

West Wimmera

FLOOD EMERGENCY PLAN

A Sub-Plan of the Municipal Emergency Management Plan

For West Wimmera Shire Council
and
VICSES Edenhope, Goroke and Kaniva Units

Version 1, February 2020



Table of Contents

Part 1. Introduction	1
1.1 Approval and Endorsement	1
1.2 Purpose and Scope of this Flood Emergency Plan	3
1.3 Municipal Flood Planning Committee (MFPC)	3
1.4 Responsibility for Planning, Review & Maintenance of this Plan	3
Part 2. BEFORE: Prevention / preparedness arrangements	4
2.1 Community Engagement and Awareness	4
2.2 Structural Flood Mitigation Measures	4
2.3 Non-structural Flood Mitigation Measures	4
2.3.1 Exercising the Plan	4
2.3.2 Flood Warning	4
2.3.3 Local Knowledge	4
Part 3. DURING: Response arrangements	5
3.1 Introduction	5
3.1.1 Activation of Response	5
3.1.2 Responsibilities	5
3.1.3 Emergency Coordination Centre or equivalent	5
3.1.4 Escalation	5
3.2 The six C's	6
3.2.1 Control	6
3.2.2 Incident Controller (IC)	6
3.2.3 Incident Control Centre (ICC)	6
3.2.4 Divisions and Sectors	7
3.2.5 Incident Management Team (IMT)	8
3.2.6 Incident Emergency Management Team (IEMT)	8
3.2.7 On Receipt of a Flood Watch / Severe Weather Warning	8
3.2.8 On Receipt of the First and Subsequent Flood Warnings	9
3.3 Initial Impact assessment	10
3.4 Preliminary Deployments	10
3.5 Response to Flash Flooding	10
3.6 Evacuation	10
3.7 Flood Rescue	11
3.8 Aircraft Management	11
3.9 Resupply	11
3.10 Essential Community Infrastructure and Property Protection	12
3.11 Disruption to Services	12

3.12	Road Closures	12
3.13	Dam Spilling/ Failure.....	13
3.14	Waste Water related Public Health Issues and Critical Sewerage Assets	13
3.15	Access to Technical Specialists	13
3.16	After Action Review	13
Part 4.	AFTER: Emergency relief and recovery arrangements	14
4.1	General	14
4.2	Emergency Relief	14
4.3	Animal Welfare	14
4.4	Transition from Response to Recovery	14
	Appendix A: Flood threats for the West Wimmera	15
5.2	Major Waterways	17
5.3	Building Damages.....	18
5.4	Dams Spill / Failure.....	19
5.5	Levees	22
	Appendix B: Typical flood peak travel times	23
	Appendix C1: Harrow (Glenelg River) Flood Emergency Plan	24
	Appendix C2: Chetwynd Flood Emergency Plan	38
	Appendix C3: Edenhope Flood Emergency Plan	46
	Appendix C4: Apsley Flood Emergency Plan.....	52
	Appendix D: Flood evacuation arrangements	59
	Appendix E: Public Information and Warnings	62
	Appendix F: Flood Maps	64
	Appendix G: Local flood information	74
	Appendix H: Local knowledge arrangements	74
	Appendix I: West Wimmera Community Sandbag Collection Points	75
	References	77

Distribution of MFEP

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

Document Transmittal Form / Amendment Certificate

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

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

The VICSES MFEP template 5.3 was used to develop this Plan.

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

Amendment Number	Date of Amendment	Amendment Entered By	Summary of Amendment
0.1	June 2018	Gavin Kelly	Draft Version
0.2	November 2019	Clare Mintern	Rewrite of the report.
0.3	November 2019	Gavin Kelly	Updated operations table 3.2.4.
0.4	February 2020	Clare Mintern	Incorporated MEMPC feedback.

This Plan will be maintained on the VICSES website at www.ses.vic.gov.au/get-ready/your-local-flood-information and West Wimmera Shire website <https://www.westwimmera.vic.gov.au/page/HomePage.aspx>

List of Abbreviations & Acronyms

The following abbreviations and acronyms are used in the Plan

AAR	After Action Review	IIA	Initial Impact Assessment
AEP	Annual Exceedance Probability	IEMT	Incident Emergency Management Team
AHD	Australian Height Datum (the height of a location above mean sea level in metres)	JSOP	Joint Standard Operations Procedure
AIDR	Australian Institute of Disaster Resilience	IMS	Incident Management System
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	MFB	Metropolitan Fire Brigade
CERA	Community Emergency Risk Assessment	MFEP	Municipal Flood Emergency Plan
CFA	Country Fire Authority	MFEPCC	Municipal Flood Emergency Planning Committee
CMA	Catchment Management Authority	MRM	Municipal Recovery Manager
RERC	Regional Emergency Response Coordinator	PMF	Probable Maximum Flood
RERCC	Regional Emergency Response Coordination Centre	RAC	Regional Agency Commander
DHHS	Department of Health and Human Services	RCC	Regional Control Centre
DJPR	Department of Jobs, Precincts and Regions	RDO	Regional Duty Officer
DELWP	Department of Environment, Land, Water and Planning	SAC	State Agency Commander
EMLO	Emergency Management Liaison Officer	SBO	Special Building Overlay
EMMV	Emergency Management Manual Victoria	SCC	State Control Centre
EMT	Emergency Management Team	SDO	State Duty Officer
ERC	Emergency Relief Centre	SERP	State Emergency Response Plan
EO	Executive Officer	SEWS	Standard Emergency Warning Signal
FO	Floodway Overlay		

Part 1. Introduction

1.1 Approval and Endorsement

This Municipal Flood Emergency Plan (MFEP) has been prepared by VICSES, Glenelg Hopkins CMA, Wimmera CMA and West Wimmera Shire Council staff and with the authority of the West Wimmera Municipal Emergency Management Planning Committee (West Wimmera MEMPC) pursuant to Section 20 of the Emergency Management Act 1986 (as amended).

VICSES staff has undertaken consultation with the West Wimmera staff, Glenelg Hopkins CMA staff, Wimmera CMA staff and Edenhope, Goroke and Kaniva VICSES Unit members regarding the arrangements contained within this plan.

This MFEP is a sub plan to the West Wimmera Shire Emergency Management Plan (MEMP), is consistent with the Emergency Management Manual Victoria (EMMV) and the Victorian Floodplain Management Strategy (2016), and takes into account the outcomes of the Community Emergency Risk Assessment (CERA) process undertaken by the Municipal Emergency Management Planning Committee (MEMPC).

The MFEP is consistent with the Mid West Regional Flood Emergency Plan (RFEP) and the State Emergency Response Plan (SERP) – Flood sub-plan.

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

This Plan is approved by the VICSES Regional Manager.

This Plan is endorsed by the West Wimmera MEMPC as a sub-plan to the MEMP.

Approval

Stephen Warren

Date 5th February 2020

Grampians Mid West Region VICSES Regional Manager



Endorsement

??

Date ?? February 2020

Chair – Municipal Emergency Management Planning Committee

1.2 Purpose and Scope of this Flood Emergency Plan

The purpose of this MFEP is to detail arrangements agreed for managing a flood emergency before, during and after it occurs or potentially occurs within the West Wimmera Shire.

As such, the scope of the Plan is to:

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

1.3 Municipal Flood Planning Committee (MFPC)

Membership of the West Wimmera Flood Planning Committee (MFPC) comprises of the following representatives from the following agencies and organisations:

- VICSES (Regional Officer – Emergency Management) (Chair),
- Council (i.e. Municipal Emergency Manager, Drainage Engineer, Statutory Planning Officer)
- Victoria Police (Municipal Emergency Response Co-ordinator) (MERC),
- Catchment Management Authorities (CMA), - Wimmera and Glenelg Hopkins
- Department of Health and Human Services (DHHS) as required,
- Department of Environment, Land, Water and Planning (DELWP) as required,
- GWMWater
- Bureau of Meteorology as required,
- Local community representatives and
- CFA

1.4 Responsibility for Planning, Review & Maintenance of this Plan

This MFEP must be maintained in order to remain effective.

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

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

A new flood study;

A significant change in flood mitigation measures;

After the occurrence of a significant flood event within the Municipality;

Or if none of the above occur, every 3 years.

Part 2. BEFORE: Prevention / preparedness arrangements

2.1 Community Engagement and Awareness

Details of this MFEP will be released to the community through; local media, any FloodSafe engagement initiatives and websites (VICSES and the Municipality) upon formal adoption by VICSES and the Municipality. VICSES with the support of the West Wimmera Shire, Wimmera and Glenelg-Hopkins CMA's will coordinate targeted community flood engagement programs within the council area.

Refer to appendix H (LFG and FloodSafe Information. Attach any broader FloodSafe details).

2.2 Structural Flood Mitigation Measures

There is one small levee in Harrow constructed to protect the Johnny Mullagh Oval from high river flows. The protection level of the levee is less than a 5 year ARI flood event. For more detail refer to **Appendix C1**.

2.3 Non-structural Flood Mitigation Measures

2.3.1 Exercising the Plan

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

2.3.2 Flood Warning

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

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

2.3.3 Local Knowledge

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

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

Part 3. DURING: Response arrangements

3.1 Introduction

3.1.1 Activation of Response

Flood response arrangements may be activated by the Regional Duty Officer (RDO) VICSES – Mid West Region or Regional Agency Commander (RAC).

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

3.1.2 Responsibilities

There are a number of agencies with specific roles that will act in support of VICSES and provide support to the community in the event of a serious flood within the West Wimmera Shire. These agencies will be engaged through the IEMT (Incident Emergency Management Team) when enacted or via the RAC when the IEMT is not enacted.

The general roles and responsibilities of supporting agencies are as agreed within the: MEMP, EMMV (Part 7 'Emergency Management Agency Roles') and SERP Sub Plan - Flood and Regional Flood Emergency Plan.

3.1.3 Emergency Coordination Centre or equivalent

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

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

3.1.4 Escalation

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

Resourcing and event escalation arrangements are described in Part 3 of the EMMV.

3.2 The six C's

Arrangements in this MFEP must be consistent with the 6 C's detailed in State and Regional Flood Emergency Plans and the MEMP. For further information, refer to Part 3 of the EMMV.

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

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

3.2.1 Control

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

Part 7 of the EMMV prepared under the *Emergency Management Act 1986 (as amended)*, identifies VICSES as the Control Agency for flood. It identifies DELWP as the Control Agency responsible for "dam safety, water and sewerage asset related incidents" and other emergencies. A more detailed explanation of roles and responsibilities is provided in later sections of Part 7 of the EMMV.

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

3.2.2 Incident Controller (IC)

An Incident Controller (IC) will be appointed by the VICSES (as the Control Agency) to command and control available resources in response to a flood event on the advice of the Bureau of Meteorology (or other reliable source) that a flood event will occur or is occurring. The IC responsibilities are as defined in Part 3 of the EMMV.

3.2.3 Incident Control Centre (ICC)

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

Pre-determined ICC locations are available in the MEMP.

3.2.4 Divisions and Sectors

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

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

Incident Level	ICC / ICP	Division & Division Control Point	Sector	Sector Control Point
Level 2-3	Horsham ICC	Edenhope LHQ	Chetwynd CFA	TBD as needed
Level 2-3	Horsham ICC	Edenhope LHQ	Harrow CFA	TBD as needed
Level 2-3	Horsham ICC	Edenhope LHQ	Apsley CFA	TBD as needed
Level 2-3	Horsham ICC	Edenhope LHQ	Edenhope LHQ	TBD as needed
Level 1	Chetwynd CFA			
Level 1	Harrow CFA			
Level 1	Apsley CFA			
Level 1	Edenhope LHQ			

3.2.5 Incident Management Team (IMT)

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

Refer to Part 3 of the EMMV for guidance on IMTs and Incident Management Systems (IMs).

3.2.6 Incident Emergency Management Team (IEMT)

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

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

Refer to 3 of the EMMV for guidance on IEMTs.

3.2.7 On Receipt of a Flood Watch / Severe Weather Warning

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

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

3.2.8 On Receipt of the First and Subsequent Flood Warnings

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

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

3.3 Initial Impact assessment

Initial impact assessments will be conducted in accordance with Part 3 section 5.2.5 of the EMMV to assess and record the extent and nature of damage caused by flooding. This information may then be used to provide the basis for further needs assessment and recovery planning by DHHS and recovery agencies.

3.4 Preliminary Deployments

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

3.5 Response to Flash Flooding

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

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

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

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

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

3.6 Evacuation

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

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

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

Refer to EMMV Part 8, Appendix 9 and the Evacuation Guidelines for guidance of evacuations for flood emergencies.

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

3.7 Flood Rescue

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

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

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

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

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

- Flood Rescue boats are located at Balmoral, Hamilton and Nhill Units.
- Ararat and Warrnambool Units have a land based Swift Rescue Team.
- HEMS 4 Rescue helicopter is located at Warrnambool.

3.8 Aircraft Management

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

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

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

Suitable airbase facilities are located at:

- Edenhope Aerodrome, along the Wimmera Highway, west of Edenhope.

3.9 Resupply

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

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

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

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

3.10 Essential Community Infrastructure and Property Protection

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

The West Wimmera Shire Council maintains a small stock of sandbags that will be made available at community collection points at Harrow, Edenhope and Apsley, refer to **Appendix I** for further details. These details will be advertised by both VICSES and West Wimmera Shire at appropriate times prior to and during an event. Back-up supplies are available through the VICSES Regional Headquarters. The IC will determine the priorities related the use of sandbags, which will be consistent with the strategic priorities.

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

Property may be protected by:

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

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

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

Refer to **Appendix C** for further specific details of essential infrastructure requiring protection and location of sandbag collection points.

3.11 Disruption to Services

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

3.12 Road Closures

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

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

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

3.13 Dam Spilling/ Failure

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

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

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

3.14 Waste Water related Public Health Issues and Critical Sewerage Assets

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

Advise VICSES of the security of critical sewerage assets to assist preparedness and response activities in the event of flood;

Maintain or improve the security of critical sewerage assets;

Check and correct where possible the operation of critical sewerage assets in times of flood;

Advise the ICC in the event of inundation of critical sewerage assets.

It is the responsibility of the West Wimmera Shire Environmental Health Officer to inspect and report to the MERO and the ICC on any water quality issues relating to flooding.

3.15 Access to Technical Specialists

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

3.16 After Action Review

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

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

Part 4. AFTER: Emergency relief and recovery arrangements

4.1 General

Arrangements for recovery from a flood incident within the West Wimmera Shire is detailed in the West Wimmera Shire MEMP.

4.2 Emergency Relief

The decision to recommend the opening of an emergency relief centre sits with the IC. The IC is responsible for ensuring that relief arrangements have been considered and implemented where required under the State Emergency Relief and Recovery Plan (Part 4 of the EMMV).

The range and type of emergency relief services to be provided in response to a flood event will be dependent upon the size, impact, and scale of the flood. Refer to Part 4 of the EMMV for details of the range of emergency relief services that may be provided.

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

Details of the relief arrangements are available in the MEMP.

4.3 Animal Welfare

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

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

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

4.4 Transition from Response to Recovery

VICSES as the Control Agency is responsible for ensuring effective transition from response to recovery. This transition will be conducted in accordance with existing arrangements as detailed in Part 3 of the EMMV or location of the transition arrangements are available in the MEMP

Appendix A: Flood threats for the West Wimmera

This Appendix provides a broad overview of flood risk within the Municipality. Detailed flood risk information for individual communities is detailed in **Appendix C**.

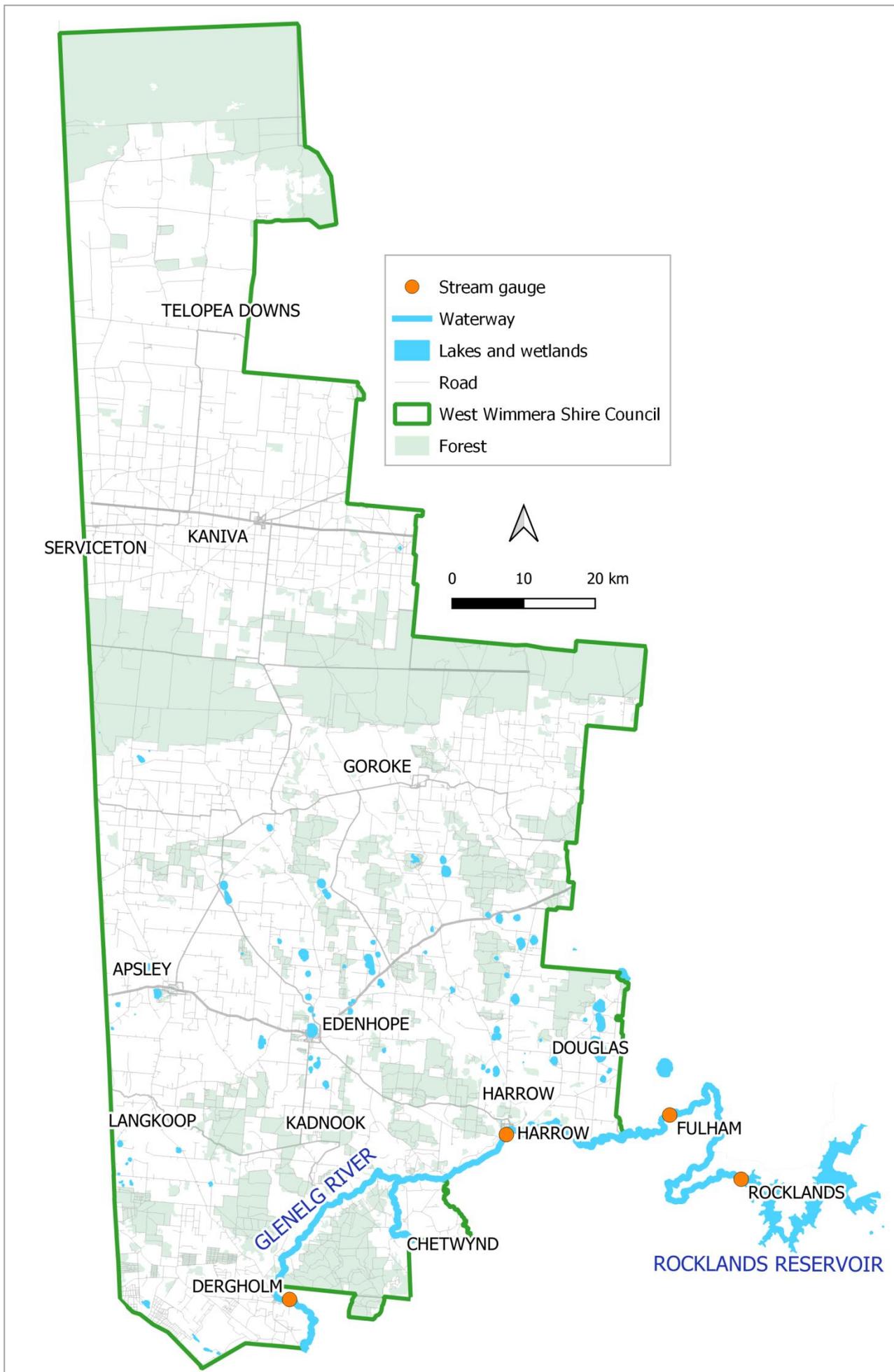
5.1 Stormwater and Riverine Flooding

West Wimmera Shire Council has towns that are subject to stormwater and riverine flooding. Towns that are prone to stormwater flooding include Apsley and Edenhope.

West Wimmera Shire has a long history of riverine flood events. Towns impacted by riverine flooding include Harrow and Chetwynd.

Flood events within West Wimmera have been infrequent over the last decade. The most recent flood event was recorded in 2016, refer to a list of significant flood events below.

Year	Description
September 2016	Large flood event in Apsley, Edenhope, Chetwynd and Harrow causing damage to buildings and infrastructure.
January 2011	Large flood event caused damage to buildings and infrastructure in Edenhope, Apsley, Chetwynd and Harrow.
December 2010	The largest recent flood event in Harrow, Apsley, Chetwynd and Harrow causing significant damage to buildings and infrastructure.
September 2010	Flooding in the Glenelg River impacting Harrow.
1996	Flooding in the Glenelg River impacting Harrow.
1992	Flooding in the Glenelg River impacting Harrow.
1991	Minor flooding in the Chetwynd River impacting Chetwynd.
1988	Flooding in the Glenelg River impacting Harrow.
1984	Flooding in the Glenelg River impacting Harrow.
1983	Flooding in the Glenelg River impacting Harrow.
1981	Flooding in the Glenelg River impacting Harrow.
1975	Flooding in the Glenelg River impacting Harrow.
1973	Minor flooding in the Chetwynd River impacting Chetwynd.



5.2 Major Waterways

The major waterways within the West Wimmera Shire Council are listed in the table below.

Waterway	Description
Glenelg River	<p>Flooding occurs regularly within the Glenelg River. The Glenelg River begins in the Grampian National Park, and flows into Rocklands Reservoir, then continues south through Harrow. Rocklands Reservoir is a significant storage that has significantly altered the flow regime of the Glenelg River. Records show that Rocklands Reservoir has spilled fourteen times, the largest being in 1975 where 5,300 ML/d spilled.</p> <p>Salt Creek is a tributary of the Glenelg River. The Salt Creek catchment is located to the north of Harrow, flowing into the Glenelg River upstream of Harrow.</p>
Chetwynd River	<p>The Chetwynd River is a tributary of the Glenelg River. The upper Chetwynd River catchment area is approximately 187km². Chetwynd River extends from Nareen north west through Chetwynd to the Glenelg River, 41km in length. Cains Creek is a tributary of Chetwynd River that also contributes flows upstream of Chetwynd. Flooding can develop quickly in Chetwynd River from heavy rainfall in the upper catchment, steep rises in floodwater can occur from 3 to 6 hours from rainfall.</p>
Koijak Creek	<p>Koijak Creek is a waterway that begins 7km west of Edenhope and flows 23 km west to Newlands Lake, west of Apsley. Flooding in this Creek can develop quickly from heavy localised rainfall, causing rapid rises in floodwater with very high velocities. While there are no flood studies or stream monitoring for Koijak Creek, the West Wimmera Shire have noted that flooding of Koijak Creek regularly cuts access along the Wimmera Highway west of Edenhope. Refer to Appendix C4 for a map and further information.</p>

5.3 Building Damages

Refer to the table below for property and building damages for flood events within the West Wimmera Shire Council. The table also provides an indication of when a Level 2 and 3 Incident Control Centre (ICC) will be required, based on the number of above floor damages.

