

# Horsham Rural City Council

## MUNICIPAL FLOOD EMERGENCY PLAN

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

For the Horsham Rural City Council  
And  
VICSES Horsham Unit

Version 7.3  
Reviewed: July 2025



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## Distribution of the Municipal Flood Emergency Plan (MFEP)

Once endorsed and signed, the MFEP should be distributed to all MFEP committee members, MEMPC Chair, council, MEMO, Deputy MEMO, Representatives from; Wimmera CMA, DEECA, Parks Victoria, Ambulance Victoria, Department of Transport, DHS, relevant utilities, MERC, RERC, VICSES Units, VICSES Regional Office, CFA Brigades, CFA Regional office, and Fire Rescue Victoria Stations (as applicable)

## 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 [ust.wimmera@ses.vic.gov.au](mailto:ust.wimmera@ses.vic.gov.au)

The VICSES MFEP template 6.0 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                                                                            |
|------------------|-------------------|----------------------------|-------------------------------------------------------------------------------------------------|
| 01               | October 2020      | Gavin Kelly                | Full translation of previous version to template v 6                                            |
| v 7              | June 2022         | Mal Gibson<br>Clare Minter | Report Review, restructure, update                                                              |
| V7               | Sept 2023         | Mal Gibson                 | Reformat, Review report, Update                                                                 |
| V7a              | Aug 2023          | John Martin                | Tracked change comments for review by SES                                                       |
| V7.1             | Feb 2025          | Jordan Bush                | Council changes reviewed, document amendments.                                                  |
| V7.2             | June 2025         | Jordan Bush                | Agency changes reviewed. Addition of Horsham Emergency Service impacts and agency name changes. |
| <b>V7.3</b>      | <b>July 2025</b>  | <b>Jordan Bush</b>         | <b>Agency changes reviewed and updated.</b>                                                     |

This Plan will be maintained on the VICSES website at [www.ses.vic.gov.au/get-ready/your-local-flood-information](http://www.ses.vic.gov.au/get-ready/your-local-flood-information) and Municipality website (if required).

## List of Abbreviations & Acronyms

The following abbreviations and acronyms are used in the Plan

|                |                                                                                   |               |                                                   |
|----------------|-----------------------------------------------------------------------------------|---------------|---------------------------------------------------|
| <b>AAR</b>     | After Action Review                                                               | <b>IMS</b>    | Incident Management System                        |
| <b>AEP</b>     | Annual Exceedance Probability                                                     | <b>IMT</b>    | Incident Management Team                          |
| <b>AHD</b>     | Australian Height Datum (the height of a location above mean sea level in metres) | <b>JSOP</b>   | Joint Standard Operating Procedure                |
| <b>AIDR</b>    | Australian Institute of Disaster Resilience                                       | <b>LSIO</b>   | Land Subject to Inundation Overlay                |
| <b>AIIMS</b>   | Australasian Inter-service Incident Management System                             | <b>MEMP</b>   | Municipal Emergency Management Plan               |
| <b>ICC</b>     | Incident Control Centre                                                           | <b>MEMPC</b>  | Municipal Emergency Management Planning Committee |
| <b>ARI</b>     | Average Recurrence Interval                                                       | <b>MERC</b>   | Municipal Emergency Response Coordinator          |
| <b>ARMCANZ</b> | Agricultural & Resource Management Council of Australia & New Zealand             | <b>MEMO</b>   | Municipal Emergency Management Officer            |
| <b>AV</b>      | Ambulance Victoria                                                                | <b>FRV</b>    | Fire Rescue Victoria                              |
| <b>BoM</b>     | Bureau of Meteorology                                                             | <b>MFEP</b>   | Municipal Flood Emergency Plan                    |
| <b>CEO</b>     | Chief Executive Officer                                                           | <b>MFPC</b>   | Municipal Flood Planning Committee                |
| <b>CERA</b>    | Community Emergency Risk Assessment                                               | <b>MRM</b>    | Municipal Recovery Manager                        |
| <b>CFA</b>     | Country Fire Authority                                                            | <b>PMF</b>    | Probable Maximum Flood                            |
| <b>CMA</b>     | Catchment Management Authority                                                    | <b>RAC</b>    | Regional Agency Commander                         |
| <b>DEECA</b>   | Department of Energy, Environment and Climate Action                              | <b>RCC</b>    | Regional Control Centre                           |
| <b>DJSIR</b>   | Department of Jobs, Skills, Industry and Regions                                  | <b>RDO</b>    | Regional Duty Officer                             |
| <b>DoH</b>     | Department of Health                                                              | <b>SERC</b>   | State Emergency Response Coordinator              |
| <b>EMLO</b>    | Emergency Management Liaison Officer                                              | <b>SERP</b>   | State Emergency Response Plan                     |
| <b>EMV</b>     | Emergency Management Victoria                                                     | <b>SAC</b>    | State Agency Commander                            |
| <b>SEMP</b>    | State Emergency Management Plan                                                   | <b>SBO</b>    | Special Building Overlay                          |
| <b>EMT</b>     | Emergency Management Team                                                         | <b>SCC</b>    | State Control Centre                              |
| <b>ERC</b>     | Emergency Relief Centre                                                           | <b>SDO</b>    | State Duty Officer                                |
| <b>EO</b>      | Executive Officer                                                                 | <b>SERP</b>   | State Emergency Response Plan                     |
| <b>FO</b>      | Floodway Overlay                                                                  | <b>SEWS</b>   | Standard Emergency Warning Signal                 |
| <b>IIA</b>     | Initial Impact Assessment                                                         | <b>SOP</b>    | Standard Operating Procedures                     |
| <b>IEMT</b>    | Incident Emergency Management Team                                                | <b>VICSES</b> | Victoria State Emergency Service                  |

# Part 1. Introduction

## 1.1 Authority

In 2020, the [Emergency Management Legislation Amendment Act 2018](#) amended the [Emergency Management Act 2013](#) (Act) to provide for new integrated arrangements for emergency management planning in Victoria at the state, regional and municipal levels. It created an obligation for a Municipal Emergency Management Planning Committee (MEMPC) to be established in each of the municipal districts of Victoria. Each MEMPC is a multi-agency collaboration group whose members bring organisation, industry, or personal expertise to the task of emergency management planning for the municipal district.

This plan has been prepared in accordance, and complies, with the requirements of the [Act](#) including having regard to the guidelines issued under s77, [Guidelines for Preparing State, Regional and Municipal Emergency Management Plans](#).

## 1.2 Plan Approval and Endorsement

### Endorsed VICSES

This plan has been prepared and approved by the VICSES.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Print Name: \_\_\_\_\_

### Operations Manager Unit Support – VICSES Wimmera Unit Area

This Plan is submitted by the VICSES as the preparer of the document.

### Endorsed MEMPC

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Print Name: \_\_\_\_\_

#### NAME

Chair, Horsham Rural City Council Municipal  
Emergency Management Planning Committee

#### Plan endorsed by:

Municipal Emergency Management Planning  
Committee

### Endorsed REMPC

Signed \_\_\_\_\_ Date \_\_\_\_\_

Print Name: \_\_\_\_\_

**Chair, Grampians Regional Emergency Management Planning Committee**

## 1.3 Plan Review

The HRCC MFEP is to be reviewed as follows.

- Annually, in association with the Municipal Emergency Management Plan (MEMP).
- Following significant incidents, if required.
- As directed by the State or REMPC.
- As required by legislation.
- As further works are completed by the MFMP.

To ensure the plan provides for a current, integrated, coordinated, and comprehensive approach to emergency management and is effective, it is to be fully reviewed at least every three years.

An urgent update of this Plan is permitted if there is a significant risk that life or property will be endangered if the plan is not updated (Act s60AM). Urgent updates come into effect when published on the municipal council website.

This Plan will be reviewed no later than March 2028.

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

## 1.4 Disclaimer

No reader should act based on any matter contained in this publication without appreciating that it may be the subject of amendment or revocation from time to time without notice. The members of the HRCC MEMPC expressly disclaim all and any liability (including liability in negligence) to any person or body in respect of anything and of the consequences of anything done or omitted to be done by any such person or body in reliance, whether total or partial, upon the whole or any part of this publication.

## 1.5 Administrative updates

Administrative updates will be made to this plan from time to time, which will be noted in the [Version control](#) section. These amendments are administrative and do not substantially change the content or intent of this plan. These amendments do not require the plan to be endorsed by the Committee or Council.

Where there is substantial change required to the content or intent of the plan, the plan will need to go through the endorsement process.

## 1.6 Plan Distribution

This Plan is intended for the use of the members of the Horsham Rural City MEMPC

The HRCC MFEP will be distributed according to the committee membership of the Horsham City Council MEMPC electronically, as required.

## 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 and websites (VICSES and the Municipality) upon formal assurance/approval by REMPC, Municipality and VICSES

VICSES, with the support of Horsham Rural City Council and North Central and Wimmera Catchment Management Authority, will coordinate targeted community flood engagement programs within the council area. Refer to Appendix H (LFG Information)

### 2.2 Structural Flood Mitigation Measures

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

#### **Horsham Weir**

Horsham Weir is located on the Wimmera River just downstream of Drummond Street. It is a concrete structure with 27 bays of removable stop boards along with eight electrically operated aluminium flume gates.

The weir is operated and owned by Horsham Rural City Council.

During low flow periods, the water levels in the Wimmera River through the town are controlled by the weir. The influence of the weir during low flows also extends to the lower reach of Burnt Creek downstream of Williams Road.

Alterations to the settings on the Horsham Weir are implemented in consideration of predicted flow rates being received from either the BoM, WCMA or GWM Water. Council staff will also separately monitor the weir level and flow rates in periods of significant rain.

Current operating rules are designed to minimise the impact of the weir at high flows. The aluminium flume gates are lowered into a laid-down position, and removal of the weir stop boards commences when the Wimmera River flow reaches 613 ML/d. All stop boards are removed when the Wimmera River flows reach a flow of 5,145 ML/d, corresponding to approximately a 50% AEP (2-year ARI) flow.

When the Horsham Weir is lowered in anticipation of high flows within the Wimmera River at Horsham, Council personnel will advise certain landholders in the Quantong area who may have stock in low-lying areas and the MEMO at Hindmarsh Shire Council by phone to expect higher than normal flows.

The weir drowns out at high flows (i.e., is completely inundated) and has no significant impact on water levels provided all stop boards are removed and the eight flume gates are laid flat.

#### **Wotonga Basin Weir**

Wotonga Basin Weir is owned and operated by Horsham Rural City Council and is the control measure to protect high river flow from entering the city drainage system, including the areas around City Gardens Estate, O'Callaghan's Parade and Firebrace Street.

Operation involves the placement of weir boards and subsequent "pumping" from above the weir into a high river.

Activation commences when the Walmer Gauge reaches 3.3m (approx. 12,800 ML/d flow)

#### **Rose and Olympic Streets Drainage Flood Gates**

The Rose and Olympic Street drains are owned and operated by Horsham Rural City Council. Council operates flood gates on these drains to prevent high river flows from entering the city drainage system.

Operation involves the "pumping" from above floodgates into a high river.

Activation commences when the Walmer Gauge reaches 3.3m (approx. 12,800 ML/d flow).

