memorial Gardens **Porepunkah** • Backwater flooding (Ovens River) through lower sites of Mount Buffalo Caravan Park (Harrison Lane). Flooding may increase rapidly above this level with high hazard conditions. • Porepunkah Bridge Caravan Park shallow breakout flows through central part of site. **Eurobin** • Flooding into plantation at Cavedons Lane, Eurobin • Flooding over Eurobin Creek Track, Eurobin • Extensive flooding into floodplain pockets opposite Westons Ln and upstream of Wobonga Ln, Eurobin.	Alpine Shire to close Centenary park/Car parks Alpine Shire/RRV to determine appropriate road closures for Bright township from this level	Upper Ovens Regional Flood Mapping Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Bright	**4.41**	10,800	**20% AEP**	**Bakers Gully & Stackey Gully Creeks – Bright** *High rainfall associated with this size flood event may see the following impacts:* • Water overflows most roads in Bright CBD and surrounds bordering the Ovens River, Morses Creek and Bakers Gully Creek. (this flooding is caused by flows from Bakers Gully and is not represented by the Bright gauge levels). • Agricultural and adjacent to Stackey Gully inundated to the west **Water over Road** • Stackey Gully Road • Bakers Gully Road • Great Alpine Road from Stackey Gully, Bright	Alpine Shire/RRV to commence closure of roads identified	Upper Ovens Regional Flood Mapping Report 2018
	5.04	14,300	**10% AEP**	**Bright** • Impact around 33 Gavan St (elevated dwelling) and 1 Canyon Lane (flood prone) **Porepunkah** • Riverview Caravan Park - onset of flooding from Buckland River • flooding throughout Porepunkah Bridge Caravan Park - hazard conditions increase rapidly above this level. **Properties at Risk** • 1 Canyon Lane • Porepunkah Bridge Caravan Park • Riverview Caravan Park, Porepunkah	Refer to 10% Flood Inundation map in Appendix F. VICSES to add to Major Flood warning impacts at this level IC & VICPOL Evacuation Manager to consider Evacuation and relief for properties identified. VICSES to visit impacted properties and assess impact.	Upper Ovens Regional Flood Mapping Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Bright	**5.04**	14,300	**10% AEP**	**Bakers Gully & Stackey Gully Creeks – Bright** *High rainfall associated with this size flood event may see the following impacts:* • Minor breakouts from Bakers Gully through Bright impacting central Bright north of Cobden St • Residential and commercial properties impacted between Burke St and Woolshed Trk • Breakouts east of Stackey Gully Rd to the end of Alexandra Crt, impacting residential and commercial properties **Water over Road** • Gavan Street (GAR) – In Bright • Ireland Street, • Mill Road, • Burke Street, • Wills Street, • Wood Street.	Alpine Shire/RRV to commence closure of roads identified	Upper Ovens Regional Flood Mapping Report 2018
	5.45	16,700		• September 1998 flood Peak height		
	5.91	19,600	**5% AEP**	**Bright** • Flooding to rear of properties on GAR between Tyntynder Ave and Mountbatten Ave but no known impact on buildings. • Flooding of cabins in Bright Riverside Caravan Park and flooding of the entire site at 4 Star Road (units) • Flooding over Frasers Lane (Ovens River) resulting in isolation of property at 16 Frasers Lane • Impacts to dwellings and sheds along Gavan Street between Bakers Gully and Walkers Lane	VICSES to add to Major Flood warning impacts at this level. VICSES to visit impacted properties.	Upper Ovens Regional Flood Mapping Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Bright	**5.91**	19,600	**5% AEP**	**Bakers Gully & Stackey Gully Creeks – Bright** *High rainfall associated with this size flood event may see the following impacts:* • Flows west along Railway Avenue from Bakers Gully Creek impacting residential properties between Railway Avenue and Gavan Street. • Further inundation of streets in central Bright and Howitt Park • Majority of streets and roads along Ovens River at Bright inundated **Properties at Risk** • Kilfinan Cr, • Mill Road, • Bakers Gully Rd, • Wood St, • Station St, • Gavan St (GAR) • Canyon Ln	Alpine Shire to close Howitt Park IC & VICPOL Evacuation Manager to consider Evacuation of properties identified Alpine Shire/RRV to commence closure of roads identified. VICSES to visit impacted properties	Upper Ovens Regional Flood Mapping Report 2018
	6.1	25,000		• Approx level only due to subsequent gauge changes (original record 5.41). Ovens River impacts around Canyon Lane, Star Road. Concurrent flooding from Bakers Gully impacting CBD and Stackey Gully breakouts. 2 caravan parks in Bright reported flooded. (Morses Creek and Bright Riverside). Porepunkah Bridge Caravan Park amenities blocks flooded above floor level		1993 flood report (Hydro Technology, 1995)
	6.77	25,700	**2% AEP**	**Bright** • Commencement of impact to dwellings along south side of Showers Avenue	VICSES to add to Major Flood warning impacts at this level	

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Bright	**6.77**	25,700	**2% AEP**	• Impact on North East Water pump offtake (Hawthorn Lane). **Porepunkah** • First known impact on residential properties from Ovens River - 28 Nicholson Street and 38 Service Street. **Bakers Gully & Stackey Gully Creeks – Bright** *High rainfall associated with this size flood event may see the following impacts:* • Inundation of properties between Gavan Street and Riverside Avenue • Flood waters impacting the Sports Centre on Gavan Street and the properties adjacent (to the east and west)		Upper Ovens Regional Flood Mapping Report 2018
	7.38	30,600	**1% AEP**	**Upstream of Bright** • flooding near perimeter of buildings at 330 and 336 Back Germantown Road (dwelling sites impacted at 0.5% AEP) • flooding over Old Harrietville Road just north (downstream) of bridge at Germantown • flooding over Back Germantown Road north (downstream) of Harpers Lane **Bright** • Inundation begins at the Big4 Bright Caravan Park from additional breakouts of Morses Creek and the Ovens River • Further inundation north of the Ovens River along Showers Avenue and south of Toorak Road at The Bright Riverside Holiday Park	Refer to 1% Flood Inundation map in Appendix F. VICSES to add to Major Flood warning impacts at this level IC & VICPOL Evacuation Manager to consider Evacuation of properties identified. VICSES to visit impacted properties.	Upper Ovens Regional Flood Mapping Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Bright	**7.38**	30,600	**1% AEP**	**Downstream of Bright** • extensive flooding of Bright Golf Course. Imminent impact around clubrooms. **Porepunkah** • imminent impact on dwellings between GAR and Ovens River around and downstream of Mill Bend Road **Bakers Gully & Stackey Gully Creeks – Bright** *High rainfall associated with this size flood event may see the following impacts:* **Properties at Risk** • Canyon Lane • 33-65 Gavan St (GAR) • Star Road • Big4 Bright Caravan Park • Bright Riverside Holiday Park • Lowen Drive	IC & VICPOL Evacuation Manager to consider Evacuation of properties identified	Upper Ovens Regional Flood Mapping Report 2018
	9.44	61,000	**0.5% AEP**	**Bright** • flooding over Back Germantown Road approximately 1 km east of Star Road. • flooding impacts residential properties at Kinchella Court (Ovens River). Potential impacts in this area from Stackey Gully Creek **Porepunkah** • breakout flows from Ovens River through main urban part of Porepunkah - mostly shallow flooding.	VICSES to add to Major Flood warning impacts at this level IC & VICPOL Evacuation Manager to consider Evacuation of properties identified	Upper Ovens Regional Flood Mapping Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Bright	**9.44**	61,000	**0.5% AEP**	**Bakers Gully & Stackey Gully Creeks – Bright** *High rainfall associated with this size flood event may see the following impacts:* • Breakouts impacting commercial properties along Mountbatten Avenue • Flows impacting properties along Camp Street and north of Gavan Street at the confluence of Morses Creek and the Ovens River • Inundation of most properties along Gavan Street between Canyon Lane and Star Road • Flood waters approaching Back Porepunkah Road north of the Ovens River • Breakouts from Stackey Gully and the Ovens River impacting properties along Frasers Lane and parcels south on Gavan Street, across from the Sports Centre • Flood waters impacting residential properties South of the Ovens River, east and west of Mill Bend Road and north of the Great Alpine Road. **Properties at Risk** • Bright Motor Inn (Mountbatten Av) • Centenary Peaks Accommodation (Mountbatten Av) • Camp Street • Frasers Lane • Gavan Street (GAR) • Bright Sports Centre • Mill Bend Rd **Water over Road** • Gavan St Bridge over Morses Creek • Showers Av & Back Germantown Road	Alpine Shire/RRV to commence closure of roads identified	Upper Ovens Regional Flood Mapping Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Bright	**10.03**	73,500	**0.2% AEP**	**Bakers Gully & Stackey Gully Creeks – Bright** *High rainfall associated with this size flood event may see the following impacts:* • Breakout from the Ovens River impacting residential properties in Bright, off the Great Alpine Road, near Ashwood Avenue. • Gavan St Bridge over Morses Creek at Bright overtopped. • Showers Avenue at Bright inundated. • Back Germantown Road inundated along Ovens north east of Bright. • Increased inundation of Bright Country Golf Club.	VICSES to add to Major Flood warning impacts at this level Alpine Shire/RRV to commence closure of roads identified	Upper Ovens Regional Flood Mapping Report 2018
	13.80	381,000	**PMF**	**Bakers Gully & Stackey Gully Creeks – Bright** *High rainfall associated with this size flood event may see the following impacts:* • Central Bright inundated north of Cobden Street. Flood impacts from Morses Creek, Bakers Gully and Ovens River • Breakouts from Stackey gully and Ovens River impacting residential properties and undeveloped land between Porcellatos Lane and Back Porepunkah Road • Murray to the Mountains Rail Trail Bridge over Ovens overtopped, east of Bright • Hawthorn Land Bridge over Ovens at Bright overtopped. • Widespread inundation of streets and roads at Bright between Back Porepunkah Rd/Toorak Road and Cobden Street	VICSES to add to Major Flood warning impacts at this level Alpine Shire to close rail trail and other park trails and paths earlier?	Upper Ovens Regional Flood Mapping Report 2018

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.

Flood Intelligence Card – Morses Creek at Wandiligong

Gauge Location: Morses Creek at Wandiligong

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Morses Creek at Wandiligong			**No Flood Class Levels at this Gauge**	Gauge reading not available on BOM website but is available through FloodZoom		
	2.04	3,890	**20% AEP**	• Shallow flooding over Morses Creek Road north of Taylors Bridge (south of Wandiligong) • Flooding throughout the Diggings Reserve area in Porepunkah • Shallow flooding in proximity to dwelling at 130 Star Road, Wandiligong • Onset of flooding (Morses Creek) into NRMA Bright Holiday Park - around the camp kitchen south of Morses Creek and lowest sites on Oriental Track. Impact on caravan park increases for larger floods but limited Morses Creek impacts in Bright up to 1% AEP level (impacts to Mountain Bike Park, State Battery etc). • Flooding throughout Splash Park and adjacent park area at Morses Creek / Ovens River confluence • Flooding over Morses Creek Road north of Taylors Bridge and around dwellings at 675-695 Morses Creek Road, Wandiligong **Water over Road** • Morses Creek Road north of Taylors Bridge	Alpine Shire to close Morses Creek Rd north of Taylors Bridge Alpine Shire to close Splash Park, Centenary Park, Mountain Bike Park, State Battery etc) As there are no set FCL for this gauge, VICSES to consider issuing Minor Level Ungauged Flood warning templates with confirmed impacts at this level IMT required to consider the consequences of closing Morses Creek Rd and access to Wandiligong community VICSES to recon listed properties	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Morses Creek at Wandiligong	**2.2**			• September 2010 & October 2016 Flood Peak Height		NECMA
	2.29	4,840	**10% AEP**	• Further increase in flood extent within NRMA Bright Holiday Park - principally south of Morses Creek • Limited additional flood extent / impact but flooding around 130 White Star Road, Wandiligong	As there are no set FCL for this gauge, VICSES NEDO/IWO to consider issuing Minor Level Ungauged Flood warning templates with confirmed impacts at this level	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018
	2.76	6,570	**5% AEP**	• Flooding around a number of houses downstream of Inces Ln, Wandilgong • Some inundation along Morses Creek Road South of Wandiligong near Mills Bridge	Alpine Shire to determine further closure of Morses Creek Rd	
	3,02			• September 1998 Flood Peak Height		NECMA
	3.46	8,810	**2% AEP**	• Breakout from Morses Creek cuts access and impacts around dwellings on White Star Road, Wandiligong • Flooding around State Battery Historic site, Coronation Ave, Bright **Water over Road** • Martins Bridge at Morses Creek Road is overtopped	As there are no set FCL for this gauge, VICSES NEDO/IWO to consider issuing Moderate to Major Level Ungauged Flood warning templates with confirmed impacts at this level VICSES to consider deploying Snap Send Solve Flood observers or local crews to determine river heights on Morses Creek and impacts on White Star Road Alpine Shire to close Morses Creek Rd	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018
	3.86	10,800	**1% AEP**	• Inundation at the rear of properties along Morses Creek in Wandiligong and into Alpine Park sports ground	As there are no set FCL for this gauge, VICSES to consider issuing Minor Level Ungauged Flood warning templates with confirmed impacts at this level	

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Morses Creek at Wandiligong	**4.57**	18,900	**0.5% AEP**	• Flooding over Centenary Ave at Stephens Bridge and White Star Road, Wandiligong • Flooding over Coronation Ave, Bright **Water over Road** • Martins Bridge at Morses Creek Road is overtopped Morses Creek Rd bridge over Morses Creek south east of Bright overtopped • Smithy Lane Bridge over Morses Creek at Wandiligong overtopped • Centenary Ave at Stephens Bridge • White Star Road, Wandiligong • Coronation Ave, Bright	As there are no set FCL for this gauge, VICSES NEDO/IWO to consider issuing Moderate (prepare to evacuate) to Major (evacuate now) Level Ungauged Flood warning templates with confirmed impacts at this level. These templates include evacuation advice where required. Alpine Shire to close Roads identified	Upper Ovens Regional Flood Mapping - Flood Behaviour Report 2018
	4.81	22,600	**0.2% AEP**	• As above		
	7.30	108,000	**PMF**	• Multiple sections of Morses Creek Road inundated south of Bright		
	No Record			• Largest event on record but no peak recorded as gauge washed away. Resulted in damage to multiple bridges between Wandiligong and Bright. Very limited impact from Morses Creek in Bright due to entrenched waterway. Some flooding of Caravan Park and sediment deposition at Ovens River confluence.		NECMA

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 C4: Porepunkah & Buckland Flood Emergency Plan

Porepunkah

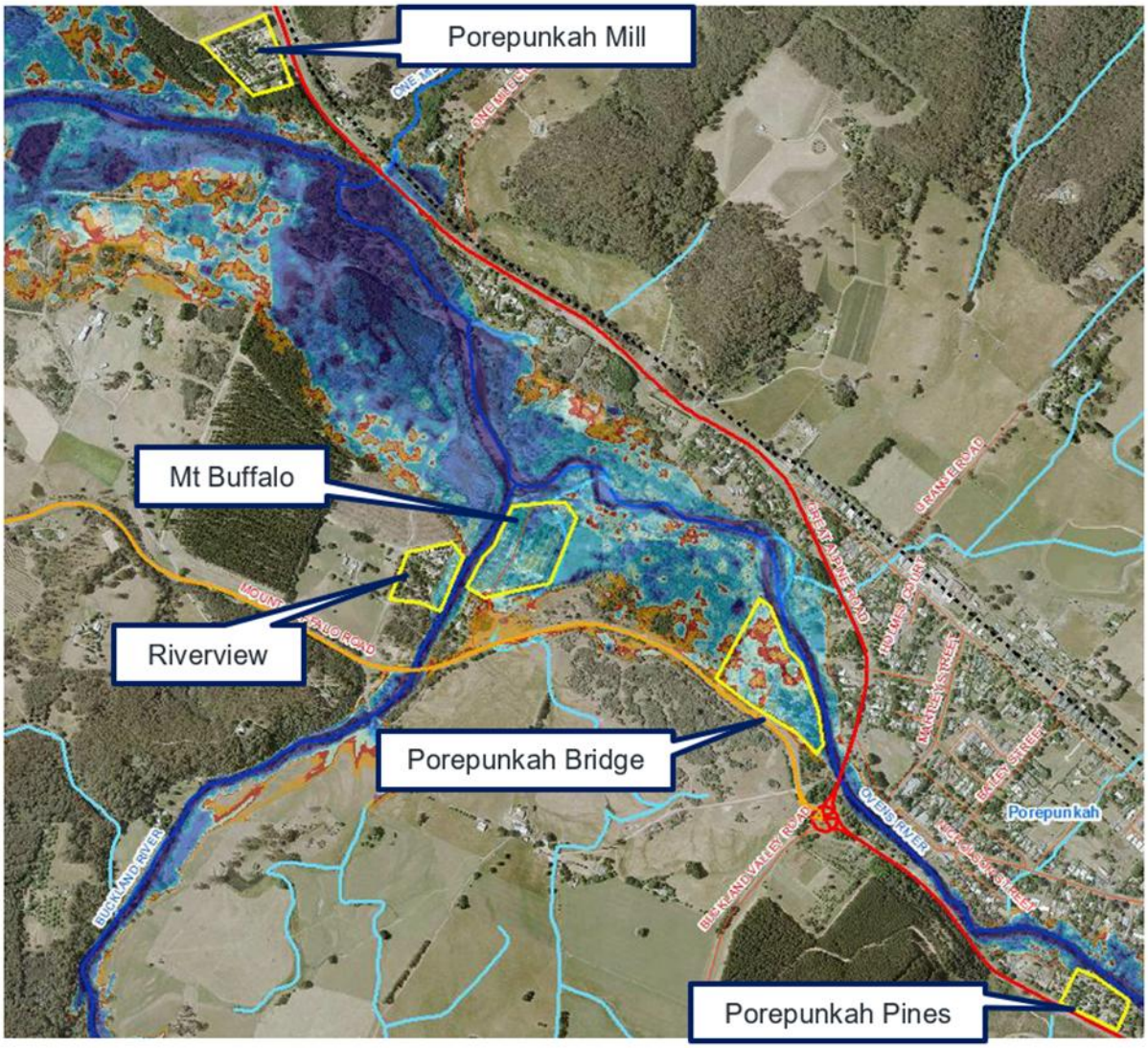
Porepunkah is located adjacent to the Ovens River, 24 km south-east of Myrtleford a short distance upstream of the Buckland River confluence. The Great Alpine Road between Myrtleford and Bright can be cut by floodwater over the road at Eurobin and thus Porepunkah can be subject to isolation from Myrtleford (although an emergency bypass has now been constructed at Eurobin).

The main residential and commercial area of Porepunkah is located on the north bank of the Ovens River, with a smaller residential / commercial area on the south bank between the Great Alpine Road and the Ovens River. These developments are located on land predominantly above the Ovens River 1% AEP flood level with only limited impact around dwellings (Nicholson St / Service St / Great Alpine Road). In larger events (0.5% AEP) significant inundation through the central part of Porepunkah occurs impacting a large part of the residential area. Caravan parks adjacent Porepunkah are significantly flood prone (Ovens River and Buckland River) as outlined in following sections.

Flood impacts for the Porepunkah township and caravan parks on the Ovens River are described based on the Ovens River @ Bright stream gauge. Parts of the Porepunkah township on the north side of the Ovens River are subject to shallow flooding impacts from tributaries draining from the hillslopes to the north (as occurred in 1993). This tributary flooding impacts on land to the north-east of Station Street and along drainage lines around Wood Street, McCullogh Street and Martley Street. The other flood exposure in proximity to Porepunkah is on Wallace Drive adjacent the Buckland River approximately 4 km south-west of Porepunkah. This is a residential area with 24 dwellings with flooding commencing at approximately 20% AEP. Further detail is provided below.

Flood impacts for the Wallace Drive area and caravan parks adjacent the Buckland River are described based on the Buckland River @ Harris Lane gauge.

Caravan Parks adjacent Porepunkah (approximate site boundaries, relative to 1% AEP flood extent)



Porepunkah Bridge Holiday Park

Porepunkah Pines Holiday Park adjacent the Great Alpine Road south-east of Mount Buffalo Road roundabout has limited flood exposure to the Ovens River. Lower parts of the site may flood around 5% AEP however approximately half of the site remains above 0.2% AEP level.

The Porepunkah Bridge Holiday Park is located on the south side of the Ovens River downstream of the Great Alpine Road Bridge crossing. The Holiday Park is located on leased Crown Land and privately operated. Flooding into the park commences at approximately 20% AEP with extensive (shallow) flooding at 10% AEP and deep flooding throughout the park at 2% AEP.

The majority of the Holiday Park was subject to severe flooding in the October 1993 flood. Major damage to Park facilities / infrastructure was incurred as a result of the 1993 flood.

Flooding at the Park in September 1998 was of a relatively minor nature as described by the lease owner at the time. The majority of the Park remained above the floodwaters.. A low level levee adjacent to the top of the south side riverbank within the upstream section of the holiday park was established in the aftermath of the 1993 flood. This levee bank is reported by the then lease owner to have assisted in limiting floodwater encroaching into the park during the 1998 flood, with only minor overtopping of this levee reported to have occurred.