Observed rainfall trigger (mm)	Average Recurrence Interval (ARI)	Total number of properties flooded (buildings flooded above floor)				Total damages for the West Wimmera Shire Council.
		Harrow (Appendix C1)	Chetwynd * (Appendix C2)	Edenhope^ (Appendix C3)	Apsley^ (Appendix C4)	
~35.1 mm in 6 hours to ~108 mm in 12 hours	5	0 (0)	1 (1)			1 (1)
~42.5 mm in 6 hours to ~53.5 mm in 12 hours	10	0 (0)	3 (3)			3 (3)
~50.4 mm in 6 hours to ~63.8 mm in 12 hours	20	1 (0)	3 (3)			4 (3)
~62 mm in 6 hours to ~79 mm in 12 hours	50	5 (3)	3 (3)			8 (6)
~71.8 mm in 6 hours to ~92.1 mm in 12 hours	100	5 (3)	3 (3)	15 (0)	12 (2)	35 (8)
~84.2 mm in 6 hours to ~108 mm in 12 hours	200	6 (3)	5 (5)	15 (0)	12 (4)	38 (12)
~103 mm in 6 hours to ~132 mm in 12 hours	500	13 (4)	5 (5)	17 (0)	12 (6)	47 (15)

*Estimated using flood extent mapping (Water Technology 2018). ^Estimated using anecdotal information provided by the West Wimmera Shire Council and VICSES Requests for Assistance database.

- Level 2 ICC
- Level 3 ICC

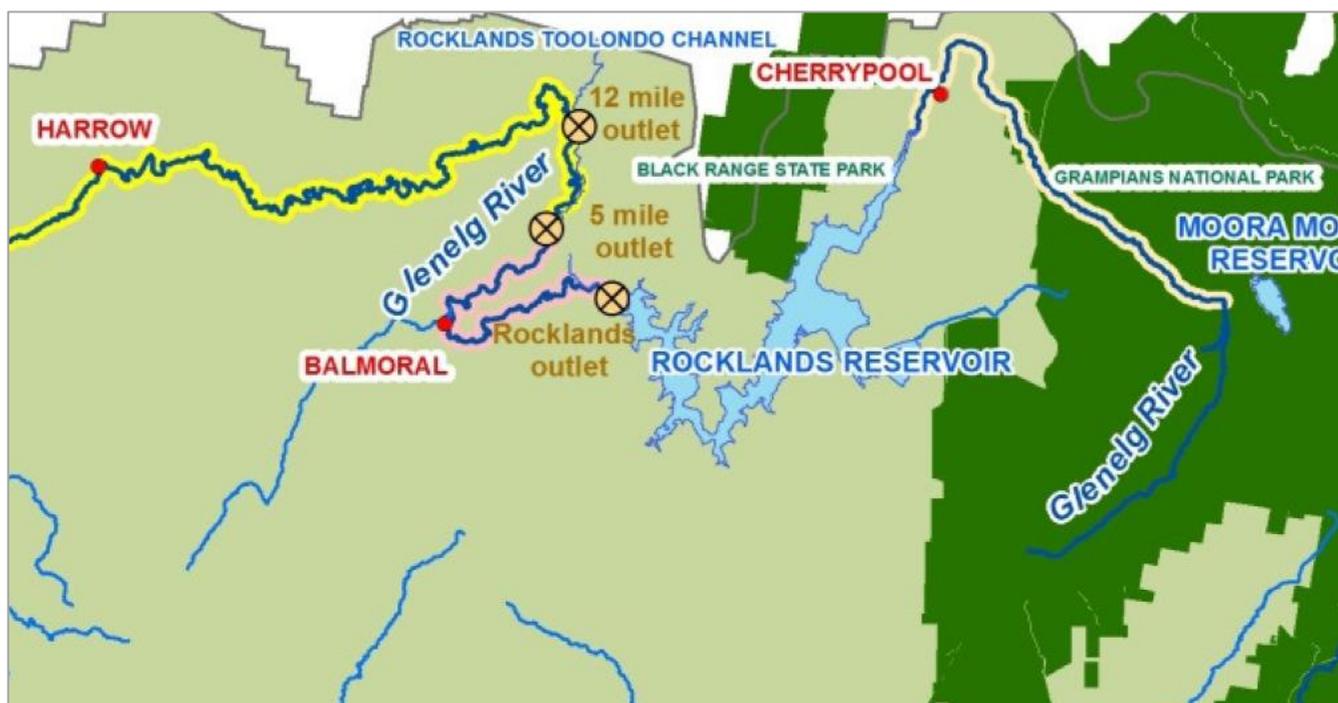
5.4 Dams Spill / Failure

Significant dams or lakes that influence flooding within West Wimmera Shire Council area are listed below.

Location	Owner	Full Supply level/volume	Comments
Rocklands Reservoir	GWMWater	194.67 m AHD 296,000 ML	Spills from Rocklands Reservoir has occurred historically and will occur again. Spills from Rocklands Reservoir significantly increase flood impacts downstream at Harrow. Refer to more detailed information below. Refer to web link for the latest storage levels: http://www.storagemanager.com.au/index.php?option=com_bwm&view=reservoirvolumechart&chart=reservoir_volume&id=9&primary=0&Itemid=532
Lake Wallace	GWMWater	~ 6.6 ML	Lake Wallace has no influence on flooding other than when the Lake is full it may cause nuisance flooding to adjacent properties. When the Lake is full overflows are released into a drainage line to the north of Lake Wallace.

Rocklands Reservoir

Rocklands Reservoir is located west of the Grampians National Park in the upper catchment of the Glenelg River. It is the largest dam in the GWMWater supply system, with a capacity of 348,300 ML. The Rocklands Reservoir has the potential to significantly impact flooding in the upper Glenelg River. High water levels in Rocklands reduce the available storage and increases the magnitude of flood events downstream when spills occur. However when the initial water level is low, this provides significant flood mitigation downstream by attenuating flows upstream of Rocklands reservoir, significantly reducing the flood magnitude for downstream towns of Harrow and Casterton.



Location of Rocklands Reservoir (source Glenelg Hopkins CMA)

Rocklands Reservoir is the largest reservoir within Grampians Wimmera Mallee Water's (GMMWater) supply system and is located on the Glenelg River upstream of the Balmoral Township. All entitlement holders, including the environment, are able to be supplied with water from the reservoir.

Rocklands Reservoir Summary:

Full Supply Level	195.47 m AHD
Full Supply Volume	348,300 ML
Maximum Operating Level (MOL)	194.67 m AHD
Maximum Operating Volume	296,000 ML
Spillway Length	154.53 m
Spillway Capacity	66,000 ML/day
Outlet Capacity	600 ML/day
Catchment Area	1,355 km ²
Surface Area When Full	67.5 km ²
Average Annual Inflow	83,000 ML/year
Maximum Depth	17 m
Year Constructed	1953

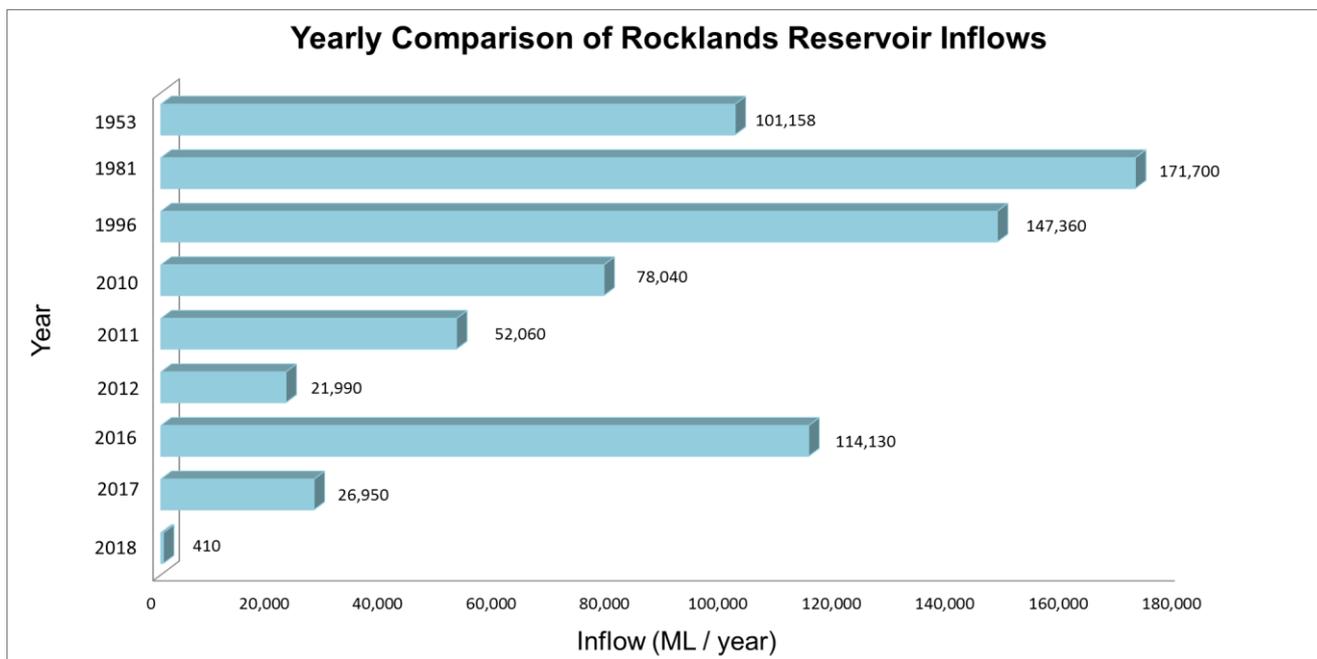
GMMWater maintains a Dam Safety Plan. When Rocklands Storage is full there is a high risk that the storage could spill and exacerbate flood impacts downstream.

Flows can be discharged from Rocklands to the Glenelg River at three locations; the main outlet (capacity 1,250 ML/d), 5 Mile Creek and 12 Mile Creek. For the locations of these discharge points refer to the map above.



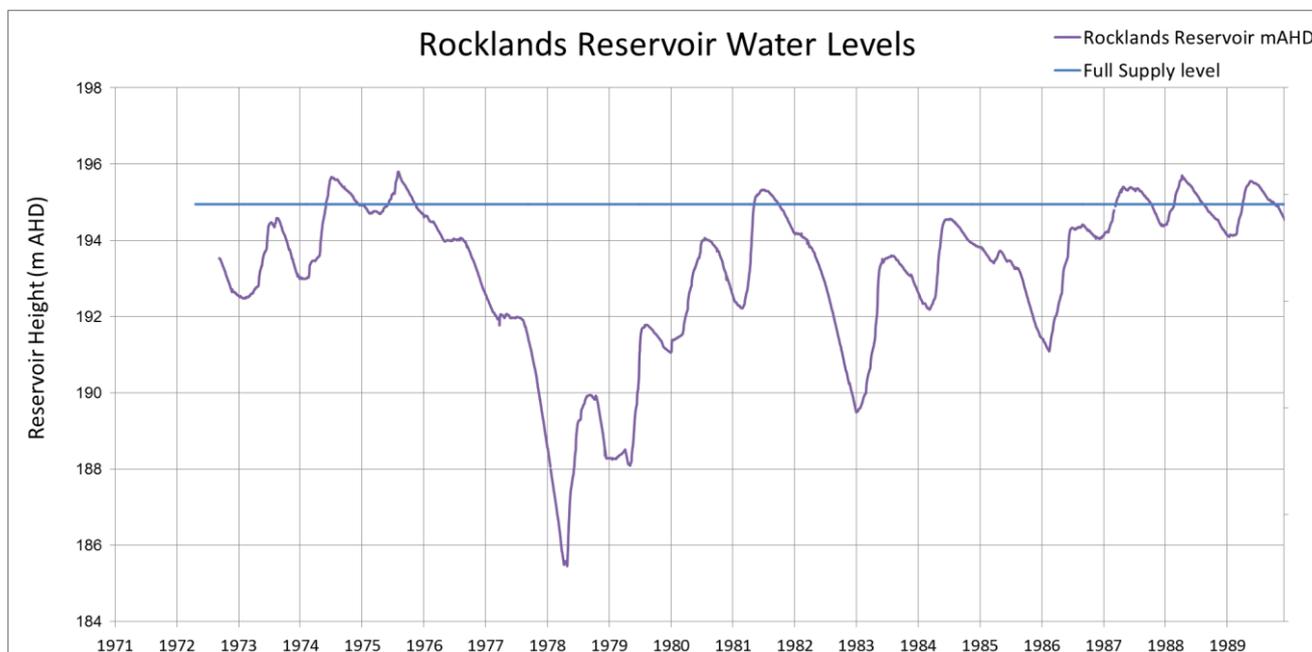
Rocklands Reservoir spillway.

While the annual average inflows into Rocklands Reservoir is 83,000 ML/y, since 1996 very rarely has the annual inflows come close to this volume, refer to the graph below. In 2018 inflows were less than 500 ML. Since 1996, less frequent rainfall and runoff has significantly reduced inflows into Rocklands Reservoir. The inflow graph below shows that in most years after 1996 the annual inflow volumes were significantly below average.

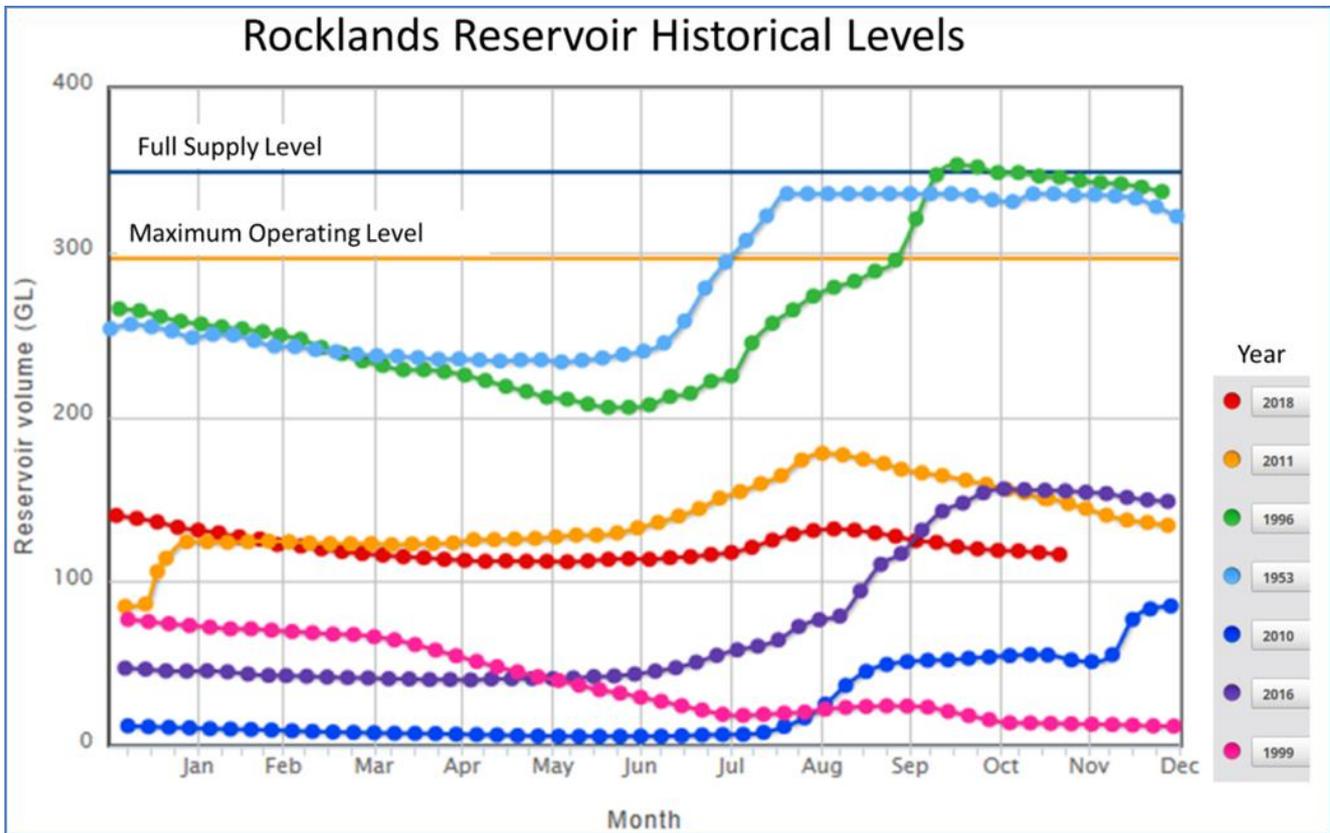


Source: data taken from GWMWater website November 2018.

The graphs below of Rocklands Reservoir historic levels shows that the storage was regularly full before 1996. However post 1996 due to the reduction of storage inflows it was often less than 50% capacity.



Historic water levels at Rocklands Reservoir (GWMWater)



Source: data taken from GWMWater website November 2018.

5.5 Levees

A small levee has been constructed in Harrow to protect the Johnny Mullah Oval. The protection level is less than a 5 year ARI design flood event. Refer to Appendix C1 for a map of the levee location.

Appendix B: Typical flood peak travel times

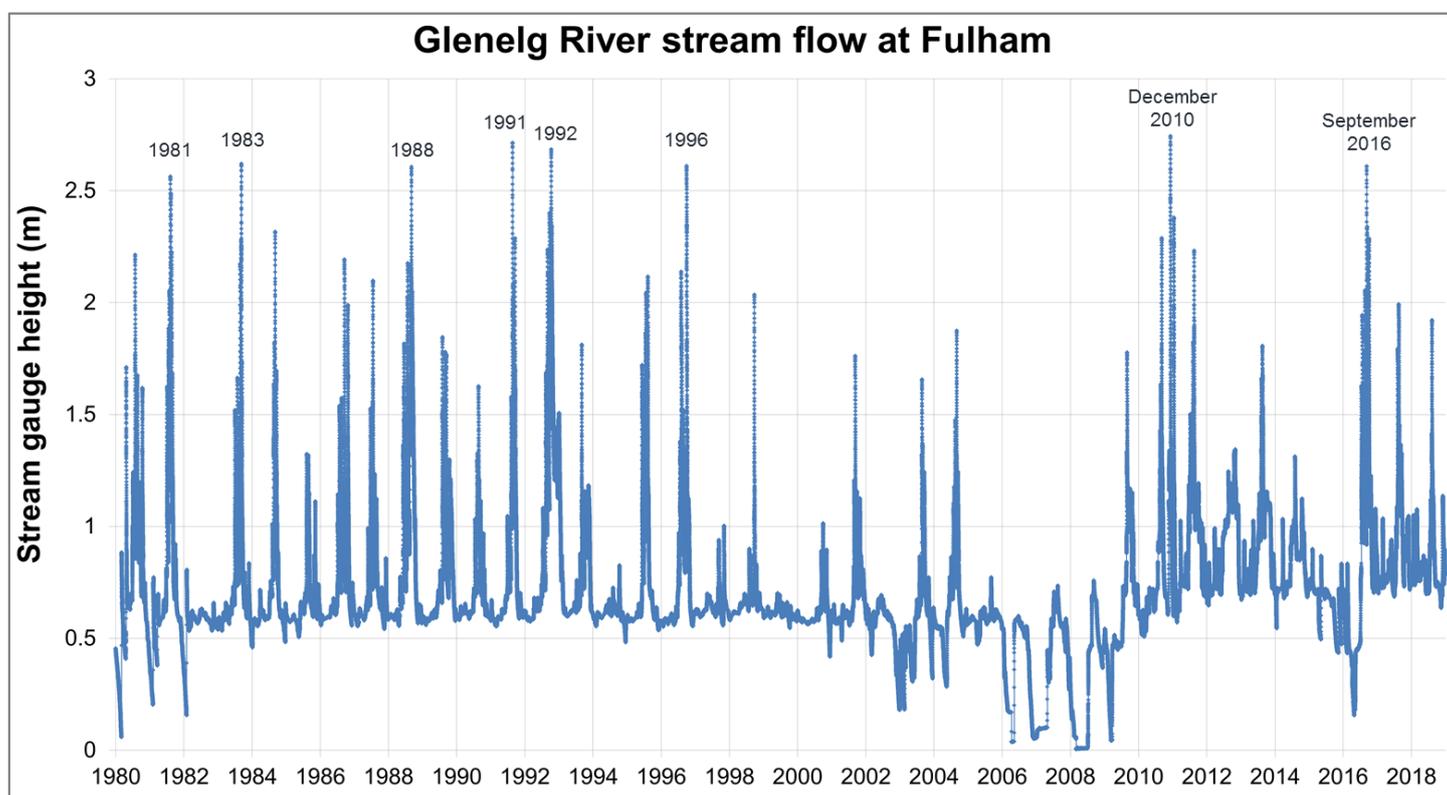
Location From	Location To	Typical Travel Time	Comments	Duration
Edenhope				
Start of rainfall (upper catchment)	Edenhope	1.5 - 6 hours	Begin to rise from normal levels	12 hours
Start of rainfall (upper catchment)	Edenhope	2.5 - 10 hours	To peak	
Apsley				
Start of rainfall (upper catchment)	Apsley	1.5 - 6 hours	Begin to rise from normal levels	12 hours
Start of rainfall (upper catchment)	Apsley	2.5 - 10 hours	to peak	
Chetwynd (Chetwynd River)				
Start of rainfall (upper catchment)	Chetwynd	3 - 6 hours	Begin to rise from normal levels	1 day
Start of rainfall (upper catchment)	Chetwynd	4 - 12 hours	To peak	
Harrow (Glenelg River)				
Start of rainfall (upper catchment)	Harrow	20 - 36 hours	Begin to rise from normal levels	1 day
Start of rainfall (upper catchment)	Harrow	30 - 36 hours	To peak	
Peak travel time from Fulham	Harrow	18 - 24 hours	To peak	

Appendix C1: Harrow (Glenelg River) Flood Emergency Plan

Harrow is located on the Glenelg River with several small tributaries in close proximity, the most significant of these is Salt Creek, flowing into the Glenelg River immediately upstream of Harrow, refer to the map below. Harrow has been subject to extensive and frequent riverine flooding from the Glenelg River. The Glenelg River begins in the Grampians National Park, and flows into the Rocklands Reservoir. The Rocklands Reservoir is a significant storage that has significantly altered the flow regime of the Glenelg River, 75km upstream of Harrow.