### Peppertree Lane to Menadue Street and Hamilton Street Levee

While it may have been intended that these levees were built to accommodate a 1% AEP flood, this has been found to be not the case. In the 1% AEP flood, water overtops the levee in several locations. In particular, near the upstream end of Peppertree Lane. As a result of this overtopping, it needs to be recognised that while the levee may provide protection for houses and properties behind the levee in up to about a 2% flood, for larger floods plans need to recognise that inundation of properties behind the levee will occur. The extent of this flooding can be readily identified in 1% AEP flood maps.

A levee audit conducted in 1996 (Findlay Irrigation Services et al, 1996) indicated that the Horsham levee system does not correspond to the original design profile. The Menadue Street/Peppertree Lane area has a low point midway along the levee and drops beneath the original design profile at either end. The consequence of the above is that the levee system will only provide flood protection up to around the 5% AEP (20-year ARI) flood level (Water Technology, 2003).

The Horsham 2006 flood study examined several issues, including the merit in raising this levee to the intended 1% AEP level. Modelling of the impacts of raising the levee determined that if it is raised to the 1% AEP level, that the depth of flooding would increase in other areas of Horsham, causing several buildings and residences which would otherwise not have above floor inundation, to be inundated by the 1% AEP flood. For this reason, it was decided not to proceed with raising the levee.

Any future proposal to raise the levee, **even on a temporary basis by sand-bagging or similar**, should only proceed if modelling is conducted and the results are found to be acceptable – i.e., no adverse impact on other properties by doing so. This may be the case if some of the potentially impacted properties are changed, e.g., re-built with higher floor levels.

### Water Supply Channels in Rural Residential Area

There are no formal flood mitigation schemes in operation in the rural residential areas upstream of Horsham but there are a number of water supply channels which influence the depth and extent of inundation through the area. While most of the irrigation channels have been decommissioned since the 2011 flood, key remaining locations are:

- Taylors Lake Outlet Channel (transports water from Taylors Lake to the Wimmera River at Yarriambiack Creek – caused significant constriction of floodwater during the January 2011 flood event.
- A section of Channel 3, otherwise known as the West Channel north of Horsham Lubeck Road.

The section of Channel 3 that used to be adjacent to Rokeskys Rd has been re-constructed as a levee within the Rokeskys Rd, with the ability to pass limited flows, built into a raised road formation from Horsham-Lubeck Road to Heards Road. Ongoing maintenance of this road will be required to maintain the levee at the designed level to balance the impacts of flooding in this area.

### Walmer Syphon Drainage Issues

In the January 2011 flood event, heavy rain caused stormwater flooding in the MacKenzie Court area of Haven, and some nearby areas. A number of works have occurred since that flood, reducing the likelihood of similar flooding in future events. The Walmer Syphon, previously used for water supply, now provides some drainage relief in this general area. Operation of the Walmer Syphon should be checked to ensure effective operation of the drainage system in this area during major events.

## 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 an 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 State Emergency Response Plan (SERP) Sub Plan – Flood ([www.ses.vic.gov.au/em-sector/vices-emergency-plans](http://www.ses.vic.gov.au/em-sector/vices-emergency-plans)) and on the Bureau of Meteorology (BoM) website [www.bom.gov.au](http://www.bom.gov.au).

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

### 2.3.3 Local Knowledge

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

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

## Part 3. DURING: Response arrangements

### 3.1 Introduction

#### 3.1.1 Activation of Response

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

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

#### 3.1.2 Responsibilities

There are several 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 Horsham Rural City Council. These agencies will be engaged through the Emergency Management Team (EMT).

The general roles and responsibilities of supporting agencies are as agreed within the: MEMP, State Emergency Management Plan (SEMP).

#### 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 / IC will liaise with the centre directly if no Division / Sector Command are established.

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

### **3.1.4 Escalation**

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

Resourcing and event escalation arrangements are described in the SEMP.

## 3.2 The six C's

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

The Victoria State Emergency Service Act 2013 and the emergency Management Act 2013 provides the authority for VICSES to respond to flood and is described in the SEMP – Roles and Responsibilities. The SEMP outlines VICSES's responsibility for Flood emergency planning including readiness.

The SEMP, prepared under *Emergency Management Act 1986 (as amended)*, identifies VICSES as the Control Agency for flood. The SEMP identifies DEECA as the Control Agency responsible for "dam safety", reticulated water and wastewater (sewerage) services and other emergencies. A more detailed explanation of roles and responsibilities is provided in the SEMP.

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

### 3.2.2 Incident Controller (IC)

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

### **3.2.3 Incident Control Centre (ICC)**

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

Pre-determined ICC locations are available in (JSOP 02.03 Schedule 4), the following ICC has been identified for use for incidents within Horsham Rural City.

### **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.

### 3.2.5 Incident Management Team (IMT)

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

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

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

Refer to 3 of the SEMP for guidance on IEMTs.

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

VICSES internal SOP's - SOP008 and VICSES SOP009 outline in detail the actions to be undertaken upon receipt of a Flood Watch / Flood Warning or Severe Weather Warning. The VICSES RDO will undertake actions as defined within the flood intelligence cards (**Appendix C**) until an IC is appointed and assumes control of the incident. General considerations by the IC / VICSES RDO may include (but are not limited to):

- Review flood intelligence to assess likely flood consequences.
- Monitor weather and flood information – [www.bom.gov.au](http://www.bom.gov.au)
- Assess Command and Control requirements.
- Review local resources and consider needs for further resources regarding personnel, property protection, flood rescue and air support.
- Notify and brief appropriate officers. This includes Regional Control Centre (RCC) (if established), State Control Centre (SCC) (if established), Council, other emergency services through the IEMT.
- 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

The VICSES RDO will undertake actions as defined within the flood intelligence cards (Appendix C) until an IC is appointed. General considerations by the VICSES RDO / IC may include (but are not limited to):

- Develop an appreciation of current flood levels and predicted levels. Are floodwaters rising, steady, peaking or falling?
- Review flood intelligence to assess likely flood consequences.
- Consider:
  - What areas may be at risk of inundation?
  - 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 (e.g., Water, power utilities)
  - Implement response strategies as required based upon flood consequence assessment.
  - Continue to monitor the flood situation – [www.bom.gov.au/vic/flood/](http://www.bom.gov.au/vic/flood/)
  - Continue to conduct reconnaissance of low-lying areas.
  - Liaise with relevant flood mitigation infrastructure managers.

## 3.3 Initial Impact Assessment

Initial impact assessments will be conducted in accordance with the SEMP to assess and record the extent and nature of damage caused by flooding.

## 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 and emergency relief services if required. 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 Flood Sub-Plan

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 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; (If time permits, any planning or discussion around evacuation should be made in consultation with VicPol, IEMT and other expert advice where available)
3. Where it is likely people will become trapped by floodwaters due to limited evacuation time or options safety advice needs to be provided to people at risk. Advice should be given to not attempt to flee by entering floodwater. If people become trapped, it may be safer to seek the highest point within the building and to telephone 000 if they require rescue.
4. For buildings known to be structurally unsuitable an earlier evacuation trigger will need to be established (return to step 1 of this cycle).
5. If an earlier evacuation is not possible then specific preparations must be made to rescue occupants trapped in structurally unsuitable buildings either pre-emptively or as those people call for help.
6. Contact the Horsham MERC and MEMO at the earliest opportunity to allow for relief preparation to commence.

Due to the rapid development of flash flooding it will often be difficult, to establish relief centres ahead of 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 for all flooding

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 SEMP 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 on behalf of the VICPOL, who are the Control Agency. 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 Horsham Rural City to assist with rescue operations:

- Flood Rescue boats are located at Ballarat Regional Office, Ballarat Unit, Stawell Unit, Ararat Unit.
- Ballarat, Bacchus Marsh have a land based Swift Rescue Teams.
- HEMS 4 Rescue helicopter is available, dispatched by the state air-desk.

### 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:

- Horsham Aerodrome, off Geodetic Road, north of Horsham.
- Nhill Aerodrome, off Aerodrome Road north of Nhill.
- Stawell Aerodrome, off Aerodrome Road southwest of Stawell.

### 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 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, Local Government Authorities (LGA) and VICPOL and within appropriate approval frameworks.

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

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

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

### 3.11 Disruption to Services

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

### 3.12 Road Closures

Horsham Rural City Council and Department of Transport (DTP) will carry out their formal functions of road closures including observation and placement of warning signs, roadblocks etc. to its designated local and regional roads, bridges, walking and bike trails if required. Horsham Rural City Council staff should also liaise with and advise Regional Roads Victoria as to the need or advisability of erecting warning signs and / or of closing roads and bridges under its jurisdiction. Regional Roads Victoria are responsible for designated main roads and highways and councils are responsible for the designated local and regional road network.

Horsham Rural City Council and the Department of Transport (DTP) 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

DECCA 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.

DECCA 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 described in **Appendix A**.

### **3.14 Wastewater related Public Health Issues and Critical Sewerage Assets**

Inundation of critical sewerage assets including septic tanks and sewerage pump stations may result in water quality problems within the Municipality. Where this is likely to occur or has occurred the 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 Horsham Rural City Council Environmental Health Officer to inspect and report to the MEMO and the ICC on any water quality issues relating to flooding.

### **3.15 Access to Technical Specialists**

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

### **3.16 Transition from Response to Recovery**

VICSES as the Control Agency is responsible for ensuring effective transition from response to recovery. This transition will be conducted in accordance with existing arrangements as detailed in the SEMP, MEMP and the Regional Recovery Sub Plan.

### **3.17 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 emergency relief and recovery from a flood and / or storm event within the Horsham Rural City Council are detailed in the Horsham Rural City Council MEMP.

### 4.2 Emergency Relief

The decision to recommend the opening of an emergency relief centre sits with the IC. The IC is responsible for ensuring that relief arrangements have been considered and implemented where required under the SEMP (Refer to “Emergency management phases” section of the SEMP).

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

Details of the relief arrangements are available in the MEMP.

### 4.3 Animal Welfare

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

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

- Matters relating to the welfare of wildlife are to be referred to DEECA.
- See also Horsham Rural City Emergency Animal Welfare Plan

## Appendix A: Flood Threats for Horsham and Rural Residential Area

This Appendix provides a broad overview of flood risk within the Municipality. Detailed Flood Risk Information for individual communities should be detailed in **Appendix C**.