Mount Buffalo Caravan Park

The Mount Buffalo Caravan Park is located at the southeast corner of the junction of the Ovens and Buckland Rivers. The Mount Buffalo Caravan Park was subject to major flooding in both the 1993 and 1998 floods. These floods have been assessed as follows:

- October 1993 flood – Ovens River flooding equivalent to 2% AEP, Buckland River flooding equivalent to 2% AEP.
- September 1998 flood - Ovens River flooding equivalent to 5-10% AEP, Buckland River flooding equivalent to 5% AEP.

The entire Park infrastructure including the Park office area was inundated during both the 1993 and 1998 floods.

Site inspections of the current park layout have identified the following:

- The lower most areas adjacent to the Buckland and Ovens River channels are not occupied by fixed or semi fixed structures.
- Some of the more recent structure development within the Park is raised above ground level for flood protection purposes (e.g. house size dwelling located in the north east corner of the Park).
- Eastern boundary of the Park is aligned with a low level levee (height generally around 0.5 metre) constructed adjacent to a wetland and drainage channel / depression.

The 1993 flood level is reported to have lapped the floor level of the Park office. The 1998 flood level was approximately 0.1 metres lower. The Park floods prior to flooding occurring on the adjacent Riverview Caravan Park located on the opposite side of the Buckland River.

Riverview Caravan Park

The Riverview Caravan Park is located on the west side of the Buckland River, approximately 200 metres upstream of the confluence of the Ovens River. The lower sections of the park were subject to flooding in 1993 and 1998.

The Riverview Caravan Park has a reduced flood risk in comparison to the adjoining Mount Buffalo Caravan Park on the opposite side of the Buckland River. The 1998 flood was equivalent to around a 3% AEP event. Given the limited amount of flood damage caused by this event, the average annual flood damages for this caravan park will be relatively low. The threshold for flooding is likely to be in the vicinity of a 5 % AEP event.

Buckland River System

Wallace Drive

The Wallace Drive residential area is located adjacent the Buckland River, approximately 4 kilometres south of Porepunkah. The catchment of the Buckland River upstream of Wallace Drive is 435 km^2 draining the northern slopes of the Victorian Alps. Upstream of Wallace Drive the catchment is largely forested with little development. Significant numbers of “free” Campers are also known to frequent the nearby property just west of the Buckland River/Harris Lane Bridge.

The access bridge (Harris Lane Bridge) leads to 24 existing dwellings (including 3 on Harris Lane) and a number of vacant allotments within the subdivision. The Wallace Drive area has been subject to both isolation and severe flooding in October 1993 (approx. 45 year ARI), September 1998 (approx. 35 year ARI) and September 2010 (approx.. 17 year ARI). Available modelling indicates that 16 of the 19 houses in Wallace Drive are subject to above floor flooding in the 100 year ARI event, with the most

flood prone dwellings (1, 12 and 23 Wallace Drive) subject to flooding in events > approximate 5 year ARI.

Flooding occurs through overtopping of Harris Lane near the intersection of Harris Lane and also through overtopping of the river bank downstream of the Harris Lane Bridge. The onset of breakout flows is at approximate Harris Lane gauge level 4.0 m. The depth and velocity of floodwaters through Wallace Drive is such that wading access is not feasible and vehicular or boat access may not be safe.

The stream gauge at Upper Buckland (12 Mile) provides limited warning time for flooding at Wallace Drive, with flood peak levels at the Harris Lane Drive often coinciding with the peak at Upper Buckland. This likely results from local runoff from immediate runoff from the adjacent steep slopes of Mt Buffalo arriving at Harris Lane prior to floodwaters from the upper catchment. In the event of an upper catchment flood (with limited rain over Mt Buffalo) the Upper Buckland gauge may provide approximately 2 hours warning for Harris Lane.

Overview of Flooding Consequences

Parameter	Flood Class Level			
	Minor	Moderate	Major	Total
Roads Impacted by water	4	1	8	13
Caravan Parks Impacted by floodwater	1	2		3

Flooding in Porepunkah Caravan Park 4thOctober 1993 (Hydrotechnology 1995)

Flood Mitigation

There are no structural flood mitigation measures in the Porepunkah area.

Flood Intelligence Card – Buckland River at Upper Buckland

Gauge Location: Buckland River at Upper Buckland

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Buckland River at Upper Buckland			**No Flood Class Levels at this Gauge**	The stream gauge at Upper Buckland (12 Mile) provides limited warning time for flooding at Wallace Drive, with flood peak levels at the Harris Lane Drive often coinciding with the peak at Upper Buckland. This likely results from local runoff from immediate runoff from the adjacent steep slopes of Mt Buffalo arriving at Harris Lane prior to floodwaters from the upper catchment. In the event of an upper catchment flood (with limited rain over Mt Buffalo) the Upper Buckland gauge may provide approximately 2 hours warning for Harris Lane.	As there are no set FCL for this gauge location, VICSES to consider issuing Minor to Major Level Ungauged Flood warning templates with confirmed impacts at this location	
	2.9			• Dec-10		NECMA
	3.22			• Jul-16		
	3.39			• September 2010 Flood Peak Height Resulted in flooding at Wallace Drive (4.17m at Harris Lane). Note there is poor correlation of gauge peaks at Upper Buckland and Harris Lane.	Information only	
	3.72			• February 2003 Flood Peak Height • Post-fire debris flow event. Only 1.9m at Harris Ln, no impacts	Information only	
	4.6			• October 2016 Flood Peak Height • Recorded peak was around 4.9 but this appears to be erroneous data. 4.6 is more representative of actual peak conditions. No known impacts at Wallace Drive (3.58m peak at Harris Ln)	Information only	

Flood Intelligence Card – Buckland River at Harris Lane

Gauge Location: Buckland River at Harris Lane

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Buckland River at Harris Lane	**2.8**	7,200	**Minor Flood Level**		BOM will issue and VICSES publish Minor flood warning to community with tailored information from this plan. The VICSES Hume 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	
	3.5	11,005	**Moderate Flood Level**		BOM will issue and VICSES to publish Moderate flood warning to community	
	3.58	11,320		• River bank full immediately downstream of bridge, just avoids impact on gardens etc, no flooding to any land around dwellings. • Some overland flows along Harris Lane from local catchment		NECMA
	3.74			• December 2010 Flood Peak Height. Reported impacts to properties on Wallace Drive in the event.		NECMA
	3.82	10,300	**20% AEP**	• Shallow breakouts near the confluence of Ovens River and Buckland River inundating residential land south of the Ovens River between Mount Buffalo Road and the Great Alpine Road • Inundation north of the Ovens River along Telford Lane • Flood water begins to overtop Harrisons Lane and enters the Mt Buffalo Caravan Park (east of Buckland River)	VICSES to add to Moderate Flood warning impacts at this level. VICSES RDO/IMT to contact and warn the Mount Buffalo Caravan Park and inform them to enact their Emergency plan.	Upper Ovens Regional Flood Mapping -Flood Behaviour Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Buckland River at Harris Lane	**3.82**	10,300	**20% AEP**	• Several breakouts along the Buckland River with impact to residences along Wallace Drive • Flooding across Wobonga Lane due to breakouts from the Ovens River at Eurobin impacting rural land **Properties at Risk (Above Floor)** • Wallace Drive, Buckland (Threshold for flooding into Wallace Drive subdivision). **Water over Road** • Harrisons Lane, Porepunkah • Harris Lane, Buckland • Wallace Drive, Buckland • Wabonga Lane, Eurobin	VICSES to consider deployment of Snap Send Solve Flood Observers to check flood levels at Wallace Drive, Buckland Alpine Shire/RRV to commence closure of roads identified VICSES to doorknock listed at risk properties. Sandbag store located at Myrtleford and Bright SES unit	Upper Ovens Regional Flood Mapping -Flood Behaviour Report 2018 NECMA
	4.17			• September 2010 flood peak height • Deep flooding along length of Wallace Drive		NECMA
	4.19	13,000	**10% AEP**	• Modelled threshold for flooding into Riverview Caravan Park (west of Buckland River). • This threshold lower than 4.7m threshold previously adopted in original FIC and may be conservative. Extent increase significantly at 5% AEP. • Original threshold on Ovens FIC for flooding to cross Harris Lane / Wallace Dr intersection &/or enter rear of lots from river bank. • Small breakout from the north bank of the Ovens River along the eastern section of the Porepunkah River Walk. • Breakout from the Buckland River along Mount Buffalo Road	VICSES to add to Moderate Flood warning impacts at this level	NECMA Upper Ovens Regional Flood Mapping -Flood Behaviour Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Buckland River at Harris Lane	**4.19**	13,000	**10% AEP**	• Small breakout from the north bank of the Ovens River along the eastern section of the Porepunkah River Walk. • Breakout from the Buckland River along Mount Buffalo Road • Increased depths through Harris Lane • Breakouts of the Ovens River at Eurobin, impacting residential properties along Wobonga Lane **Properties at Risk** • Wallace Drive • Porepunkah Bridge Caravan Park • Mt Buffalo Caravan Park	Alpine Shire/RRV to determine if road closures are required on Mt Buffalo Road VICSES to deploy crew or Snap Send Solve Flood Observers determine impacts VICSES to doorknock listed at risk properties.	Upper Ovens Regional Flood Mapping -Flood Behaviour Report 2018
	4.2		**Major Flood Level**		BOM will issue and VICSES to publish Major flood warning to community	
	4.72	16,900	**5% AEP**	• Minor breakouts to the south of Ovens River across from the Porepunkah River Walk impacting undeveloped land • Breakout across the Great Alpine Road at One Mile Creek Road • Impacts to residential properties along Harris Lane • Deep flooding throughout Wallace Drive area • Breakout from the Buckland River upstream of McCormacks Road • Major breakouts from the Ovens River under the rail trail and across the Great Alpine Road downstream of Eurobin.	VICSES to add to Major Flood warning impacts at this level VICSES to deploy crew or Snap Send Solve Flood Observers determine further impacts at Harris Lane and Wallace Drive and Wabonga Drive IC & VICPOL Evacuation Manager to consider Evacuation of properties identified VICSES to doorknock listed at risk properties.	Upper Ovens Regional Flood Mapping -Flood Behaviour Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Buckland River at Harris Lane	**4.72**	16,900	**5% AEP**	• Impact to residential properties between the Great Alpine Road and Wobonga Lane **Water over Road** • Mount Buffalo Road at bridge over Buckland River • Deans Lane	RRV to determine if road closure required on GAR at One Mile Rd and at Eurobin	
	4.87	24,421		• Overtopping of Harris Lane to east of bridge resulting in flows through Wallace Drive and multiple above floor flooded	VICSES to add to Major Flood warning impacts at this level	NECMA 1993 impacts
	5.48	25,000	**2% AEP**	• All land parcels on Harris Lane and Wallace Drive are inundated • Increased breakouts north of the Great Alpine Road impacting residential properties and rural land north and south of the Great Alpine Road, downstream of Eurobin • Flooding to Punky Rocks sand and gravel pit downstream of Wallace Drive • Flooding over Mt Buffalo Road at Buckland River (east of bridge crossing) **Water over Road** • Harris Lane Bridge over the Buckland River • Great Alpine Road at Porepunkah • Mount Buffalo Road at bridge over Buckland River	VICSES to add to Major Flood warning impacts at this level VICSES to consider deployment of a crew or Snap Send Solve Flood Observers to determine impacts at Harris Lane and GAR at Eurobin RRV to close Harris Road and GAR at Porepunkah	Upper Ovens Regional Flood Mapping -Flood Behaviour Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Buckland River at Harris Lane	**5.78**	30,300	**1% AEP**	• Flood water enters Properties from the Ovens River between the Great Alpine Road and McCullough Street, south of Francis Street • Breakouts along Junction Road at the confluence of Buckland River and Ovens River • Breakouts across rural properties between Cavedons Lane and Dawsons Lane upstream of Eurobin • Further breakouts at the confluence of Buckland River and Ovens River impacting plantations • Intersection of Great Alpine Road and Buckland Valley Road at Porepunkah inundated. • Modelling indicates that 16 of the 19 houses in Wallace Drive are subject to above floor flooding in the 100 year ARI event **Water over Road** • Great Alpine Road at Hoppers Crossing Bridge Porepunkah Junction Road	Refer to 1% Flood Inundation Map for Wallace Drive in Appendix F. VICSES to add to Major Flood warning impacts at this level RRV/Alpine Shire/HVP to close Junction Road RRV/ to close GAR at Porepunkah	Upper Ovens Regional Flood Mapping -Flood Behaviour Report 2018
	6.33	45,400	**0.5% AEP**			
	6.57	54,800	**0.2% AEP**	• Intersection of Great Alpine Road and Buckland Valley Road at Porepunkah inundated. • Harrison Lane and Mt Buffalo Rd near confluence of Buckland and Ovens Rivers inundated. • Wallace Drive and Harris Lane inundated along Buckland River. • Breakout from the Ovens River impacting residential properties in Eurobin, located on the Great Alpine Road, upstream of Flemings Lane	VICSES to add to Major Flood warning impacts at this level	Upper Ovens Regional Flood Mapping -Flood Behaviour Report 2018

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Buckland River at Harris Lane	**6.57**	54,800	**0.2% AEP**	• Inundation of most land parcels downstream of Eurobin (data ending at 5627-5997 Great Alpine Road)		Upper Ovens Regional Flood Mapping -Flood Behaviour Report 2018
	9.56	297,000	**PMF**	• Inundation of Porepunkah from south of the Great Alpine Road (where it lies south of the Ovens River) up to north of Station Street • Large flow path inundating parcels north of the Great Alpine Road, in Eurobin and bounded by Wobonga Lane in the south.	VICSES to add to Major Flood warning impacts at this level	
	9.56	297,000	**PMF**	• Inundation between Mount Buffalo Road and across the Great Alpine Road at the confluence of the Buckland River and the Ovens River • Roads and rail trail along the Ovens River between Porepunkah and Eurobin inundated in multiple sections. This includes the Great Alpine Road, Hughes Lane and the Murray to Mountains Rail Trail. **Water over Road** • Great Alpine Road • Hughes Lane	RRV/Alpine Shire/HVP to close roads identified	

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: Myrtleford Flood Emergency Plan

Myrtleford

Myrtleford is located adjacent the Ovens River just upstream of the Buffalo River confluence. Flood flows from the Ovens River are carried predominantly on the northern side of the floodplain along and adjacent the Happy Valley Creek which is a developing anabranch of the Ovens River. These breakout flows commence downstream of Fernydale Lane (10 km upstream of Myrtleford) and more significantly around and downstream of Selzers Lane. The Ovens River @ Myrtleford stream gauge is largely bypassed by these flood flows and hence warnings and expected impacts for Myrtleford are most appropriately derived from the Ovens River @ Eurobin gauge, located approximately 17 km upstream of Myrtleford (approximately 6 hours flood travel time).

The breakout flows to Happy Valley Creek have historically been associated with a gauge level of 4.5 m for the Ovens River @ Eurobin (Minor FCL) however in recent events (August 2016 onwards) breakouts have occurred just downstream of Selzers Lane at a lower threshold (4.3 m). As Ovens River flows increase above this threshold Happy Valley Creek carries an increasing proportion of flows and bankfull flows occur along Happy Valley Creek in Myrtleford around 5-5.5 m. Significant out-of-bank flows along Happy Valley Creek commence at Eurobin gauge 5.7 m.

In Myrtleford, the diversion channel from Happy Valley Creek to the Ovens River was constructed in 2009 and opened in 2010, prior to the flood events of September 2010. This channel, instigated as part of the Myrtleford Floodplain Management Study (2000) and constructed as a Water management Scheme under the Water Act 1989, is designed to divert floodwater and reduce impact during an Ovens River flood. Up to Moderate flooding, floodwater is diverted from Happy Valley Creek (at the Whalleys Lane culverts) back into the Ovens River near the end of Gerraty's Lane. Above Moderate the channel is overtopped and also increases that speed of floodwater travel along the diversion channel. The channel helped reduce the impact of the 2010 flood on the town but does not completely mitigate the flood risk from around 5.0m on the Eurobin Gauge.

The commercial centre and adjacent residential areas along and (predominantly) to the south of the Great Alpine Road / Myrtle Street are subject to flooding from the Ovens River / Happy Valley Creek however there is also exposure to flooding from Nil Gully (a tributary of Barwidgee Creek) in the northern part of town. Residential and agricultural properties within the Ovens River floodplain to the south of Happy Valley Creek (Maude Street, Lewis Avenue, Standish Street, Gerratys Lane, Whalleys Lane, Clancy Lane) are particularly exposed to flooding and isolation.

Flooding along Happy Valley Creek also occurs as a result of rainfall in the Happy Valley Creek catchment east of the Ovens township. Runoff from the Happy Valley Creek catchment (in the absence of significant breakouts from the Oven River) does not result in significant flooding in Myrtleford but is sufficient to close the Standish Street causeway when Happy Valley Creek @ Rosewhite exceeds 1.3 m.

Myrtleford has experienced significant flooding in May 1974, October 1993, September 1998, September and December 2010 and October 2016, with October 1993 being the largest event on record (although possibly exceed by an event in 1917 for which little data is available). The 1993 and 1998 flooding arose from rainfall totals of 250-300 mm over 3 days over the upper catchment of the Ovens and Buffalo Rivers. In 1993, over-floor flooding was experienced at around 90 dwellings and 32 businesses along with extensive damage to crops, livestock, pumps, machinery and fencing of rural property abutting the river network of the Ovens River and Happy Valley Creek.

Predicted impacts around Myrtleford are derived from the assessment in the Myrtleford Floodplain Management Study (2000) which provides mapping and identifies impacted dwellings for the 10%, 5%, 2%, 1%, 0.5% and 0.2% AEP events. The flood study mapping was related to expected levels at the Ovens River @ Eurobin gauge however the gauge was only installed in July 2000 and hence the correlations were approximate only. Based on a recent review correlating the Eurobin, Myrtleford and Rocky Point gauges a revised relationship between the Eurobin gauge and the mapped impacts at Myrtleford has been developed (as tabulated below).

While this must be treated with caution, in the absence of detailed hydraulic assessment, it has been observed to provide a good match and relationship between observed impacts in events between 2010 and 2021 and should be used as a revised guide for impacts at recorded heights in the Myrtleford Floodplain Management Study 2000.

AEP (%)	Ovens River @ Eurobin gauge level identified in	Revised Ovens River @ Eurobin gauge level based on recent correlation
10%	5.3	6.2
5%	5.9	6.7
2%	6.2	7.0
1%	6.6	7.5
0.5%	7	8.0
0.2%	7.5	8.7

For the 0.5% AEP event predicted height of 8.0m on the Ovens River at Eurobin, 194 properties could be impacted above floor, 174 properties below floor totalling 368 properties. By comparison, the 1993 flood (which preceded installation of the Eurobin gauge) is estimated to have peaked at a level of approximately 7.1 m at the Eurobin gauge.

A detailed list of addresses impacted during flooding in Myrtleford are included in the Flood intelligence card in Appendix J.

Significant Road closures occur around Myrtleford during large floods:

- Great Alpine Road west of Myrtleford – near the sewage farm around Lower River Road East
- Great Alpine Road east of Myrtleford – to the east of Wabonga Lane (near the Deer Farm). A single lane emergency services bypass has now been constructed (reinforced) along the rail trail around this area.
- Standish Street causeway over Happy Valley Creek – flooded from Happy Valley Creek for Happy Valley Creek @ Rosewhite > 1.3 m or Ovens River @ Eurobin > 4.5 m. While this can be initially bypassed via Lewis Avenue this route is also flooded once Eurobin level exceeds approximate 5.5 m with flooding over Lewis Avenue, Maude Street, Whalleys Lane and Buffalo River Road resulting in loss of access up the Buffalo River valley.

Overview of Flooding Consequences

Property Impacts Myrtleford

Parameter	Annual Exceedance Probability (%AEP)				
	0.5%	1%	2%	5%	10%
Above Floor Flooding					
Urban Residential Properties	68		23	5	2
Commercial Buildings	72		15	8	6
Industrial Buildings	10		10	6	1
Public	7		2	1	1
Rural Residential Properties	35		12	7	0
Above Floor Properties Flooded	**192**		**62**	**27**	**10**
Below Floor Flooding					
Urban Residential Properties	95		78	64	43
Commercial Buildings	35		19	15	10
Industrial Buildings	0		0	1	3
Public	9		4	5	2
Rural Residential Properties	34		37	25	13
Below floor Properties Flooded	**173**		**138**	**110**	**71**
Total affected properties	**365**		**201**	**137**	**81**

Properties at Flood Risk

Due to the large number of properties, a separate table for Myrtleford has been provided as **Appendix L**.

Flood Mitigation

Mitigation	Description	Protection	Comments
Diversion Channel (Upstream of Myrtleford)	Constructed Diversion Channel	Effective up to 5.0m on the Ovens River at Eurobin Gauge (below Moderate Flood Class Level)	Diversion channel assists in diverting floodwater from the Happy Valley Creek to the Ovens river
Rail Trail vehicle bypass	Single-lane bypass suitable for carrying vehicles up to a 20 tonne gross mass between Myrtleford & Bright	Access for community and emergency services vehicles between Bright and Myrtleford during floods	A 976 metre section of the Murray to Mountains Rail Trail upgraded to a single-lane bypass suitable for carrying vehicles up to a 20 tonne gross mass. Northern access is located at 5997 Great Alpine Rd, and southern access is located at Flemming Lane (off Great Alpine Rd). Council maintain a locked box at the access points with traffic signs located in inside.