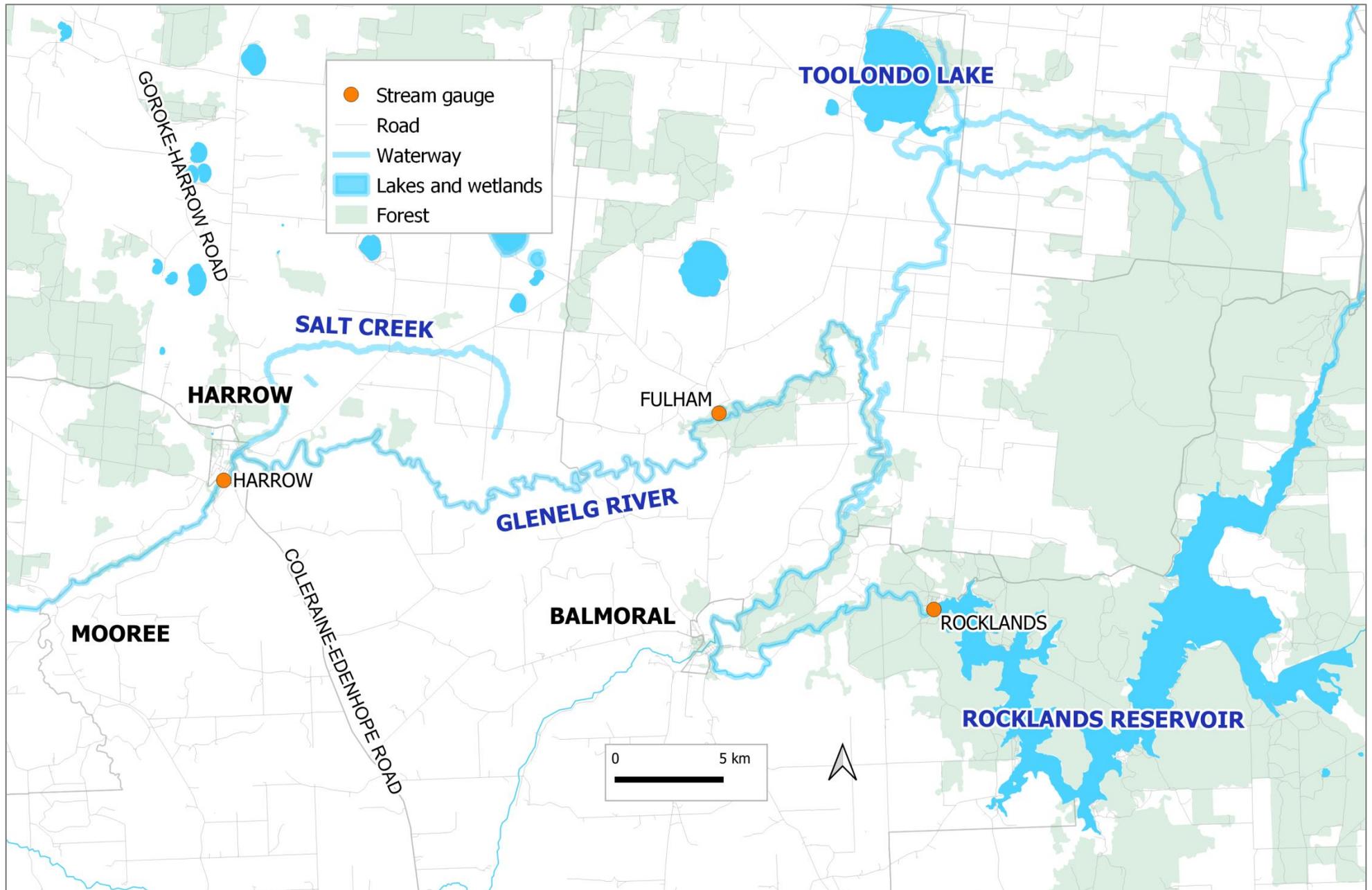
Historic Flood Events

Harrow has experienced frequent and extensive flood events. Significant flood events have occurred in 1956, 1975, 1979, 1981, 1983, 1984, 1988, 1991, 1992, 1996, 2010, 2011 and 2016, refer to the graph below



With the December 2010 flood event being the largest recent flood event. Heavy rainfall occurred on the 5th and 8th of December, with total rainfall of 115 mm. The highest rainfall intensity recorded was 54mm/hr, 31.6mm over 19 hours. The Fulham stream gauge peaked at 2.73 m on the 9th of December at 12 am.

This flood event caused considerable damages to buildings, roads and bridges. For more details refer to the Harrow Flood Intelligence Card below.





The Harrow RSL impacted by flooding during the December 2010 flood event.



Harrow Hall and toilet block at 29 Blair Street impacted by flooding during the December 2010 flood event.



Flooding in the Glenelg River cuts access to the Mooree Bridge (10km downstream of Harrow) during the December 2010 flood event.

Environmental flow releases

Environmental flows are regularly released from Rocklands Reservoir to support the Glenelg Rivers environmental values. The maximum typical environmental flow of 5,296 ML/d increases water levels in Harrow by 0.3m. This demonstrates that controlled environmental releases are not likely to add significantly to natural flood levels at Harrow with the level of increase relatively minor (Water Technology 2017).

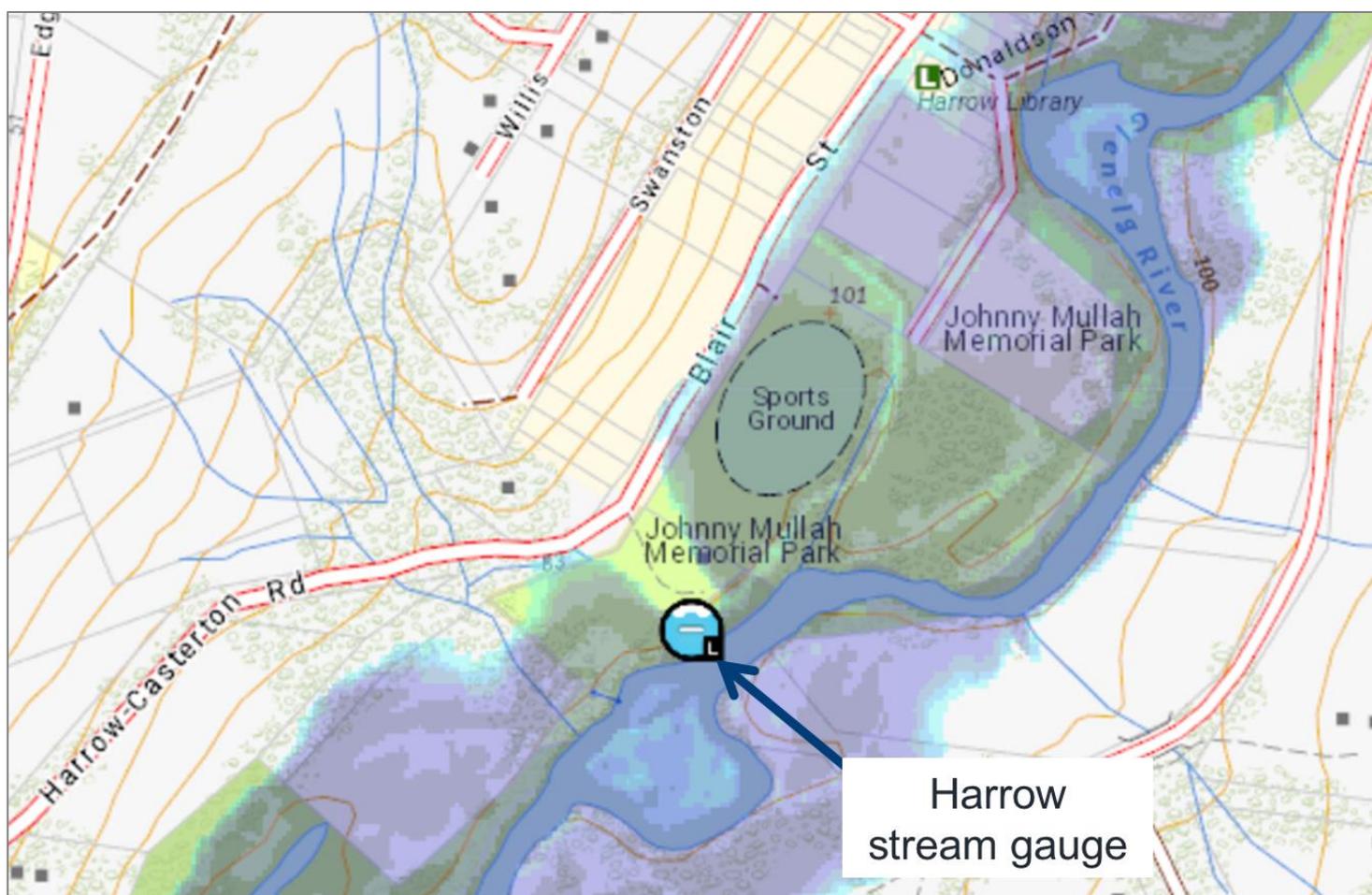
To ensure flood damages are minimised as much as possible, environmental flow releases from Rocklands Reservoir will be stopped as soon as possible when there is risk of flooding occurring in the Glenelg River.

Accuracy of the Harrow Stream Gauge

The Harrow stream gauge is located along the Glenelg River next to the Johnny Mullah Oval, refer to the map below. The rating curve for the Harrow gauge in the Harrow Flood Investigation Report (Water Technology 2017) has been superseded by an updated rating curve (DELWP, 2019). These rating curves are updated by DELWP and published on the Bureau of Meteorology website and in Floodzoom (DELWP flood database).

It is recommended to use the most up to date rating curves when converting flows to gauge heights. Do not refer to estimated gauge heights per event magnitude for the Harrow gauge from the Harrow Flood Investigation (Water Technology 2017) as these will overestimate the magnitude of the event.

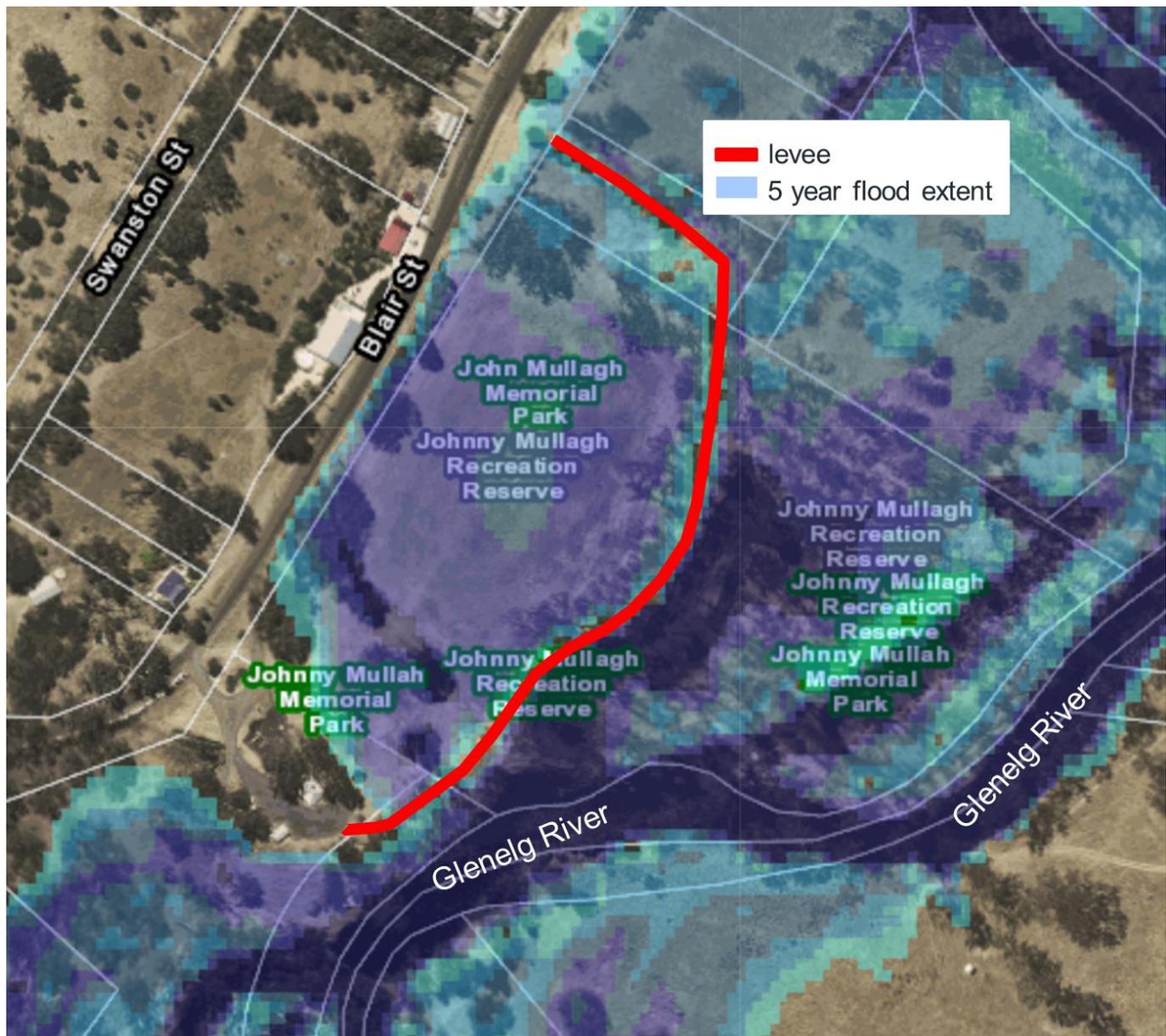
The Fulham stream gauge and rating curve provides much more robust estimates due to a significantly greater amount of reliable data available. The Fulham stream gauge was used to determine the flood frequency analysis (FFA) for Harrow as the Harrow gauge was deemed to have insufficient data on which to base the analysis. For the Harrow flood triggers, refer to the Fulham stream gauge heights in the Harrow Flood Intelligence Card below.



Johnny Mullagh Oval Levee

The levee surrounding the Johnny Mullagh Memorial Park was constructed to protect the oval from regular high river flows. Refer to the map below for the location of the levee. The protection level of the levee is less than the 5 year ARI flood level. Flood mapping undertaken as part of the Harrow Flood Investigation (Water Technology 2018) shows that flooding to a depth of 1.26m occurs on the Johnny Mullagh Oval during a 5 year ARI design flood event, refer to the map below.

During previous flood events floodwater has backed up drains inside the levee. This water built up behind the levee. There have been attempts to block these drains to prevent this problem occurring.

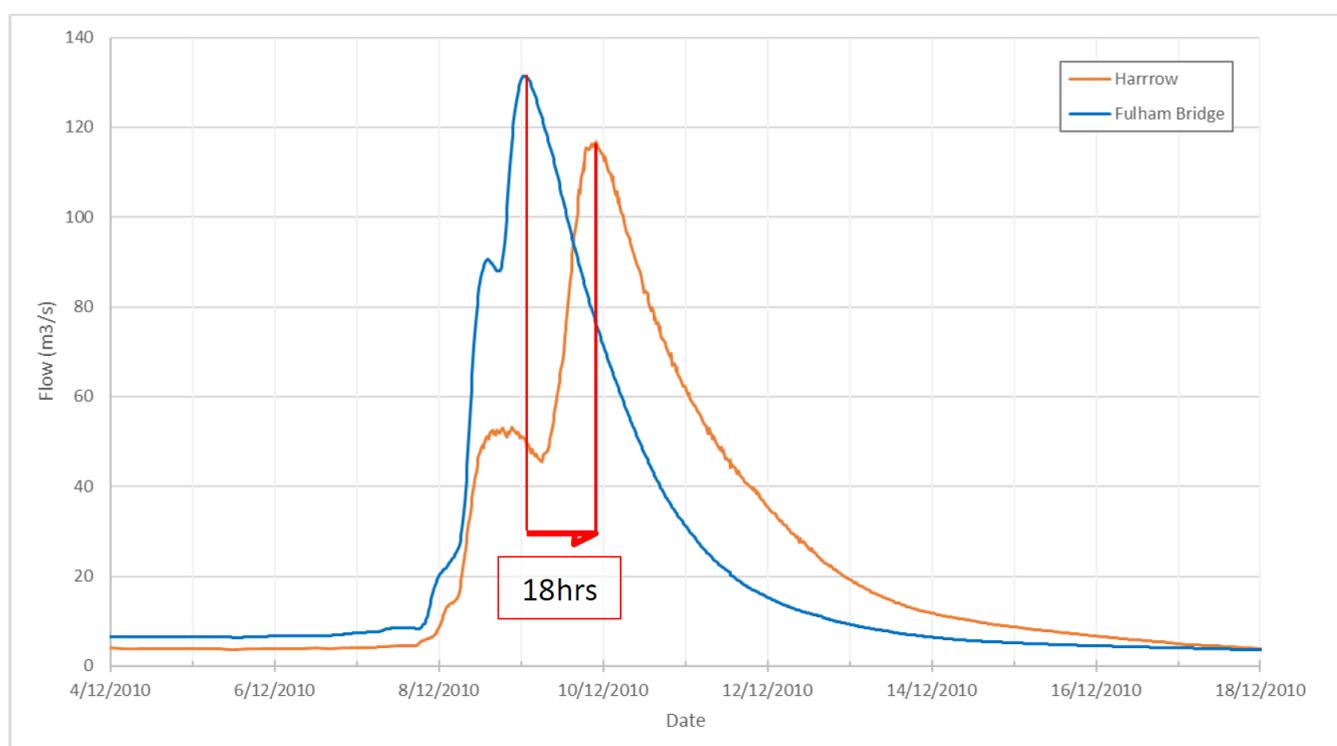


Warning Time and Flood Behaviour

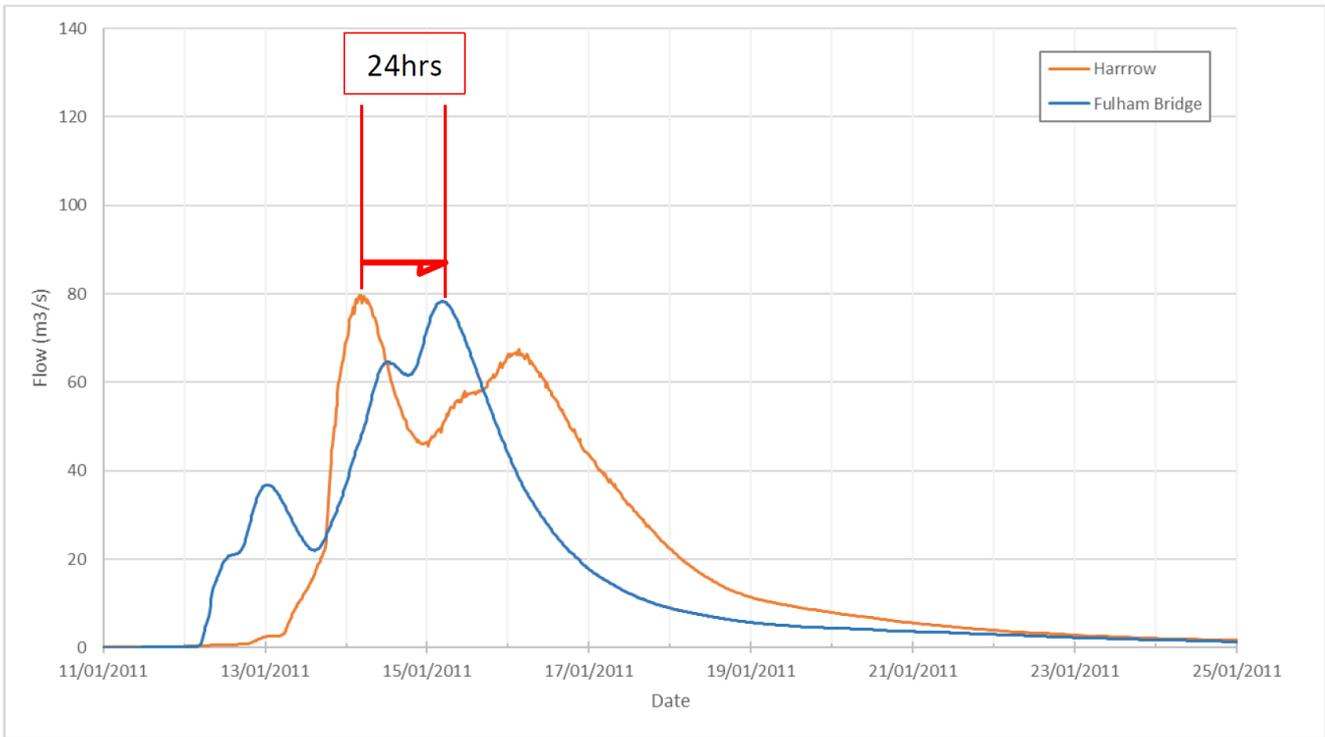
Flooding in Harrow is driven by two separate catchment areas; up and downstream of Fulham Bridge. The Harrow streamflow gauge has consistently recorded two peak stream heights during historic events representative of the two catchments, refer to the graph below. An initial peak height due to the rainfall runoff occurring in the catchment downstream of Fulham Bridge (including Salt Creek) and a second peak occurring due to the rainfall runoff in the catchment area upstream of Fulham Bridge. In two of the three historic events modelled in this project the second peak was the largest, however localised rainfall could result in the initial peak being larger.

The Fulham Bridge gauge gives the earliest streamflow indication of potential flooding at Harrow. Given the proximity between the Harrow and Fulham Bridge gauges there is a consistent timing difference between the timing of peak stream heights, refer to hydrographs and table below. Hydrographs for the December 2010 and January 2011 events show the timing of the localised catchment in the Harrow hydrograph, as the first peak, followed by the larger second peak from the broader catchment are upstream of Fulham Bridge.

Flood event	Travel time between Fulham gauge and Harrow (hours)	Peak flow at Fulham gauge (ML/d)
December 2010	18	11,344
January 2011	24	10,072
September 2010	18	5,760



Glenelg River December 2010 flows at the Fulham and Harrow stream gauges.



Glenelg River January 2011 flows at the Fulham and Harrow stream gauges.

Influence of Rocklands Reservoir

Rocklands Reservoir has the potential to significantly impact flooding in Harrow. High water levels in Rocklands reduce the available storage and increases the magnitude of flood events downstream when spills occur. However when the initial water level is low, this provides significant flood mitigation downstream by attenuating flows upstream of Rocklands reservoir, significantly reducing the flood magnitude for downstream towns of Harrow and Casterton.

There have been a number of spills from Rocklands Reservoir into the Glenelg River, the largest on record occurred in October 1975, 5,300 ML/d. This spill is much less than a 5 year ARI flood flow for Harrow, 6,221 ML/d, indicating that the catchment downstream of Rocklands Reservoir can contribute significant flows without requiring spills from Rocklands Reservoir.