**Table 1. Flood risk Horsham Municipality**

| LOCATION                                                                                       | IMPACTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wimmera River and tributaries, Mount William Creek, Burnt Creek, MacKenzie River, Norton Creek | <p>The Wimmera River, and its tributaries Mount William Creek, Burnt Creek, MacKenzie River and Norton Creek form the main waterway system in Horsham Rural City Municipality. Yarriambiack Creek is a distributary stream on the Wimmera River located on the eastern boundary of the municipality upstream of Horsham.</p> <p>Burnt Creek joins the Wimmera River in Horsham and has a catchment area of approximately 186 km<sup>2</sup>. The small channel capacity of Burnt Creek's lower catchment north of the Western Highway means that for relatively small (20% AEP) floods approximately 50% of the flow leaves the mainstream course and flows along a southern channel, re-joining the mainstream just upstream of Williams Road.</p> <p>When the Wimmera River floods, localised urban flooding will occur due to backup of the urban drainage system. During riverine floods Horsham Rural City Council implements an urban drainage flooding procedure that includes emergency stormwater pumping into the flooded Wimmera River.</p> |
| Wimmera River from Glenorchy to Horsham                                                        | <p>The Wimmera River environs from Glenorchy to Horsham start to experience localised flooding when the river reaches the minor flood level at Glenorchy, although some local access may be interrupted at lower flood levels.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Taylors Lake Outlet                                                                            | <p>The Taylors Lake Outlet Channel crosses the Wimmera River upstream of Horsham and influences flood behaviour by slightly reducing floodwater flows to the west. For floods from a 20% AEP event and above, the channel overtops south of the Wimmera River. North of the river, historically the backed up water flooded the Barrabool State Forest which also provides natural storage. The channel has been filled in in this section, although flood modelling has shown this to have little impact upon the direction or extent of flood flows. Observations in subsequent floods will improve the understanding of any changes in this area due to the infilling of sections of this channel.</p>                                                                                                                                                                                                                                                                                                                                              |
| Horsham                                                                                        | <p>The Horsham area is impacted by flooding of the Wimmera River and Burnt Creek, if the same rainfall event triggers a flood event in both waterways Burnt Creek will peak first, followed by the Wimmera River. There is potential for both waterways to peak concurrently although this would require large rainfalls falling in the upper Wimmera Catchment with a second burst of rainfall falling</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | <p>over the Burnt Creek catchment approximately 4 days apart later, a statistically unlikely scenario.</p> <p>Much of Horsham's infrastructure is located on the floodplain and is affected by periodic flooding. The characteristics of the floodplain in Horsham City have been significantly altered by the construction of flood mitigation works including the levees that run from Peppertree Lane to Menadue Street near Hamilton St and to a lesser extent the Wotonga Basin weir. These structures provide minimal protection and are drowned out in larger events. Both systems are inundated commencing with floods between the 20 and 50 year ARI events.</p> <p>The Horsham urban area is relatively flat and has limited drainage infrastructure. Stormwater drainage is discharged to the Wimmera River through a number of outfalls. Consequently, localised urban stormwater flooding occurs from time to time but quickly dissipates provided the Wimmera River is not high. Stormwater flooding may persist for some time if river levels are high, either through operational procedures of the weir or from flood flows.</p> |
| Longerenong Floodplain | <p>Flood flows break out from the Wimmera River and flood the adjoining Longerenong floodplain between the Yarriambiack Creek confluence and Horsham township. The natural storage provided by the floodplain attenuates and reduces the downstream flood peak. Dooen Swamp, 6 km upstream from Horsham, provides a large flood storage area on the Wimmera River. Its effect in reducing peak flood flows reduces as the flood size increases and/or during multiple floods in quick succession as the swamp fills early during an event.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### ***Flood Studies and other flood information***

There are numerous flood studies covering the Horsham area including:

- Horsham Flood Study (2003)<sup>i</sup>;
- Horsham Flood Study 2006
- Horsham & Wartook Valley Flood Study 2016
- Yarriambiack Creek Flood Investigation Study (2003)<sup>ii</sup>;
- Wimmera River and Yarriambiack Creek Flows Study (2009)<sup>iii</sup>;
- Wimmera Region Flood Report - January 2011 (2011)<sup>iv</sup>
- Horsham Bypass Hydrology and Hydraulics Study (2013)<sup>v</sup>.
- Horsham Floodplain Management Study Volume 1 –Final Report (1982)<sup>vi</sup>
- East Horsham Flood Plan –Flood Intelligence Report, (2014)<sup>vii</sup>.
- Lower Wimmera Flood Study 2016

## **A1 Stormwater and Riverine Flooding**

Horsham Rural City Council is impacted by riverine and stormwater flooding.

Areas that are impacted by stormwater flooding include the Horsham Racecourse, Police Paddock and parts of Haven.

Horsham Rural City has a long history of riverine flood events. Towns impacted by riverine flooding include Horsham, Natimuk, Riverside, Wartook, Quantong and Dadswells Bridge. The most significant recent flood event was recorded in January 2011.

- **A1.1 Riverine Flooding**

**Table 2. communities impacted by riverine flooding.**

| Community               | Impacting Waterways                               |
|-------------------------|---------------------------------------------------|
| <b>Riverside</b>        | Wimmera River, Burnt Creek                        |
| <b>Drung</b>            | Wimmera River                                     |
| <b>Longerenong</b>      | Wimmera River, Yarriambiack Creek, Two Mile Creek |
| <b>St Helens Plains</b> | Wimmera River                                     |
| <b>Horsham City</b>     | Wimmera River, Burnt Creek                        |
| <b>Natimuk</b>          | Natimuk Creek                                     |
| <b>Wartook</b>          | MacKenzie River                                   |

- **A1.2 Stormwater Flooding**

Stormwater induced flooding in the East Horsham area is likely to cause some overland flow, inundation of road and agricultural land. However, due to the very flat terrain of the area, stormwater inundation is not anticipated to cause inundation of dwellings or prevent access to private property due to the low depths and velocities of stormwater, however access may be limited in some locations due to boggy ground conditions.

## **A2 Description of Major Waterways and Drains**

- **A2.1 Wimmera River**

The Wimmera River is the principal waterway within the municipality. Its main tributaries, which all originate from the south, are Mount William Creek, Burnt Creek, MacKenzie River and Norton Creek.

The Wimmera River floodplain between Glenorchy and Horsham is a large and relatively flat alluvial area. It is featuring several wetlands, the largest being Darlot and Dooen Swamps. These areas (i.e., the natural storage of the floodplain) have a vital role in the natural mitigation of floods and help prevent flooding at Horsham.

The Horsham Floodplain Management Study (SRWSC, 1982) highlighted the significant role the floodplain upstream of Horsham plays in attenuating flood peaks. The study recommended that the natural floodplain upstream of Horsham be protected so that its flood storage and attenuation characteristics are retained.

Low flows through Horsham are controlled by the Horsham Weir located just downstream of Drummond Street. Prior to a sizeable flood passing, the regulators on the weir are lowered and boards removed to minimise their influence on the passage of floodwater through the weir.

- **A2.2 Mount William Creek**

Mount William Creek originates well south of the municipality and flows in a north to north-west direction, eventually entering the Wimmera River upstream of the Yarriambiack Creek/ Wimmera River confluence. The lower Mount William Creek floodplain is flat with many small floodways in addition to the main channel. From Horsham-Lubeck Road (near the common boundary between the Horsham Rural City Council and the Yarriambiack and Northern Grampians Shires) to the Wimmera River, the Creek runs parallel to and close to the Wimmera River.

Lake Lonsdale is upstream of Dadswells Bridge and was built in 1903. It is an on-stream storage on Mount William Creek within the Northern Grampians Shire and commands an area of about 25% of the Wimmera River catchment at Horsham and about 70% of Mt William Creek Catchment at Dadswells Bridge. Knowledge of the status of Lake Lonsdale, e.g., if it is spilling or about to spill, is important in determining the likely impact of flooding in Dadswells Bridge and surrounding areas, and the potential additional contribution of this source to floods in the Wimmera River.

- **A2.3 Burnt Creek**

Burnt Creek joins the Wimmera River at Horsham and has a catchment area of approximately 186 km<sup>2</sup>. Burnt Creek can flood either from heavy rainfall in its own catchment, or via cross-catchment flows from the MacKenzie River, as Burnt Creek connects to that River at Distribution Heads. Burnt Creek is connected to the MacKenzie River at Distribution Heads near the south end of Staehrs Road. Flood flows from the MacKenzie River usually split at this point so that Burnt Creek often receives significant flows from this source.

- **A2.4 Yarriambiack Creek**

Yarriambiack Creek is a distributary stream located on the eastern boundary of the municipality upstream of Horsham. It flows in a northerly direction, with its floodwaters also contributing to Darlot Swamp.

Former water supply infrastructure at the Wimmera River/Yarriambiack Creek confluence influences the split of flow with the between the catchments.

- **A2.5 Lake Systems**

From the south-eastern boundary of the municipality to just upstream of Horsham there are a number of Lakes (Dock Lake, Green Lake, Pine Lake and Taylors Lake) that are off-stream storages forming part of the GWM Water reservoir system. These lakes as well as other storages in the upper catchment (Lakes Lonsdale, Fyans, Wartook and Bellfield) are all operated by GWM Water. These lakes provide a small attenuating capacity for larger events, for example Taylors or Pine Lakes can only take around 1200-1600 ML/d from the Wimmera Inlet channel coming from the Wimmera side, or around 600 ML/d from the Burnt Creek side. The Taylors Lake Outlet channel to the Wimmera River can carry flows of up to 380ML/d, however this capacity is not available when the Wimmera River is at moderate flood levels or above, as the channel is overtopped by the Wimmera River.

## A3 Rainfall

The following rainfall amounts (if they fall generally over the Upper Wimmera River catchment) could lead to flooding but are provided as an indicative guide only.

General rain greater than a 20% AEP event over the Upper Wimmera River catchment signals a need for increased vigilance for possible flooding of low-lying farmland along the Wimmera River and its tributaries.

General rain greater than 5% AEP event over the Upper Wimmera River catchment signals a need for increased vigilance for possible of flooding of low-lying areas in Horsham.

**Table 3. BoM Intensity - Frequency - Duration (IFD) Design Rainfalls (mm) for Elmhurst AWS**

| Rainfall in mm  | Annual Exceedance Probability (AEP) |       |       |       |       |
|-----------------|-------------------------------------|-------|-------|-------|-------|
|                 | 20%                                 | 10%   | 5%    | 2%    | 1%    |
| <b>Duration</b> |                                     |       |       |       |       |
| <b>1 hour</b>   | 21.1                                | 25.5  | 30.3  | 37.1  | 42.9  |
| <b>2 hours</b>  | 26.4                                | 31.8  | 37.4  | 45.6  | 52.5  |
| <b>3 hours</b>  | 30.2                                | 36.2  | 42.5  | 51.6  | 59.1  |
| <b>6 hours</b>  | 38.5                                | 45.9  | 53.6  | 64.5  | 73.4  |
| <b>12 hours</b> | 49.7                                | 59.2  | 68.9  | 82.5  | 93.5  |
| <b>1 day</b>    | 63.6                                | 76.1  | 88.9  | 106.8 | 121.2 |
| <b>2 days</b>   | 78.5                                | 94.9  | 111.9 | 135.7 | 155.2 |
| <b>3 days</b>   | 86.5                                | 104.9 | 124.4 | 152   | 174.9 |
| <b>4 days</b>   | 91.3                                | 110.8 | 131.5 | 161.4 | 186.4 |
| <b>5 days</b>   | 94.5                                | 114.4 | 135.5 | 166.6 | 192.8 |