Flood Intelligence Card – Ovens River at Eurobin (Use for Myrtleford)

Gauge Location: Ovens River at Eurobin

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Eurobin	**4.2**		**Below Minor Flood Class Level**	• Initial breakouts from Ovens River south-west of Selzers Lane toward GAR / Happy Valley Creek (Mummery Break) – Observed in Aug 2017 **Water over Road** - Standish Street	BOM will issue a Flood Watch and VICSES to publish a Flood Watch to community with potentially tailored information from this plan. Alpine Shire/RRV to close Standish Street	NECMA VICSES Jul 17 2021 Obs
	4.5		**Minor Flood Level**	Commencement of main break from Ovens River toward Happy Valley Creek upstream of Selzers Lane, leading to increased flow through Myrtleford. **Water over Road** - Standish Street floodway	BOM will issue and VICSES to publish Minor flood warning to community with tailored information from this plan. The VICSES Hume 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 Alpine Shire/RRV to close Standish Street	NECMA
	4.79			March 2012 peak height October 2022 peak height (4.8m)		
	4.9			• Diversion channel is full, 300mm additional rise in Happy Valley Creek before impact on Whalleys Lane. • Selzers Lane impacted from Ovens River. **Water over Road** - Selzers Lane, Ovens	VICSES to add to Minor Flood warning impacts at this level Alpine Shire to consider closure of Selzers Lane VICSES to undertake reconnaissance of impacted areas.	NECMA

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Eurobin	**5.0**			• Happy Valley Creek at Selzers Lane bank full. • Whalleys Lane diversion operating toward Ovens River (level marginally below Whalleys Lane). • Happy Valley Creek on threshold of flooding at Gerraty Lane impacting toward Lewis Ave and Maude Street. • Standish Street causeway deep flooding but no known impact to caravan park. • Possible impact along Mummery Lane (off Selzers Ln)	VICSES to undertake reconnaissance of impacted areas. Engage with residents / land holders in impacted areas to ensure they are aware of flood risks.	Oct 2016 ground photos (NECMA)
	5.2			• October 2023 peak height		
	5.5		**Moderate Flood Level**		BOM will issue and VICSES to publish Moderate flood warning to community VICSES to consider Base IMT rostered/standby or Base IMT in place depending on forecast	
	5.66			• Deep flooding over land immediately upstream of Wobonga Lane out to corner of GAR. Wobonga Lane remains open. Ovens River in-channel at Wobonga Lane bridge but breakouts commencing on north bank upstream of bridge.		Oct 2016 ground photos (NECMA)
	5.7			December 2010 peak height (5.73m) • Happy Valley Creek breaks banks upstream of Selzers Lane with flows spilling from Ovens River to Happy Valley Creek via Wallaces Race upstream of Selzers Lane (local gauge 1.15m) • Happy Valley Creek flows break out over Whalleys Lane near corner of Gerratys Lane - leading to onset of flooding through Lewis Ave, Maude St area • Happy Valley Creek marginally overbank downstream of Standish Street (behind supermarket etc)	VICSES to add to Moderate Flood warning impacts at this level VICSES to consider deployment of a crew or Snap Send Solve Flood Observers to determine impacts at Lewis Ave, Maude St and behind supermarket area Engage with residents / land holders in impacted areas to ensure they are aware of flood risks.	Oct 2016 ground photos (NECMA)

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Eurobin	**5.7**			**Water over Road** - Lewis Ave, Myrtleford - Maude St, Myrtleford	Alpine Shire to close roads identified	
	6.0		**Major Flood Level**	• Flooding to rear of shops along GAR downstream of Lewis Ave, flooding over tennis courts and around clubhouse buildings	BOM will issue and VICSES to publish Major flood warning to community Alpine Shire to close Tennis Courts and Clubhouse Engage with residents / land holders in impacted areas to ensure they are aware of flood risks.	Oct 2016 ground photos (NECMA)
	6.1			• GAR and Wobonga Lane flooded from Ovens River. Flooding extends to rail trail at Wobonga Lane intersection. Flooding all around 6040 GAR. Consistent with Upper Ovens FS 20% AEP which approximates Eurobin 6.28m • Flooding from Happy Valley Creek extends to GAR from Willow Grove to beyond Mitre 10 • Flooding at Happy Valley Creek / Standish Street causeway extends up Standish Street past King Street intersection (to roadside parking bays at Target). • Extensive flooding over Standish Street south of Happy Valley Creek. • Likely impact into Myrtleford Caravan Park. **Water over Road** - Great Alpine Road near Wabonga Lane, Eurobin - Wabonga Lane, Eurobin - Willow Grove, Myrtleford	VICSES to add to Major Flood warning impacts at this level VICSES RDO/IMT to contact and warn the Myrtleford Caravan Park and inform them to enact their Emergency plan. IC & VICPOL Evacuation Manager to consider Evacuation of the Myrtleford Caravan Park and roads identified Alpine Shire/RRV to close roads identified Sandbag store located at Myrtleford SES Unit	Oct 2016 ground photos (NECMA)

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Eurobin	**6.19**			October 2016 peak flood Height • Extensive floodplain inundation downstream of Ovens, flooding over Happy Valley Creek / Ovens River floodplain at Myrtleford throughout Lewis Ave, Maude St, Standish St area.	VICSES to add to Major Flood warning impacts at this level.	NECMA
	6.2		**10% AEP**	• For Specific Myrtleford Property flood listings please refer to Appendix L: Summary of impacted properties: - 10 Properties affected above floor level - 71 Properties affected below floor level - 81 properties in total **Properties at Risk (Above Floor)** • 1 & 2 35 Standish St • Commercial/Municipal properties at risk (above floor) • 4 King St • 91, 145,190 & 218 Myrtle St • 49C Standish Street • 21A Standish St • Public facility Myrtle St (GAR) **Properties at Risk (by Street)** • Lewis Ave • Myrtle St (GAR) • Standish St • Willow Gv • Maude St • Clancy St • King St • Merriang Rd • Old Ovens Hwy	Refer to 10% Flood Extent Map in Appendix F VICSES to add to Major Flood warning impacts at this level Alpine Shire to monitor and inspect roads to determine any further road closures IC & VICPOL Evacuation Manager to consider Evacuation of addresses identified IC/Alpine Shire to determine activation of Relief centre/s VICSES to doorknock listed at risk properties.	Ovens Catchment Flood Study 2012

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Eurobin	**6.2**		**10% AEP**	• Prince St • Smith St • Whalleys Ln • Willow Gv		
	6.7		**5% AEP**	• For Specific Myrtleford Property flood listings please refer to Appendix L. Summary of impacted properties: - 27 Properties Flooded above floor level - 111 Properties affected below floor level - 138 properties in total **Properties at Risk (Above Floor): 17 Additional properties (27 in total)** • 126 Old Ovens Hwy • ## Clancy Lane • 13 &16 Standish St • Lot 10, RMB 44, RMB 425 Whalleys Ln • 4, 14 & 16 Maude ST **Commercial/Municipal properties at risk (above floor)** • ## Lewis Ave • 21 & 35 Myrtle St (GAR) • 21 Maude St • 4 Old Ovens Hwy • 46 & 48 Standish St **Properties at Risk (by Street)** • Lewis Ave • Blewett Ln • Clancy Ln • Geoffrey St	VICSES to add to Major Flood warning impacts at this level IC & VICPOL Evacuation Manager to consider Evacuation of addresses identified IMT will consider critical services infrastructure Alpine Shire and RRV to monitor, inspect or close roads or determine any further road closures VICSES to doorknock listed at risk properties.	Ovens Catchment Flood Study 2012

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Eurobin	**6.7**		**5% AEP**	• Gerratys Ln • King St • Maude St • Merriang Rd • Myrtle St • Old Ovens Hwy • Prince St • Smith St • Standish St • Toniazzo Ln • Whalleys Ln • Willow Gv		
	6.83			• September 2010 estimated Flood Peak Height - gauge was not in operation until 2000		NECMA
	7.0		**2% AEP**	• For Specific Myrtleford Property flood listings please refer to Appendix L. Summary of Impacted properties: - 63 Properties Flooded above floor level - 158 Properties affected below floor level - 221 properties in total **Properties at Risk (Above Floor): 36 Additional properties (63 in total)** • 420 Gerraty's Ln • RMB 437, RMB ###, 450 & 490 Whalleys Ln • 0 Blewett Ln • 42 & 52 Lewis Ave • 4,5,14,15,16 & 19 Maude St • 31, 37, 39, 57, 141, 21A Myrtle St (GAR) • 10 Old Oven Hwy • 81 Prince St	VICSES to add to Major Flood warning impacts at this level IC & VICPOL Evacuation Manager to consider Evacuation of addresses identified Alpine Shire and RRV to monitor, inspect or close roads or determine any further road closures VICSES to doorknock listed at risk properties.	Ovens Catchment Flood Study 2012

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Eurobin	**7.0**		**2% AEP**	• 6 Smith St • 31 & 36 Standish St • # Clancy Ln **Commercial/Municipal properties at risk (above floor)** • 47 Clyde St • 6 Geoffrey St • 2 Unnumbered properties in Lewis Av • 17, 41, 91, 145, 151, 190 & 218 Myrtle St (GAR) • 1 Willow Gv • 31, 35 & 39 King St • 35 Myrtle St • 36742? Standish St		Ovens Catchment Flood Study 2012
	7.1			• Oct 1993 estimated Flood Peak Height gauge was not in operation until 2000. • Flooding throughout Ovens and Happy Valley Creek floodplain, extending across Myrtle Street	VICSES to add to Major Flood warning impacts at this level	NECMA
	7.4		1% AEP		Refer to 1% Flood Extent Map in Appendix F	
	8.0		**0.5% AEP**	• For Specific Myrtleford Property flood listings please refer to Appendix L. Summary of impacted properties: - 194 Properties Flooded above floor level - 174 Properties affected below floor level - 368 properties in total **Properties at Risk (Above Floor): 131 Additional properties (194 in total)** • 32, 421 & 423 Gerraty's Ln • 2, 10, 42, 44, 46, 48, 50, 52, 62, 64, 68, 72, 96, Old Ovens Hwy	Incident Controller and VicPol Evacuation Manager to consider enacting an Evacuations Plan VICSES to add to Major Flood warning impacts at this level. VICSES to doorknock listed at risk properties. Consideration about safe access for emergency service personnel at this height.	Ovens Catchment Flood Study 2012

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Ovens River at Eurobin	**8.0**		**0.5% AEP**	• 13, 16, 18, 23, 25, 26, 30, 31, 36, 38, 39, 43, 45, 27-29, 35/1, 35/2 Standish St • 5 Unnumbered Properties Toniazzo Lne • Lot 10, RMB 400, 401, 405, 425, 430, 435, 437, 450, 455, 457, 467, 490 Whalleys Lne • 2 Unnumbered Properties Blewett Lne • 3 & 4 Jones St • 11, 13, & 28 King St • 7, 18, 29, 31, 41, 49 & 69 Lewis Ave • 4, 5, 7, 14, 15, 16, 17, 19, Maude St • 9, 13, 31, 37, 39, 57, 69, 71, 139, 141, 174, 177, 220, 21A Myrtle St (GAR) • 6, 8, 10, 24 Smith St • 81 Prince St **Commercial/Municipal properties at risk (above floor)** • Most properties in Clyde St • Most properties in Myrtle St (GAR) • Most properties in Standish St • 4 King St • 2 unnumbered properties in Lewis St • 37 Smith St • 31, 35, 39 King St • 1 Willow Gv • 31, 35, 39 King St • 21 Maude St • 35 Myrtle St • 4 Old Ovens Hwy • 14 Clyde St • Multiple Public properties in Lewis St, Myrtle St, Smith St, Standish St, and Clancy Lne	Alpine Shire and RRV to monitor, inspect or close roads or determine any further road closures.	Ovens Catchment Flood Study 2012

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.

Flood Intelligence Card – Happy Valley Creek at Rosewhite

Gauge Location: Happy Valley Creek at Rosewhite

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Happy Valley Creek at Rosewhite	**1.3**		**No Flood Class Levels at this Gauge**	Flows of this magnitude from Happy Valley Creek closed Standish Street causeway (Myrt) in July 2016 and 31 Aug 2016 even in the absence of breakout flows from the Ovens River at Selzers Lane (although this was during a period of sustained minor flooding and catchment saturation so is probably conservative i.e. lower than would normally be expected.) **Level also exceeded:** • 26/8/2010 (1.8m), • 4/9/2010 (2.2m), • 16/10/2010 (1.6m), • 14/11/2010 (1.5m), • 9/12/2010 (3.3m), • 5/2/2011 (1.9m), • 11/2/2011 (1.4m), • 18/8/2011 (1.6m), • 10/11/2011 (1.24m), • 28/2/2012 (1.28m), • 1/3/2012 (2.36m), • 4/3/2012 (1.3m), • 12/8/2013 (1.55m), • 24/8/2013 (1.25m), • 2/8/2015 (1.26m). **Water over Road** • At 1.3m Happy Valley Creek will close Standish Street at Myrtleford	The VICSES Hume 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 As there are no set FCL for this gauge, VICSES to consider issuing Minor Level Ungauged Flood warning with confirmed impacts at this level Alpine Shire/RRV to monitor and determine if Standish Road Myrtleford requires closure from 1.3m	July 2016 ground photos (NECMA)

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Happy Valley Creek at Rosewhite	**2.1**	3,244	**36% AEP**	• Happy Valley Creek flows (in the absence of any breakout events from the Ovens River upstream) break from Happy Valley Creek at Carlassare Ct, across Hop Gardens and return to Happy Valley Creek to rear of 120 GAR, Myrtleford (Lupos)		Sept 2021 ground photos (NECMA)
	2.5	4,514	**22% AEP**	• October 2016 Flood peak Height		
	2.87			• November 2022 peak height		
	3.1		**10% AEP**			
	3.3	5,291		• May 1974 Flood Peak Height • Flooding of Ovens store and houses opposite, Shop House above floor • Water Over Road Myrtleford side Happy Valley Bridge **Water over Road** • Great Alpine Road near Happy Valley Bridge	VICSES to consider issuing a Major Level Ungauged Flood warning with confirmed impacts at this level RRV to determine if GAR requires closure VICSES to doorknock listed at risk properties.	Upper Ovens Flood Study 2004
	4.0		**2% AEP**	• Large flow path inundating parcels north of the Great Alpine Road, in Eurobin and bounded by Wobonga Lane in the south.	RRV to determine if GAR requires closure	Upper Ovens Flood Study 2004
	4.4	8,493	**1% AEP approx**	• 6 dwellings (north of Happy Valley Rd) + shop and 1 dwelling south of Happy Valley Road subject to flooding.	VICSES to consider issuing a Major Level Ungauged Flood warning with confirmed impacts at this level VICSES to doorknock listed at risk properties. Sandbag store located at Myrtleford SES Unit	Upper Ovens Flood Study 2004

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.

Flood Intelligence Card – Buffalo River Downstream of Lake Buffalo

Gauge Location: Buffalo River – D/S of Lake Buffalo

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Buffalo River – D/S of Lake Buffalo	**3.2**	9,090	**Minor Flood Level**		BOM will issue and VICSES to publish Minor flood warning to community with tailored information from this plan The VICSES Hume 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	NECMA
	4.1			• August 2016 Flood peak Height • Breakouts commencing on agricultural land near near Nug Nug Road, Buffalo River Rd, Nug Nug and Back Creek Road. • No known road or dwelling impacts.		NECMA
	5.0	11,700	**Moderate Flood Level**	• Potential isolation issues of Merriang and Merriang South (Access via Whorouly Kneebones Gap).	BOM will issue and VICSES to publish Moderate flood warning to community VICSES to consider Base IMT rostered/standby or Base IMT in place depending on forecast VICSES to doorknock listed at risk properties.	
	5.6			• October 2016 Flood Peak Height • Flooding over Merriang South Road between the Buffalo River and Merriang Homestead Road,	VICSES to doorknock listed at risk properties.	NECMA

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Buffalo River – D/S of Lake Buffalo	**5.6**			• Extensive flooding of agricultural land downstream of Back Creek Road. • Likely flooding over Merriang South Road (around 196 Merr Sth Rd) from local runoff. **Water over Road** • Merriang South Road between the Buffalo River and Merriang Homestead Road	VICSES to add to Moderate Flood warning impacts at this level Alpine Shire and RRV to determine if road closures required at identified roads VICSES to doorknock listed at risk properties.	NECMA
	5.73	22,100	**20% AEP**			Ovens Catchment Flood Study 2012
	6.3	**17,200**	**Major Flood Level**		BOM will issue and VICSES to publish Major flood warning to community	
	6.65	30,000	10% AEP			
	7.6	40,300		• September 1998 Flood Peak • Extensive rural flooding both upstream and downstream of Merriang South Road. • No identified dwelling impacts but flooding in proximity to a number of dwellings on Buffalo River Road and Merriang South Road. **Water over Road** • Possibly over Buffalo River Road near Back Creek Road.	Alpine Shire and RRV to determine if road closures required at identified roads	Ovens Catchment Flood Study 2012 NECMA

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Buffalo River – D/S of Lake Buffalo	7.63	40,600	4% AEP			
	7.66			• Sept 2010 Flood Peak Height • No identified dwelling impacts however houses on Merriang Road west of Crameri Ln likely isolated. **Water over Road** • Merriang South Road and Merriang Road. • Buffalo River Road from Sandy Creek (upstream of Nug Nug) and Ableits Lane (downstream of Merriang Sth Rd)	VICSES to add to Major Flood warning impacts at this level Alpine Shire and RRV to determine if road closures required at identified roads VICSES to doorknock listed at risk properties.	
	7.68	40,450		• September 2010 Flood Peak		
	7.99	45,100		• May 1974 Flood Peak		
	8.27	48,900	2% AEP			
	8.65	54,300		• October 1993 Flood Peak • Extensive floodplain inundation. • HydroTechnology 1995 flood report notes "there was little damage to property directly from the Buffalo River floodwaters, apart from some rural properties near the confluence with the Ovens River."	VICSES to add to Major Flood warning impacts at this level	
	8.85	57,200	1% 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 C6: Mount Beauty Flood Emergency Plan

Mt Beauty is located between the Kiewa River West Branch and the Kiewa River East Branch a short distance upstream of the confluence of the 2 branches. The centre of the township is located on rising ground above the Mt Beauty Regulating Pondage. The regulating pondage is an off-stream storage which acts to regulate outflows from the Kiewa West Power Station tailrace prior to release to the Kiewa River West Branch.

Flooding impacts in Mt Beauty / Tawonga result principally from the Kiewa River West Branch and breakout flows from Simmonds Creek which impact the area north of Simmonds Creek Road through to the Kiewa Valley Highway (overtopping the highway) with flows returning to the Kiewa River West Branch around and to the south of the Mt Beauty Holiday Centre. The lower parts of the Holiday Centre were subject to flooding in 1998. Damage to roads and bridges along the Kiewa River East Branch (i.e. Damms Road) is known to have occurred in 1998.

The nearest active flood warning service gauge on the Kiewa River is at Mongans Bridge approximately 17 km downstream of Mt Beauty, with no real time gauging data available from upstream of the town. Both the Kiewa River East Branch and Kiewa River West Branch upstream of Mt Beauty are impacted by the operation of the Kiewa Hydro scheme however significant flood events are unlikely to be significantly impacted by hydro operations. Some real-time stream flow information may be available from AGL Energy in Mt Beauty during a flood event.