A review of Rocklands Reservoir head gauge levels indicated that Reservoir spills have also occurred in 1953, 1955, 1956, 1958, 1960, 1974, 1975, 1983, 1988, 1989, 1990, 1992, 1993 and 1996. The largest spill from Rocklands occurred in 1975 of 5,300ML/d. Refer to the table below for other spill volumes.

Spill Date	Maximum Discharge to the Glenelg River at Rocklands (ML/d)
October 1975	5,300
August 1956	4,060
August 1992	3,540
August 1988	3,280
July 1983	2,605
September 1974	2,250

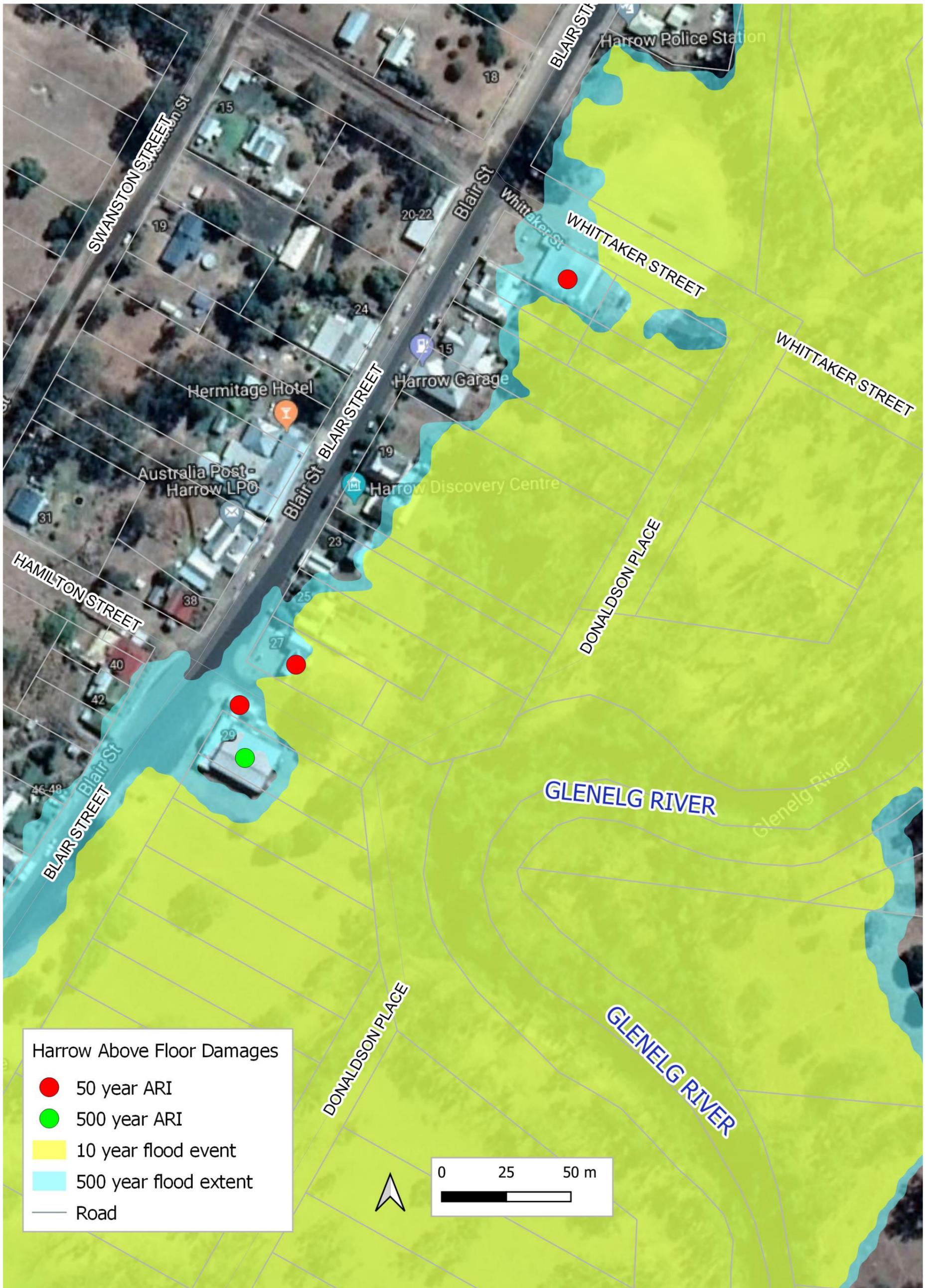
Given that the maximum operating level of Rocklands Reservoir is 85% (296,000 ML) this provides 52,300 ML of space within the storage when full. The current storage capacity of Rocklands Reservoir is 32% (October 2019). If a flood occurred in the Glenelg River tomorrow the low storage levels in Rocklands Reservoir will provide flood mitigation by attenuating flows upstream of Rocklands Reservoir, significantly reducing the flood magnitude for downstream towns, Harrow and Casterton.

Flood Impacts and Actions Required

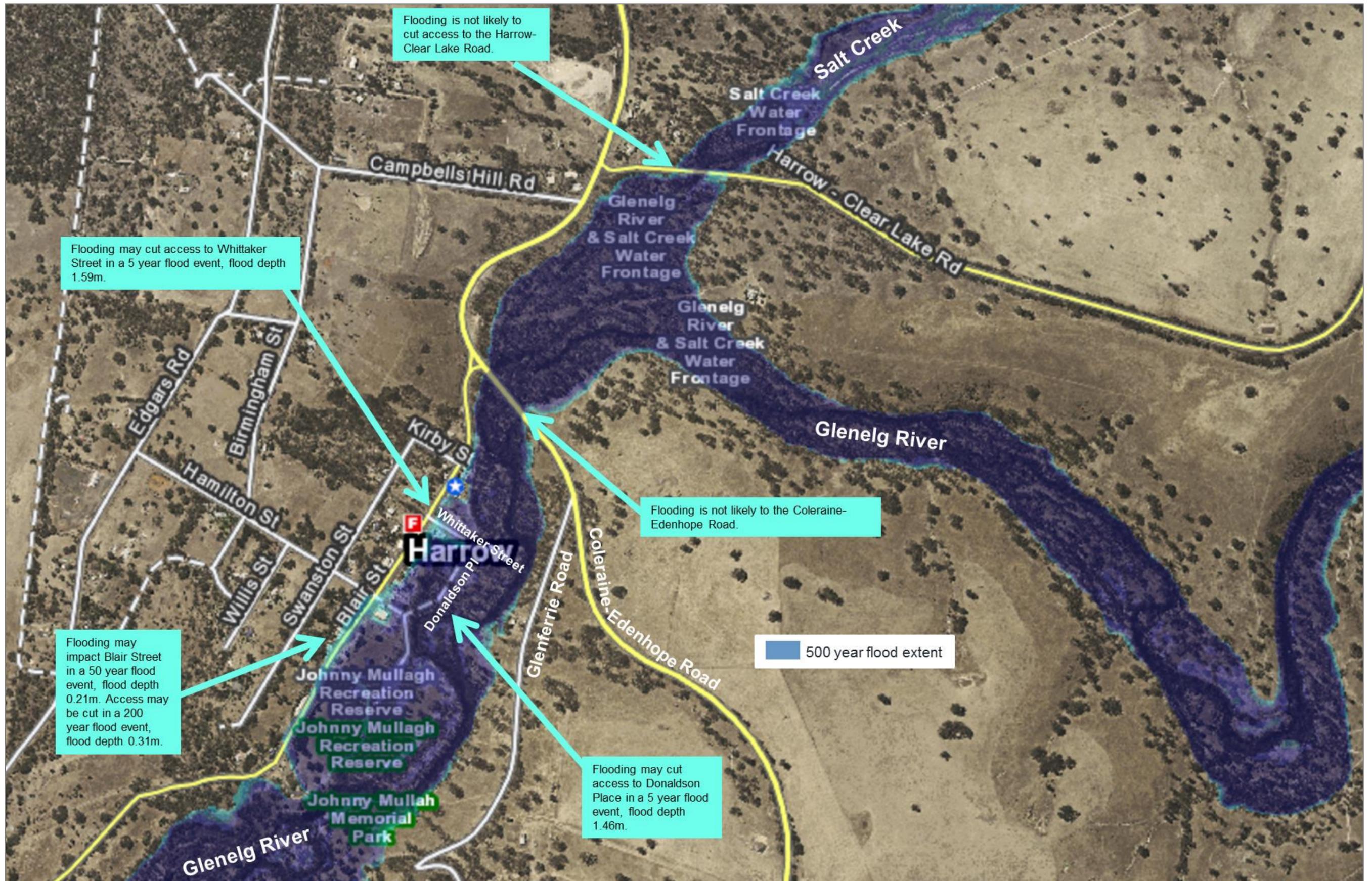
Key assets at risk of flooding in Harrow are listed in the table below.

Asset register				
Asset Name and location	Average Recurrence Interval (ARI)	Consequence / Impact	Mitigation/ Action	Lead Agency
The levee surrounding the Johnny Mullagh Oval, Blair Street, Harrow.	< 5 year flood	Flooding overtops the levee surrounding the Johnny Mullagh Oval during flood events less than a 5 year flood event.	No action required	VICSES
Whittaker Street, Harrow.	5 year flood	Flooding may cut access to Whittaker Street during a 5 year flood event, depth 1.59m.	Deploy road closure signs as needed.	Council
Donaldson Street, Harrow.	5 year flood	Flooding may cut access to Whittaker Street during a 5 year flood event, depth 1.46m.	Deploy road closure signs as needed.	Council
Harrow Public Toilets, 29 Blair Street, Harrow	50 year flood	Harrow Public Toilet is the first building impacted by above floor flooding.	Sandbag building as needed.	VICSES
Blair Street, Harrow.	50 year flood	Flooding may impact Blair Street in a 50 year flood, depth 0.21m. Access may be cut in a 200 year flood event, flood depth 0.31m.	Deploy road closure signs as needed. Undertake evacuations as needed.	Council Victoria Police
The Pivot Shed, 11 Blair Street Harrow.	50 year flood	The Pivot Shed may be impacted by above floor flooding.	Sandbag building as needed.	VICSES
The Harrow RSL, 27 Blair Street Harrow.	50 year flood	The Harrow RSL building may be impacted by above floor flooding.	Sandbag building as needed.	VICSES
Harrow Hall and Library, 29 Blair Street, Harrow	500 year flood	Harrow Hall and Library may be impacted by above floor flooding.	Sandbag building and undertake evacuations as needed.	VICSES Victoria Police

For more detailed information regarding buildings and roads impacted refer to the Harrow Flood Intelligence Card and flood impact maps below. Also refer to the Harrow flood depth maps in **Appendix F**, a list of flood observers in **Appendix H** and community sandbag collection point in **Appendix I**.



Harrow above floor damages over a range of design flood extents (Water Technology 2017).



Harrow roads impacted by flooding with the 500 year flood extent (Water Technology 2017).

Harrow Flood Intelligence Card

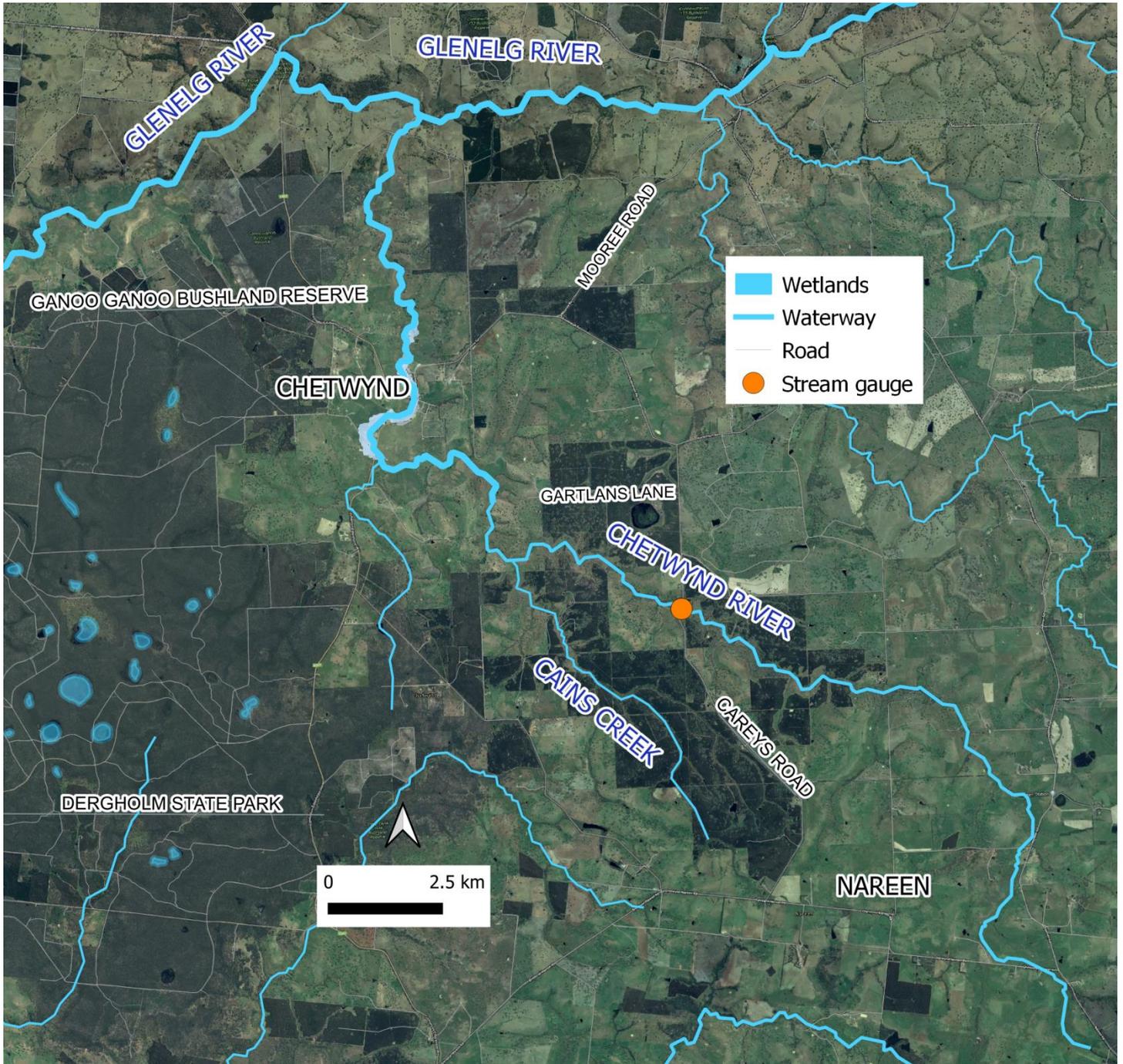
Flood travel time					Time from start of rain to steep rise in floodwater at Harrow 20-36 hours			
					Time from start rainfall to flood peak at Harrow 30- 36 hours			
					Time between Fulham and Harrow peak 18 - 24 hours			
					Riverine flooding duration: 24 hours			
Glenelg River, Fulham gauge height 238224 (m)	Glenelg River, Harrow gauge height 238210 (m)	Average Recurrence Interval (ARI) (Water Tech 2017)	Glenelg River at Harrow Design Flows (ML/d)	Harrow damages total number properties flooded (above floor)	Consequence / Impact	Houses/ buildings flooded / isolated	Roads Impacted	Action
	2.20	September 2010	4,017		Minor flooding impacts.			
2.40	2.42	5	6,221	0	The Levee around the Johnny Mullagh Oval overtops. Flooding impacts land surrounding the Harrow Mechanics Institute (Harrow Hall and Library 29 Blair Street) and the Harrow Telephone Exchange. Donaldson Place and Whittaker Street are impacted by flooding.		Blair Street depth 0m Whittaker Street depth 1.59m Donaldson Place 1.46 m	VICSES activate CFA ground observers to take photos and record flood levels at key crossings. Council and Regional Roads Victoria to deploy road closure signs and undertake traffic management as needed.
	2.51	January 2011	6,895		Minor flooding impacts.			Refer to actions listed above.
2.62	2.73	10	8,986	0	Warn residents along the Glenelg River that localised inundation is likely. No assets are likely to require flood protection measures.		Blair Street depth 0m Whittaker Street depth 1.80m Donaldson Place 1.65 m	Refer to actions listed above.
2.74	2.85	December 2010	10,083		Significant inundation was observed in the Harrow township with several buildings flooded below floor. The RSL Hall in Blair Street was subject to flooding and was sandbagged.			Refer to actions listed above.
2.77	2.94	20	11,232	1	Inundation of Blair Street, south of Hamilton Street. Isolation of the Library and Mechanics Institute building.		Blair Street depth 0m Whittaker Street depth 1.95m Donaldson Place 1.78 m	Refer to actions listed above.
2.90	3.09	50	12,874	5 (3)	Three buildings in Blair Street may be flooded over floor.	X3 buildings may be flooded over floor: toilet block beside the Hall (29 Blair Street), the Pivot Shed (11 Blair Street) and RSL (27 Blair Street).	Blair Street depth 0.21m Whittaker Street depth 2.05m Donaldson Place 1.87 m	VICSES sandbag buildings as needed. Victoria Police evacuate buildings as needed. Council clear debris from waterway crossings, drains and culvers as needed.
2.96	3.17	100	13,824	5 (3)	Increased depths across floodplain. Increased breakout across Blair Street.		Blair Street depth 0.27m Whittaker Street depth 2.10m Donaldson Place 1.92 m	Refer to actions listed above.
3.00	3.23	200	14,515	6 (3)	Access is cut to a section of Blair Street, adjacent to the Harrow Hall. Seven houses in Blair Street may be isolated.	Houses may be isolated: X7 Blair Street (42, 46, 50, 54, 56, 60, 64)	Blair Street depth 0.31m Whittaker Street depth 2.14m Donaldson Place 1.96 m	Victoria Police evacuate buildings as needed.
3.03	3.28	500	18,230	13 (4)	An additional building may be flooded over floor, the Harrow Hall.	An additional building may be flooded over floor: The Harrow Hall (29 Blair Street).	Blair Street depth 0.52m Whittaker Street depth 2.34m Donaldson Place 2.16 m	Refer to actions listed above.
During Severe Thunderstorm Warnings, Severe Weather Warnings and Flood Watches refer to Rocklands gauge 238205 and Rocklands Reservoir storage levels.								

Harrow Property Inundation Table (Water Technology 2017)

No	Address	Depth of known property flooding for each ARI event (m)							Depth of known building over-floor flooding for each ARI event (m)							Building type and comments
		5	10	20	50	100	200	500	5	10	20	50	100	200	500	
1	29 Blair Street	0.56	0.75	0.88	0.97	1.03	1.06	1.26				0.08	0.13	0.17	0.34	Toilet Block
2	11 Blair Street	0.00	0.05	0.21	0.30	0.35	0.39	0.56				0.07	0.12	0.16	0.32	Pivot Shed
3	27 Blair Street	0.48	0.68	0.81	0.90	0.96	1.00	1.19				-0.16	-0.10	-0.07	0.12	RSL
4	29 Blair Street	0.56	0.75	0.88	0.97	1.03	1.06	1.26							-0.24	Harrow Hall and Library (Mechanics Institute)
5	21 Blair Street	1.98	2.17	2.31	2.41	2.46	2.50	2.70							-1.03	Old school
6	19 Blair Street	1.98	2.19	2.33	2.43	2.49	2.53	2.73								NAB Bank
7	19 Blair Street	1.98	2.19	2.33	2.43	2.49	2.53	2.73								Discovery Centre
8	23 Blair Street	1.98	2.17	2.31	2.41	2.46	2.50	2.70								Shop
9	5 Blair Street	0.67	0.93	1.10	1.22	1.29	1.34	1.56								Colourbond Shed
10	5 Blair Street	0.67	0.93	1.10	1.22	1.29	1.34	1.56								House
11	13-17 Blair Street	0.76	0.96	1.10	1.20	1.25	1.29	1.49								Kellys Garage
12	25 Blair Street	0.73	0.93	1.07	1.16	1.22	1.26	1.46							-0.37	Old Post Office
13	11 Blair Street		0.05	0.21	0.30	0.35	0.39	0.56								House
14	44 Blair Street							0.10							-0.33	Studio
15	50-52 Blair Street							0.05							-0.33	General Store
16	40 Blair street							0.05							-0.58	House
17	60-62 Blair Street							0.14							-0.59	Old House
18	56 Blair Street							0.22							-0.78	House
19	46 Blair Street							0.40							-0.94	House
20	54 Blair Street							0.22							-0.98	House
21	42 Blair Street							0.14								House
22	50-52 Blair Street							0.05								Former Stables, Lower level

Appendix C2: Chetwynd Flood Emergency Plan

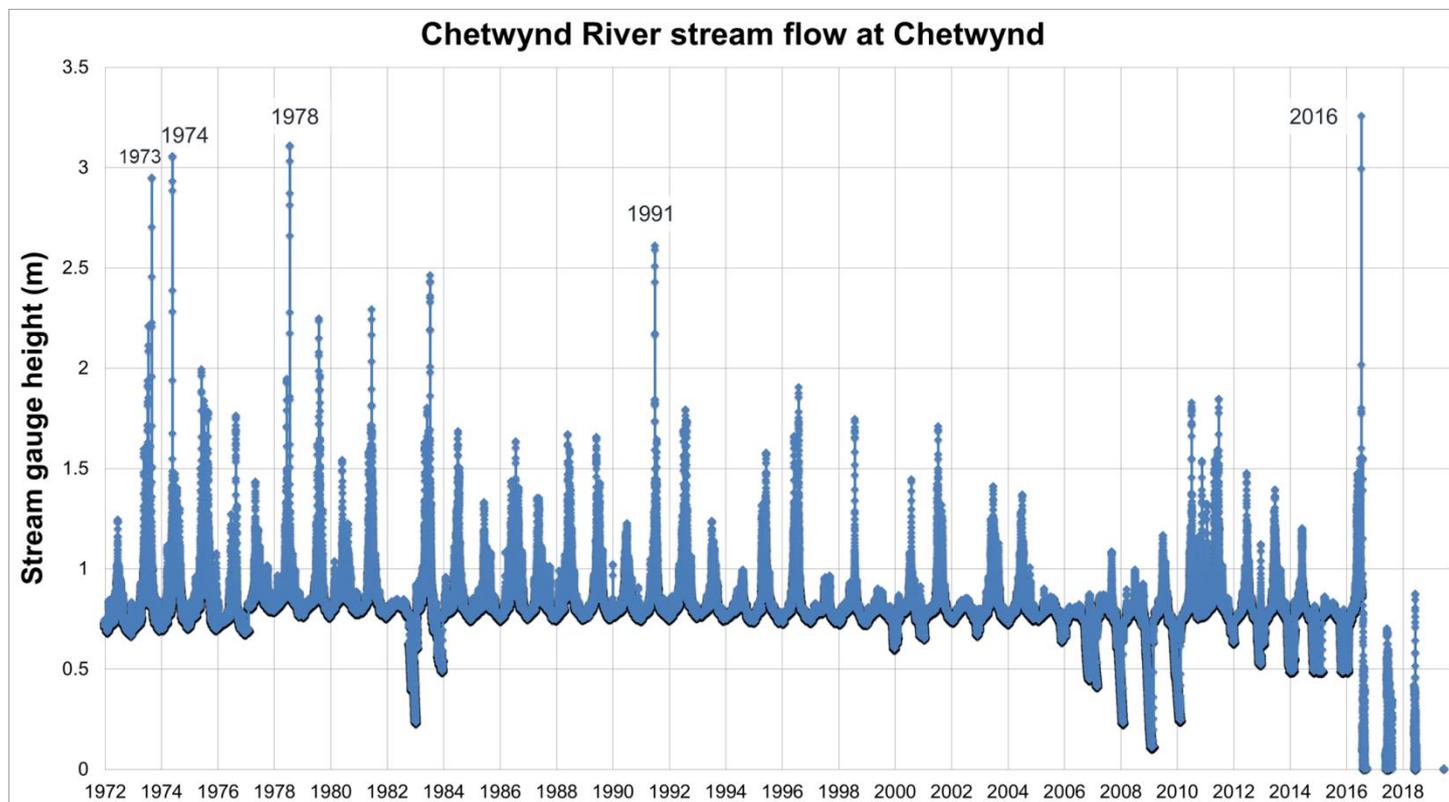
Chetwynd is subject to riverine flooding from Chetwynd River. The upper Chetwynd River catchment area is approximately 187 km² and extends from Nareen to the Glenelg River to the north. Cains Creek is a tributary of Chetwynd River that also contributes flows upstream of Chetwynd, refer to the map below. Chetwynd River is a tributary of the Glenelg River is very flashy. A stream gauge on Chetwynd River, located 10 km upstream of Chetwynd provides a record of historic flood events, refer to map below. Unfortunately this stream gauge is not available live via telemetry.