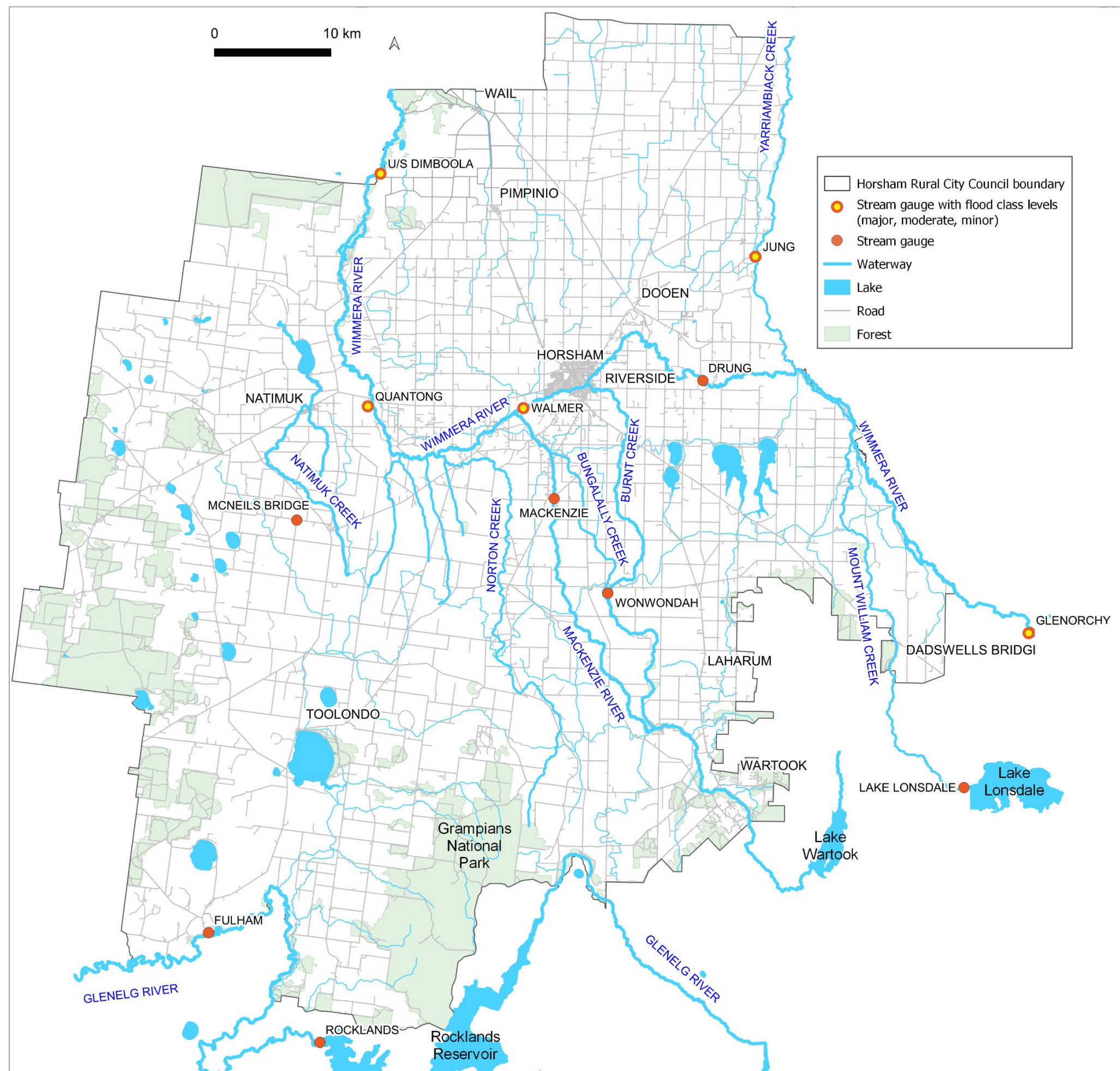


Figure 1. Horsham Rural City council waterways.

## A4 Building Damage

Refer to the table below for property and building damage for flood events within Horsham Rural City. 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 damaged buildings.

**Table 4. Horsham Rural City Council building damages.**

| Annual Exceedance Probability (1 in year) | Total number of properties flooded.<br>(Buildings flooded above floor) |                          |                            |                           |                                                        |
|-------------------------------------------|------------------------------------------------------------------------|--------------------------|----------------------------|---------------------------|--------------------------------------------------------|
|                                           | Natimuk<br>(Appendix C1)                                               | Horsham<br>(Appendix C2) | Riverside<br>(Appendix C3) | Quantong<br>(Appendix C4) | Dadswells Bridge and St Helens Plains<br>(Appendix C5) |
| 5                                         | 16 (0)                                                                 | 74 (0)                   | 74 (0)                     | 74 (0)                    |                                                        |
| 10                                        | 21 (0)                                                                 | 111 (0)                  | 111 (0)                    | 78 (0)                    |                                                        |
| 20                                        | 33 (1)                                                                 | 172 (0)                  | 172 (1)                    | 86 (0)                    | 4 (4)                                                  |
| 50                                        | 49 (8)                                                                 | 578 (35)                 | 578 (2)                    | 88 (0)                    | 4 (7)                                                  |
| 100                                       | 58 (14)                                                                | 773 (135)                | 773 (5)                    | 105 (0)                   | 9 (7)                                                  |
| 200                                       | 60 (20)                                                                | 890 (231)                | 890 (7)                    | 256 (1)                   | 9 (7)                                                  |
| Probable Maximum Flood                    |                                                                        |                          |                            |                           | 17 (17)                                                |

 Level 2 ICC

 Level 3 ICC

## A5 Dam Spilling / Failure

Significant dams or lakes that influence flooding within the Horsham Rural City Council area are listed below.

**Table 5. Dams and lakes that influence flooding.**

| Dam/Lake             | Owner     | Full Supply Volume | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------|-----------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lake Wartook</b>  | GWM Water | 29,300 ML          | <p>During flood events, Lake Wartook has frequently spilled, contributing to flood flows in the lower Wimmera River via Mackenzie River. In January 2011 Lake Wartook's spill lasted for 5 days, peaking at 3,780 ML/d. This spill flooded 3 buildings. The high velocity flows washed away the Wartook Road Bridge (north of Mount Victory Road), the Northern Grampians Road Bridge (west of Zumsteins) and large sections of roads downstream.</p> <p>The storage outlet can release up to 500 ML/d. During the September 2016 flood event, the spill lasted for several days peaking at 1000 ML/d. During this event no buildings were flooded, however access was cut to adjacent roads and there was extensive inundation of farmland.</p> <p>Spills cause very high risks to tourists walking downstream of Lake Wartook in the Grampians National Park.</p> <p>For current storage levels refer to the GWM Water website.</p> <p>Also refer to the Wartook Reservoir stream gauge (415228) for early warning of Lake Wartook spills.</p> |
| <b>Lake Lonsdale</b> | GWM Water | 53,300 ML          | <p>Lake Lonsdale has a long history of spills occurring during flood events, the January 2011 flood event was the largest spill on record. During January 2011 flood event Lake Lonsdale's spill lasted for several days peaking at 38,527 ML/d. This spill significantly impacted Dadswells Bridge along Mount William Creek and contributed to flood levels in the Wimmera River and Yarriambiack Creek, downstream of Glenorchy. Refer to a more detailed description below. For current storage levels refer to the GWM Water website.</p> <p>Also refer to the Mount William Creek stream gauge (415203), downstream of Lake Lonsdale for early warning of Lake Wartook spills.</p>                                                                                                                                                                                                                                                                                                                                                         |

## A6 Lake Wartook

During flood events, Lake Wartook has frequently spilled contributing flood flows to the lower Wimmera River via Mackenzie River. Lake Wartook is located to the northwest of the Grampians National Park, refer to the map below. Lake Wartook is an important storage managed by GWM Water that is primarily used to supply water for Horsham and the Wimmera Mallee Pipeline. Lake Wartook has a storage capacity of 29,300 ML (full supply level), with a further 1,400 ML buffer of airspace until it spills. Lake Wartook has a catchment area of 75 km<sup>2</sup> and has an average annual inflow of 26,000 ML (GWM Water 2009).

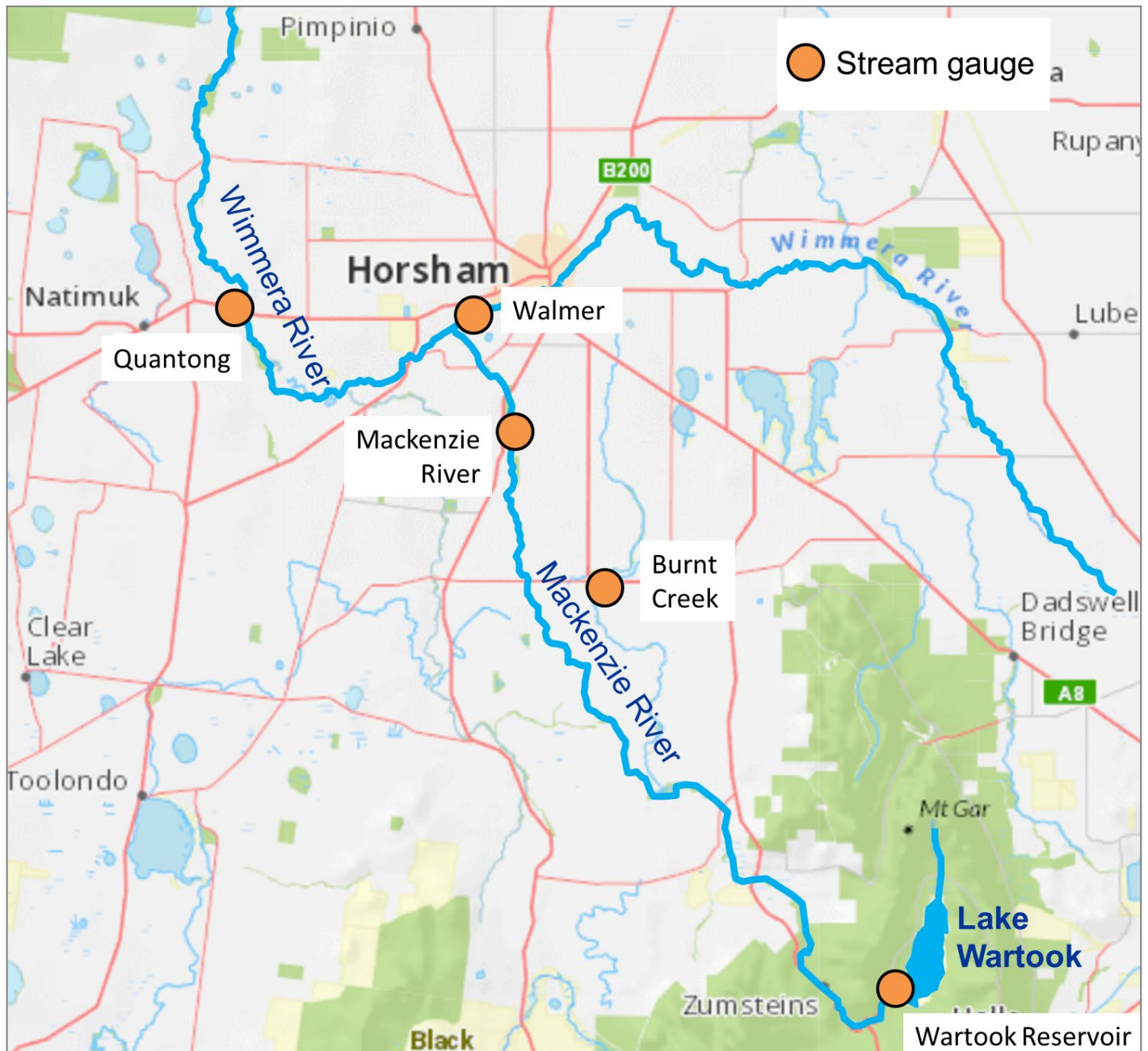
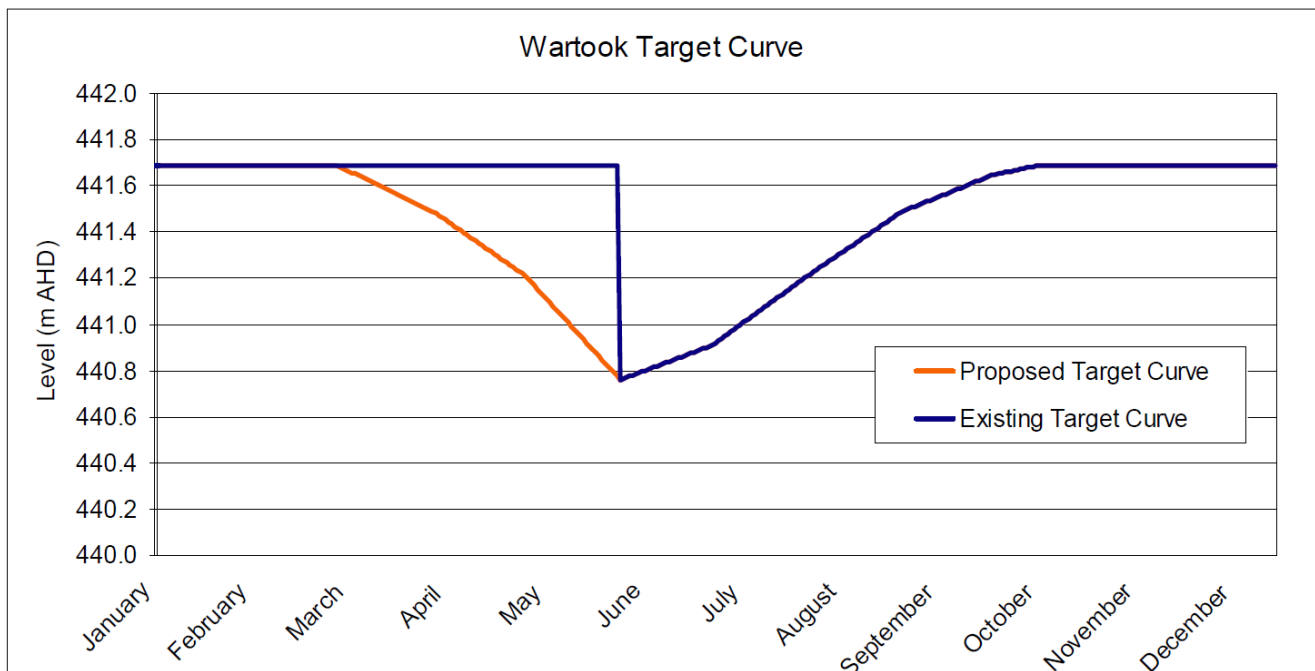