Flood mitigation

Mitigation	Description	Protection	Comments
Diversion Channel – Big Hill Mountain Path	Constructed Diversion Channel		Diversion channel assists in diverting floodwater from the Bogong High Plains Road from the township
Mt Beauty Drainage system	Constructed roadway drains within township		Drains are installed in the following streets to move water from the township and aid in flood mitigation. • Arthur Street, • Hill Street, • Bogong Ave • Towonga Cresent

Flood Intelligence Card – Kiewa River at Mongans Bridge

Gauge Location: Kiewa River at Mongans Bridge

Gauge	River Height (m)	River Flow ML/d	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Kiewa River at Mongans Bridge	**2.4**	**6,400**	**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	Kiewa Catchment Flood Study 2012
	3.5	**12,500**	**Moderate Flood Level**	• Flooding to just beyond top of bank in Mt Beauty Holiday Centre. • Flooding of Tawonga Caravan Park - around riverside BBQ areas and low sites near river. Northern billabong (open area) flooded. • No known impacts in the rural reach downstream of Mt Beauty.	BOM will issue and VICSES to publish Moderate flood warning to community. VICSES to consider Base IMT rostered/standby or Base IMT in place depending on forecast. Tawonga Caravan Park enact their flood emergency plan. Call on 03 8727 8946.	NECMA July 2016 observations Kiewa Catchment Flood Study 2012
	3.77	**14,340**		• Tawonga Caravan Park not impacted (bankfull) - contrasts with July 2016 observation of 3.5m causing substantial flooding **Water over Road** • Boyd Road, Gundowring	Alpine Shire determine if road closures required at Roads identified	NECMA April 2020 observations

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Kiewa River at Mongans Bridge	**3.92**	**15,900**	**20% AEP**			Strategic Flood Intel Report 2011
	4.5	**19,500**	**Major Flood Level**		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	Kiewa Catchment Flood Study 2012
	4.52	**20,300**	**10% AEP**			Strategic Flood Intel Report 2011
	4.66	**20,800**		• December 2010 - Did not impact Mongans Bridge Caravan Park • Simmonds Creek flows unable to get away on confluence of Kiewa River West Branch. Water can back up and flood over the Kiewa Valley Highway near Simmonds Creek Rd. **Water over Road** • Kiewa Valley Highway, Mt Beauty	Alpine Shire and RRV to monitor, inspect or close roads or determine any further road closures	GHD 2012 assessment for Alpine Shire
	4.7	**21,100**		• Approximate threshold for impact onto Mongans Bridge Caravan Park - complete flooding of Caravan Park within around 1 hour after onset	VICSES to add to Major Flood warning impacts at this level. Mongans Bridge Caravan Park and inform them to enact their Emergency plan. Call on 0457 945 226. IC & VICPOL Evacuation Manager to consider Evacuation of the Mongans Bridge Caravan Park	GHD 2012 assessment for Alpine Shire

Gauge	River Height (m)	River Flow ML/d	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Kiewa River at Mongans Bridge	**4.96**	**23,500**		• Sep-1975		Strategic Flood Intel Report 2011
	5.24	**26,000**	**5% AEP**	• September 2010 Peak Flood Height • Tawonga Caravan Park flooded • 1/09/2010 - Flooded through Mongans Bridge Caravan Park - most caravans flooded above floor level **Water over Road** • Keegans Lane, Upper Gundowring	VICSES to add to Major Flood warning impacts at this level VICSES RDO/IMT to contact and warn the Tawonga Caravan Park and inform them to enact their Emergency plan. IC & VICPOL Evacuation Manager to consider Evacuation of the Mongans Bridge Caravan Park Alpine Shire determine if road closures required at Roads identified	Strategic Flood Intel Report 2011 NECMA
	5.66	**29,000**		• October 1993 Peak Flood height • 1/10/1993 - Mt Beauty Holiday Centre 12 sites impacted with Kiewa River flows along the Kiewa Hwy to front entrance of park. • Mongans Bridge Caravan Park flooded - most caravans flooded above floor level (Oct 1993)	VICSES to add to Major Flood warning impacts at this level The Park Mount Beauty (formally Mt Beauty Holiday Centre) enact flood emergency plan. Call on 03 5754 4396	Strategic Flood Intel Report 2011

Gauge	River Height (m)	River Flow (ML/d)	Flood Class Level & Annual Exceedance Probability (%AEP)	Consequence/ Impact	Action Actions may include: Evacuation, closure of road, sandbagging, issue warning and who is responsible etc.	Reference
Kiewa River at Mongans Bridge	**6.59**	**31,000**	**2% AEP**			
	6.62	**36,800**	**1% AEP**	• Flooding effects of the Mt Beauty Holiday centre are caused by the west Kiewa System.	VICSES to add to Major Flood warning impacts at this level	Strategic Flood Intel Report 2011
	6.69	**36,100**		• September 1998 Peak Flood Height • 1/09/1998 - Mt Beauty Holiday Centre 12 sites impacted. • Tawonga Caravan Park (Mountain Creek Road) flooded to depth of 0.5m, 90% of sites impacted but office and kiosk can be protected by sandbagging (Caravan Park EM Plan) • Mongans Bridge Caravan Park flooded - most caravans flooded above floor level. **Water over Road** • Kergunyah Road, Kergunyah (Indigo Shire) • Boyd Road, Gundowering • Bay Creek Lane, Mongans Bridge	VICSES to add to Major Flood warning impacts at this level Alpine Shire and RRV to monitor, inspect or close roads or determine any further road closures Sandbag store located at Bright SES Unit	Strategic Flood Intel Report 2011 NECMA

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 D - FLOOD EVACUATION ARRANGEMENTS

Phase 1 - Decision to Evacuate

Under the SEMP, Victoria Police (VicPol) has the responsibility for evacuation (Evacuation Manager) – in consultation with the control agency and other expert advice. EMV has developed a standardised procedure for evacuation under JSOP J03.12.

The IC decides whether to warn people to evacuate within a specified timeframe or whether it is necessary to advise them to evacuate immediately. The IC must make this decision having regard for the requirements of the JSOP.

Once the IC makes a decision to recommend evacuation, VicPol's Evacuation Manager is 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.

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 because of flooding and the IC considers that evacuation is the most effective risk treatment. The AV Health Commander is responsible for supporting the evacuation of vulnerable people. Refer to the State Health Emergency Response Plan (SHERP) for details)
- essential services have been damaged and are not available to a community, therefore the IC considers evacuation is 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
- vulnerable people and facilities
- transportation
- registration
- people of cultural or linguistically diverse background and transient populations
- safety of emergency service personnel
- different stages of an evacuation process.

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

When planning evacuation, the IC will consider triggers for evacuation. For example, specific flood heights are predicted.

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

Location	Gauge	Trigger	Actions/Considerations
Harrietville	Ovens River at Harrietville	3.55m	Initial flooding of GAR at Frosty Corner modelled to occur at gauge 2.37 m – not known to have occurred in Aug 2017 (2.57 m or Oct 2016 (2.7 m). Requires monitoring to verify Closure of GAR at multiple locations at 3.55m creates additional points of isolation for the Harrietville community. At 3.55m multiple roads within the township are inundated impeding access and travel
Bright	Ovens River at Bright	5.91m	Multiple residential and commercial properties at risk of inundation from Bakers Gully and Stackey Gully at 5% AEP (cannot be directly related to Ovens River @ Bright gauge). Multiple road closures required and consideration of relief centre locations required.
Buckland	Buckland River at Harris Lane	4.0m	Impacts to residential properties in Harris Lane, and Wallace Drive. 4m and access is not safe (refer Sep 2010 conditions at 4.2m)

Myrtleford	Ovens River at Eurobin	About 4.2 m (Minor) 5.9m	Low lying properties along the Floodplain between Happy Valley Creek and the Ovens River (Standish St flooding) are the early priority. Multiple commercial and residential properties at risk from this height. Multiple road closures required as Happy Valley Creek breakout flows impact Lewis Ave, Maude St area Consideration of relief centres required.

Phase 2 – Warning

Warnings may include a warning to 'prepare to evacuate' and a warning to 'evacuate now'. Once the IC has made the decision to evacuate, the at-risk community will be warned to evacuate. Evacuation warnings should be disseminated via methods listed in Part 3 and Appendix J of this plan.

Phase 3 – Withdrawal

VicPol is the responsible agency for evacuation. In accordance with the JSOP, The VicPol Evacuation Manager will consult with the IC and IEMT on the most appropriate relief options. When preparing the schedule 2 Evacuation Recommendation as per the JSOP, it is important to ensure that the recommended routes and specified relief centres are accessible to the relevant community. This is to ensure a community does not receive advice about a relief centre that may not be accessible to them due to road closures and flooding.

VICSES, CFA, AV and Local Government will provide resources where available to support VicPol/DTP-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 at the direction of the VicPol Evacuation Manager.

Landing zones for helicopters are located at:

Primary Locations (airfield facilities):

Airbase name	Type of facility (such as fixed wing/rotary wing capability)	Location
Albury Airport	Wing/rotary wing capability Regional Airport with facilities to accommodate wide range of aircraft and operations.	121 Airport Drive, East Albury, NSW, 2640
Wangaratta Airport	Wing/rotary wing capability	Brian Higgins Drive, Laceby, VIC, 3678

Porepunkah Airfield	Wing/rotary wing capability Small airfield located two nautical miles south of Porepunkah township. Commonly used for recreational aircraft	266 Buckland Valley Road, Porepunkah, VIC, 3740 Duty ARO: 0490 175 178 Porepunkah Airfield Webpage
Mount Beauty Airport	Wing/rotary wing capability Small airfield located approx. one kilometre north of Mount Beauty township. Commonly used for recreational aircraft	25 Embankment Drive, Mount Beauty, VIC, 3699 Mount Beauty Airport webpage

Secondary Locations (informal, i.e sports ovals):

Facility	Type of facility	Location
Harrietville Recreation Reserve	Sports Oval	Charlie Miley Road, Harrietville
Mount Beauty Cricket Ground	Sports Oval	Lakeside Avenue, Mount Beauty
Dederang Recreation Reserve	Sports Oval	Kiewa Valle Highway, Dederang
Memorial Park	Sports Oval	Duke Street, Myrtleford

Vulnerable persons register and people with special needs

The Department of Families Fairness and Housing (DFFH) is responsible for the Vulnerable Persons Register (VPR). It operates across Victoria and provides 24x7 access to data by authorised emergency management agencies. The system can be accessed via most web enabled devices and includes locality aware functions for mobile devices.

DFFH has developed VPRs to store local information about consenting, identified vulnerable people[7], which will be directly entered by funded agencies and locally overseen by municipal

[7] Informed consent will be required before identified vulnerable people can be registered in a VPR. In keeping with the definition of a vulnerable person and the additional considerations the VPR should only list a small number of people, as per Diagram 1. More information about the identification and screening process for VPRs is available in Protocol 1: Emergency planning and screening.

councils[8]. The VPRs are cloud-based and directly accessible to authorised representatives from Victoria Police (without having to contact the council or funded agency) to aid emergency planning and response, including potential evacuation.

The information in the VPR can be filtered, mapped, and where necessary exported to reports for authorised purposes, according to the role and access rights of each organisation.

Phase 4 – Shelter

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

Sector	Shelter type (Relief Centre/ Assembly Area (include address)	Comments
Bright	**Bright Community Centre** 1 Railway Avenue, Bright	
	Pioneer Park Pavilion 64 Coronation Avenue, Bright	STAND Site
Harrietville	**Harrietville Community Hall** 210 Great Alpine Road, Harrietville	STAND Site
Mount Beauty	**Mount Beauty Community Centre** 21 Kiewa Crescent	STAND Site
	Mount Beauty Swimming Pool & Sports Stadium Pool Road, Mount Beauty	STAND Site
Dederang	**Dederang Multipurpose Building** Kiewa Valley Highway, Dederang	
	Dederang Golf Club Kiewa Valley Highway, Dederang	
	Dederang Memorial Hall Kiewa Valley Highway, Dederang	STAND Site

8 64 councils covered by the Vulnerable People in Emergencies Policy, November 2012.

Myrtleford	**Myrtleford Sports Stadium** 109 O'Donnell Avenue, Myrtleford	STAND Site
	Myrtleford Senior Citizens Centre 11 Smith Street, Myrtleford	STAND Site
Dinner Plain	**Dinner Plain Community Centre** Big Muster Drive, Dinner Plain	STAND Site

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 though the Emergency Management Team (EMT).

Strengthening Telecommunications Against Natural Disasters (STAND) Sites:

The STAND program aimed to increased community communications connectedness, via the installation of NBN satellite internet connections in high-risk areas. These connections are designed to support response, relief, and recovery activities if normal communication networks fail and provide community members with access to the internet. Via this Program, 9 NBN satellite connections have been installed across the Alpine shire.

APPENDIX E – FLOOD AND STORM WARNING SYSTEMS

Flood and Storm Warning

Flood and storm warning products and Flood Class Levels can be found on the BoM and VicEmergency websites. Flood and storm warning products include Severe Thunderstorm Warnings, Severe Weather Warnings, Flood Watches and Flood Warnings. See next page for an example of a BoM Flood Warning on the VicEmergency page.

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

The EMCOP platform enables simultaneous 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 X and so forth) and emergency broadcasters, such as Sky News TV, ABC Local ABC radio 106.5FM and various other local emergency broadcaster radio stations current list is available via the EMV website.

VICSES Regional staff (typically the 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 relevant and tailored information via VicEmergency (all hazards platform hosted by EMV) 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) issue all severe weather and thunderstorm warnings as these are rarely confined to a single region or area and also play 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. EMCOP Public Publishing Business Rules for Riverine Flood, Flash Flood and Severe Weather / Thunderstorm 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.

VICSES Flood Warning Products

VICSES distributes flood emergency information to the media through “Flood Watches and Warnings”. Flood watches and warnings provide BoM flood warning information combined with other relevant sources of intelligence to provide communities information regarding possible flood consequences and safety advice, that is not contained in BoM flood warning products.

The relevant VICSES RDO, in conjunction with the RAC, or the established ICC will normally be responsible for drafting, authorising and issuing flood warnings, using the EMCOP to publish these to the VicEmergency channels.

Flood watch and warning products should refer to the warning title within the Bulletin header, for example Flood Bulletin for Major Flood Warning on Yarra River.

VICSES Flood Warnings should follow the following structure by describing:

- Critical details: including what the current and predicted flood situation is

- Action Statement: An action statement that is consistent with the Australian Warnings System (AWS) https://www.australianwarningsystem.com.au/
- What you should do: what the community should do in response to flood warnings
- Potential Impacts: what flood consequences are or the likely flood consequences

More Information: including where the community should go to seek further information and who the community should call if they require emergency assistance.

It is important that the description of the predicted flood situation is consistent with and reflects the relevant BoM Flood Warning and is tailored and made relevant to at risk communities using a range of intelligence sources.

In areas covered by a Total Flood Warning System (TFWS) VICSES Flood Watches should be issued for a whole river catchment. Additionally, VICSES flood Warnings should be issued at the pre-determined sub-catchment level focused on specific gauge reference areas. These are the area in which flood consequences specifically relate to the relevant flood gauge.

There may also be a need to issues warnings for areas not covered by the TFWS using available intelligence. The issue of these warnings is guided by the likely or observed impacts of the floodwater with guidance provided in the VICSES Riverine Flood Business Rules.

VICSES Flood Warnings should be prepared and issued after receipt of each Flood Watch and Flood Warning from the BoM, or after Severe Weather or Thunderstorm Warnings indicating potential for severe flash flooding.

To ensure VICSES flood warnings are released in a timely manner much of the relevant information is built into warnings templates in EMCOP, including a range of pre-development statements that can be ‘dragged and dropped’ into messages as relevant.

BOM Flood Warning Example

Advice - Flood

Message reference number: 14767

Issued For:	the Ovens River at Wangaratta
Incident Location:	the Ovens River at Wangaratta
Incident Name:	FloodNorthEastOctober
Issued:	12/10/2020 10:51 AM
Next Update Expected:	13/10/2020 11:00 AM
Contact For Media:	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 (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.

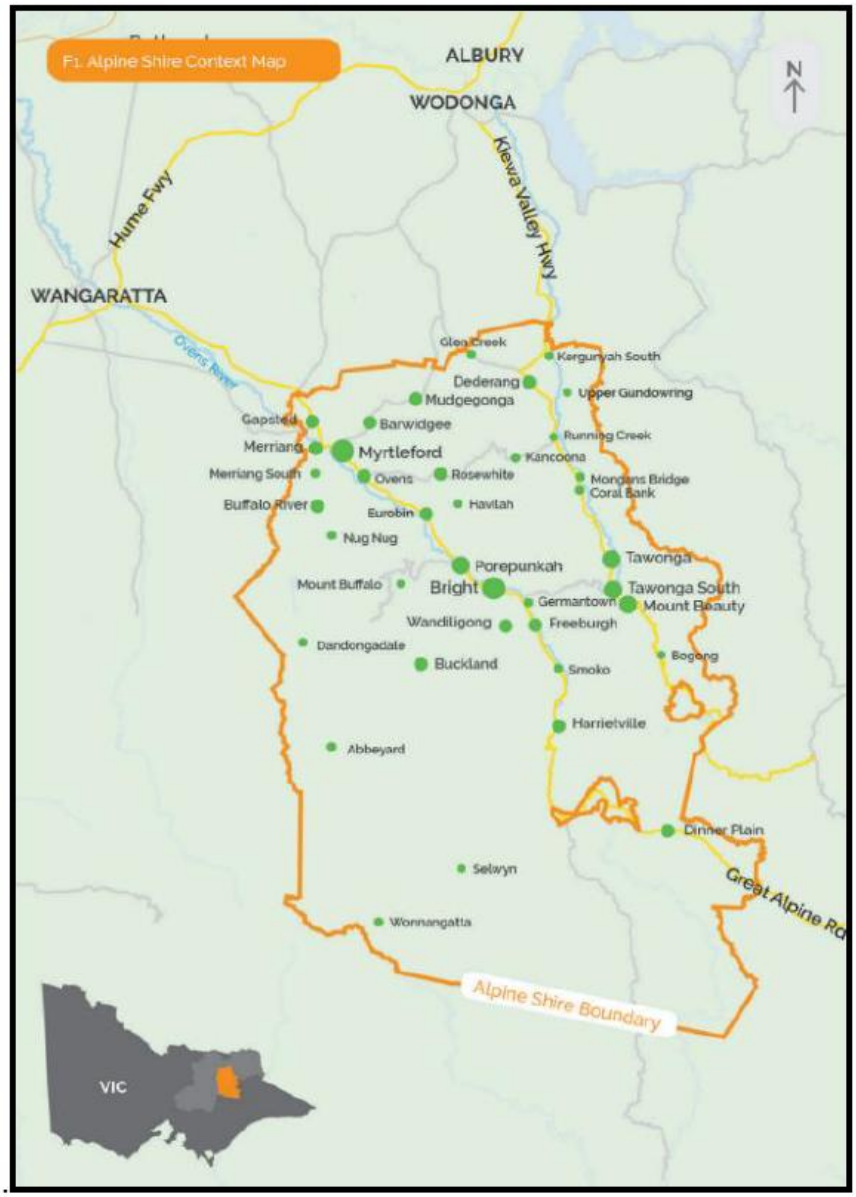
APPENDIX F – MAPS & SCHEMATICS

Maps are provided detailing likely affected areas including properties, essential community infrastructure, roads, identification of evacuation routes, likely evacuation route closure locations, assembly areas, emergency relief centres etc. under different flood scenarios.