Historic Flood Events

Chetwynd has been subject to extensive and frequent riverine flood events, significant flood events have occurred in 1973, 1974, 1978, 1991 and 2016, refer to the graph below.

With the September 2016 flood event being the largest recent flood event. This flood event caused considerable damages to buildings, roads and bridges. Refer to the Chetwynd Flood Intelligence Card below.



Chetwynd River stream flow records show the frequency of flood events in Chetwynd.

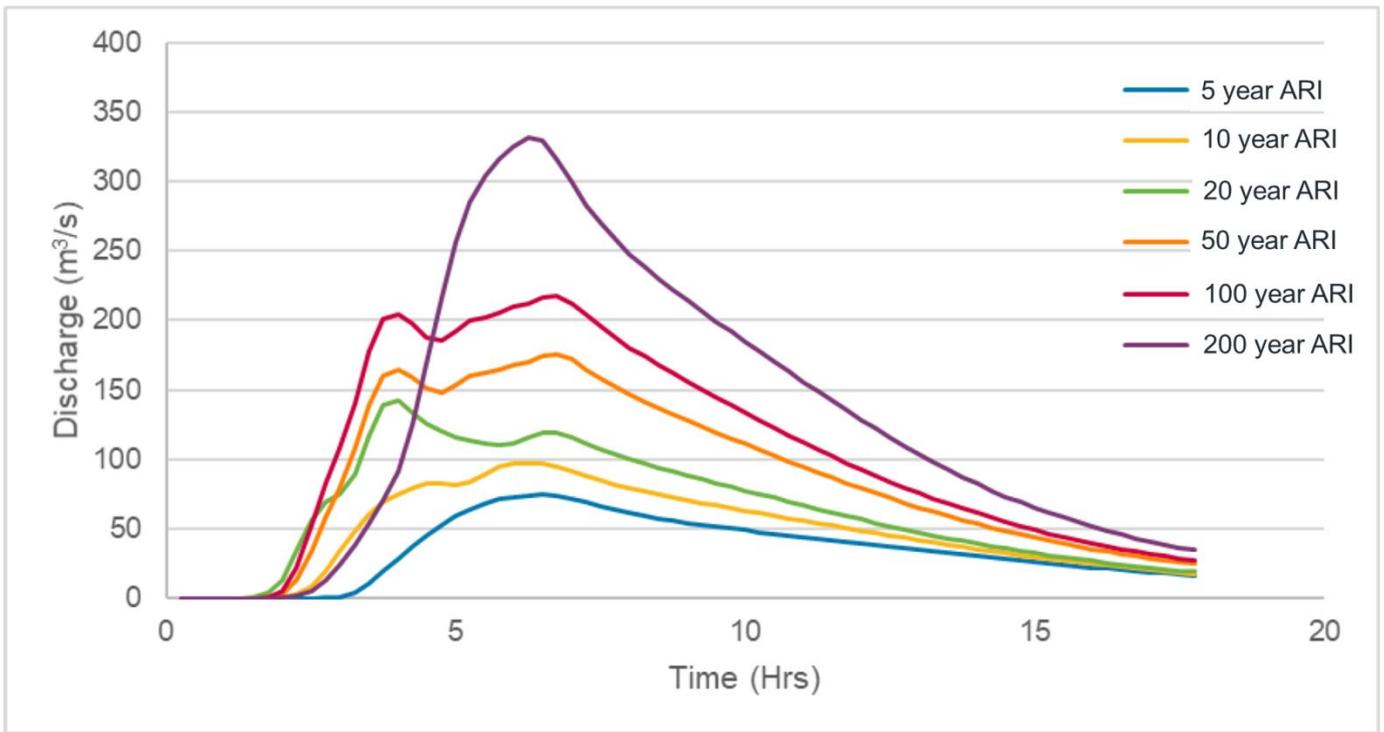


Chetwynd toilets impacted by flooding during the 2016 flood event.

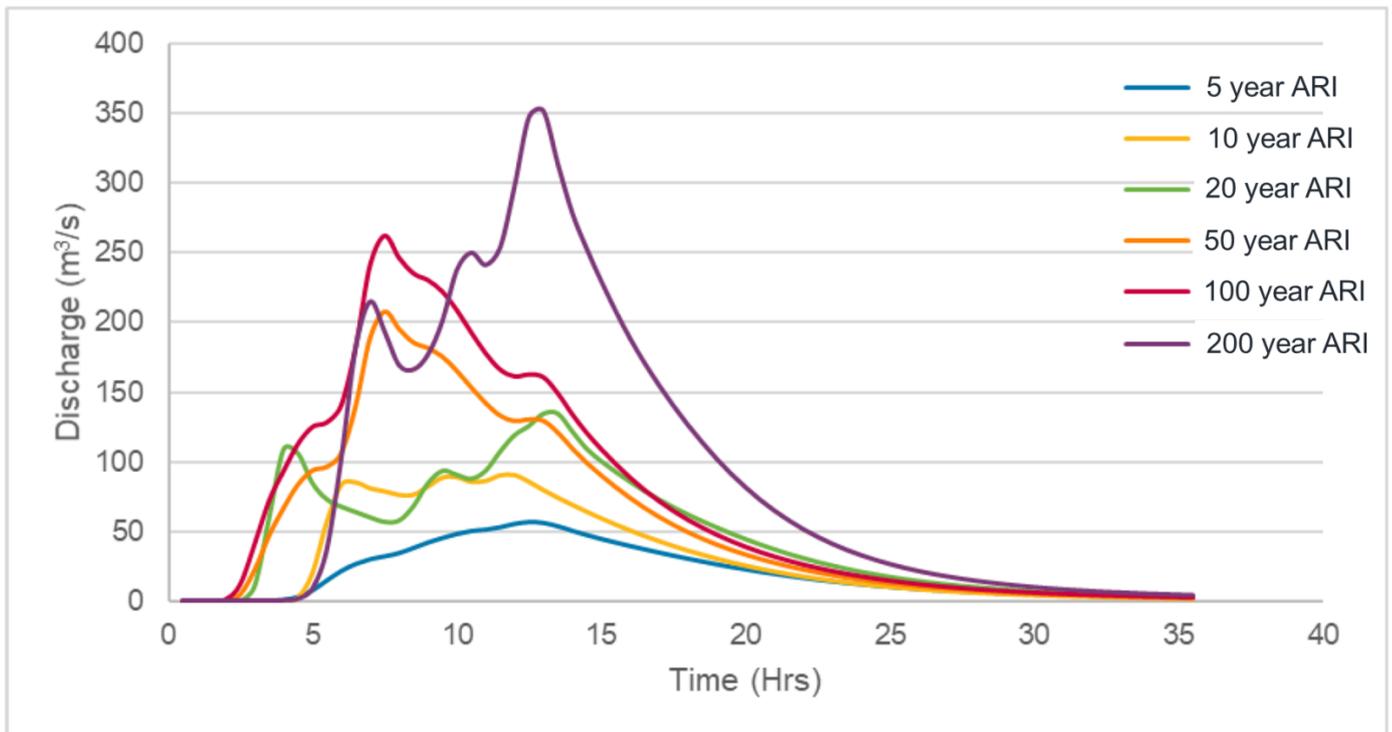
Warning Time

Flooding can develop quickly in Chetwynd from heavy rainfall in the upper Chetwynd River catchment. Rapid rises in floodwater within Chetwynd can occur within 3 to 6 hours from rainfall. The floodwater peak may occur within 4 to 12 hours, refer to modelled flood travel times below for the 6 hour and 12 hour storm durations (Water Technology 2018). It is important to note that all floods are different, and different rainfall patterns falling on dry or wet catchments may respond differently. The streamflow and travel time numbers below should be used as a guide only.

While there is a stream gauge along the Chetwynd River (238229), 10 km upstream of Chetwynd, given it is not linked to telemetry, live data is not available. If this gauge was linked via telemetry it would assist to provide an indication of flood waning and of flood magnitude.



Peak flow travel times for design flood events for Chetwynd River at Chetwynd for a 6 hour storm duration (Water Technology 2018).



Peak flow travel times for design flood events for Chetwynd River at Chetwynd for a 12 hour storm duration. (Water Technology 2018).

Chetwynd Flood Impacts and Required Actions

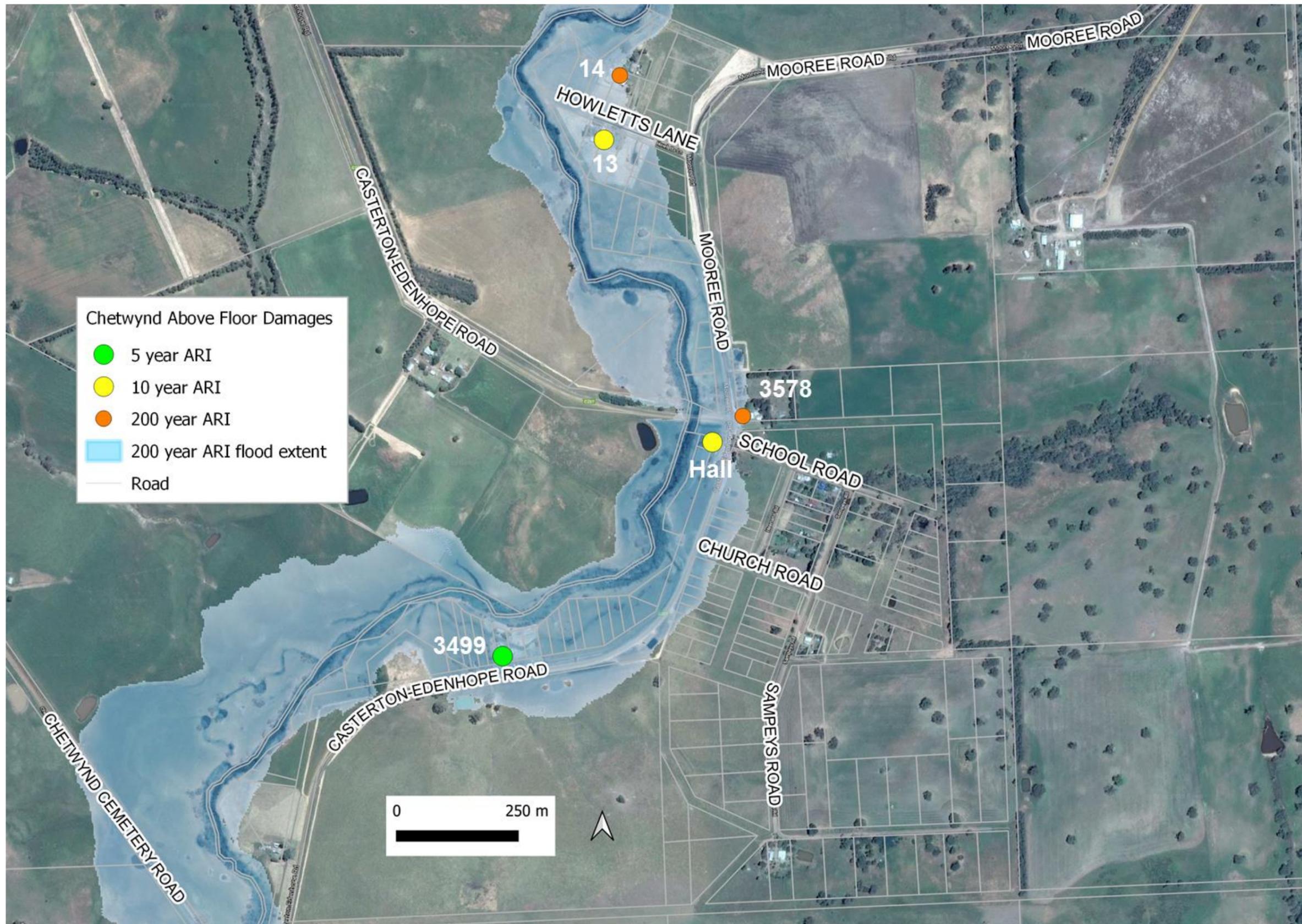
Given that there was no floor level survey undertaken as part of the Chetwynd Flood Intelligence Mapping (Water Technology 2018) the Chetwynd Flood Intelligence Card, tables and maps below only indicate buildings that may be at risk of above floor flooding. There is uncertainty regarding these building damage estimates.

It is important to note that all floods are different, and different rainfall patterns falling on dry or wet catchments may respond differently. The rainfall and streamflow numbers in the Chetwynd Flood Intelligence Card below should be used as a guide to selecting which flood map to use to plan for a flood emergency (Water Technology 2018).

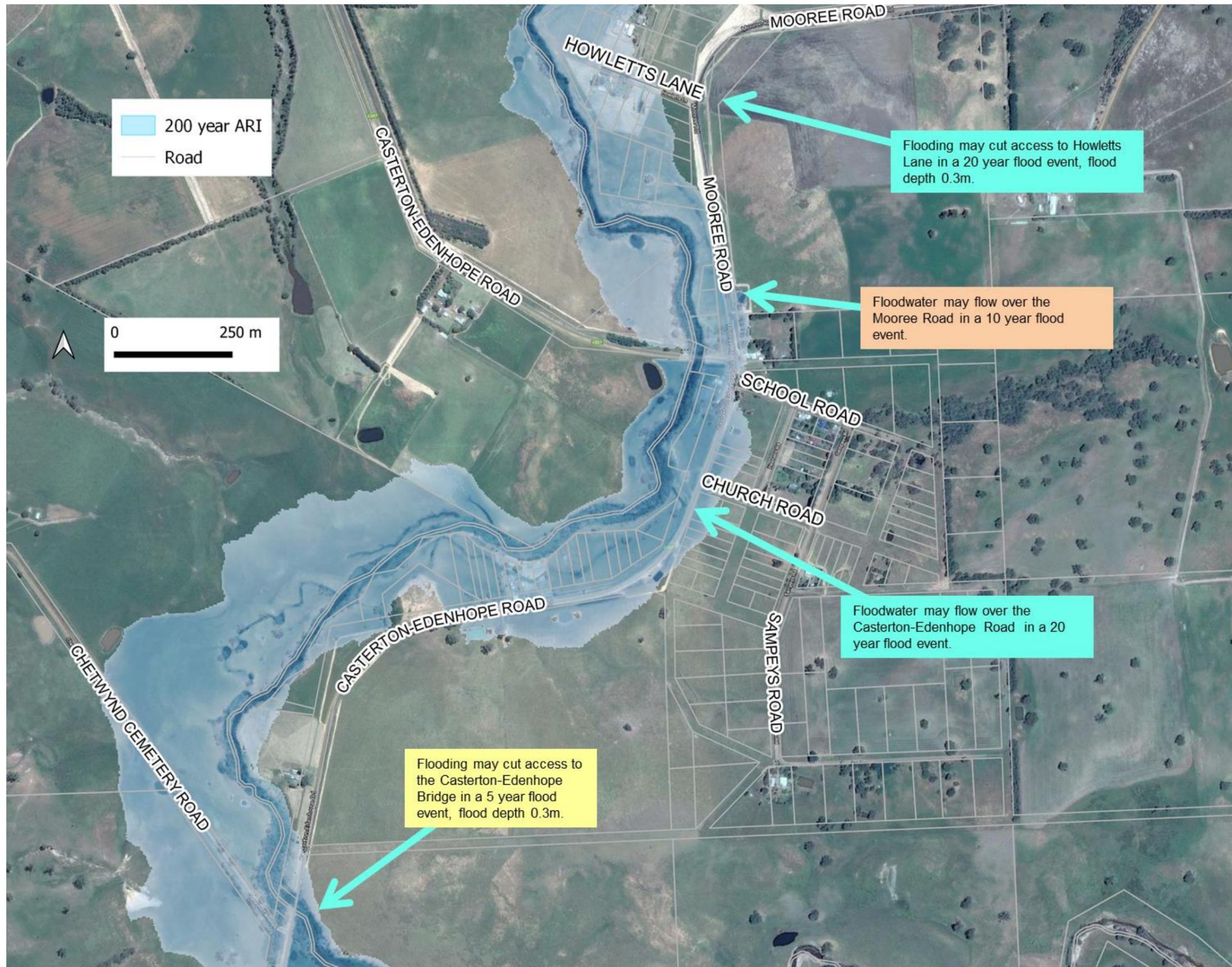
Key assets at risk of flooding in Chetwynd are listed in the table below.

Asset register				
Asset Name and location	Average Recurrence Interval (ARI)	Consequence / Impact	Mitigation/ Action	Lead Agency
A house at 3499 Casterton-Edenhope Road, Chetwynd	5 year flood	A house at 3499 Casterton-Edenhope Road may be flooded above floor.	Sandbag buildings and undertake evacuations as needed.	VICSES
Casterton-Edenhope Bridge	5 year flood	Flooding may cut access to Howletts Lane in a 5 year flood event, flood depth 0.3m	Deploy road closure signs as needed	Regional Roads Victoria
Chetwynd Hall, Casterton-Edenhope Road, Chetwynd	10 year flood	The Chetwynd Hall may be flooded above floor.	Sandbag buildings and undertake evacuations as needed.	VICSES
A house at 13 Howletts Lane, Chetwynd	10 year flood	A house at 13 Howletts Lane may be flooded above floor.	Sandbag buildings and undertake evacuations as needed.	VICSES
Mooree Road, Chetwynd.	10 year flood	Flooding may flow over Mooree Road in a 10 year flood event.	Deploy road closure signs as needed	Council
Casterton-Edenhope Road, adjacent to Church Road, Chetwynd	20 year flood	Flooding may flow over Mooree Road in a 20 year flood event.	Deploy road closure signs as needed	Regional Roads Victoria
Howletts Lane, Chetwynd.	20 year flood	Flooding may cut access to Howletts Lane in a 20 year flood event, flood depth 0.3m	Deploy road closure signs as needed	Council
Buildings at 14 Howletts Lane and 3578 Casterton-Edenhope Road, Chetwynd	200 year flood	Buildings at 14 Howletts Lane and 3578 Casterton-Edenhope Road, may be flooded above floor.	Sandbag buildings and undertake evacuations as needed.	VICSES

For more detailed information regarding buildings and roads impacted refer to the Chetwynd Flood Intelligence Card and flood damages/impact maps below. Also refer to the Chetwynd flood depth maps in **Appendix F**, a list of flood observers in **Appendix H** and community sandbag collection points in **Appendix I**.



Chetwynd above floor damages and the 200 year ARI flood extent.



Chetwynd roads impacted by flooding with the 200 year ARI flood extent.

Chetwynd Flood Intelligence Card (Water Technology 2018)

Flood travel time					Time from start of rain to steep rise in floodwater 3 - 6 hours			
					Time from start rainfall to flood peak 4 - 12 hours			
					Riverine flooding duration: 10 - 24 hours			
Observed rainfall (mm) (Water Tech 2018)	Average Recurrence Interval (ARI) (Water Tech 2018)	Chetwynd River at Chetwynd gauge height 238229 (m)	Chetwynd estimated damages	Chetwynd River at Chetwynd design flows (ML/d)	Consequence / Impact	Houses/ buildings flooded / isolated	Roads Impacted	Action
	September 1991	2.61		2,478				
	October 1973	2.94		2,729				
~36.1 mm in 6 hours	5		1 (1)	3,029	Water flowing over road at Chetwynd Cemetery Road. Water Flowing over road at Casterton-Edenhope Road at southern bridge crossing. Residential Structures inundated at Casterton-Edenhope Road. Flood water surface 1.2 m below Casterton-Edenhope bridge deck	Buildings that may be impacted by flooding over floor: 3499 Casterton-Edenhope Road	Chetwynd Cemetery Road and Casterton-Edenhope Road flooded below 0.3 m depth.	VICSES activate CFA ground observers to take photos and record flood levels at key crossings. Council and Regional Roads Victoria to deploy road closure signs and undertake traffic management as needed. VICSES sandbag buildings as needed. Victoria Police evacuate buildings as needed. Council clear debris from waterway crossings, drains and culvers as needed.
~43.7 mm in 6 hours	10		3 (3)	4,387	Residential buildings are inundated at Howletts Lane. Water flowing over road at Mooree Road. Flood water surface 1.06 m below Casterton-Edenhope bridge deck.	Additional buildings that may be impacted by flooding over floor: Chetwynd Hall, 3573 Casterton-Edenhope Road and 13 Howletts Lane.	Chetwynd Cemetery Road now flood depth between 0.3 and 0.5 m. Mooree Road flood depth below 0.3 m.	Refer to actions listed above.
~51.9 mm in 6 hours	20		3 (3)	5,807	Water Flowing over road at Casterton-Edenhope Road near intersection of Mooree Road. Flood water surface 0.93 m below Casterton-Edenhope bridge deck		Howletts Lane flooded below 0.3 m depth.	Refer to actions listed above.
	September 2016	3.25		?	The flood depth in the Chetwynd Hall was 300mm, over 1m in the house at 3499 Casterton-Edenhope Road. Significant damage to sections of the Casterton-Edenhope Road and to the Casterton-Edenhope Bridge adjacent to Cemetery Road.			
~81.6 mm in 12 hours	50		3 (3)	8,302			Chetwynd Cemetery Road now flood depth greater than 0.5m. Mooree Road and Casterton-Edenhope Road now flood depth between 0.3 and 0.5 m.	Refer to actions listed above.
~95.0 mm in 12 hours	100		3 (3)	10,640			Mooree Road and Casterton-Edenhope Road flood depth above 0.5 m. Howletts Lane flood depth between 0.3 and 0.5 m.	Refer to actions listed above.
~110 mm in 12 hours^ to ~140mm in 24 hours	200		5 (5)	13,154		Additional buildings that may be impacted by flooding over floor: 14 Howletts Lane 3578 Casterton-Edenhope Road		Refer to actions listed above.