Figure 2. Location of Lake Wartook.

## Operation of Lake Wartook

Lake Wartook is operated at its capacity in the summer months, 29,300 ML at Full Supply Level (FSL) which is 0.15 metres below the spillway crest. This means that when Wartook is at its FSL, an additional 1,400 ML is required before it will spill.

To assist in managing Lake Wartook storage levels, a variable operating level has been adopted between June and October of each year, refer to the graph below of the target Lake Wartook operating level. This provides a maximum of 8,000 ML of air space in June, which is progressively reduced with the objective of having the storage at its FSL by the end of October. Lowering the water level of Lake Wartook over winter provides flood mitigation, reducing the spill risk. This target curve also provides some attenuation of flood flows to allow controlled harvesting of this water downstream. It also reduces the frequency of road closures at Zumsteins and surrounding areas of the Grampians National Park.



**Figure 3. Lake Wartook storage level control release target curve (source GWM Water).**

### January 2011 flood event

Leading into the January 2011 rainfall event Lake Wartook's storage level was at 26,700 ML or 91%. Approximately 100 ML/d was being released prior to the rainfall, this volume increased during the event to 450-500 ML/d, the upper threshold of the outlet capacity. However, it became apparent that Wartook would fill and spill as the rate of increase greatly exceeded the ability to drawdown.

During the January 2011 flood event over 200 mm of rainfall was recorded during the event, the volume rising by approximately 4,000 ML until it spilled at 2:30pm on Thursday 13 January. The spill lasted for five days, peaking at 3,780 ML/d, refer to flood photos below.

At the beginning of January 2011 Lake Wartook contained 27,980 ML (95%). During the 2011 event, Lake Wartook's peak storage volume was approximate 32,120 ML (109.6%). The maximum inflow was 15,780 ML/d with a maximum outflow of 3,780 ML/d. This indicates a peak flow through Lake Wartook was attenuated by 12,000 ML/d, substantially reduced the potential flood impacts downstream of Lake Wartook (Water Technology 2016).

Following the spill GWM Water undertook controlled releases of 200 ML/d to lower the storage level to reduce the risk of additional spills. The storage outlet can release up to 500 ML/d.

During the September 2016 flood event Lake Wartook's peak spill was 1,000 ML/d, the spill lasted for several days.



Figure 4. Lake Wartook spilling during the January 2011 flood event.



Figure 5. Flooding impacting Mackenzie Falls (downstream of Lake Wartook) during the January 2011 flood event.



Figure 6. Flooding impacting Mackenzie Falls (downstream of Lake Wartook) during the January 2011 flood event.

### **Lake Wartook Spill Warning**

A stream gauge immediately downstream of Lake Wartook on Mackenzie River (Wartook Reservoir 415202) provides early warning of Lake Wartook spills. Refer to figure 2 above for the location of the Wartook Reservoir stream gauge. Data on Wartook Reservoir Height and Mackenzie River height at 415202 can be accessed via:

<http://www.bom.gov.au/waterdata/station.html?dataowner=w00115&station=415202>

<http://www.bom.gov.au/water/dashboards/#/water-storages/sites/rural?location=Wimmera%20Mallee>

<https://www.storagemanager.com.au/reservoir-levels-and-other-information/reservoirs-level-summary>

### **Lake Wartook Historic Spills (Summary)**

Water may be released from Lake Wartook up to the safe maximum rate of 500 ML/day to maintain target levels. When inflows exceed this rate of controlled release, levels within the reservoir will increase and a spill may occur. Lake Wartook's primary spillway is located at the west end of the embankment. A secondary spillway is located at the east end of the embankment. Spills from Lake Wartook pass into the Mackenzie River.

The management of Lake Wartook's water level significantly influences the potential for floodwater to overtop the spillway. Refer to figure 6 below for the spills that have occurred in 2011 and 2016 with the target curve.

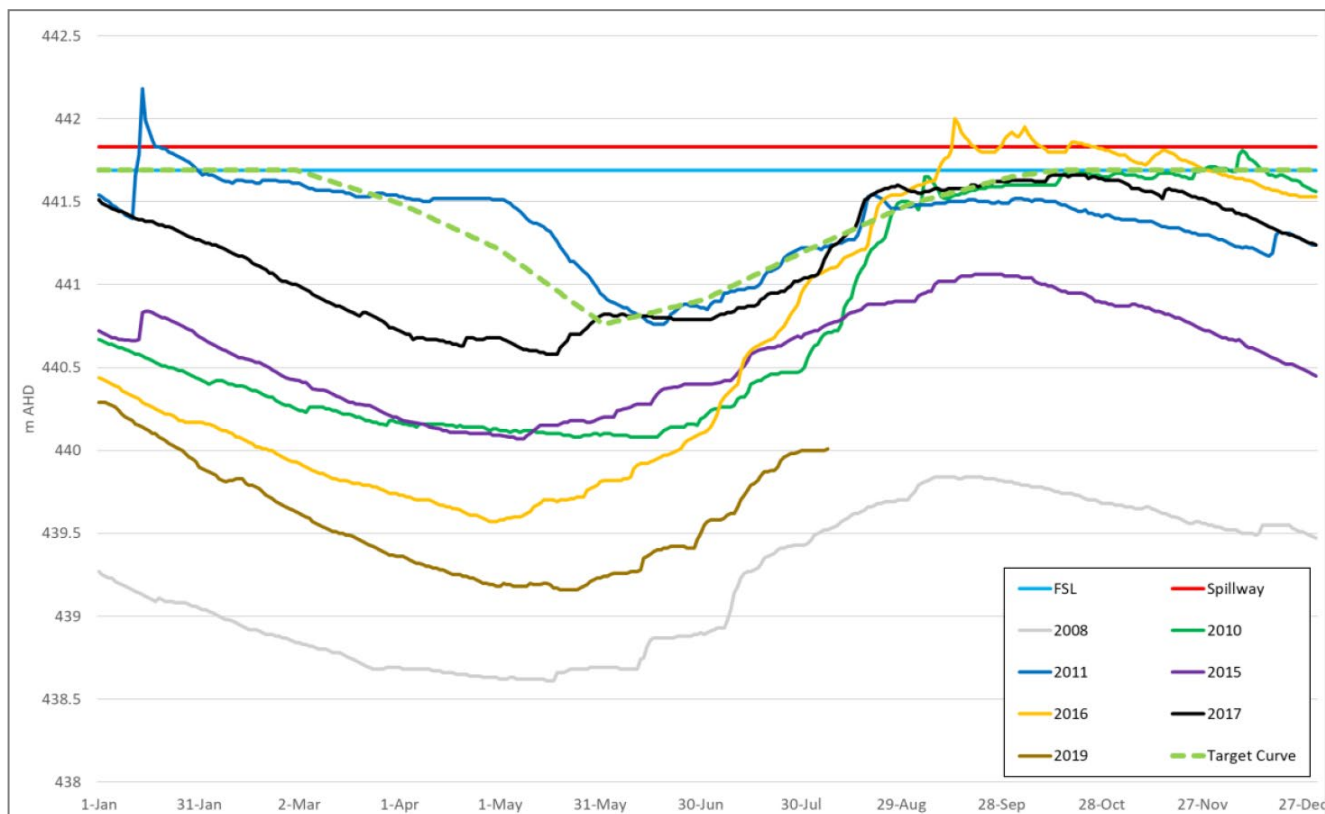


Figure 7. Lake Wartook water level target curve and historic spill levels.

An analysis of the annual peak stream flow indicates a change in distribution of flows greater than 500 ML, which is the maximum regulated outflow from Lake Wartook. It also estimates the 100 year ARI flow of 3,570 ML/d which is in line with anecdotal evidence of the January 2011 flood event being between a 50 year and 200 year ARI flood event, refer to the graph below.

Historic records for the gauge indicate for floods greater than a 10 year ARI a typical flood duration of 8 days can be expected. The table below provides a summary of his historic flood events, showing the January 2011 flood was the largest spill on record.

**Table 6. Mackenzie River at the Wartook Reservoir gauge historic flood events.**

| Start      | End        | Peak Flow (ML/d) | Duration (days) |
|------------|------------|------------------|-----------------|
| 14/1/2011  | 24/1/2011  | 3,780            | 10              |
| 14/9/2016  | 14/9/2016  | 2,027            | 10              |
| 18/12/1992 | 25/12/1992 | 2,327            | 7               |
| 8/10/1975  | 18/10/1975 | 1,805            | 10              |
| 7/10/1992  | 16/10/1992 | 1,660            | 9               |
| 23/10/1975 | 4/11/1975  | 1,627            | 12              |
| 21/09/1992 | 26/09/1992 | 1,429            | 5               |
| 30/08/1992 | 7/09/1992  | 1,345            | 8               |
| 21/11/1992 | 24/11/1992 | 1,218            | 3               |
| 11/09/1992 | 17/09/1992 | 1,173            | 6               |
| 28/09/1992 | 1/10/1992  | 1,156            | 3               |
| 31/08/1983 | 30/09/1983 | 1,027            | 30              |

A model was developed to assess the impact of various starting water levels in Lake Wartook using a spillway height 441.83m and volume 30,741ML with a 95%, 90% and 85% capacity from spillway height. The figure below shows the impact on flows from Lake Wartook for the 12 hour and 72 hour storm events respectively.