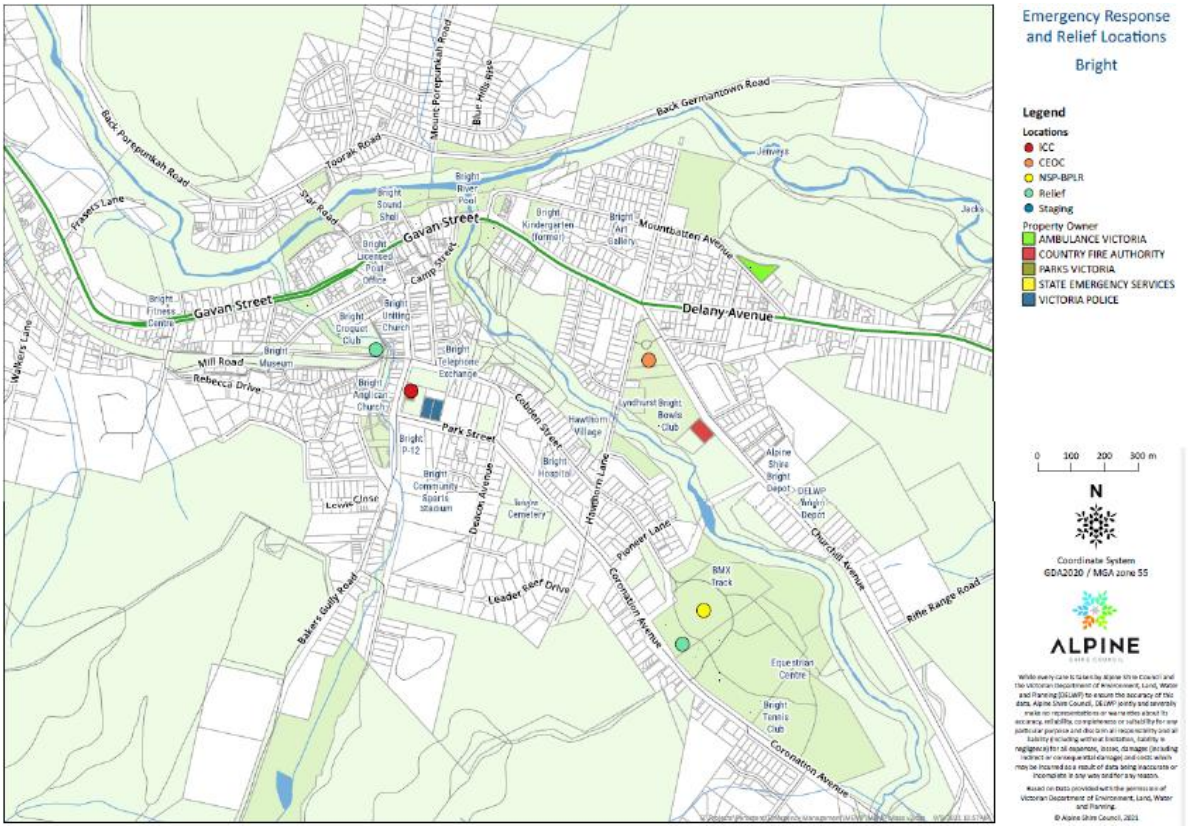
Maps include:

- Council Area Maps
- Township Maps
- River Schematics
- Inundation Maps

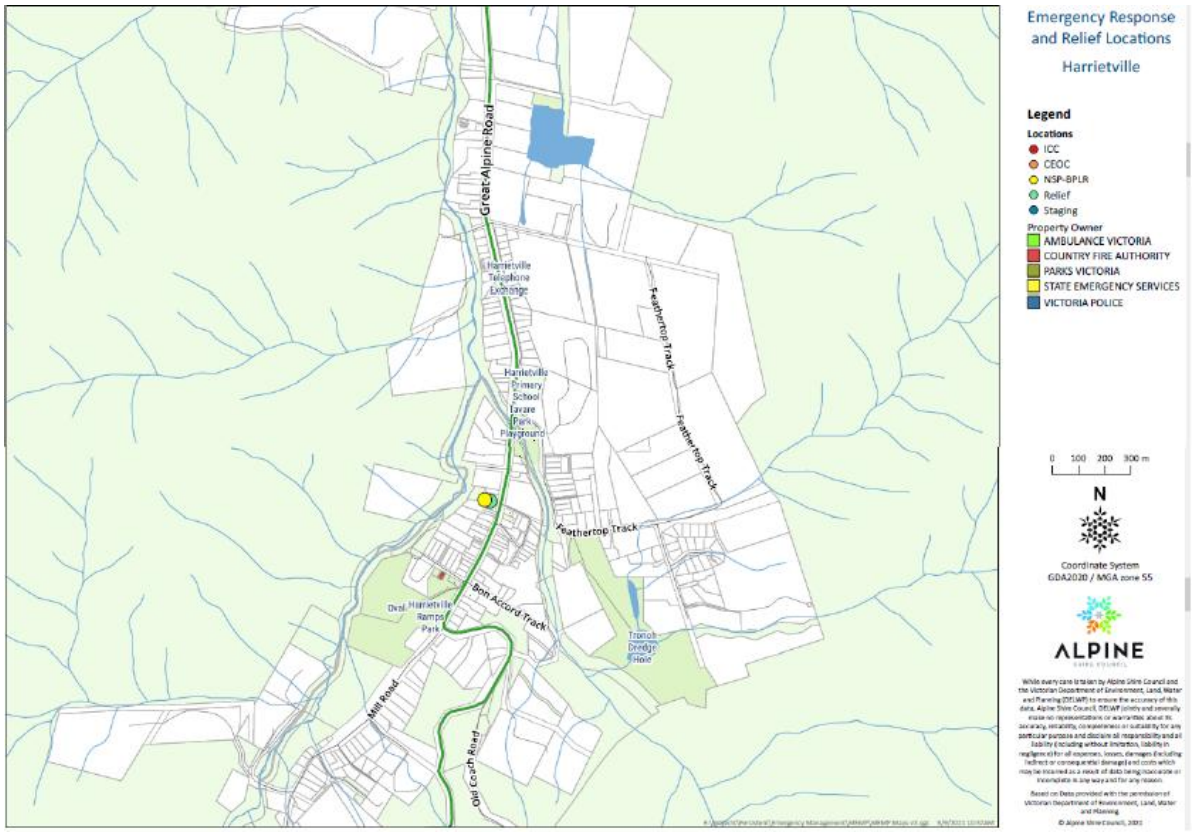
Alpine Shire



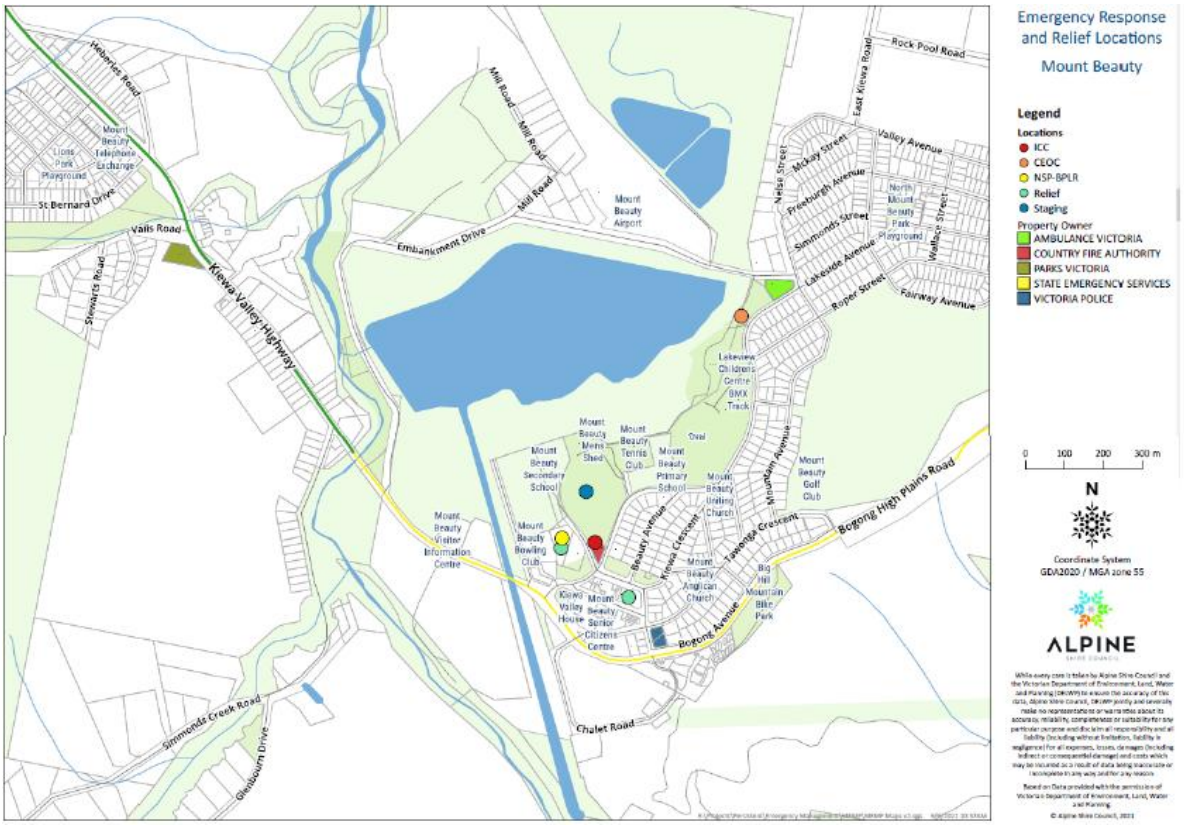
Bright Township



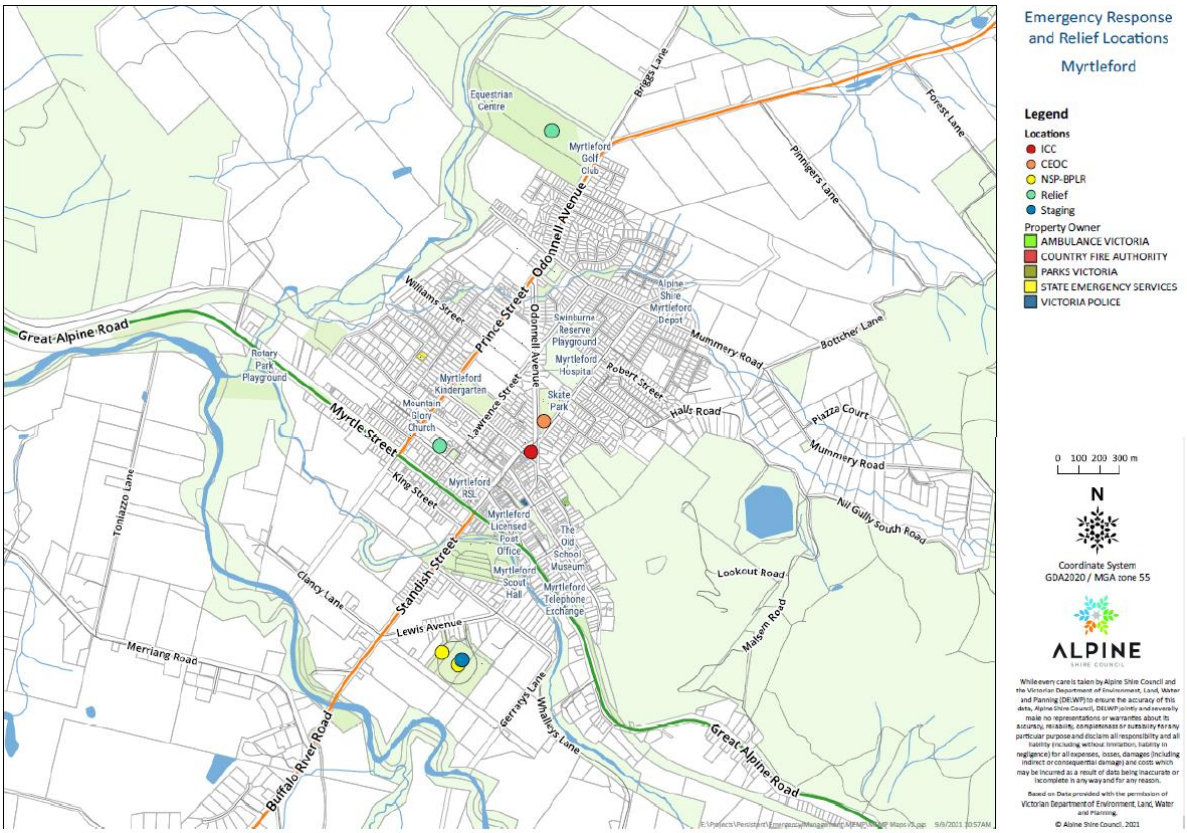
Harrietville Township



Mount Beauty Township

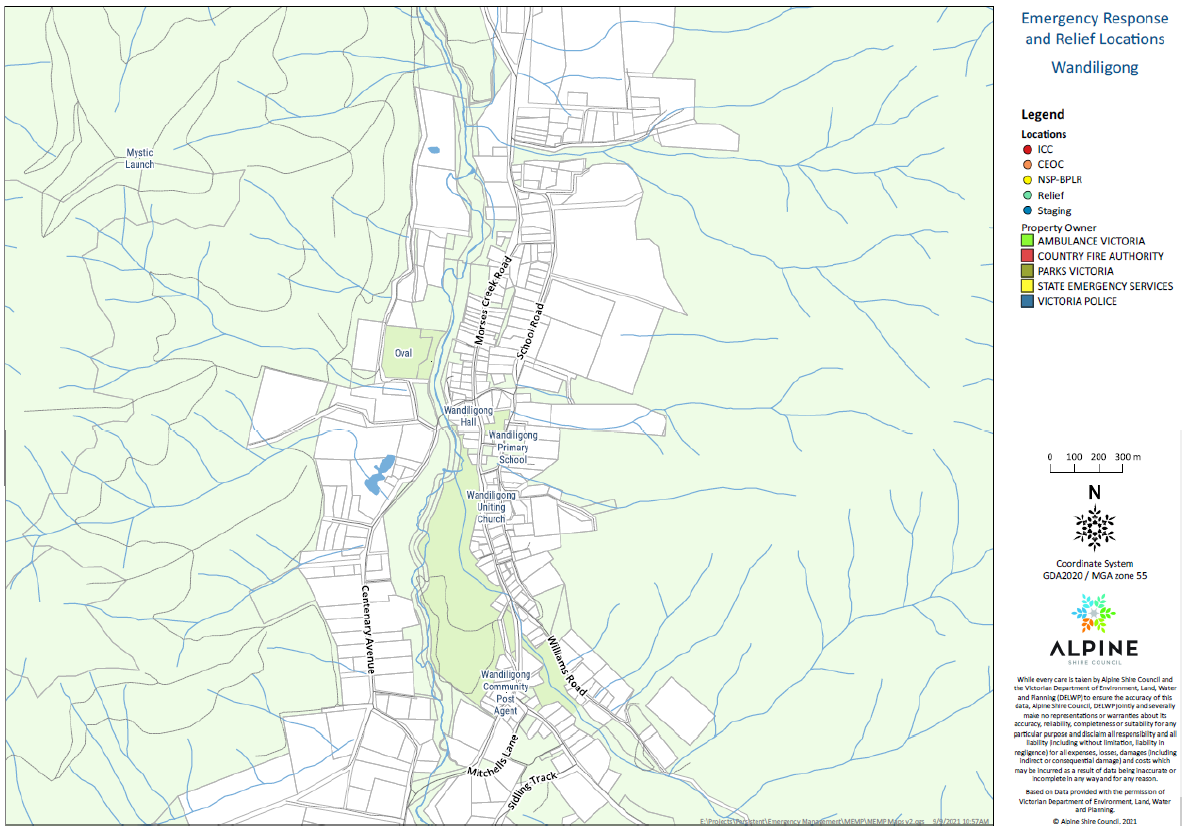


Myrtleford Township

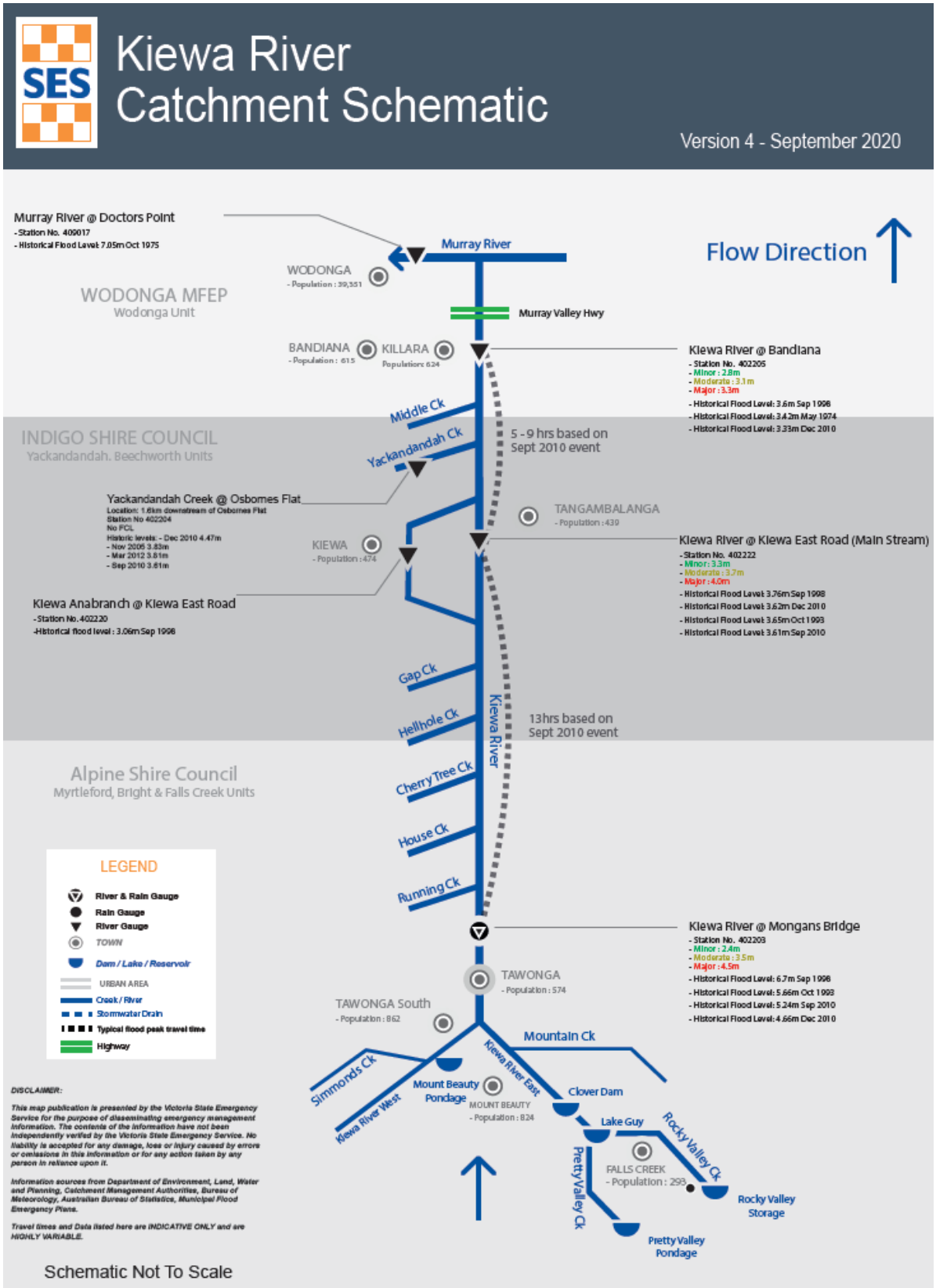


Porepunkah Township

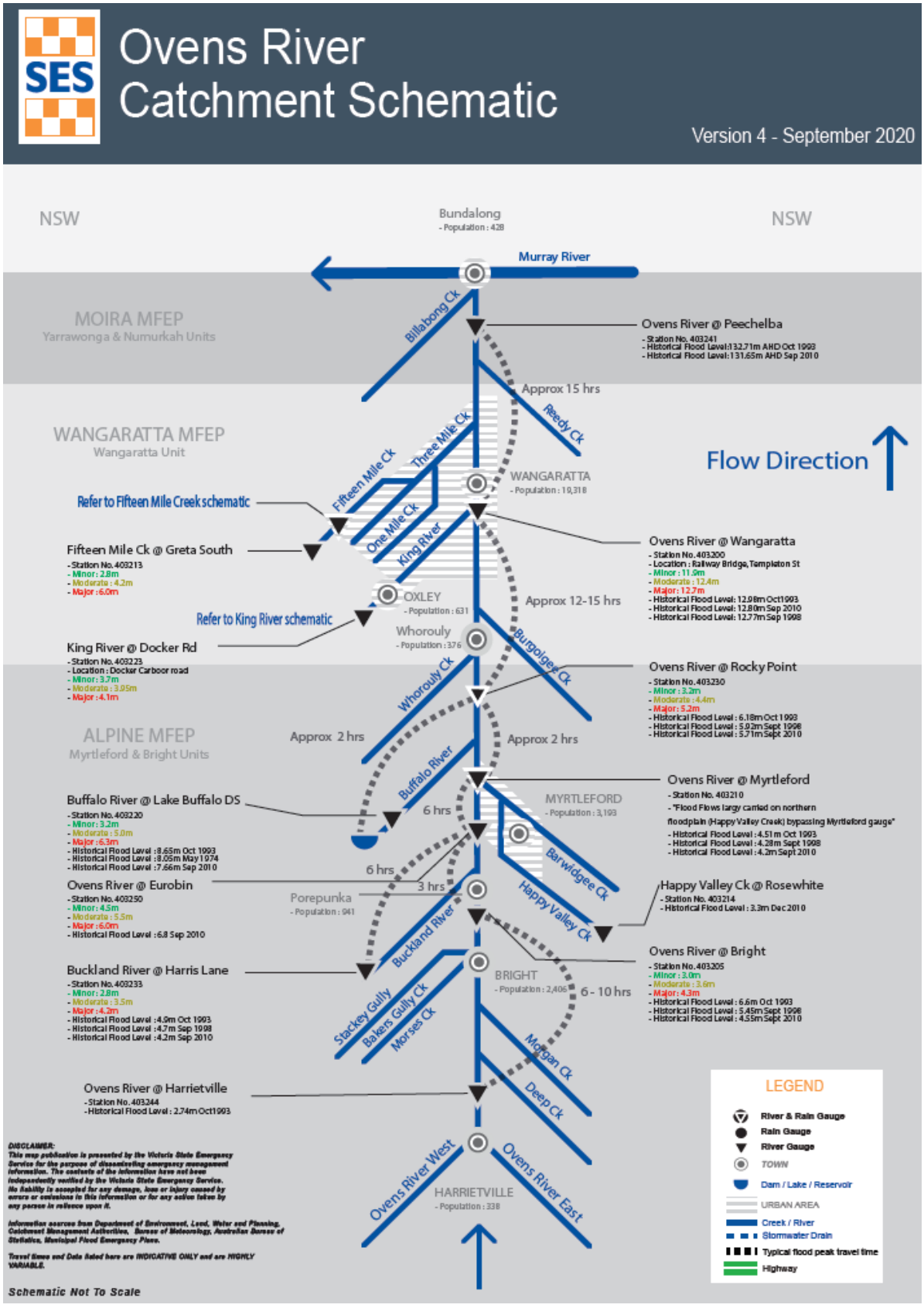
Wandiligong Township



Appendix F1: Kiewa River Catchment Schematic

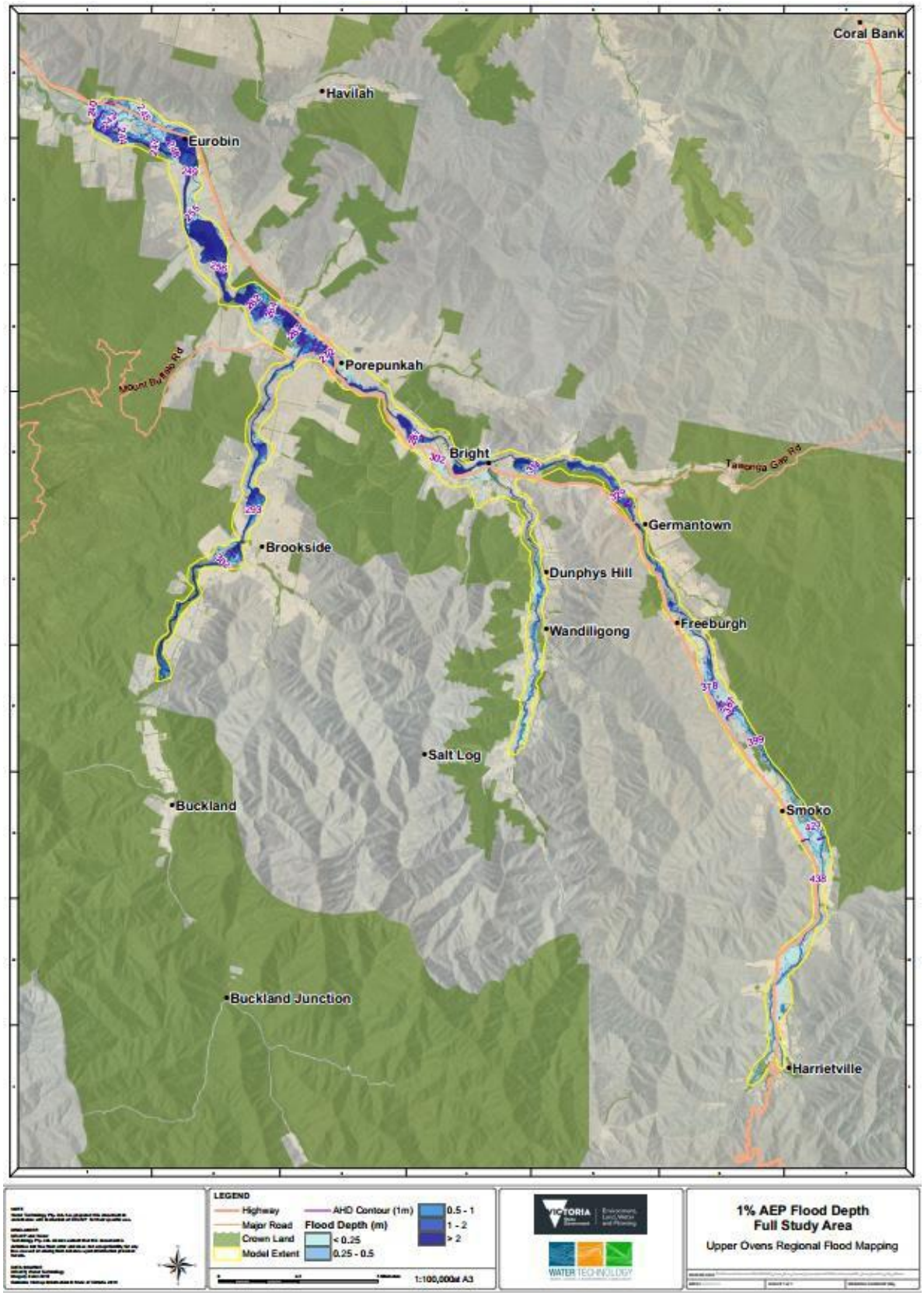


Appendix F1: Ovens River Catchment Schematic



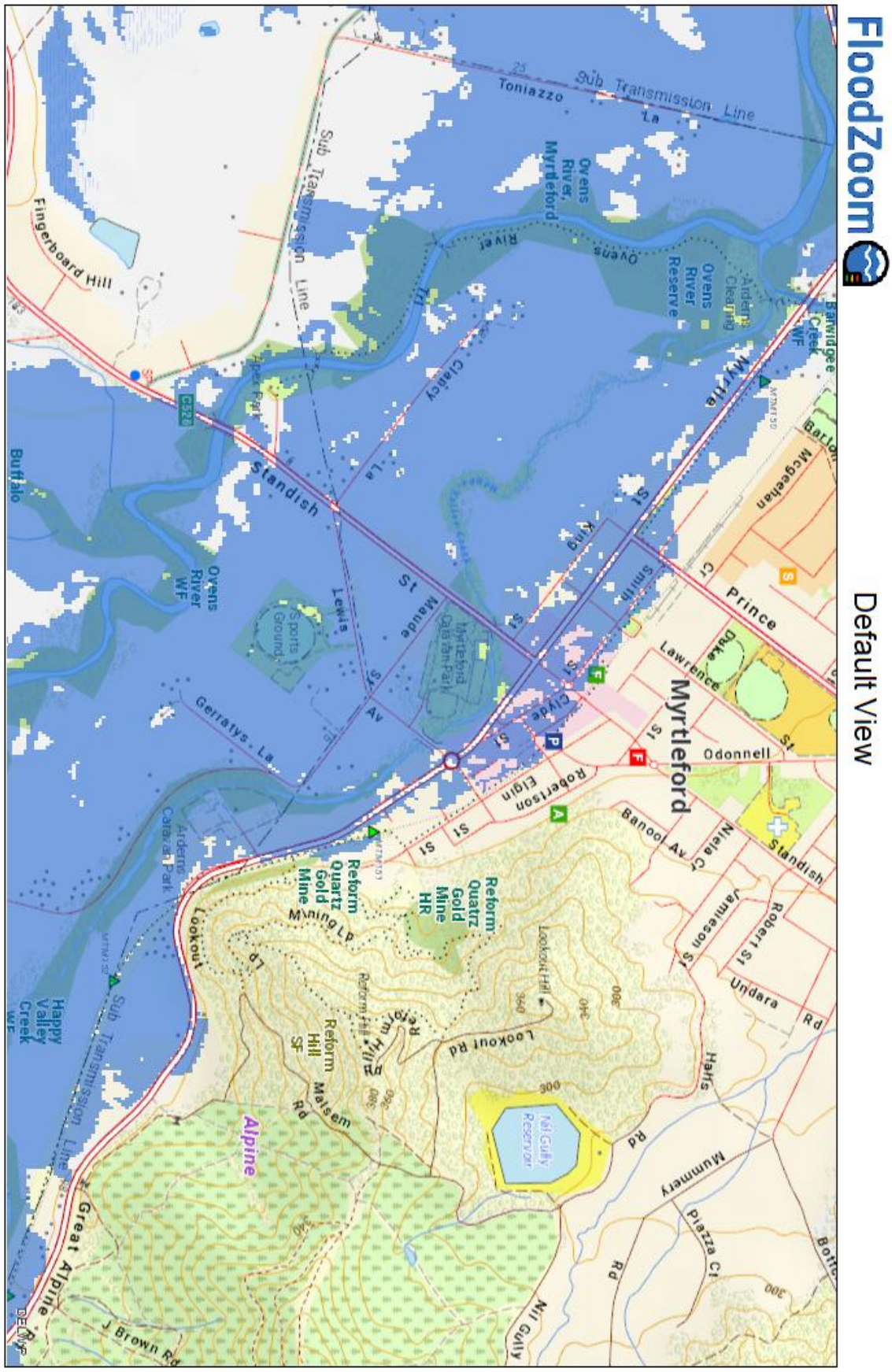
Appendix F1: Innundation Maps

1% AEP Design Flood Map of Upper Ovens River catchment

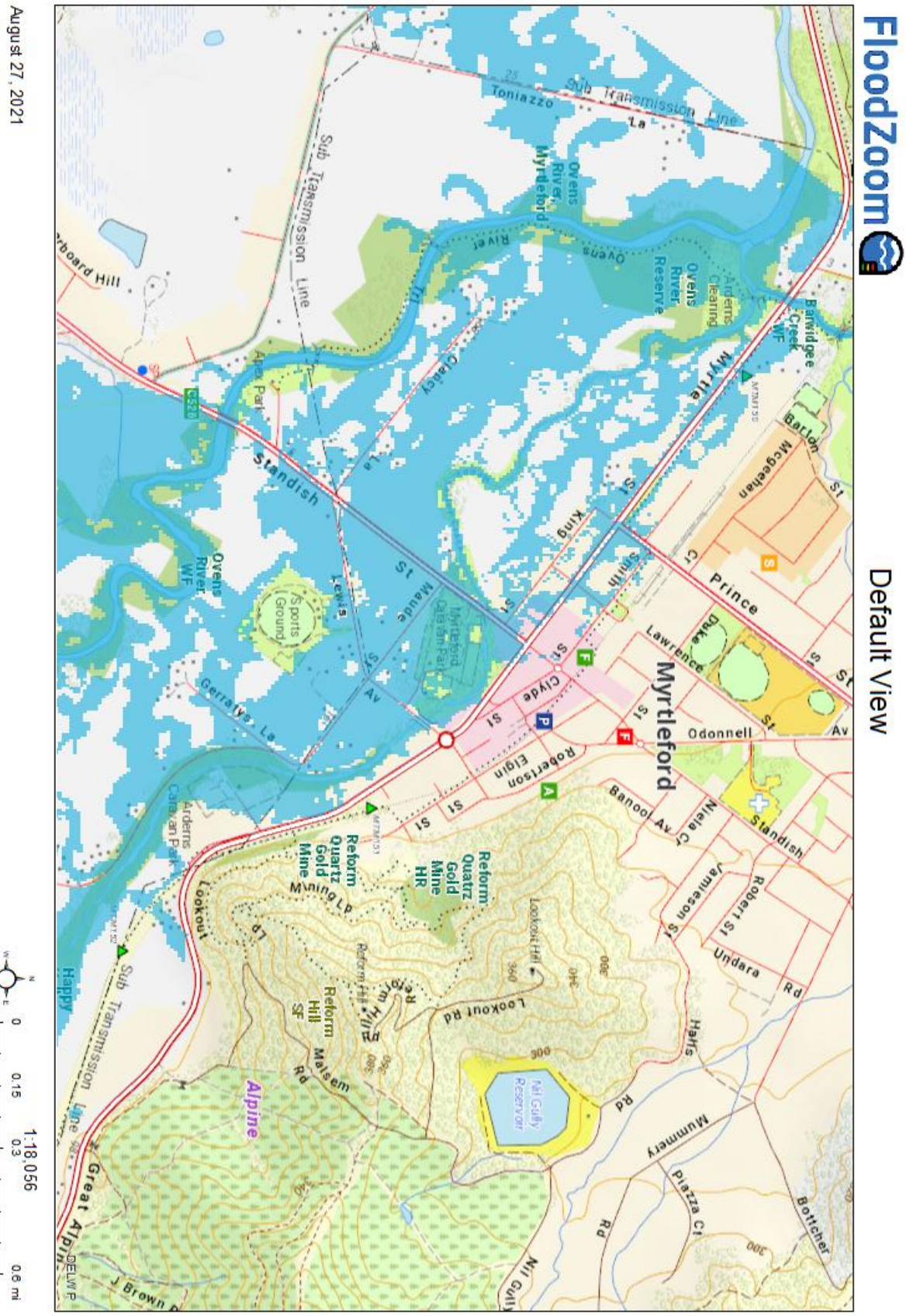


1% AEP Inundation Map – Myrtleford Township

Ovens River at Eurobin at 1% AEP



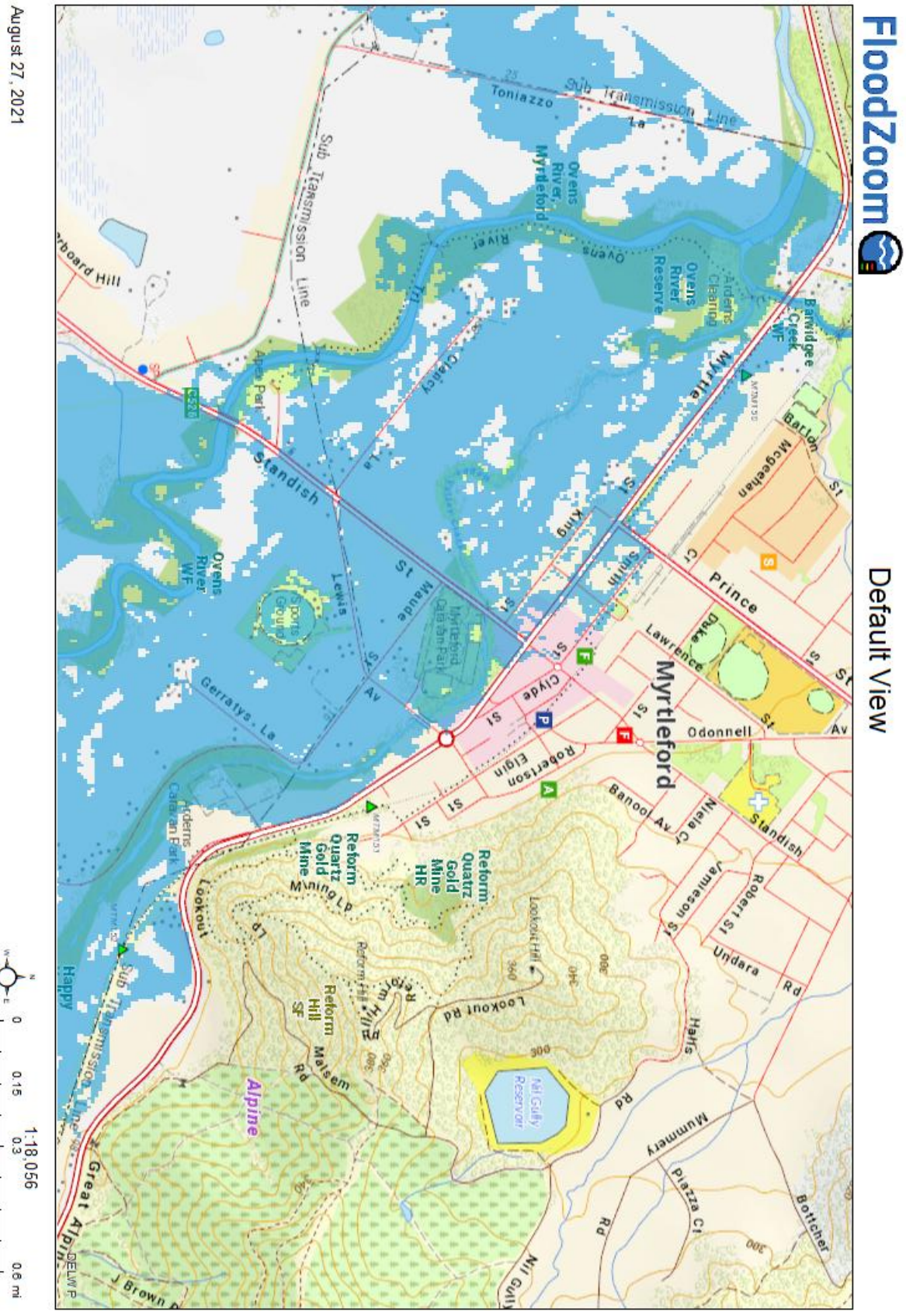
10% AEP Inundation Map – Myrtleford Township
Ovens River at Eurobin at 10% AEP



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.

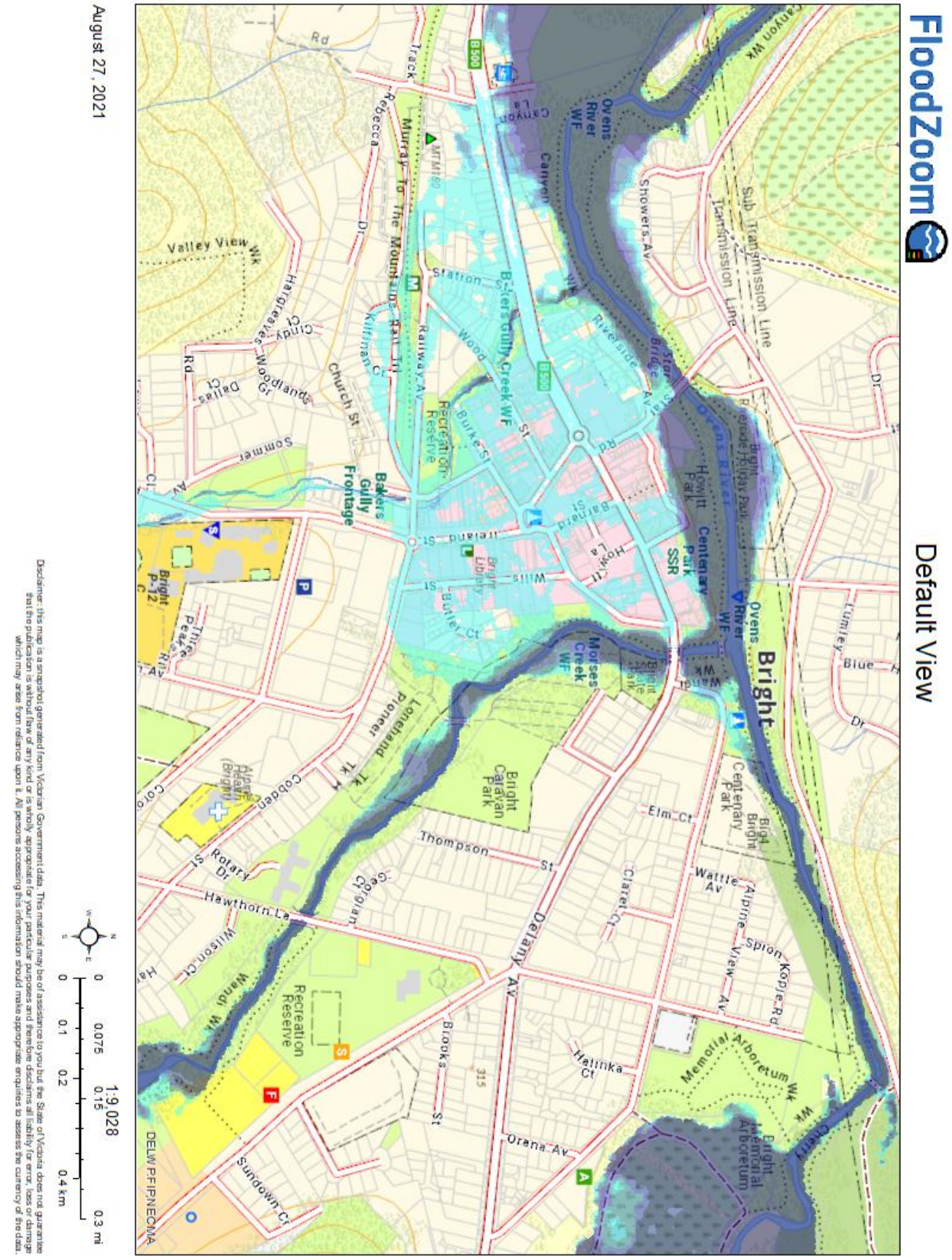
20% AEP Inundation Map – Myrtleford Township