^Rainfall values for ARI's less than 100 year for a 12 hour storm have been extrapolated.

Appendix C3: Edenhope Flood Emergency Plan

Edenhope is subject to stormwater flooding, overland flow from localised rainfall. Stormwater flooding can develop quickly from heavy localised rainfall, within 1.5 to 6 hours depending on the rainfall intensity. Flooding is caused by a series of local undefined waterways and wetlands to the south east of Edenhope. Refer to the map below. Inflows from Edenhope's stormwater drainage network also contribute to flooding.

Anecdotal information provided by the West Wimmera Shire Council indicates that due to the flat landscape surrounding Edenhope frequent nuisance flooding occurs along roads adjacent to Black Swamp, upstream of Lake Wallace. During heavy rainfall events, the limited capacity of these waterways and substantial local runoff often quickly floods a large number of adjacent properties and roads.



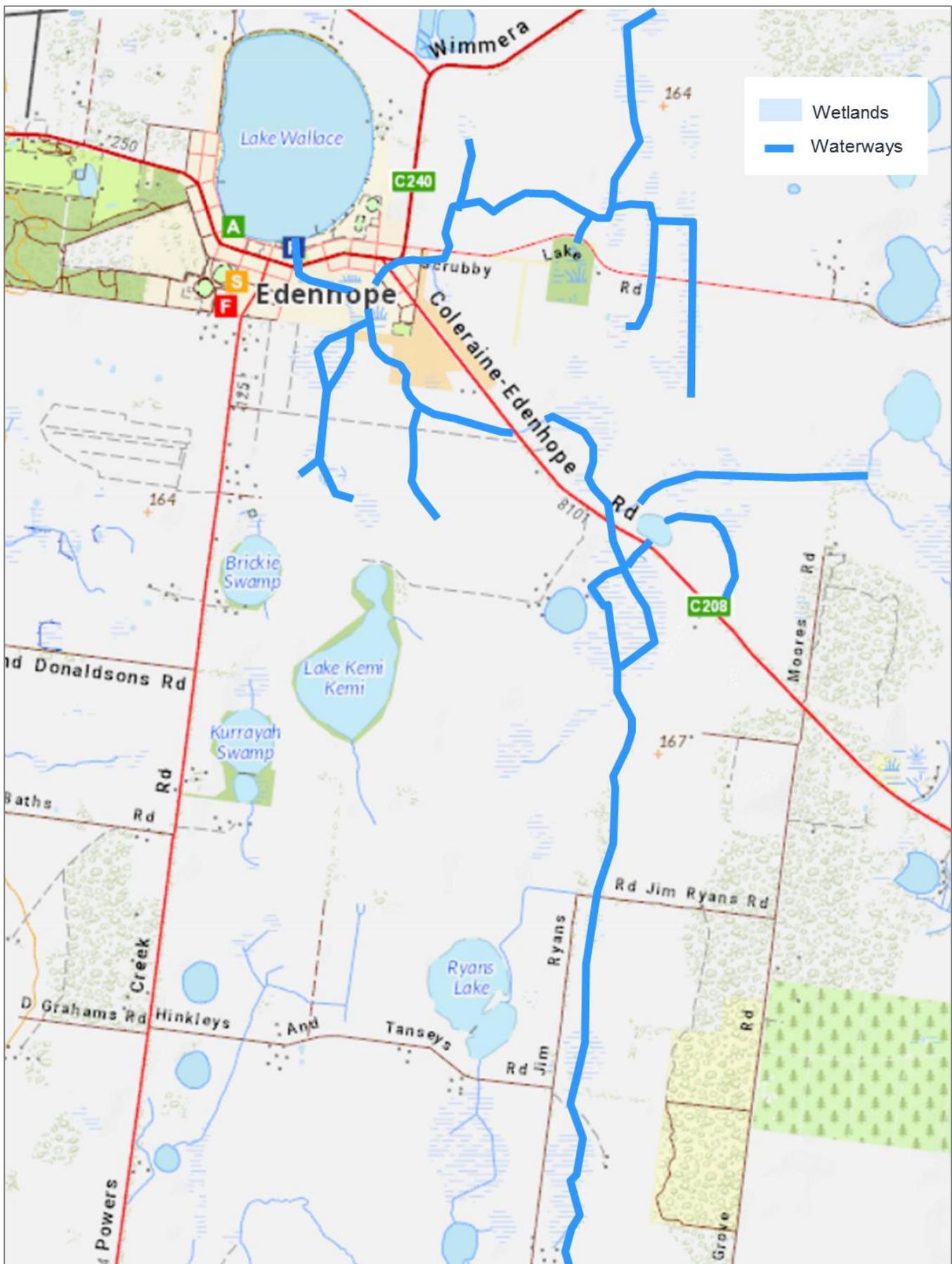
Lake Wallace, Edenhope.

Historic Flood Events

Flooding has occurred in Edenhope during 1971, 1973, 1975, 1981, 1991, 1993, 2011 and 2016. The largest recent flood event occurring in September 2016. While no buildings were impacted above floor, several buildings were impacted by flooding below floor during this flood event. Also a number of roads were impacted by flooding, streets impacted include; Elizabeth Street, Orme Street and Lake Street.

Also according to the VICSES Request for Assistance database several cabins at the Edenhope Caravan park were impacted by flooding during the December 2011 flood event.

For more details regarding buildings and roads prone to flooding, refer to maps, assets register table and the Edenhope Flood Intelligence Card below.



Warning Time

Stormwater flooding can develop quickly as a result of local heavy rainfall. Heavy rainfall event can cause rapid rise of floodwater. The warning time available from rainfall to stormwater flood impacts occurring can range between 1.5 to 6 hours depending on the rainfall intensity.

Flood Impacts and Required Actions

Key assets in Edenhope at risk of flooding are listed in the table below.

Asset register				
Asset Name and location	Average Recurrence Interval (ARI) [❖]	Consequence / Impact	Mitigation/ Action	Lead Agency
Where George Street and Harrow Road intersect a drain feeding into Black Swamp, Edenhope	100 year flood	Access/egress may be impacted by flooding in George Street and Harrow Road	Deploy road closure signs and undertake traffic management as needed	Council
Lake Street, Elizabeth Street and Orme Street, adjacent to the Black Swamp drain, Edenhope	100 year flood	Access/egress may be impacted by flooding in Lake Street, Elizabeth Street and Orme Street, flood depth may be 200mm or greater.	Deploy road closure signs and undertake traffic management as needed	Council
Cabins at Edenhope Caravan Park, 75 Lake Street, Edenhope.	100 year flood	Cabins may be impacted by flooding.	Sandbag buildings and evacuate as needed	VICSES Victoria Police
x13 properties may be impacted by flooding in Orme Street, Edenhope	100 year flood	Properties may be impacted by flooding in Orme Street, Edenhope	Doorknock properties to ask if they need assistance with flood protection tasks.	VICSES
x2 properties may be impacted by flooding in Langford Street, Edenhope	100 year flood	Properties may be impacted by flooding in Langford Street, Edenhope	Doorknock properties to ask if they need assistance with flood protection tasks.	VICSES

- ❖ Estimated to be prone to flooding during a 100 year storm event. There is uncertainty regarding these estimates given no flood study has been undertaken. This flood risk information is based on anecdotal information provided by the West Wimmera Shire Council.

For more detailed information regarding buildings and roads impacted refer to the Edenhope flood risk maps above and the Edenhope Flood Intelligence Card below. Also refer to the Edenhope list of flood observers in **Appendix H** and community sandbag collection points in **Appendix I**.



Properties in Edenhope prone to flooding (source: West Wimmera Shire Council).



Roads in Edenhope prone to flooding (source: West Wimmera Shire Council).

Edenhope Flood Intelligence Card

Flood travel time				Time from start of rain to steep rise in floodwater 1.5 - 6 hours		
				Time from start rainfall to flood peak 2.5 - 10 hours		
				Flooding duration: 12 hours		
Design rainfall (mm) (BOM IFD)	Average Recurrence Interval (ARI) (Water Tech 2018)	Edenhope estimated damages	Consequence / Impact	Houses/ buildings flooded / isolated	Roads Impacted	Action
~34.3 mm in 6 hours to ~42.9 mm in 12 hours	5	0 (0)				VICSES activate ground observers to take photos and record flood levels at key crossings as needed. Council clear debris from waterway crossings, drains and culvers as needed.
~41.5 mm in 6 hours to ~51.9 mm in 12 hours	10	0 (0)				Refer to actions listed above.
~49.2 mm in 6 hours to ~61.5 mm in 12 hours	20	0 (0)				Refer to actions listed above.
~60.5 mm in 6 hours to ~75.9 mm in 12 hours	50	0 (0)				Refer to actions listed above.
~70.2 mm in 6 hours to ~88.5 mm in 12 hours	September 2016 January 2011 100	17 (0)*	Significant flooding in Edenhope may cause below floor flooding to a number of buildings and cutting access to a number of roads.	Below floor flooding for a number of buildings; X2 cabins at the Edenhope Caravan Park. Properties prone to flooding; Edenhope Caravan Park (Lakeside Tourist Park 75 Lake Street), x13 Orme Street (28, 30, 32, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54) and x2 Langford Street (3, 5).	Sections of roads are closed in Orme Street, Lake Street, Elizabeth Street and the Wimmera Highway with flood depth approx 200mm.	VICSES sandbag buildings as needed. Victoria Police evacuate buildings as needed. Council and Regional Roads Victoria to deploy road closure signs and undertake traffic management as needed.

*Estimated number of buildings flooded below floor (a floor level survey was not undertaken, there is uncertainty regarding the number of buildings flooded below floor).

Appendix C4: Apsley Flood Emergency Plan

Apsley is subject to stormwater flooding, overland flow from localised rainfall. Stormwater flooding can develop quickly from heavy localised rainfall, within 1.5 to 6 hours depending on the rainfall intensity. Flooding is caused by a series of local waterways and drainage lines surrounding Apsley. Refer to the maps below. Inflows from Apsley's stormwater drainage network also contributes to flooding.

Anecdotal information provided by the West Wimmera Shire Council and the VICSES Request for Assistance Database indicates that due to the flat landscape surrounding Apsley frequent nuisance flooding occurs along roads adjacent to the Apsley Recreation Reserve and drains into Newlands Lake. Refer to the map and flood photos below. During heavy rainfall events, the limited capacity of these waterways and substantial local runoff often quickly floods a large number of properties and roads.

Historic flood events

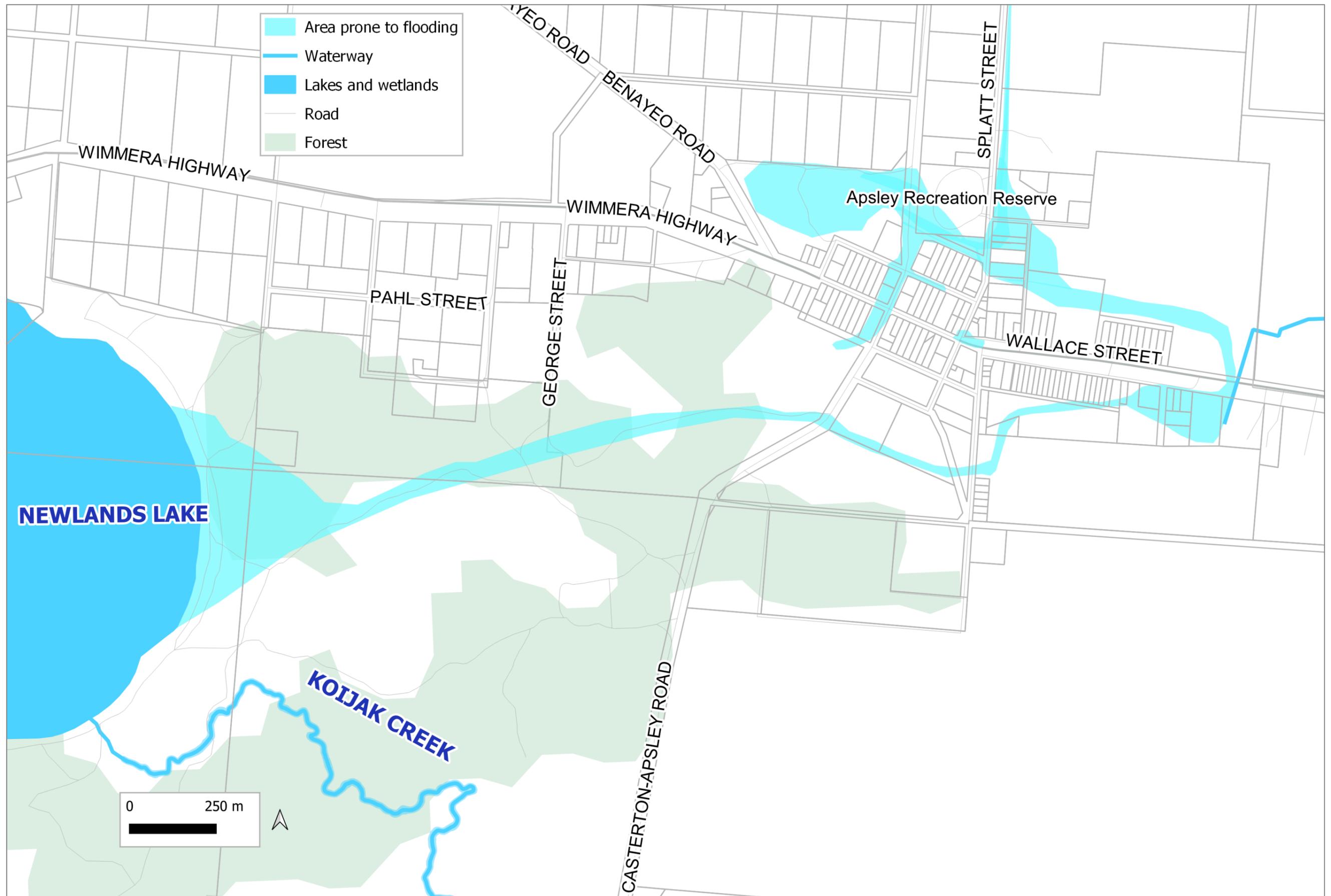
Flooding has occurred in Apsley during 1971, 1973, 1975, 1981, 1991, 1993, 2011 and 2016. The largest recent flood event occurred in September 2016. As seen in the flood photos below several buildings at the Apsley Recreation Reserve were flooded above floor. Also a number of roads were impacted by flooding, streets impacted include; Wallace Street, Splatt Street, Johnston Street, Townsend Street, Ballantyne Street, Percy Clark Street and Laidlaw Street.

For more details regarding buildings and roads prone to flooding, refer to maps, assets register table and the Edenhope Flood Intelligence Card below.

Since the 2016 flood event, West Wimmera Shire Council have undertaken works to reduce flood risk in Apsley by increasing the capacity of drains and culverts surrounding the Apsley Recreation Reserve.

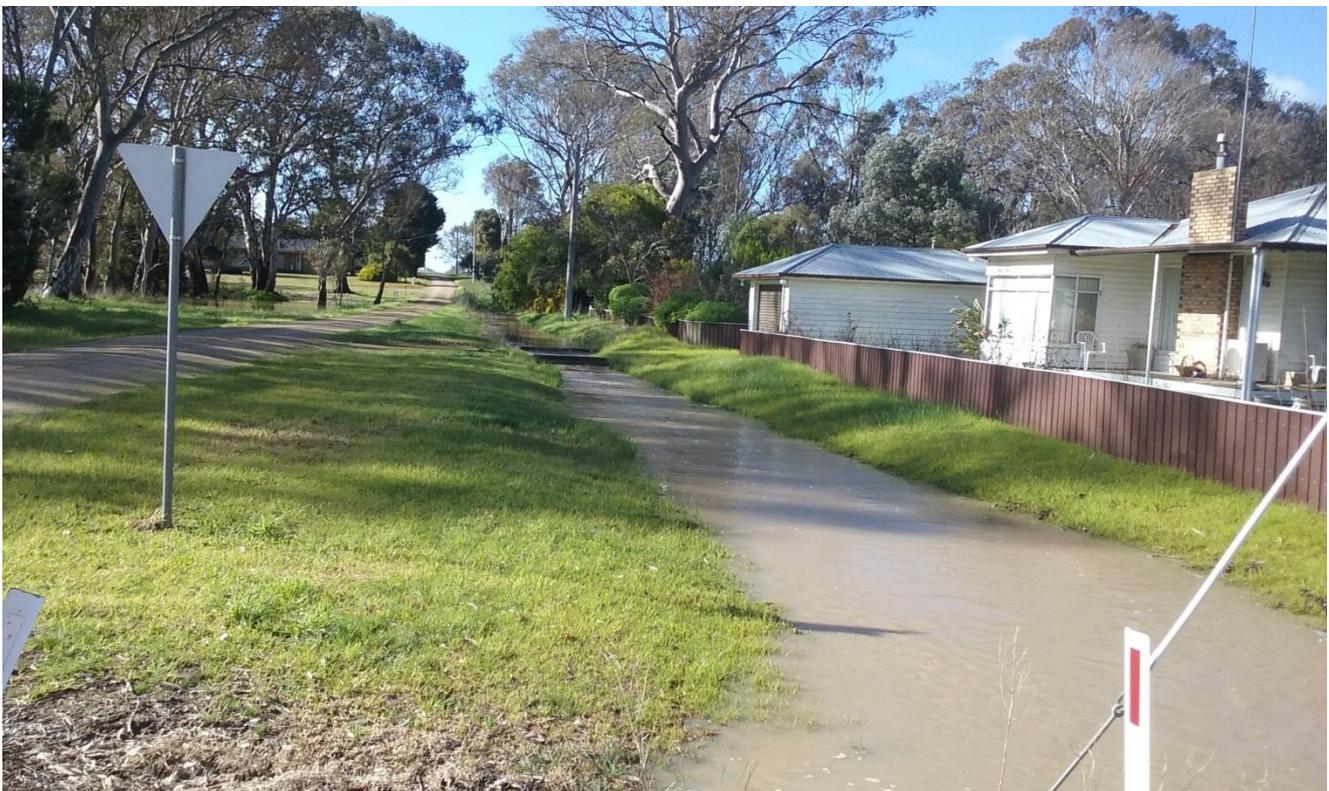


Buildings at the Apsley Recreation Reserve impacted by flooding during the September 2016 flood event (source: West Wimmera Shire Council).





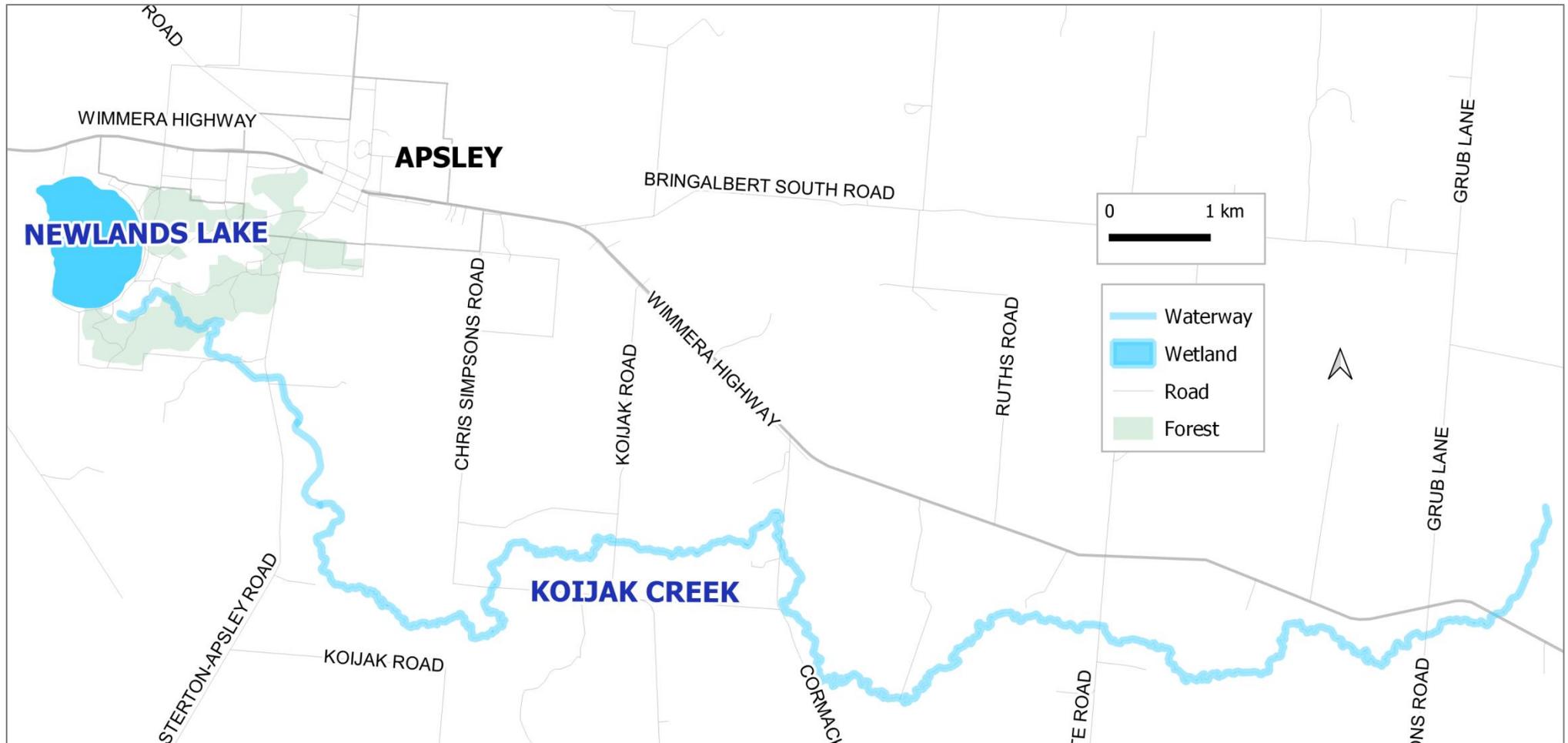
Flooding adjacent to the Apsley Recreation Reserve during the September 2016 flood event (source: West Wimmera Shire Council).