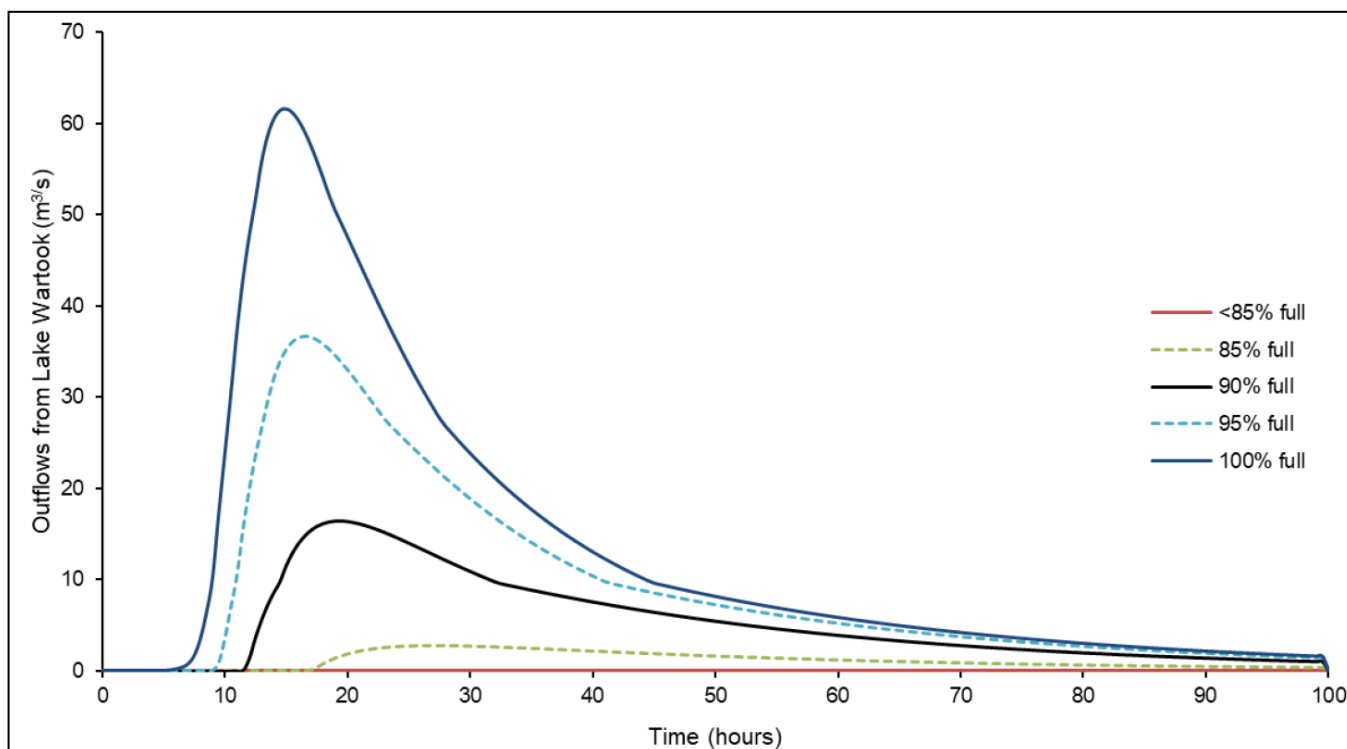


Figure 8. The impact of increasing the Lake Wartook water level during a 12 hour storm event (Water Technology 2019).

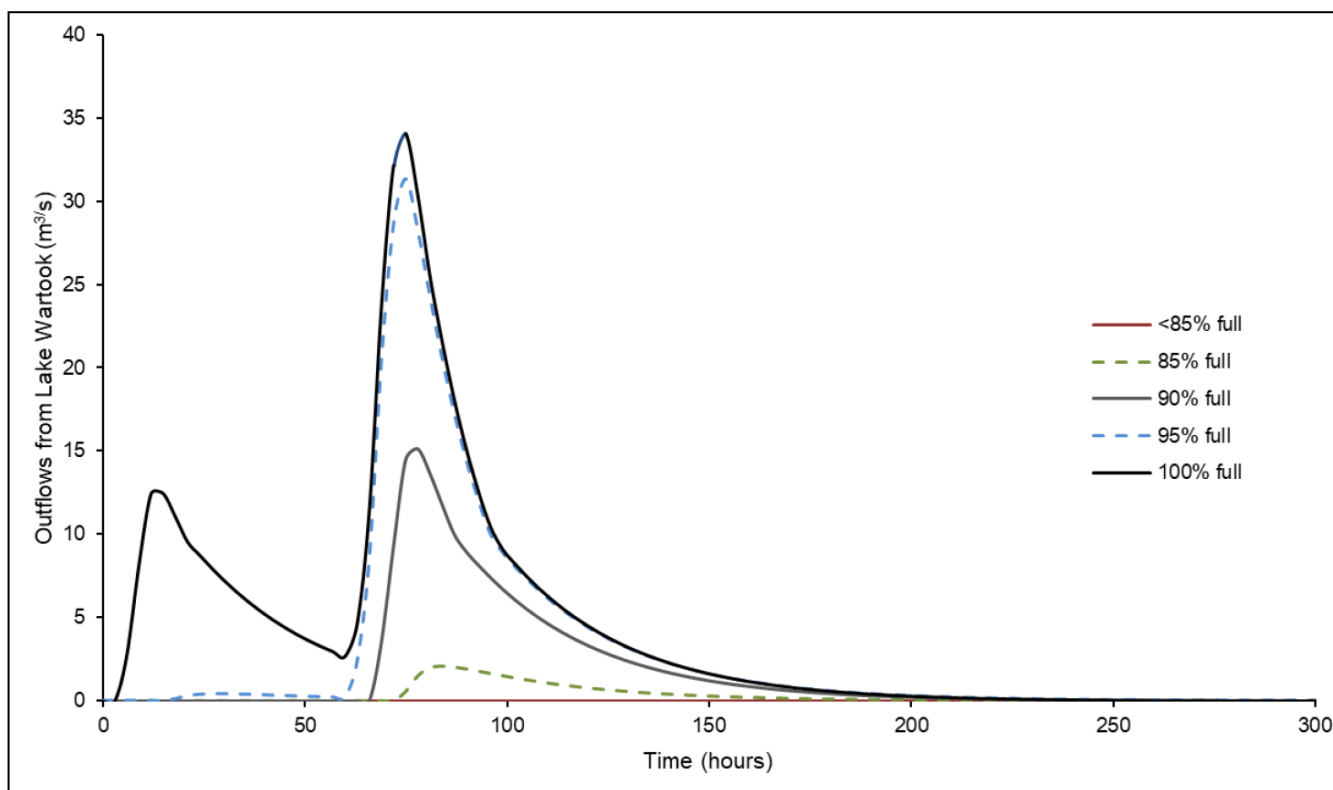


Figure 9. The impact of increasing the Lake Wartook water level during a 72 hour storm event Water Technology 2019).

The change to outflows from Lake Wartook was significant with the Lake able to fully absorb the 100 year ARI event volume at 85% full for both the 12hr and 72 hour events, meaning no spills would occur.

## A7 Lake Lonsdale

Lake Lonsdale is a large shallow reservoir located on Mount William Creek, 20 km upstream of Dadswells Bridge, refer to map below. Lake Lonsdale has a very large catchment area; the Mount William Creek can be a substantial producer of water during wetter years. During the January 2011 flood event Lake Lonsdale's peak spill was 38,527 ML/d for several days.

Lake Lonsdale was originally developed to supply the Wimmera-Mallee Domestic and Stock channel system; however, its role has changed considerably following the completion of the Wimmera Mallee Pipeline. Lonsdale continues to play a significant role in the overall supply system as a key source of water for the environment and is highly valued for its recreational use.

With a full storage capacity of 65,480 ML, Lake Lonsdale has a long history of mitigating flows in Mt William Creek, though when it spills it contributes flood flows to Yarriambiack Creek via Mount William Creek and the Wimmera River.

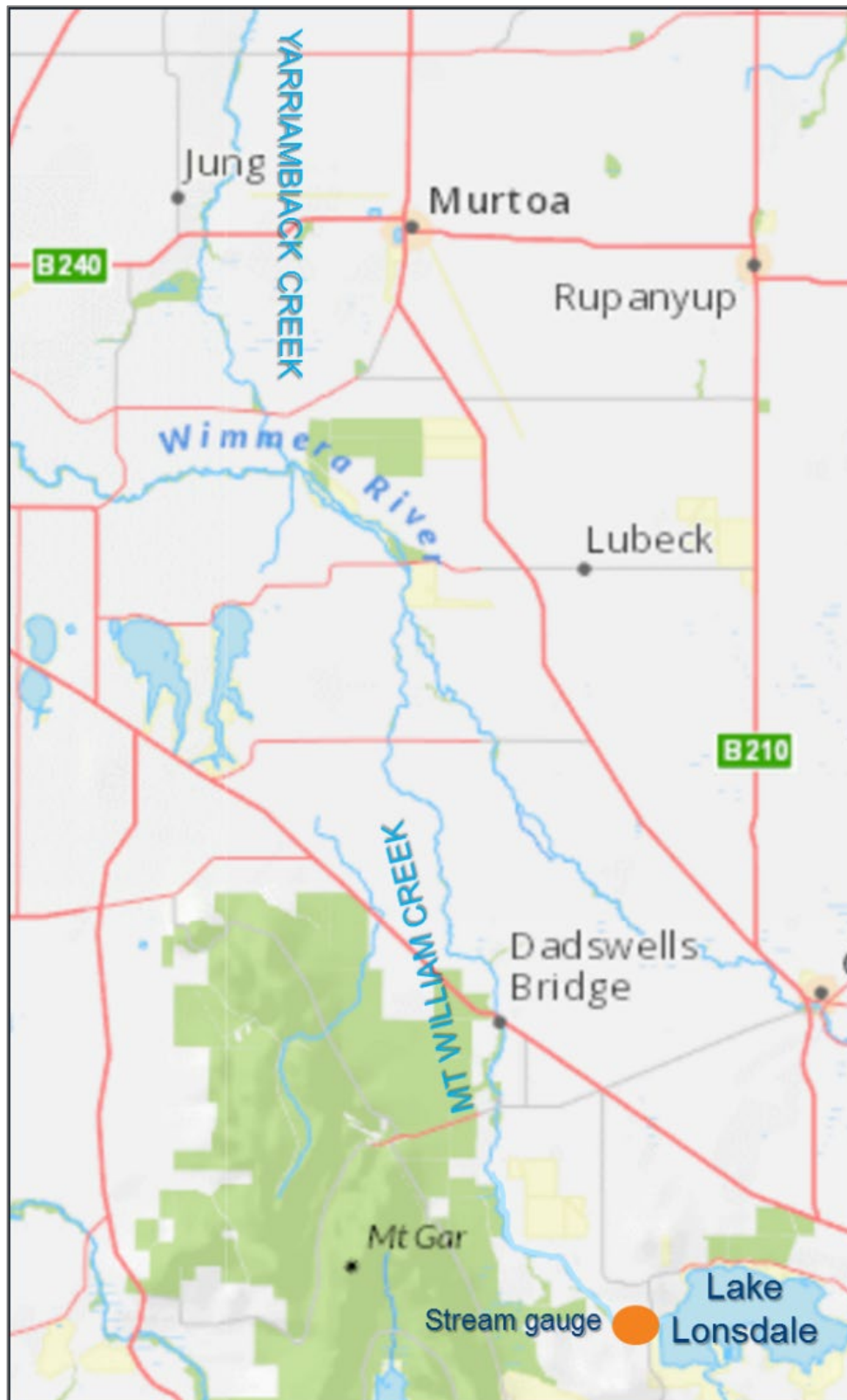


Figure 10. Flow path from Lake Lonsdale to Yarriambiack Creek.