Ovens River at Eurobin at 20% AEP



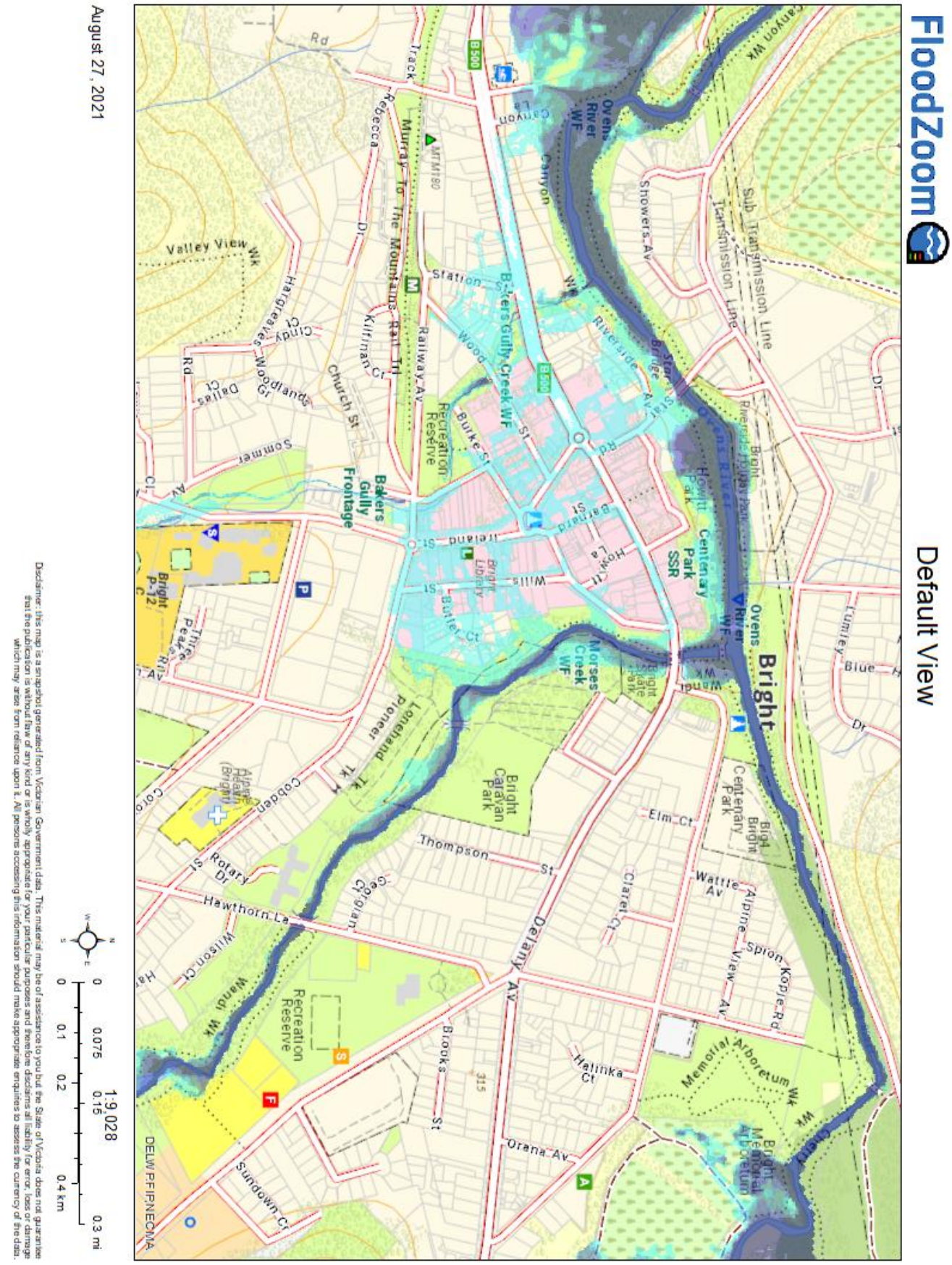
1% AEP Inundation Map – Bright Township

Ovens River at Bright at 1% AEP



10% AEP Inundation Map – Bright Township

Ovens River at Bright at 10% AEP



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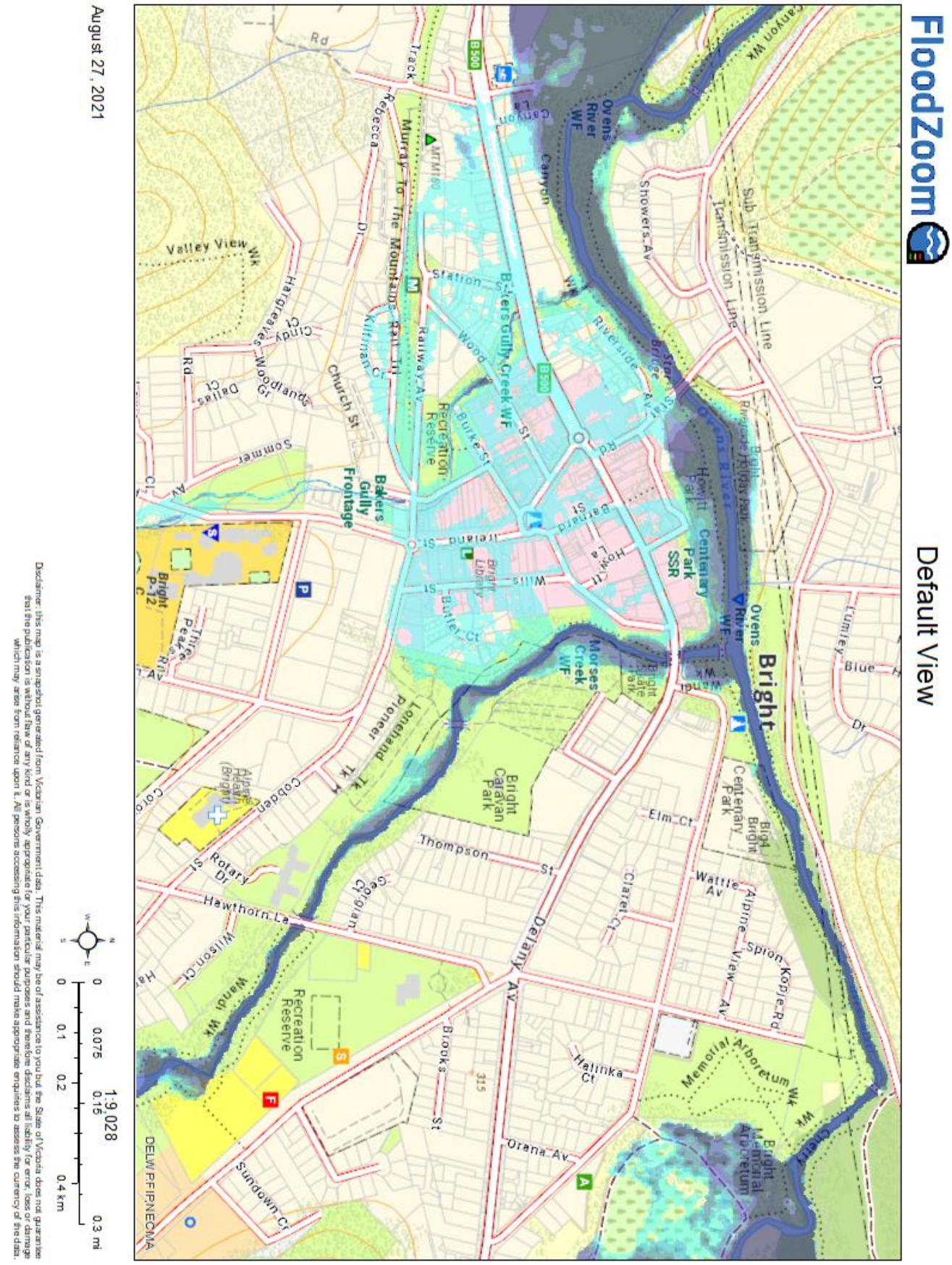
20% AEP Inundation Map – Bright Township

Ovens River at Bright at 20% AEP



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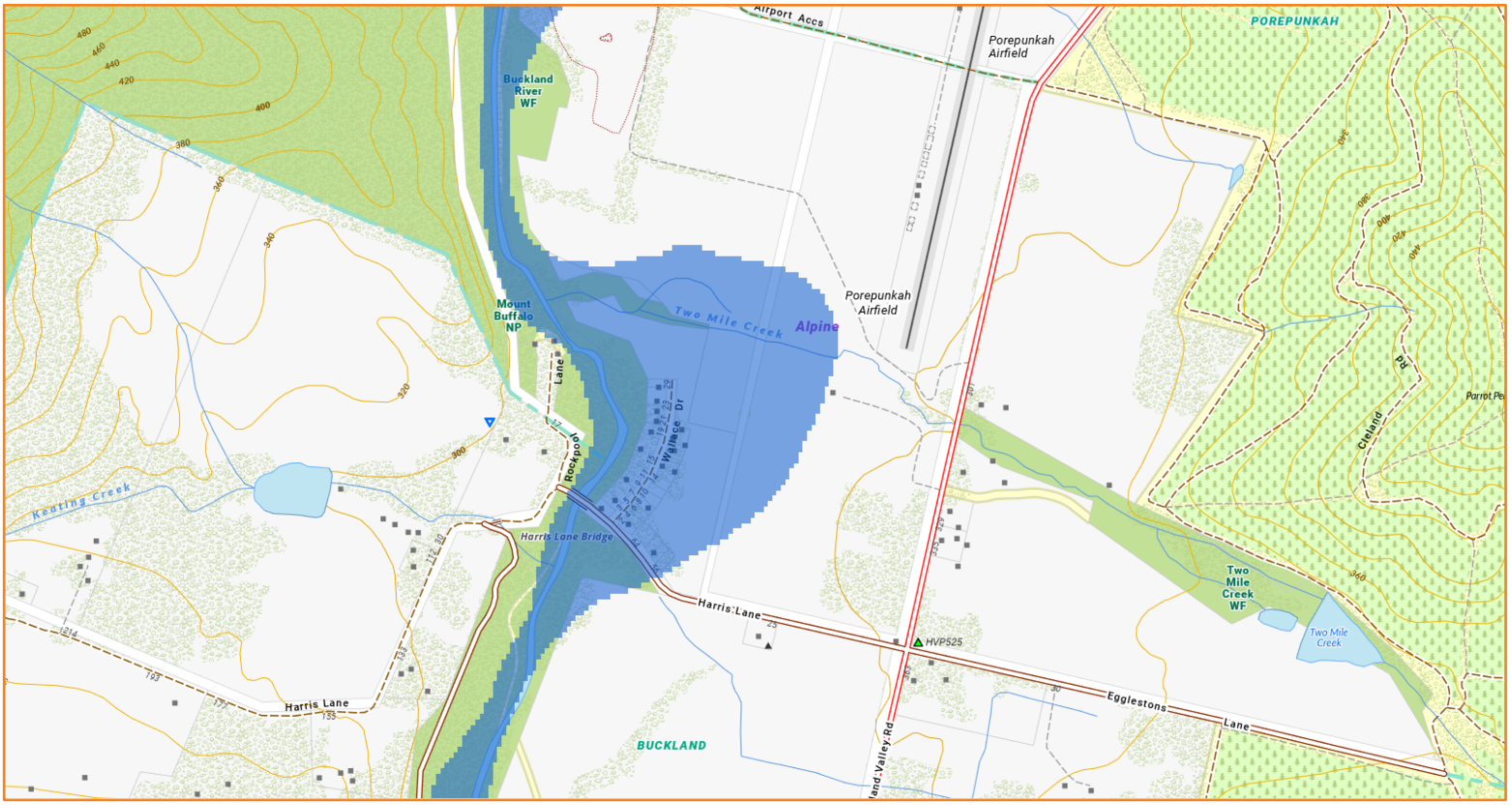
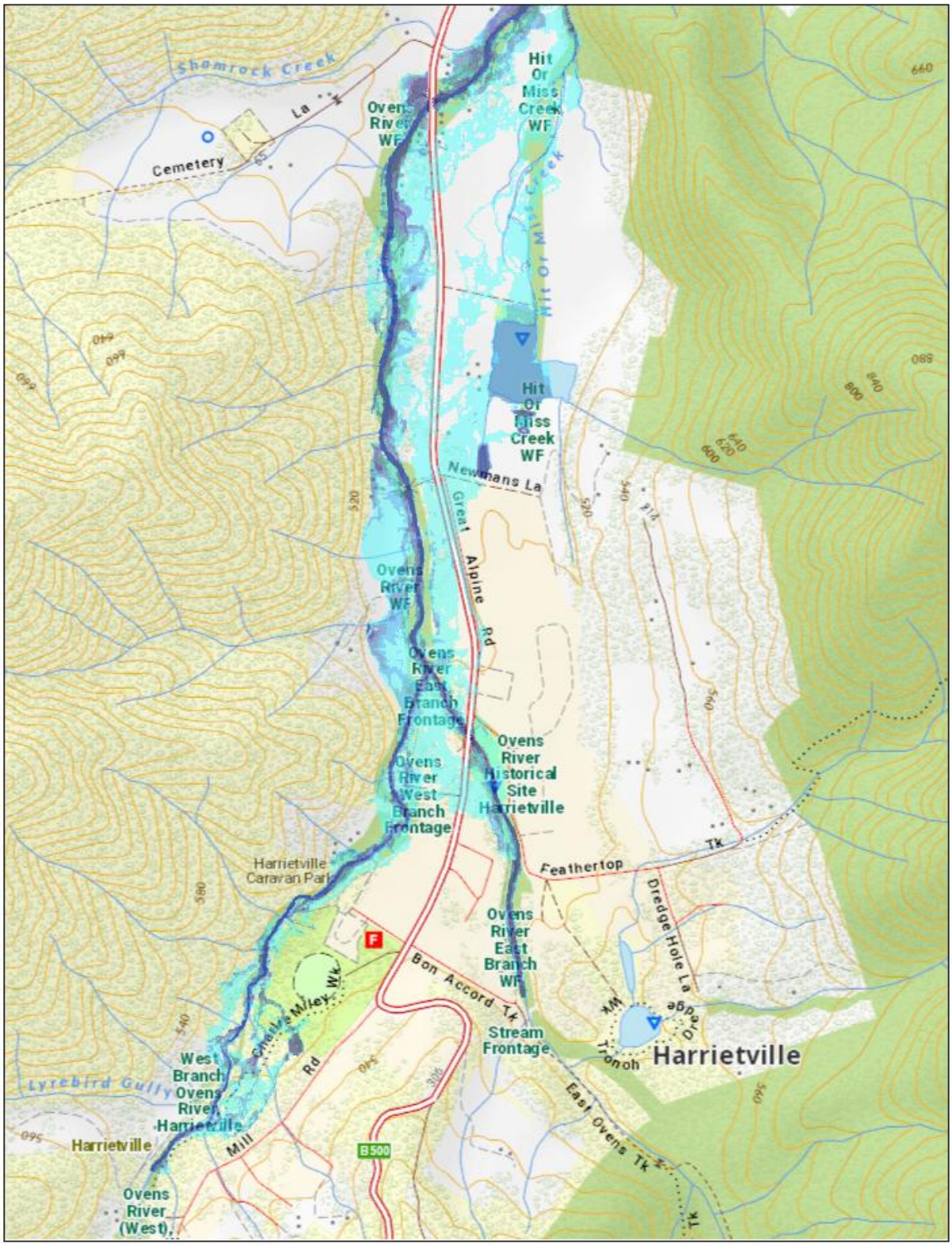
1% AEP Inundation Map –Wallace Drive

Buckland River at Wallace Drive at 1% AEP



1% AEP Inundation Map – Harrietville Township
Ovens River at Harrietville at 1% AEP

FloodZoom Default View



August 27, 2021

DELWP,FP,NECMA 1:18,056

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

FloodZoom Default View

August 27, 2021

DELWP,FP,NECMA

1:18,056

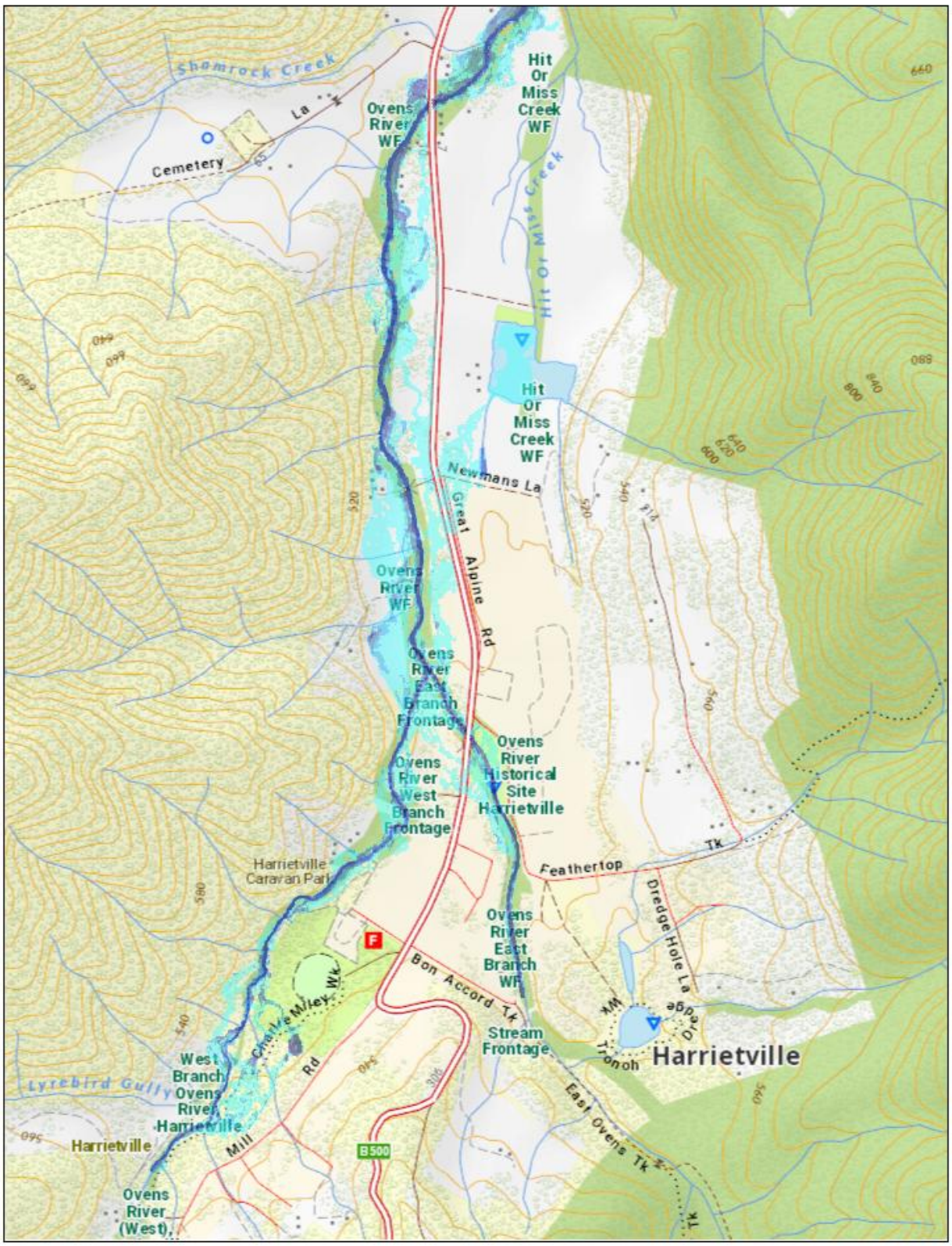
0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

20% AEP Inundation Map – Harrietville Township
Ovens River at Harrietville at 20% AEP

FloodZoom

Default View



August 27, 2021

DELWP,FIP,NECMA

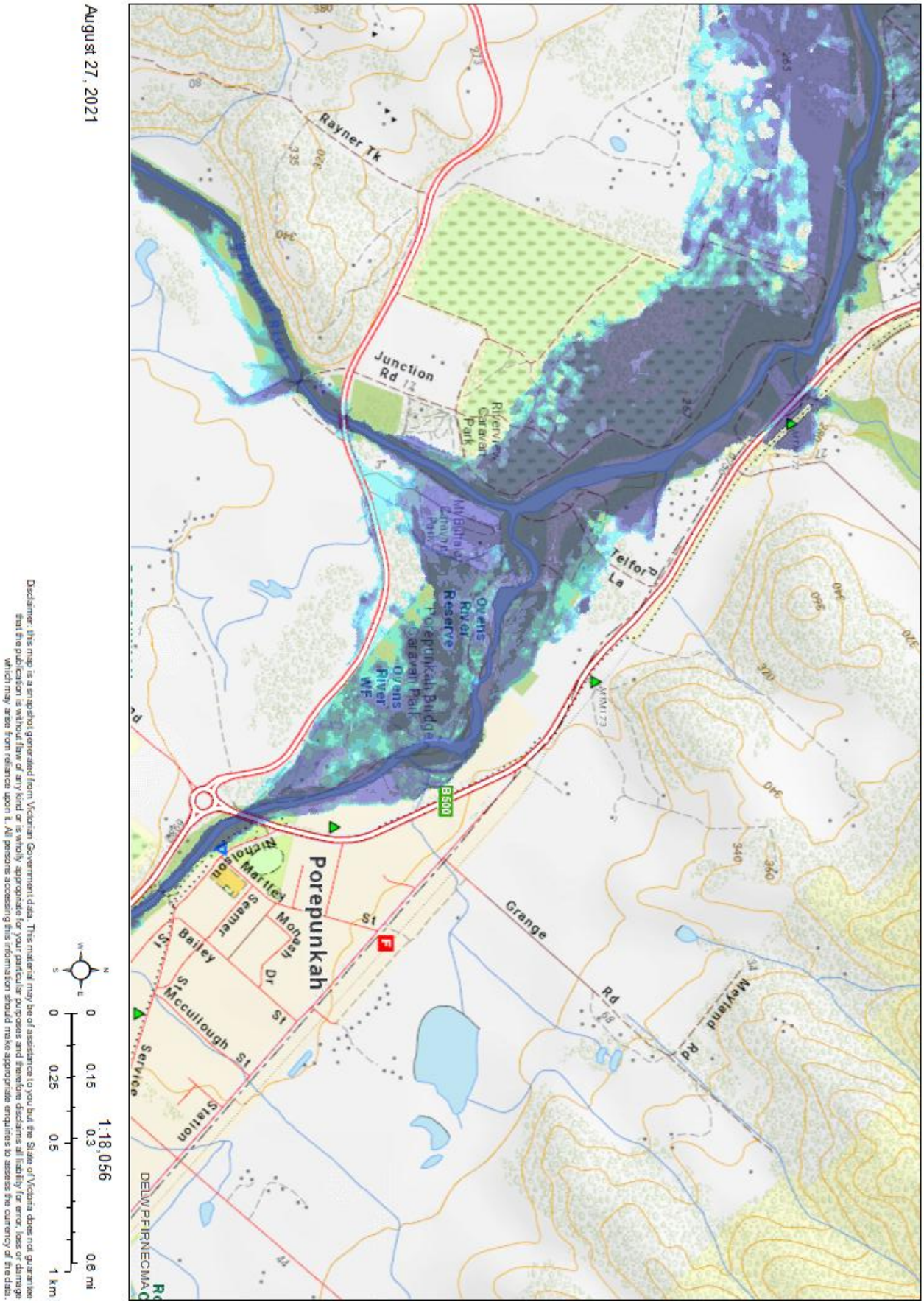
1:18,056

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

1% AEP Inundation Map – Porepunkah Township

Ovens River at Eurobin and Buckland River at Harris Lane at 1% AEP



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APPENDIX G – SEVERE WEATHER (STORM & FLOOD) EVENTS

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. This is guided by the VICSES policy 10.02 Local Knowledge.