Flooding in Apsley along Johnston Street during the September 2016 flood event (source: West Wimmera Shire Council).

Flooding along Kojak Creek

Kojak Creek is a waterway that begins 7km west of Edenhope and flows 23km west to Newlands Lake, west of Apsley. Refer to the map below. Flooding in this Creek can develop quickly from heavy localised rainfall, causing rapid rises in floodwater with very high velocities. While there are no flood studies or stream monitoring for Kojak Creek, the West Wimmera Shire have noted that flooding of Kojak Creek regularly cuts access along the Wimmera Highway west of Edenhope. Flooding of Kojak Creek also cuts access to local roads south of the Wimmera Highway.



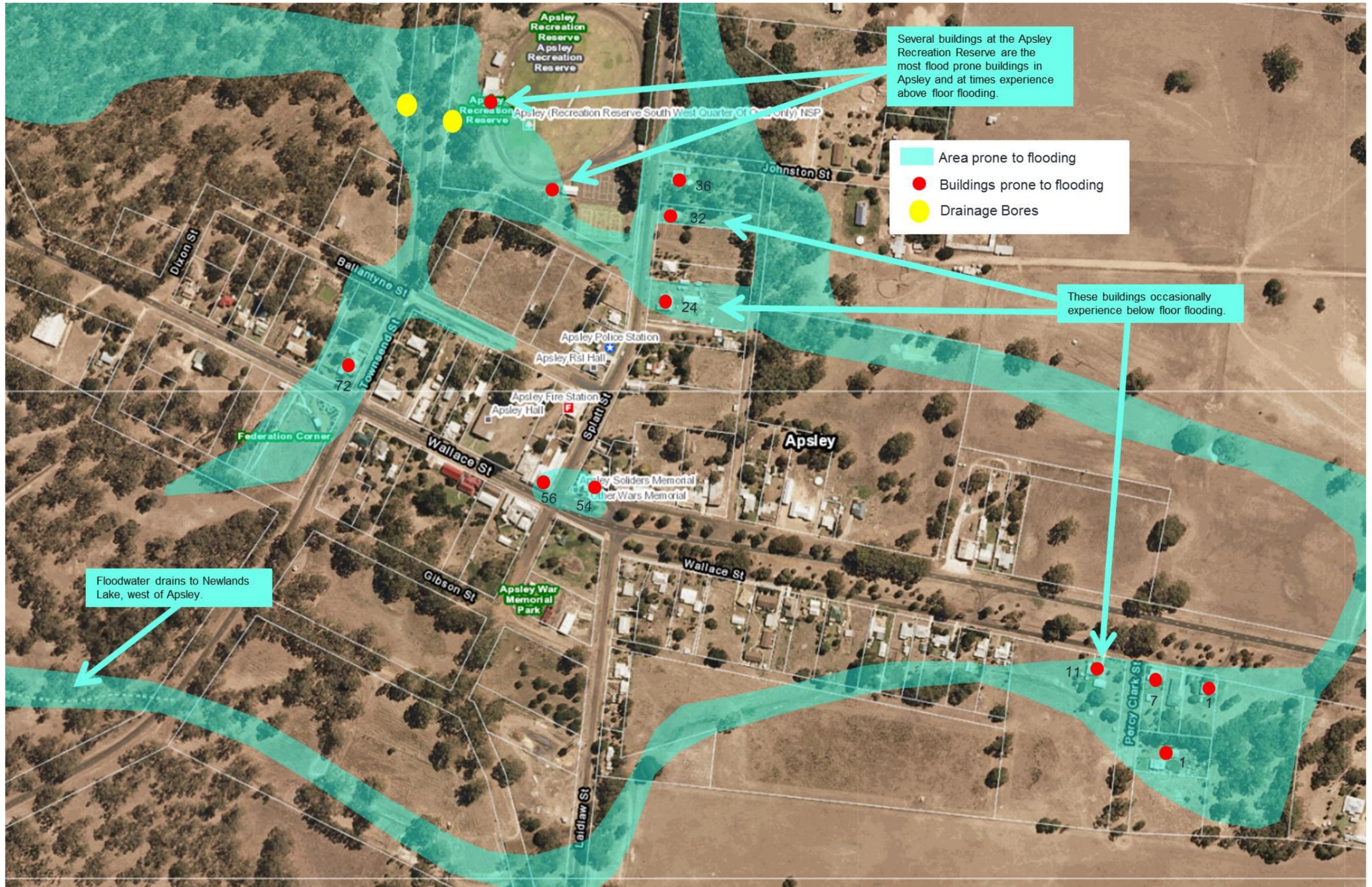
Flood Impacts and Required Actions

Key assets in Apsley at risk of flooding are listed in the table below.

Asset register				
Asset Name and location	Average Recurrence Interval (ARI)❖	Consequence / Impact	Mitigation/ Action	Lead Agency
Where Kojjak Creek interests the Wimmera Highway, 7km west of Edenhope.	10 year flood	Access/egress may be cut by flooding (flood depth may be 0.35m or greater)	Deploy road closure signs and undertake traffic management	Regional Roads Victoria
x2 drainage bores west of the Apsley Recreation Reserve, along the Apsley-Natimuk Road.	50 year flood	Two drainage bores west of the Apsley Recreation Reserve, along the Apsley-Natimuk Road need to be maintained to drain floodwater from the area to reduce flood risk to the Apsley Recreation Reserve.	Remove debris from the drainage bores, ensure they are maintained to reduce flood risk	Manager of the Apsley Recreation Reserve
x2 buildings at the Apsley Recreation Reserve, 37 Splatt Street, Apsley.	100 year flood	x2 buildings at the Apsley Recreation Reserve may be impacted by above floor flooding. These buildings are the most flood prone buildings in Apsley.	Sandbag buildings and undertake evacuations as needed.	VICSES Victoria Police
x6 buildings properties may be impacted by flooding in Wallace Street, Apsley.	100 year flood	Properties may be impacted by flooding in Wallace Street, Apsley.	Doorknock properties to ask if they need assistance with flood protection tasks.	VICSES
x3 buildings may be impacted by flooding in Splatt Street, Apsley.	100 year flood	Properties may be impacted by flooding in Splatt Street, Apsley.	Doorknock properties to ask if they need assistance with flood protection tasks.	VICSES
Splatt Street, Apsley-Natimuk Road, Wallace Street, Townsend Street, Percy Clark Street and Laidlaw Street, Johnston Street, Gibson Street, Ballantyne Street, Apsley.	100 year flood	Access/egress may be impacted by flooding in Splatt Street, Apsley-Natimuk Road, Wallace Street, Townsend Street, Percy Clark Street and Laidlaw Street, Johnston Street, Gibson Street, Ballantyne Street, Apsley, flood depth may be 200mm or greater.	Deploy road closure signs and undertake traffic management as needed	Council

- ❖ Estimated to be prone to flooding during a range of magnitudes. There is uncertainty regarding these estimates given no flood study has been undertaken. This flood risk information is based on anecdotal information provided by the West Wimmera Shire Council.

For more detailed information regarding buildings and roads impacted refer to the Apsley Flood Intelligence Card and the map below. Also refer to the Apsley list of flood observers in **Appendix H** and community sandbag collection point in **Appendix I**.



Buildings in Apsley prone to flooding (Source West Wimmera Shire Council and VICSES Request of Assistance Database).

Apsley Flood Intelligence Card

Flood travel time				Time from start of rain to steep rise in floodwater 1.5 - 6 hours		
				Time from start rainfall to flood peak 2.5 - 10 hours		
				Flooding duration: 12 hours		
Design rainfall (mm) (BOM Intensity Frequency Duration)	Average Recurrence Interval (ARI) (Water Tech 2018) *	Apsley estimated damages	Consequence / Impact	Houses/ buildings flooded / isolated	Roads Impacted	Action
~34.6 mm in 6 hours to ~42.3 mm in 12 hours	5	0 (0)	Two drainage bores adjacent to the Apsley Recreation Reserve, along the Apsley-Natimuk Road need to be regularly maintained to reduce flood risk of buildings at the Apsley Recreation Reserve.			VICSES activate CFA ground observers to take photos and record flood levels at key crossings. Council clear debris from waterway crossings, drains and culvers as needed.
~41.8 mm in 6 hours to ~51.0 mm in 12 hours	10	0 (0)	Access may be cut to the Wimmera Highway by flooding in Kojjak Creek. Refer to the map above for the location of this waterway.		Access may be cut to the Wimmera Highway, 7km west of Edenhope, where Kojjak Creek intersects the Wimmera Highway.	Council and Regional Roads Victoria to deploy road closure signs and undertake traffic management as needed. VICSES sandbag buildings as needed. Victoria Police evacuate buildings as needed.
~49.5 mm in 6 hours to ~60.3 mm in 12 hours	20	0 (0)				Refer to actions listed above.
~60.8 mm in 6 hours to ~74.3 mm in 12 hours	50	0 (0)				Refer to actions listed above.
~70.5 mm in 6 hours to ~86.4 mm in 12 hours	September 2016 January 2011 100 year event	12 (2)	Significant flooding in Apsley may impact buildings and cut access to a number of roads.	Buildings subject to above floor flooding; x2 buildings at the Apsley Recreation Reserve are regularly subject to above floor flooding, 37 Splatt Street. Buildings subject to below floor flooding; x6 buildings in Wallace Street (1, 7, 11, 54, 56, 72), 1 Percy Clark Street, x3 Splatt Street (24, 32, 36),	Roads that may be impacted by flooding; Splatt Street, Apsley-Natimuk Road, Wallace Street, Townsend Street, Percy Clark Street and Laidlaw Street, Johnston Street, Gibson Street, Ballantyne Street. The flood depth may be approx 200mm or greater.	VICSES activate ground observers to take photos and record flood levels at key crossings.

* Estimated number of buildings flooded below floor. A floor level survey was not undertaken, there is uncertainty regarding the number of buildings flooded below floor.

Appendix D: Flood evacuation arrangements

Phase 1 - Decision to Evacuate

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

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

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

The following should be considered when planning for evacuation:

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

Phase 2 – Warning

Warnings may include a warning to 'prepare to evacuate' and a warning to 'evacuate now'. Once the decision to evacuate has been made, the at-risk community will be warned to evacuate. Evacuation warnings should be disseminated via methods listed in section 3.3 of this plan.

Phase 3 – Withdrawal

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

VICSES, CFA, AV and Local Government will provide resources where available to support VICPOL/ REGIONAL ROADS 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.

Landing zone for helicopters are located at:

Edenhope Aerodrome, along the Wimmera Highway, west of Edenhope.

Special needs groups will be/are identified in Council's 'vulnerable persons register'. This can be done through community network organisations.

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

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

Animal Shelter

Animal shelter compounds will be established for domestic pets and companion animals of evacuees.

Phase 5 – Return

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

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

Considerations for deciding whether to evacuate include:

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

Disruption to Services

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

Appendix E: Public Information and Warnings

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

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

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

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

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

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

	<p>EMERGENCY ALERT</p> <p>As required, subject to individual circumstances, weather conditions, potential impacts and duration.</p> <p>Refer VICSES SOP057.</p>	<p>As required, based on conditions, changed conditions or impacts of the flood event.</p> <p>Circumstances which warrant the use of EA include:</p> <ul style="list-style-type: none"> • EA is likely to contribute to saving lives and property • EA is likely to be the most effective way to warn the community in an actual or likely emergency • Alternative channels have been considered and alone may not achieve objectives • Time is of the essence and specific action following the receipt of the warning is required <p>The message is of critical importance and needs to be delivered to a specific geographic area</p>
<p>Pre-populated Ballarat Emergency Alert key messages for a severe flash flood event</p> <p>High velocity floodwater may cause risk to life for pedestrians and motorist. Access to main roads may be cut. Advise to shelter in place if it is safe to do so. The flood peak is likely to pass within 6 to 12 hours.</p>		

	<p>EMERGENCY ALERT</p> <p>As required, subject to individual circumstances, weather conditions, potential impacts and duration.</p> <p>Refer VICSES SOP057.</p>	<p>As required, based on conditions, changed conditions or impacts of the flood event.</p> <p>Circumstances which warrant the use of EA include:</p> <ul style="list-style-type: none"> • EA is likely to contribute to saving lives and property • EA is likely to be the most effective way to warn the community in an actual or likely emergency • Alternative channels have been considered and alone may not achieve objectives • Time is of the essence and specific action following the receipt of the warning is required <p>The message is of critical importance and needs to be delivered to a specific geographic area</p>
---	--	--

Pre-populated West Wimmera Emergency Alert key messages for a severe flash flood event

The BOM have issued a Severe Weather Warning: Heavy Rain

Heavy rainfall forecast by the BOM may lead to Flash Flooding ????. Falls are expected to be between ???mm and ???mm. Locally heavier falls are possible due to embedded thunderstorms that could cause severe flooding.

Locations which may be affected could include: Chetwynd, Harrow, Edenhope and Apsley.

Widespread flooding may occur.

Keep clear of creeks and storm drains

Stay clear of fast moving floodwater. Floodwater is expected to rise quickly and will cause risk to life for pedestrians and motorist.

Flooding may cause extensive inundation of buildings.

Properties are likely to be isolated. If your property is impacted by flooding, we advise you to shelter in place if it is safe to do so.

The flood peak is likely to pass quickly, within 6 to 12 hours.

Floodwater may cut access to main roads, avoid driving until the storm and floodwater has subsided.

Waterways likely to be affected include:

- Glenelg River
- Chetwynd River
- Salt Creek
- Kojjak Creek

SES advises that all community members should:

Never walk, ride or drive through floodwater, Never allow children to play in floodwater, Stay away from waterways and stormwater drains during and after heavy rain, Keep well clear of fallen power lines Be aware that in fire affected areas, rainfall run-off into waterways may contain debris such as ash, soil, trees and rocks, and heavy rainfall increases the potential for landslides and debris across roads.

For emergency assistance contact the SES on 132 500.

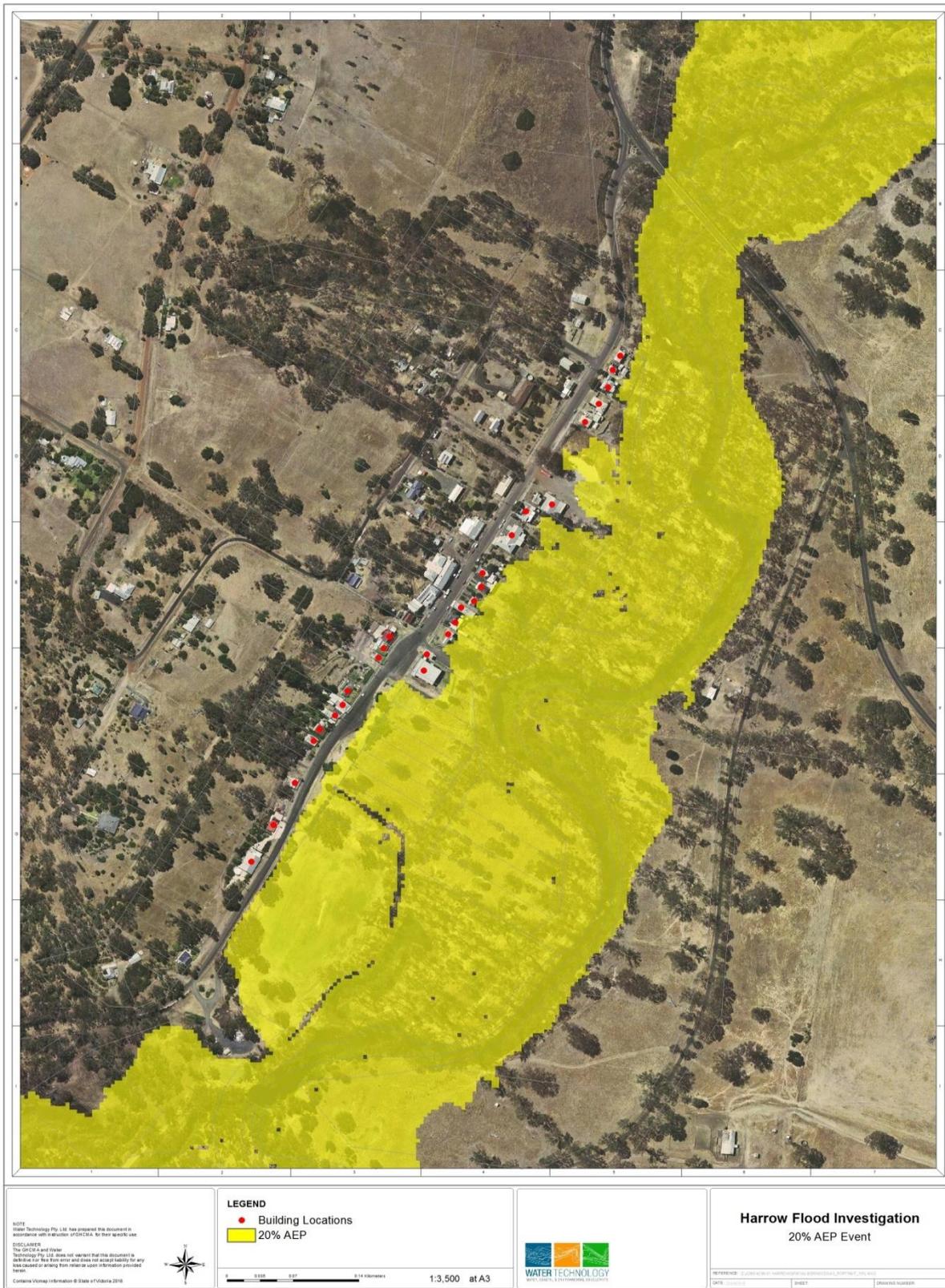
Current Road and Traffic Information is available at the VicRoads website: <http://traffic.vicroads.vic.gov.au>

Weather Forecast:

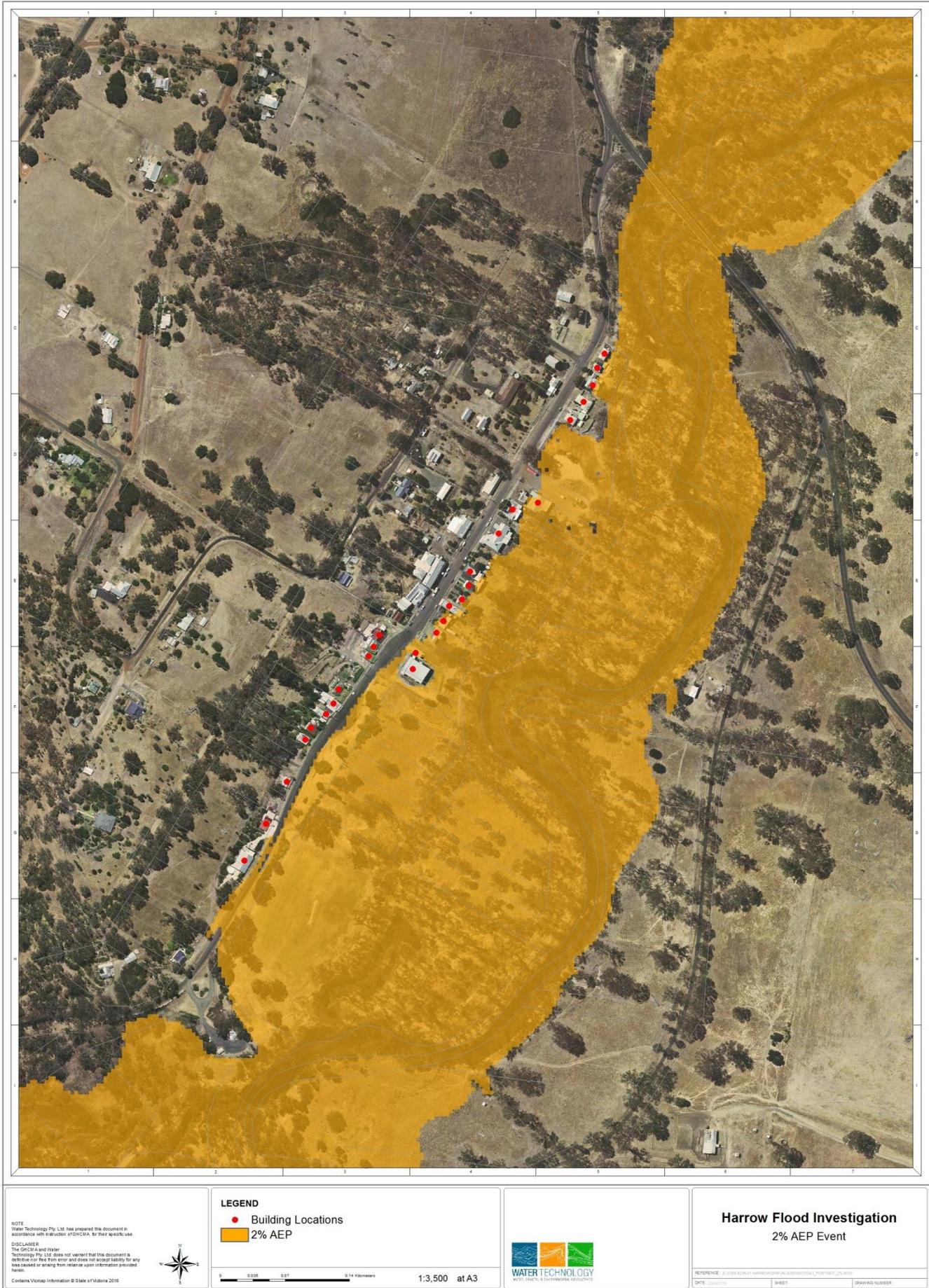
For the latest weather forecast see <http://www.bom.gov.au/vic/forecasts/>