While Lake Lonsdale has a long history of spills occurring during flood events, the January 2011 flood event was the largest event on record. During January 2011 Lake Lonsdale's peak spill was 38,527 ML/d for several days. Refer to the photos below showing Lake Lonsdale spilling during the January 2011 flood event.



Figure 11. Lake Lonsdale spilling during the January 2011 flood event.



Figure 12. Lake Lonsdale spilling during the January 2011 flood event.

To monitor the contribution of flood flows from Lake Lonsdale, refer to the Mount William Creek stream tail gauge, downstream of Lake Lonsdale (415203). Also refer to the table below that relates stream height to flow (Water Technology 2016). It is important to note that this stream gauge is only accurate for in channel flows. VICSES can request ALS to use stream monitoring equipment to more accurately estimate the peak spill volume to enable the assessment of downstream flood impacts.

**Table 7. Mt William Creek stream gauge heights at Lake Lonsdale.**

| <b>Mount William at Lake Lonsdale tail gauge height (m) * only within channel flows are accurate</b> | <b>Design flow (ML/d)</b> | <b>Average Recurrence Interval (ARI)</b> |
|------------------------------------------------------------------------------------------------------|---------------------------|------------------------------------------|
| 2.7                                                                                                  | 32,420                    | 200                                      |
| 2.65                                                                                                 | 29,400                    | January 2011                             |
| 2.54                                                                                                 | 23,570                    | 100                                      |
| 2.38                                                                                                 | 26,200                    | 50                                       |
| 2.0                                                                                                  | 7,990                     | 20                                       |
| 1.4                                                                                                  | 3,420                     | 10                                       |
| 0.85                                                                                                 | 980                       | 5                                        |

For current storage level data for Lake Lonsdale, and other storages in this region refer to the GWM Water Storage Manager Website: [http://www.storagemanager.com.au/reservoir-levels-and-other-information/reservoir-levels?chart=cumulative\\_inflows&primary=0](http://www.storagemanager.com.au/reservoir-levels-and-other-information/reservoir-levels?chart=cumulative_inflows&primary=0)

GWM Water maintains a Dam Safety Plan for Lake Lonsdale and Lake Belfield.

## **A8 Levees**

There are two formal levees within the Horsham Rural City Council as discussed previously in the report being:

- The Peppertree Lane levee
- Rokesky's Rd levee (i.e., replacing the former irrigation channel in this vicinity).

There are also a number of minor water diversion banks, culverts and channels associated with drainage and drainage diversion works, ownership of these structures is very diverse, and many have been constructed over the course of time without maintenance agreements.

## Appendix B: Typical Flood Peak Travel Times

### Overview

Flood Peak Travel Times are highly dependent on conditions prior to any rain event. It is therefore difficult to estimate typical flood peak travel times due to the low number of stream gauges in the Wimmera River upper catchment. The timing of flood flows in Horsham is based largely on stream gauging.

- The speed a flood moves along a waterway is dependent on conditions prior to the triggering rain event:
- A flood on a 'dry' watercourse will generally travel more slowly than a flood on a 'wet' watercourse.
- Big floods tend to travel faster than small floods.
- Wimmera River floods travel slowly within the mainstream – the rate of rise is slow; peaks are long and flat, and the rate of fall is generally around 3 to 5 times the rate of rise.

Note: The size of the flood, recent flood history, soil moisture and forecast weather conditions all need to be considered when using the following information to direct flood response activities.

The reality that a community at risk can be inundated before the peak of the flood can be overlooked. In the past efforts have concentrated on estimating and forecasting the time of the peak, however this can sometimes be detrimental. Rural residential areas of St Helens Plains, Longerenong, Riverside and Drung should be warned to prepare **before** Horsham.

Messaging should focus on the expected extent and timing of inundation with respect to upstream areas and Horsham, warnings can focus on rural residential areas upstream of Horsham and Horsham with specific timing and extents issued for both. The below table shows the peak inundation in rural residential areas upstream of Horsham will occur approximately 3-4 days after it is observed at Eversley and 2 days at Glenorchy.

Flood travel times from Glenorchy to Longerenong (the Wimmera River) and from Lake Lonsdale to Longerenong (Mount William Creek) are similar with the result that flood peaks often coincide causing floodwaters to join across the Wimmera floodplain and the lower reaches of the Mount William floodplain.

There are several rainfall and streamflow gauges within the study area. These include streamflow gauges on the:

- Wimmera River located at Horsham (Walmer) and Drung Drung,
- Burnt Creek (Wonwondah)
- Mt William Creek (Lake Lonsdale).
- Rainfall gauges located in close proximity to East Horsham are Horsham (AWS), Longerenong (AWS) and Drung (AWS)

The table below provides generalised information about the travel times of floods. This is useful to assist in informing the community about when floods might be expected, and the amount of preparation time for various actions that need to occur during a flood.

**Table 8. Travel times observed Wimmera River and Burnt Creek**

|                                                                                                                                                                                                                                                                                                                                                                                                                       | Location To      | Typical Travel Time | Comments                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>RIVERINE FLOODING – Wimmera River</b>                                                                                                                                                                                                                                                                                                                                                                              |                  |                     |                                                                                                                                                                                                                                         |
| <p><b>Floods are characterised by long flat peaks and slow recessions although the rise can be quite sharp, particularly at Glenorchy and upstream.</b></p> <p><b>The further down the catchment the longer the peak and the slower the recession.</b></p> <p><b>A second flood on the river will travel faster than a flood on a dry river and a big flood will in general travel faster than a small flood.</b></p> |                  |                     |                                                                                                                                                                                                                                         |
| <b>Start of rainfall (upper catchment)</b>                                                                                                                                                                                                                                                                                                                                                                            | -                | 0                   |                                                                                                                                                                                                                                         |
| <b>Eversley</b>                                                                                                                                                                                                                                                                                                                                                                                                       | Glynwylln        | 7 – 19 hours        |                                                                                                                                                                                                                                         |
| <b>Glynwylln</b>                                                                                                                                                                                                                                                                                                                                                                                                      | Glenorchy        | 18 – 30 hours       |                                                                                                                                                                                                                                         |
| <b>Glenorchy</b>                                                                                                                                                                                                                                                                                                                                                                                                      | Drung Drung      | 45 – 60 hours       | Travel time of Mount William Creek depends on the storage volume available in Lake Lonsdale, flood peaks can coincide, causing floodwaters to join across the Wimmera floodplain and the lower reaches of the Mount William floodplain. |
| <b>Glenorchy</b>                                                                                                                                                                                                                                                                                                                                                                                                      | Horsham          | 3 to 4 days         | High flows from MacKenzie River and Darragan and Norton Creeks are likely to slow travel time and increase the peak at Horsham due to backwater effects – this can slow the travel time during a big flood.                             |
| <b>Horsham</b>                                                                                                                                                                                                                                                                                                                                                                                                        | Quantong Bridge  | 10 - 20 hours       |                                                                                                                                                                                                                                         |
| <b>Horsham</b>                                                                                                                                                                                                                                                                                                                                                                                                        | Dimboola         | 3 days or more      | Initial earlier peak likely from MacKenzie River and Darragan & Norton Creeks                                                                                                                                                           |
| <b>Quantong Bridge</b>                                                                                                                                                                                                                                                                                                                                                                                                | Polkemmet Bridge | 12 hours            | Initial earlier peak likely from MacKenzie River and Darragan & Norton Creeks                                                                                                                                                           |
| <b>Quantong Bridge</b>                                                                                                                                                                                                                                                                                                                                                                                                | Lochiel Bridge   | 36 hours            | Initial earlier peak likely from MacKenzie River and Darragan & Norton Creeks                                                                                                                                                           |
| <b>Polkemmet Bridge</b>                                                                                                                                                                                                                                                                                                                                                                                               | Lochiel Bridge   | 24 hours            | Initial earlier peak likely from MacKenzie River and Darragan & Norton Creeks                                                                                                                                                           |
| <b>Dimboola</b>                                                                                                                                                                                                                                                                                                                                                                                                       | Tarranyurk       | 2 days or more      |                                                                                                                                                                                                                                         |

| RIVERINE FLOODING – Burnt Creek            |                               |               |                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------|-------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Start of rainfall (upper catchment)</b> | Burnt Creek at Wonwondah East | 0.5 – 2 days- | The travel time of flow in Burnt Creek can be dependent on the operation of several operating structures and the spatial distribution of rainfall. Structures to be monitored include Lake Wartook, the Burnt Creek offtake point from MacKenzie River and the offtake of Bungalally Creek from Burnt Creek. |
| RIVERINE FLOODING – Mount William Creek    |                               |               |                                                                                                                                                                                                                                                                                                              |
| <b>Start of rainfall (upper catchment)</b> | Mokepilly                     | 24-36 hrs     | Travel time can vary due to the spatial distribution of rainfall to the east. Rainfall distribution can vary due to the topography.                                                                                                                                                                          |
| <b>Mokepilly</b>                           | Lake Lonsdale (DS)            | 12-36 hrs     | Travel time can vary due to the contribution of Fyans Creek and storage volume available in Lake Bellfield as well as the storage volume available in Lake Lonsdale.                                                                                                                                         |
| <b>Lake Lonsdale (DS)</b>                  | Dadswells Bridge              | 12-24 hrs     |                                                                                                                                                                                                                                                                                                              |

Travel times were calculated as the time that the **peak** of the event takes to move from one gauge to the next. Note that the onset of flooding can occur before the peak water level occurs.

## Appendix C1: Natimuk Flood Emergency Plan

Natimuk is situated on the Wimmera Highway approximately 25 km west of Horsham. The township of Natimuk sits at the confluence of Natimuk Creek and Little Natimuk Creek, with Natimuk Creek continuing north and terminating in Natimuk Lake. Natimuk Lake is managed by Parks Victoria and used for recreation only.

Natimuk Creek flows through largely agricultural areas (dry land and cereal cropping) around Noradjuha and Nurrabel before flowing through the township of Natimuk. Natimuk creek and little Natimuk Creek have catchment areas of approximately 114 km<sup>2</sup> and 25 km<sup>2</sup> respectively. The catchment of these waterways extending to downstream of Natimuk Lake. Much of the infrastructure in this rural township is located on the floodplain.

The township of Natimuk has a history of past flooding which is characterised by flash flood events as a result of localised rain events, with the most recent events being in 1981, 2010 and 2011.