Information from community sources including but not limited to observations, historical information and information about current and possible consequences of an incident may be utilised to help inform the process of incorporating local knowledge into decision making during an incident. Field observers, Local Information Officers (LIOs) and other agency networks will help support this process.

Field Observers

Field Observers may support:

- the monitoring and reporting on observations of incidents. For example, during a flood event a Field Observer may be regularly taking photos via mobile app technology of the local stream gauge board if it is safe to do so.
- The provision of local advice regarding the consequences of incidents.
- Establishing linkages with key groups within local communities during emergency management planning and operational response. During operational response, this may be through an LIO or direct to the Intelligence cell. In some circumstances it may also be through a Community Liaison Officer if one is in place within the Public Information Unit or via a Community Field Officer.
- The provision of authorised information to community members where requested.

Intelligence Gathering System

Historically, the gathering of local flood/storm or other VICSES hazard intelligence during an event has been 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 create a flood/storm and other VICSES hazard 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 and graffiti.

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 field observations during an event such as a flood, 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 data.

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

Trusted field observers include both internal and external stakeholders (community members, ESOs such as CFA/VicPol). They can be activated and deployed by the VICSES RDO to use the app during an event and to report on valuable information with a level of accuracy.

The portal has been successfully integrated with EMCOP and eMap, 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.

Important Notes

These arrangements do not give field observers and existing agency networks any responsibility for operational decisions. Nor does it permit field observers and existing agency networks to direct operational activity, including the management of flood levees.

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

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.

Local Flood Guides can be accessed via the VICSES website

Within the Alpine Shire, there are the following Local Flood Guides:

- Myrtleford
- Harrietville
- Bright

APPENDIX I – STORM RESPONSE

Consequences of severe thunderstorm

Severe thunderstorms and its associated weather conditions such as a tornado or microburst may have the same effect on the community and the natural environment. The difference is likely to be in terms of the geographic expanse. A severe thunderstorm can move over a large part of the land mass whereas in Victoria, a tornado or microburst is likely to be heavily concentrated in a small geographic area affecting one or two localities.

Consequences of storm damage typically involve the following:

- wind damage to residence and buildings
- fallen trees damaging buildings and blocking roadways
- flooding
- road damage and road closures
- power outages
- telecommunications outages
- impacts on a wide range of critical infrastructure.
- Entrapment of people in vehicles or in homes.

Areas most likely to be affected by Storm damage

The Alpine 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 and significant townships and tourism activities and events nestled amongst mature native vegetation and bushland means tree damage during wind events is a significant risk.

The Australian Alps also present a significant risk with the alpine areas around Falls Creek and Mount Hotham attracting visitors all year round combined with their altitude, snow and significant winds can create road closures, tree damage, significant rain and blizzards.

BoM's storm archive (www.bom.gov.au/australia/stormarchive/) and VICSES' records of recent events show the North East (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 Myrtleford and adjacent municipalities that have been very damaging.

People in the open, under trees or camping/tourists, 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.

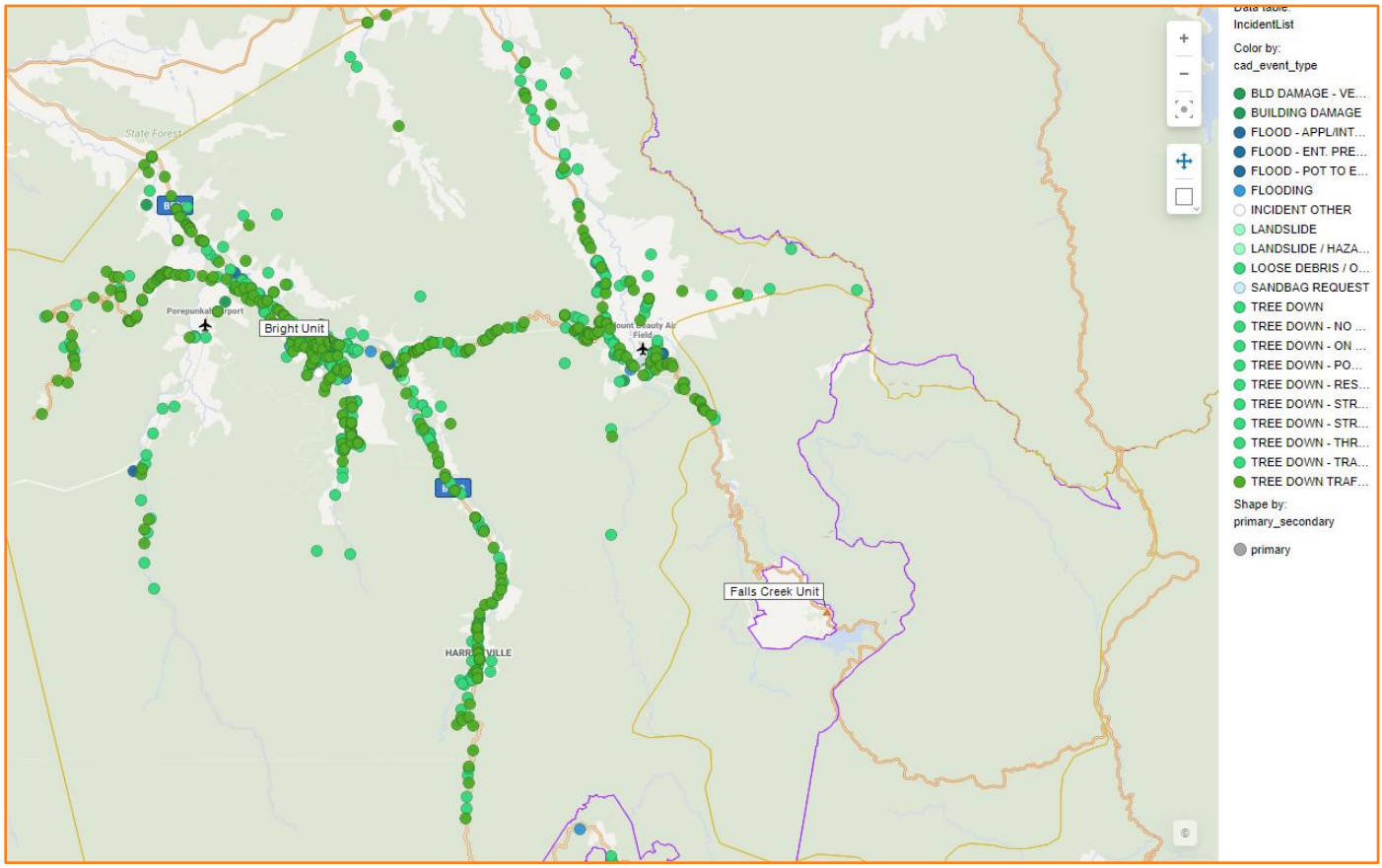
Obstructions across roads could disrupt services, affect community functioning and have great potential for road traffic delays for access and egress of the community and emergency services. Infrastructure near waterways, such as pedestrian bridges or their approaches may become damaged either directly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

Locations of historic storm damage

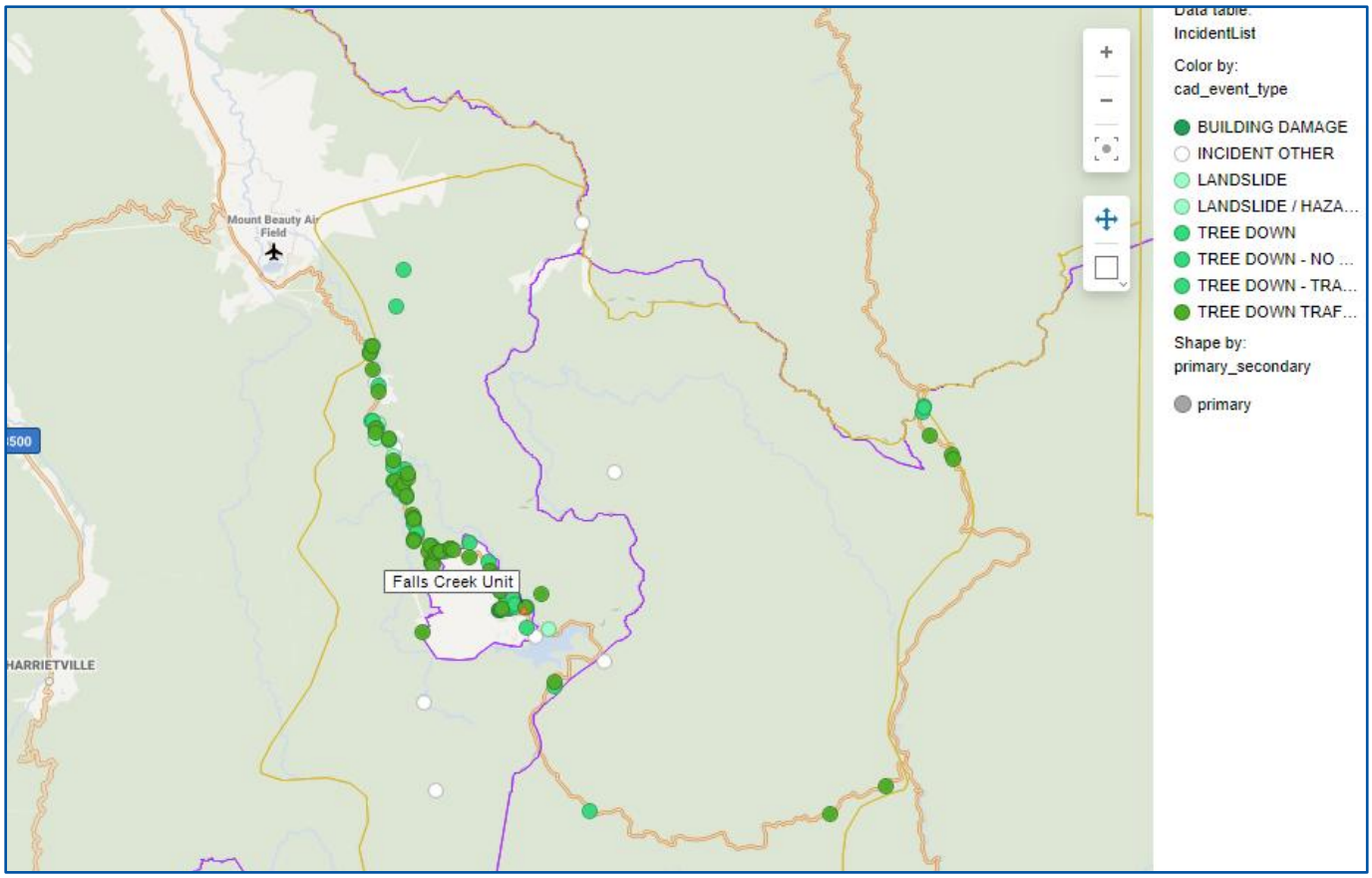
The following map indicates where the hot spots have been for historic storms of significance that have generated a larger than normal number of requests for assistance. Note that while the map is based on historic data, a severe storm can affect any part of the municipality.

Throughout the Alpine Shire, it is common for severe storms to result in trees on roads, including main access roads such as the Great Alpine Road.

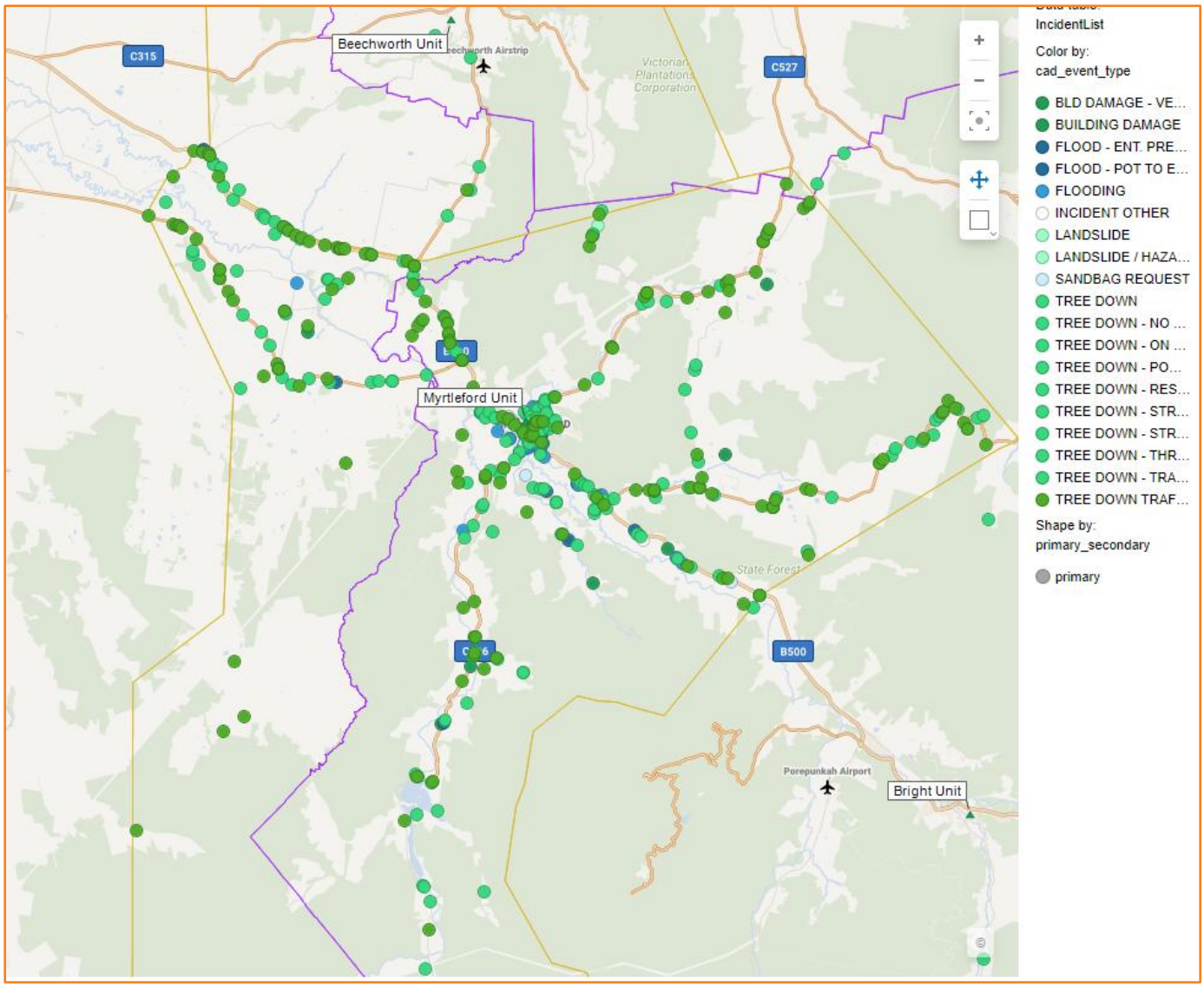
Severe Storm related Requests for Assistance (RFA) for the Bright VICSES Unit – Last 10 Years (June 2013 to June 2024)



Severe Storm related Requests for Assistance (RFA) for the Falls Creek VICSES Unit – Last 10 Years (June 2013 to June 2024)



Severe Storm related Requests for Assistance (RFA) for the Myrtleford VICSES Unit – Last 10 Years (June 2013 to June 2024)



Bureau of Meteorology weather districts

The municipality falls within the weather district of North East.

As the municipality incorporates part of the alpine region the BoM alpine weather warnings apply to some locations.

Storm specific community education programs

VICSES provides standard community education material on what to do during a storm on its public website. This includes:

- Are you storm ready?
- How to plan and stay safe before a storm hits
- What to do during a storm
- Recovery after a storm

APPENDIX I2 – STORM DAMAGE SPECIFIC RESPONSE ARRANGEMENTS

In the initial response phase, managing the response to widespread property damage resulting from a severe thunderstorm involves the coordinated assignment of resources to individual requests for assistance. It is akin to a fire service suddenly having to respond to a widespread outbreak of individual domestic house fires at the same time.

This is different to the approach taken for some other hazards such as riverine flooding or bushfire, where there is more likely to be a need to undertake common tasks around building defensive structures or control lines.

After the initial response phase, and in the most severe cases, relief and recover may take on a more familiar look to other natural hazards. However, there may be unique aspects that vary from planning associated with riverine flooding.

An example of this may be assisting vulnerable people. In a flood, the plans typically identify the areas subject to inundation, whereas in a storm, the damage may occur anywhere. As such, there may be high risk premises such as aged care or medical facilities that need assistance after a severe storm but are not identified as at risk from riverine flooding.

In the example of the 2021 cyclogenesis windstorm event that affected the Dandenong Ranges, parts of Gippsland, Macedon Ranges and other localities, the effect on the community lasted weeks with access and power restoration taking weeks to achieve. In the aftermath of that event the community gained value from the sector establishing early on, relief centres and community hubs, however, their establishment was hindered due to the consequences of the flood and storm event.

In addition, initial welfare calls made to community members by the Department of Families, Fairness and Housing (DFFH) and AusNet due to being listed as a power dependent customer or experiencing prolonged power outages were generally appreciated.

Incident Control Centres and Divisional/Sector command points

Unless stated otherwise here, the same pre-determined locations are to be used for Incident Control Centres

Each unit local headquarters listed below are suitable for use as a divisional or sector command point.

Unit name and Location/address	Divisional or sector command point suitability	Ability to manage small, medium or large-scale response
Bright Unit 16 Churchill Ave, Bright, VIC 3741	Sector Command Point	Small < 20 RFA's
Myrtleford Unit 16 Jubilee St, Myrtleford VIC 3737	Sector Command Point	Small < 20 RFA's
Falls Creek Windy Corner, Falls Creek VIC 3699	Sector Command Point	Small < 20 RFA's

The nature of severe storm damage may preclude one of the above locations from being used as intended due to factors such as road blockages (trees down), damage to its infrastructure or loss of mains power.

Response planning and escalation

In the initial response phase, units will receive requests for assistance (RFA's) direct from Triple Zero Victoria and will typically respond in a business-as-usual mode, typically attending events in order of receipt or priority. This is in accordance with the VICSES Operations Management Manual.

As a unit begins to receive a volume of RFAs, it is important that it shifts focus to efficient use of resources through the application of:

- ensuring it has geographic situational awareness through visualising the location and spread of RFAs via EM-COP situation map or if unable to login, via the public access Emergency.vic.gov.au incidents and warnings page. This will prevent unnecessary travel times and can assist in allocating resources to manage a number of RFAs located in nearby streets.
- Triaging RFAs including call-backs to residents where appropriate to clarify needs and priority
- Seeking support via the RDO and escalation of response arrangements as appropriate (transfer of control from level 1 to level 2 response arrangements).
- Potential deployment of field observers and intelligence gathering via Snap Send Solve to assess areas where the storm impacted as in many cases, there will be unreported cases of damage that requires assistance from the community

Support arrangements – other agencies assistance

While VICSES units provide the initial response to storm damage, this section details the local arrangements for events where VICSES will require support from local emergency services and government departments/agencies to manage a large number of requests for assistance from the community.

For agencies that are likely to provide regular assistance such as CFA brigades and FRV, it is strongly encouraged that these organisations promote to its responders the benefit of completing the E-learn Maintain safety at storm and flood operations. This E-Learn is accessible via the EMV intranet site EM-Learning.

In the municipality, the following agencies typically provide immediate support to assist VICSES units in responding to RFAs.

- Alpine Shire Council
- CFA
- Forest Fire Management Victoria (DEECA, Parks Victoria)
- DTP (Vicroads)
- Panel of contractors

Power utilities

In the event of a severe storm, significant loss of mains electricity/power is highly likely. Ensuring there is effective coordination between the power distribution network operators and the Incident Control Centre will enhance community information and assist with elements of relief such as ensuring vulnerable people that require medical / or other life sustaining equipment remains functional.

Early liaison with the distribution networks may assist in establishing priorities for power restoration, identifying areas of outages and matching this with any known vulnerable premises such as aged care, medical facilities.

The local protocols for establishing coordination and liaison between the distribution networks and the ICC are as follows:

- Ausnet is the service provider for electricity within the Alpine Shire.
- Contact details for Ausnet are available via EMCOP Operational Contacts, and via their 24/7 hotline 131 799.
- An Ausnet EMLO should be sought ASAP to ensure early communication and planning can be completed.

Considerations for operating with other agencies

As other agencies are deployed to assist the IC should consider the following actions:

- Establish a communications plan to enable the tasking of other agency resources. This may include:
  - Use of other agency portable radios at the Sector/Division command point
  - Embedding an CFA member in the comms team so that they can page allocated tasks via EAS/VIPER direct to its brigade resources
  - Embedding an EMLO from other assisting agencies at the sector/Division command point for comms purposes
  - Use of mobile phones or sat phones to communicate
- Embed Power Company / Utilities / DEECA EMLOs into the IMT / Division Command Points to support operations involving downed powerlines, and to also ensure that the relevant control agency for Power Outages is able to communicate directly to the IMT / Division.
- Ensuring other agency personnel who are undertaking EMLO roles have access to EM-COP
- Preparing a briefing to support in-coming other agency resources to identify
  - staging area location and any safety issues with accessing it (closed roads/powerlines down)
  - resources available such as re-supply of consumables (tarps/sandbags)
  - welfare arrangements
  - duty time limitations (these should be consistent with VICSES SOP 003