Appendix F: Flood Maps

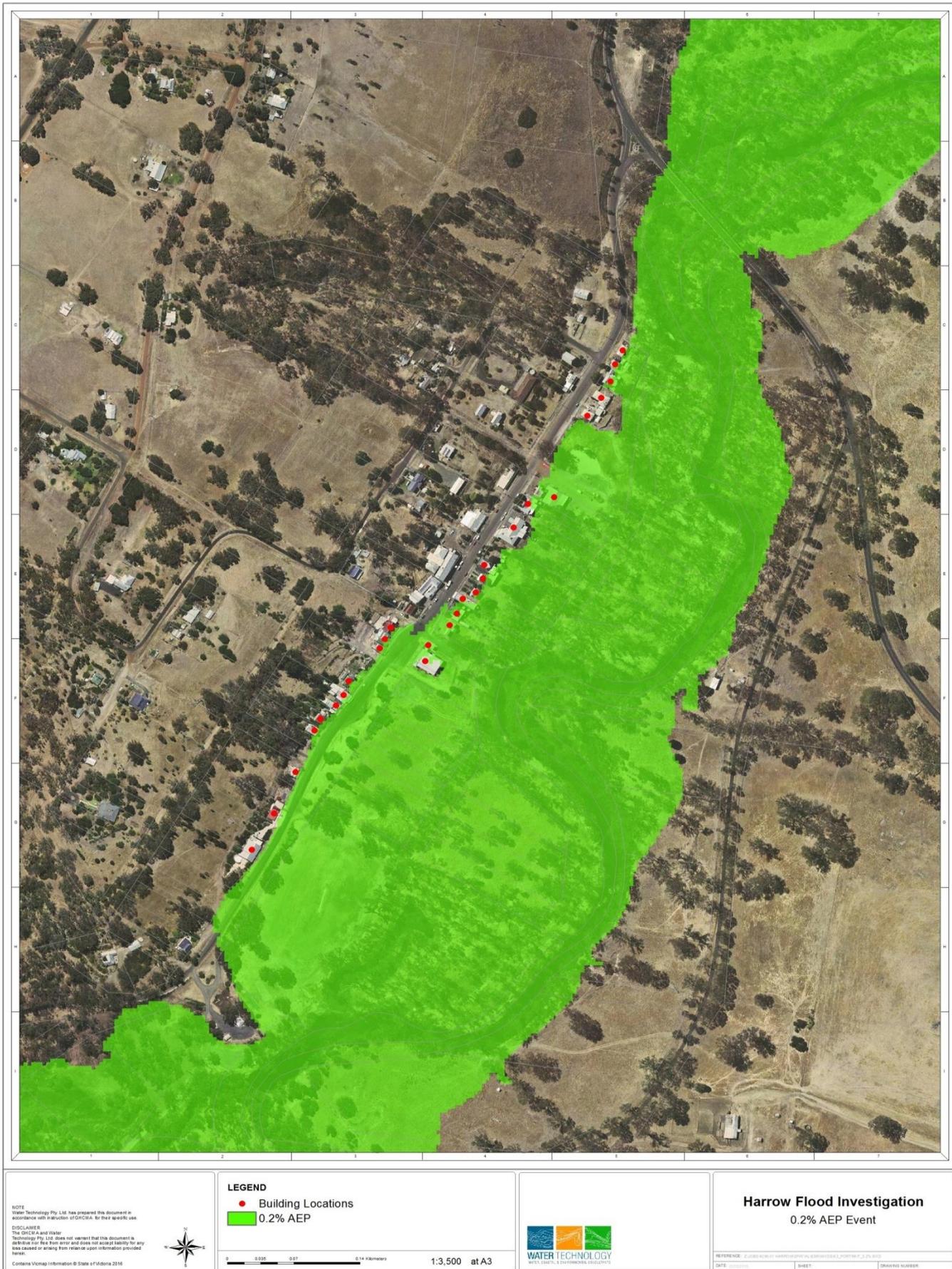
1.1. Harrow Flood Extent Maps. Harrow 5 year ARI flood extent map (Water Technology 2017).



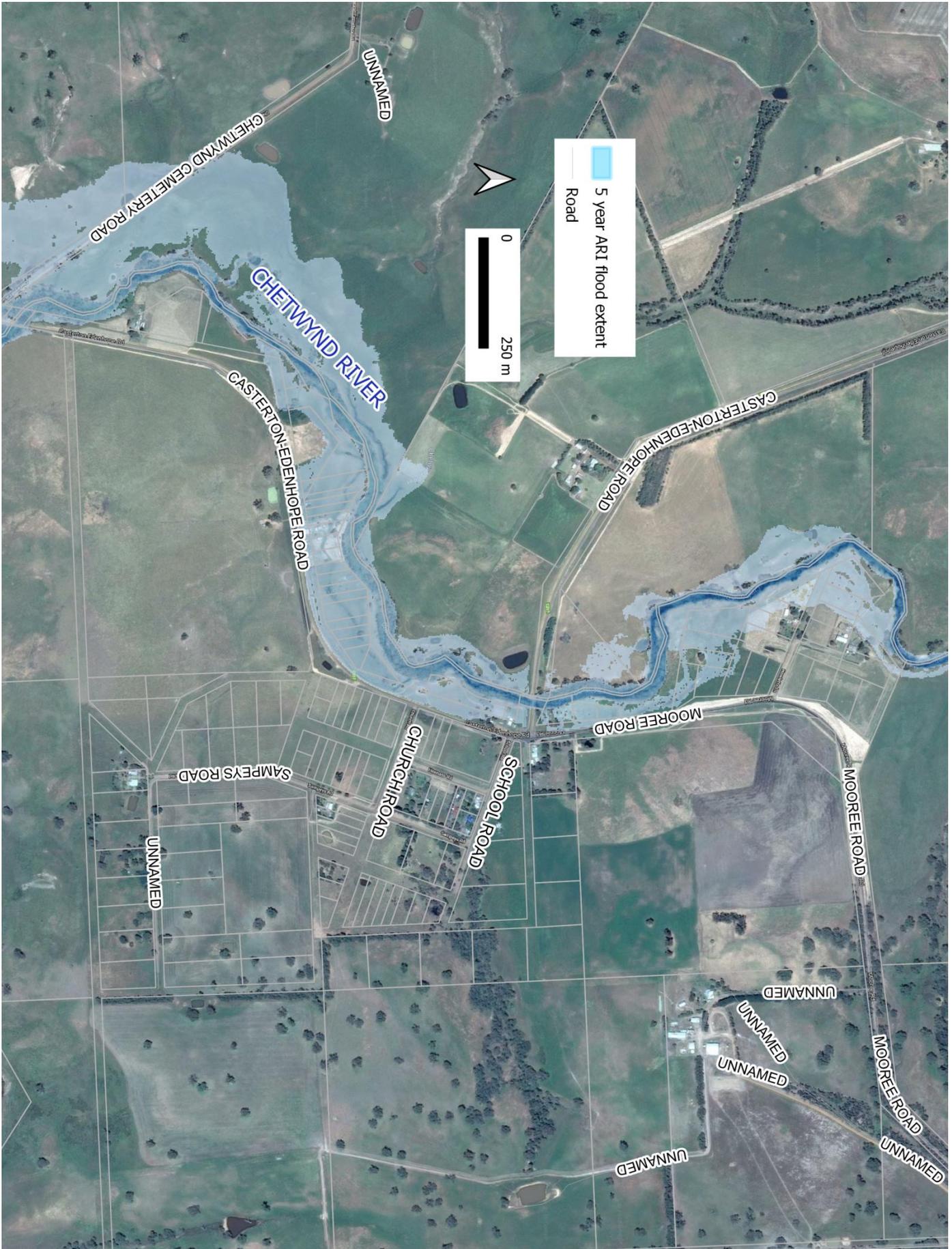
Harrow 50 year ARI flood extent map (Water Technology 2017).



Harrow 500 year ARI flood extent map (Water Technology 2017).



1.2. Chetwynd Flood Extent Maps. Chetwynd 5 year ARI flood extent map (Water Technology 2018).



Chetwynd 10 year ARI flood extent map (Water Technology 2018).



Chetwynd 20 year ARI flood extent map (Water Technology 2018).



Chetwynd 50 year ARI flood extent map (Water Technology 2018).



Chetwynd 100 year ARI flood extent map (Water Technology 2018).



Chetwynd 200 year ARI flood extent map (Water Technology 2018).



Appendix G: Local flood information

No Local Flood Guides have been developed for the West Wimmera Shire Council.

Appendix H: Local knowledge arrangements

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

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

For the West Wimmera region community observers identified are:

Town	Observer Details	Community Observer Name	Contact Details
Harrow	Harrow CFA Brigade, Region 17	Craig Decker	0438 394 775
Harrow	Harrow CFA Brigade, Region 17	Susan Anson	0427 881 377
Harrow	Harrow CFA Brigade, Region 17	Mitch Linto	0428 396 276
Harrow	Harrow CFA Brigade, Region 17	Robert McFarlane	0428 881 204
Chetwynd	Chetwynd CFA Brigade, Region 17	Warren McDonnell	0428 253 308
Chetwynd	Chetwynd CFA Brigade, Region 17	Robert Flynn	0421 728 732
Chetwynd	Chetwynd CFA Brigade, Region 17	Nick Sangster	0408 814 191
Edenhope	Edenhope VICSES Unit	Josh Williamson	0436 294 891
Edenhope	Edenhope VICSES Unit	Andrew Nelson	0428 833 232
Apsley	Apsley CFA Brigade, Region 17	Brad Turner	0428 173 814
Apsley	Apsley CFA Brigade, Region 17	Brendan Hocking	0428 139 560
Apsley	Apsley CFA Brigade, Region 17	Ken Mulraney	0429 144 017
Apsley	Apsley CFA Brigade, Region 17	Stephen Hocking	0429 861 389

Appendix I: West Wimmera Community Sandbag Collection Points

Triggers to start prefilling sandbags and setting up community sandbag collection points;

- BOM flood watch has been issued for the town/catchment area
- Significant rainfall is predicted for the town/catchment area (greater than 50mm)
- BOM has high certainty the rainfall event will impact a town/catchment area listed below.
- Flooding is imminent

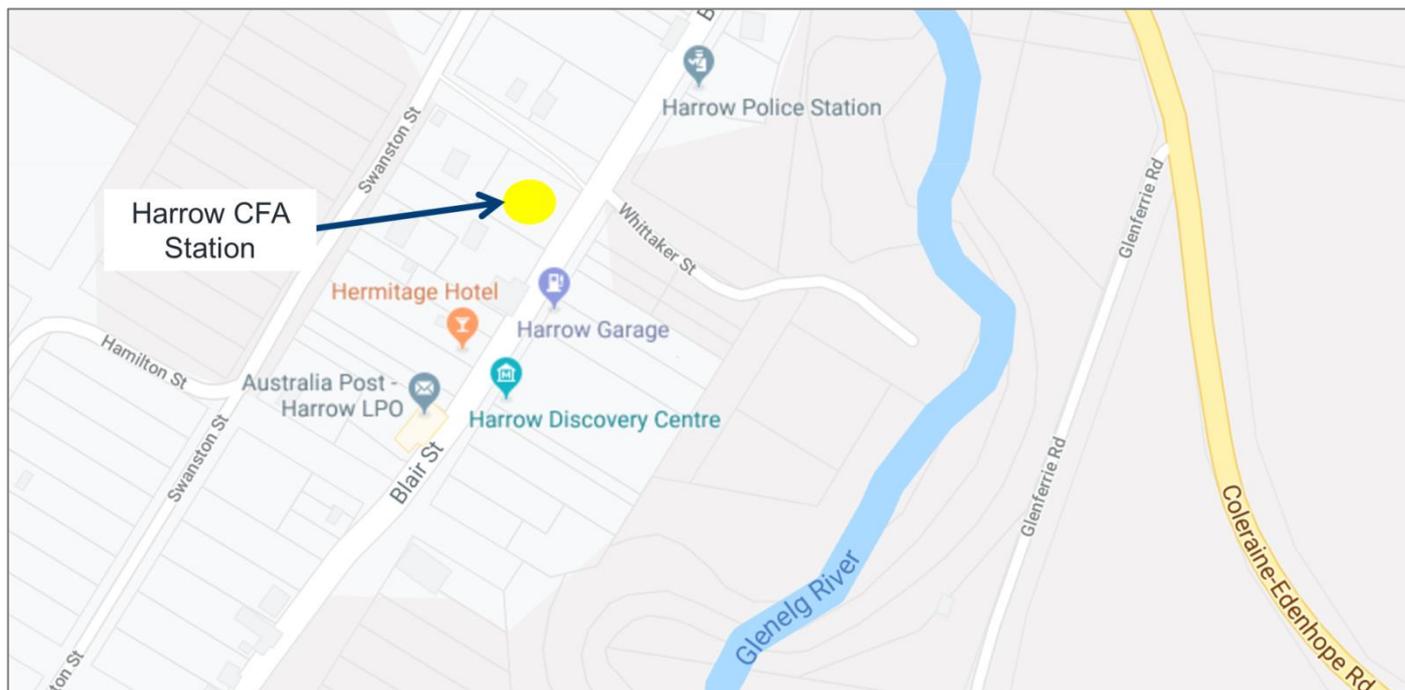
When needed community sandbag collection points will be set up at;

- Harrow CFA Station: 20 Blair Street, Harrow.
- Edenhope VICSES Unit: 26 Mollison Street, Edenhope.
- Apsley CFA Station: 11 Splatt Street, Apsley.

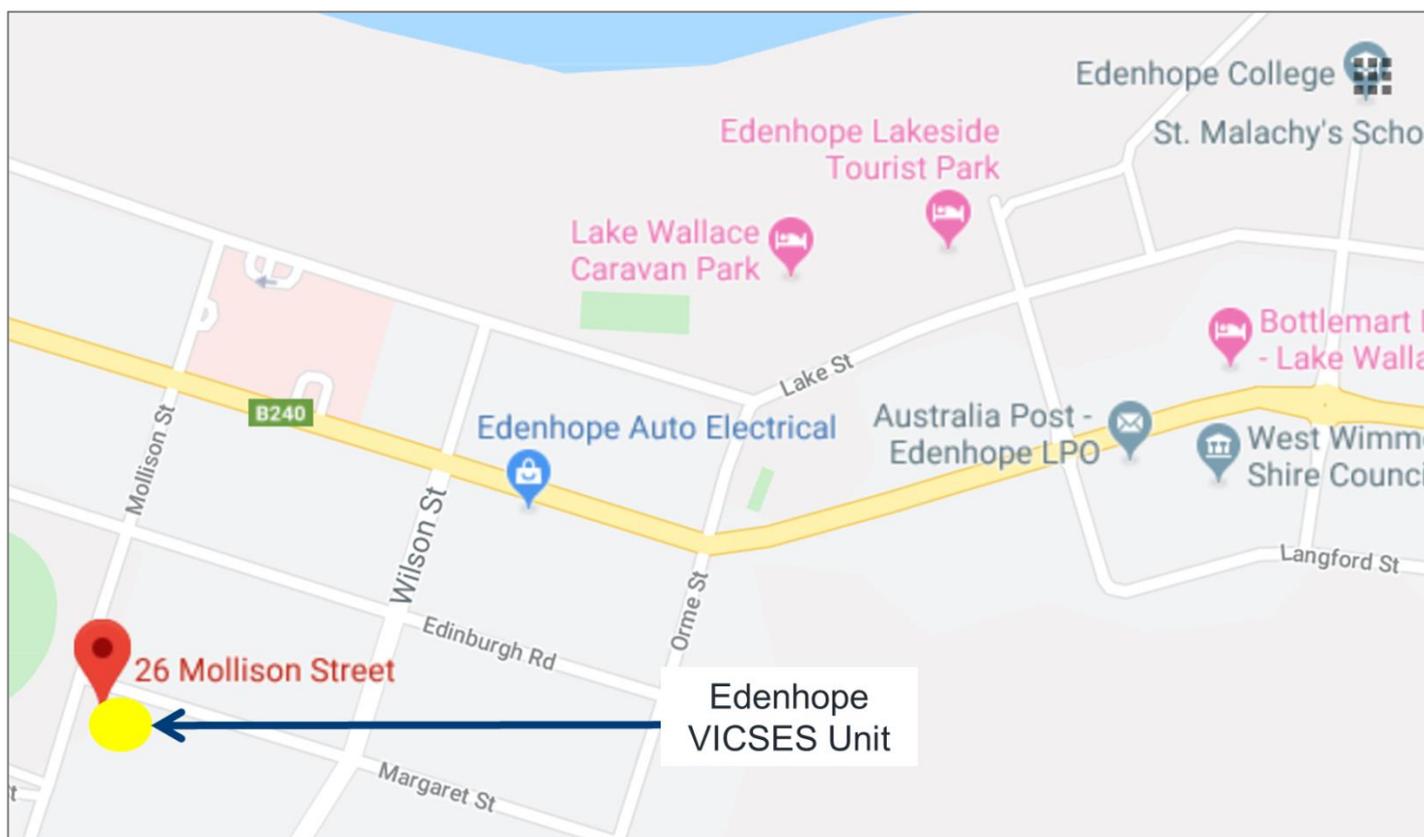
Refer to the list below of key tasks that may be undertaken to prepare sandbag filling and community sandbag collection points.

Agency	Task Description
VICSES	Deliver sandbags to the council depot or other nominated sandbag filling point to prefill the sandbags.
West Wimmera Shire	Deliver sand to sandbag filling points documented below.
West Wimmera Shire / VICSES / CFA	Deliver prefilled sandbags either directly to buildings that need to be sandbagged or to the nominated community Sandbag collection point. Provide staff/volunteers to set up the community sandbag point. Provide staff/volunteers to distribute prefilled sandbags to the community.
West Wimmera Shire / VICSES	Notify the community of the location of the community sandbag collection point via local radio and social media channels.

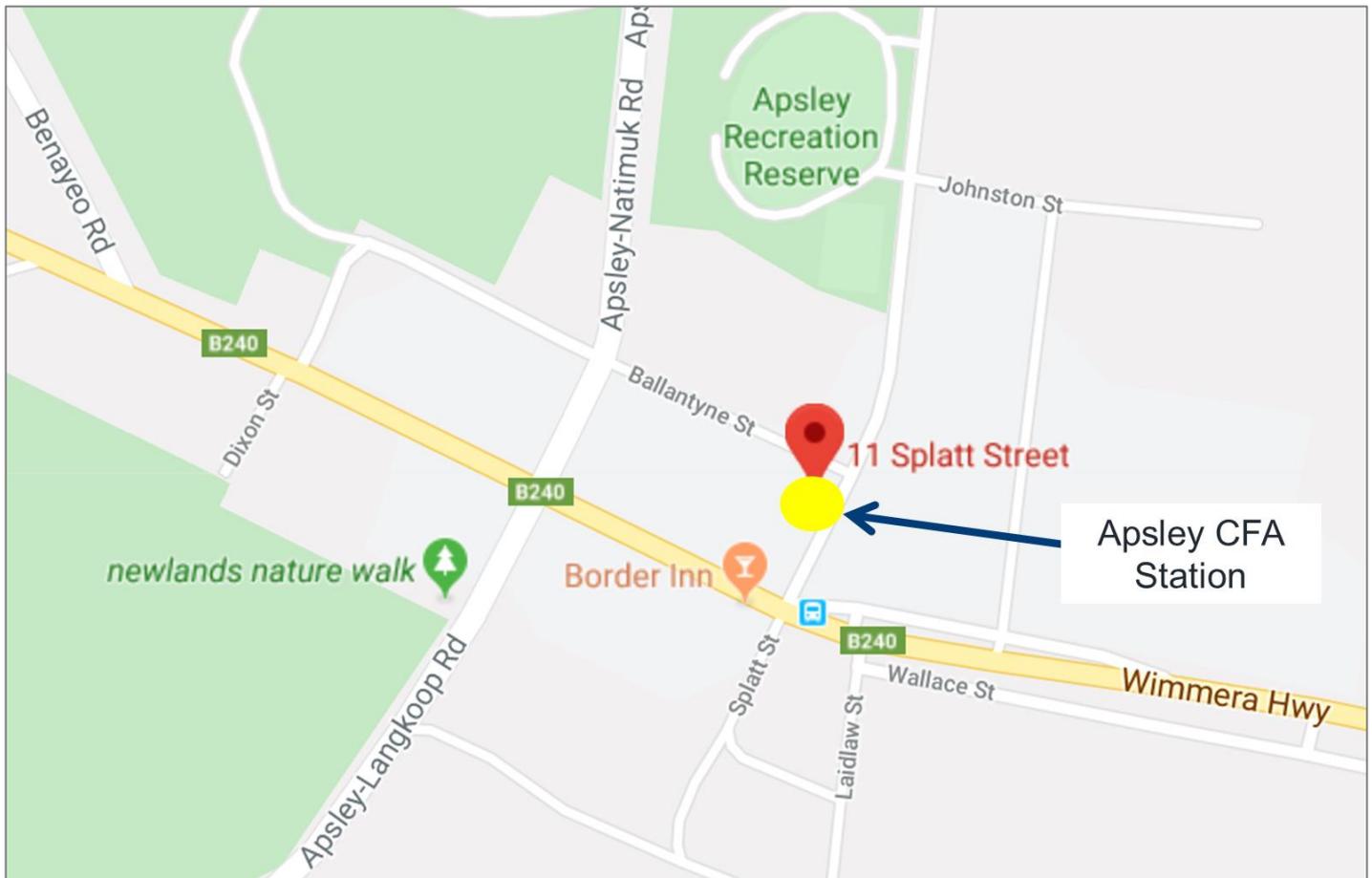
Harrow sandbag filling and community collection point: the Harrow CFA Station, 20 Blair Street, Harrow (refer to map below).



Edenhope sandbag filling and community collection point: the Edenhope VICSES Unit 26 Mollison Street, Edenhope (refer to map below).



Apsley sandbag filling and community collection point: the Apsley CFA Station, 11 Splatt Street, Apsley (refer to map below).



References

Water Technology (2017): Harrow Flood Investigation Report.

Water Technology (2018): Chetwynd Flood Intelligence and Flood Mapping for the West Wimmera Shire Council.