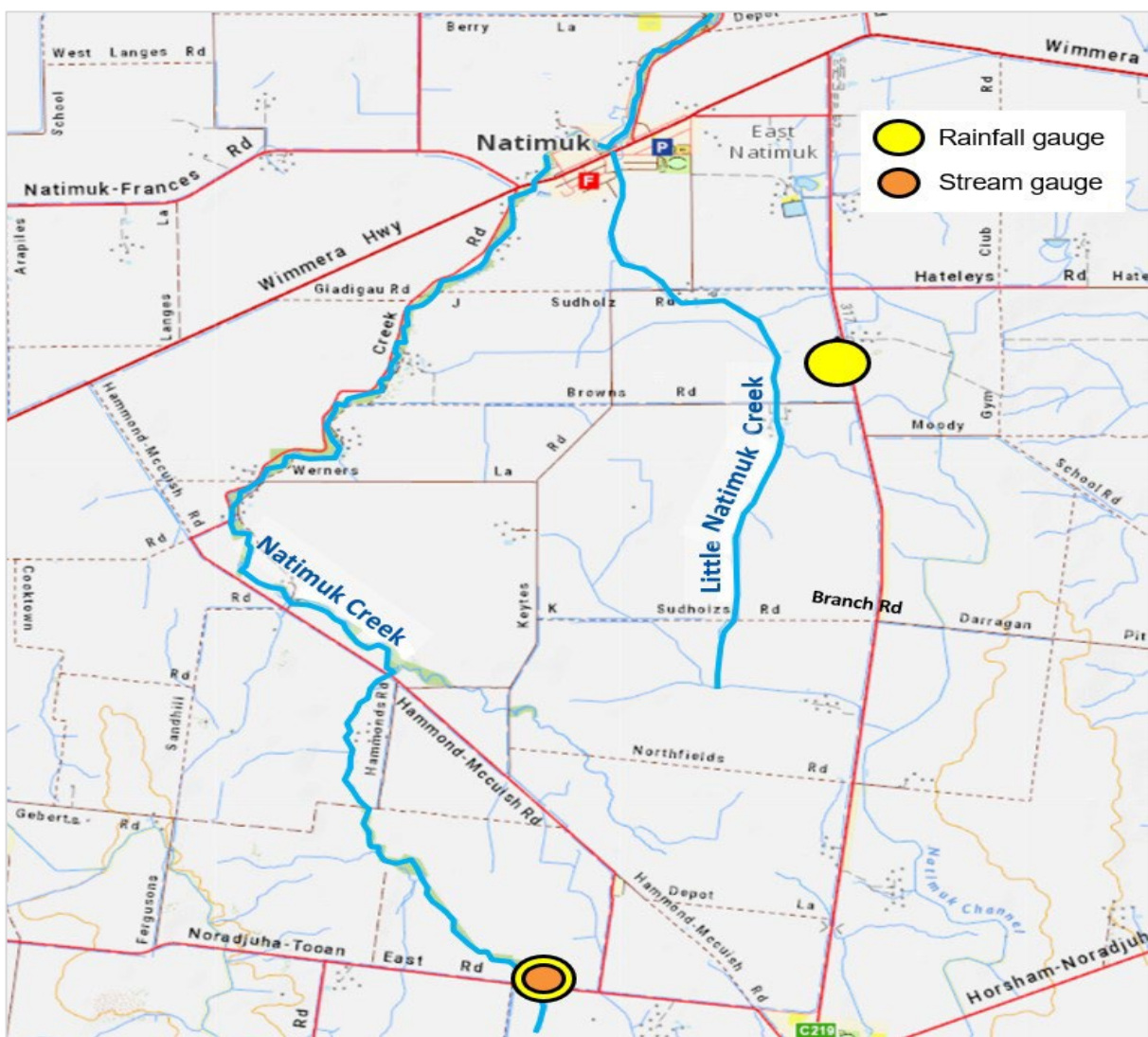


Figure 13. Natimuk Creek catchment waterways and stream gauges

## Historic Flood Events

Anecdotal evidence and discussions with local residents indicate that prior to the December 2010 and January 2011 floods, the last major flood event occurred in August 1981 for which no significant data is available. The recent January 2011 flood event is thought to be the largest flood event in Natimuk in living memory. Records indicate that flooding historically occurs over the spring/summer period, corresponding to periods of heavy rainfall but can occur at any time of year. Graph below shows the mean and median monthly rainfall totals for the entire length of record at the Natimuk rainfall gauge. The wettest months are largely in winter with June, July and August recording the highest mean values. The large difference between the mean and median monthly rainfall totals is an indication of the occurrence of extreme events, as they will statistically have a greater impact on the mean than the median. Larger differences between the mean and median monthly rainfalls are observed in the months of December, January and February, indicating those months have witnessed a greater proportion of extreme events. (WaterTech Natimuk Flood Investigation 2013)



Figure 14. Flooding Natimuk Township during the January 2011 event.



Figure 15. Flooding from the Natimuk Creek Natimuk impacting the Wimmera Highway during the January 2011 event.

## Flood Impacts and Actions Required

Key assets at risk of flooding in Natimuk are listed below.

### Road network

The main access roads for Natimuk are:

- The Wimmera Highway.
- Natimuk - Frances Road.
- Lake Road.
- Creek Road.

The Wimmera Highway is the most important road. During a severe flood, the Wimmera Highway may be closed at Natimuk for the best part of a day and local roads further up the catchment are likely to be impassable for a day or more.

The Wimmera Highway was overtopped at both the Natimuk Creek and Little Natimuk Creek crossings in January 2011 but was not overtopped in the December 2010 event. In January 2011, this caused some difficulties for staff at the Natimuk Nursing Home in Schurmann St at shift-change.

- At the Little Natimuk Creek crossing, the Wimmera Highway is likely to start getting wet around 7 hours after start of rain, maximum depth will occur at around 8 hours, and it will remain wet for up to 12 hours.
- At the Natimuk Creek crossing, the Wimmera Highway is likely to start getting wet around 7 hours after start of rain, the maximum depth will occur at around 12 hours, and it will remain wet for up to 22 hours.
- Lake Avenue is likely to start getting wet around 7 hours after start of rain, maximum depth will occur at around 12 hours, and it will remain wet for up to 23 hours.

### Critical Infrastructure

Critical infrastructure, other than the Wimmera Highway, is limited to the Police Station and Nursing Home. Neither is impacted directly by floods up to and including the 200-year ARI event. Staff and supplies accessing the Nursing Home become an issue when the Wimmera Highway becomes impassable.

The Wimmera Highway may be inundated at Natimuk dependant on flood magnitude. It was overtopped at both the Natimuk Creek and Little Natimuk Creek crossings in January 2011 but was not overtopped in the December 2010 event. Many minor roads in and around Natimuk as well as further up the catchment may also be inundated.

The Telephone exchange is located on the floodplain. The sewerage pump station is located on a mound on the flood plain. The wastewater treatment plant is located downstream from Natimuk to the left of the Creek and is not likely to be flooded.

## Disruption to Services

**Table 9. Disruption to services in the event of flooding.**

| Service                    | Impact                                 | Trigger point for action | Strategy / Temporary Measures |
|----------------------------|----------------------------------------|--------------------------|-------------------------------|
| Telephone exchange         | Not affected in Jan 2011 flood (1%AEP) | N/A                      | Monitor only                  |
| Sewerage pump station      | Not affected in Jan 2011 flood (1%AEP) | N/A                      | No action                     |
| Wastewater treatment plant | Not affected in Jan 2011 flood (1%AEP) | N/A                      | No action                     |

## Structural Flood Mitigation Measures

### Flood Protection Levees

There are no flood protection levees at Natimuk. There are no substantial levees within the catchment that are considered likely to modify flood behaviour other than the embankment that separates Natimuk Creek, and the privately owned swamp located a short distance to the northeast of Natimuk township.

The Wimmera Highway (Main Street) through Natimuk acts as a small levee which causes some ponding upstream from somewhere between the 5-year and 10-year ARI flood events on Natimuk Creek and from less than the 5-year ARI event on Little Natimuk Creek.

The railway embankment also acts as a small levee for floods somewhere between the 20-year ARI and 50-year ARI event and causes some ponding in Little Natimuk Creek on the upstream side.

### Drainage Works

A by-wash channel on the northern side of Lake Avenue was constructed to pass a portion of flood flows around the Natimuk township.

### Sandbag Strategy

Prior to a flood:

- Both HRCC and VICSES will ensure that there are sufficient numbers of sandbags in stock in strategic locations in preparation for floods. Council normally stocks 10,000 sandbags in Horsham, and 5000 at Natimuk. The condition and number of bags are subject to a pre-season check each year on 1 May.

When a flood warning has been issued or flooding is imminent:

- If a large flood is imminent, Council and VICSES will facilitate the issue of sandbags to houses identified in Table 14 and consider establishment of an alternative location for sandbags to cater for isolation of parts of the township.

- Sandbags and plastic sheeting will be allocated to properties that meet the following criteria:
  - Essential community infrastructure
  - Brick residences identified as being at risk of over-floor flooding. Generally, 25 to 50 sandbags per house will be supplied to protect door openings and vents. Sandbags will not be supplied for building levees around houses. Proof of occupation/ownership is required e.g., a driver's licence or account from a utility.
  - Public buildings.
  - Commercial premises for doors and other openings.
  - Generally, sandbags will not be supplied to properties if Table 14 of this Appendix or flood inundation maps (for rural properties) indicate a house is not at risk of over floor flooding. However, it is recognised that shed floors are often lower than residential floors and an allocation of sandbags may be made to impacted properties based on the assessment of the staff on duty and adequate numbers of sandbags being available for higher priority assets.
- Large numbers of sandbags will not be supplied to residences with cement sheet or weatherboard construction on raised footings (see point below) to build a levee surrounding the house. For these residences plastic sheeting and tape will be supplied (if available) to create a waterproof membrane, using the house walls for structural strength. Sandbags will be supplied to anchor the membrane.
- Sandbags will not be supplied in any circumstances to residential or rural properties to construct levee walls around houses or around or along property boundaries.



**Figure 16. Sandbagging Natimuk Jan 2011**

**Table 10. Key assets at risk of flooding.**

| <b>Asset register</b>                                                               |                                                  |                                                                                                  |                                                                     |                    |
|-------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------|
| <b>Asset Name and location</b>                                                      | <b>Annual Exceedance Probability (1 in year)</b> | <b>Consequence / Impact</b>                                                                      | <b>Mitigation/ Action</b>                                           | <b>Lead Agency</b> |
| Station Street                                                                      | 5 year flood                                     | Potential for water over road at Station Street Crossing up to 500 mm                            | Deploy road closure signs as needed.                                | Council            |
| Wimmera Hwy Elmes Street, Lake Avenue, Station Street,                              | 10 year flood                                    | Potential for water over road                                                                    | Deploy road closure signs as needed.                                | VICSES /Council    |
| <b>87 Main Street</b>                                                               | 10 year flood                                    | Potential for water to impact rear of property and associated shedding                           | Sandbag building as needed.                                         | VICSES             |
| <b>Jory Street, Lake Avenue, Elmes Street, Lake Avenue, Wimmera Hwy, Depot Lane</b> | 20 year flood                                    | Potential above floor impacts                                                                    | Sandbag building as needed.                                         | VICSES             |
| Wimmera Hwy, Natimuk Francis Road, Lake Road, Creek Road                            | 20 year flood                                    | Main access roads impacted by flooding                                                           | Deploy road closure signs as needed.                                | Council            |
| Elmes street, Lake Avenue                                                           | 50 year flood                                    | Access limited flooding potential up to 500-600mm, potential for increase in over floor flooding | Sandbag building as needed.                                         | VICSES             |
| Joy street, Schmidt Street                                                          | 100 year flood                                   | Potential for inundation of up to 800mm in places, Elmes street entirely inundated               | Deploy road closure signs as needed.<br>Sandbag building as needed. | Council/ VICSES    |
| Wimmera Hwy                                                                         | 100 year flood                                   | Flow across Wimmera Hwy at Little Natimuk Creek up to 500mm                                      | Deploy road closure signs as needed.                                | Council            |

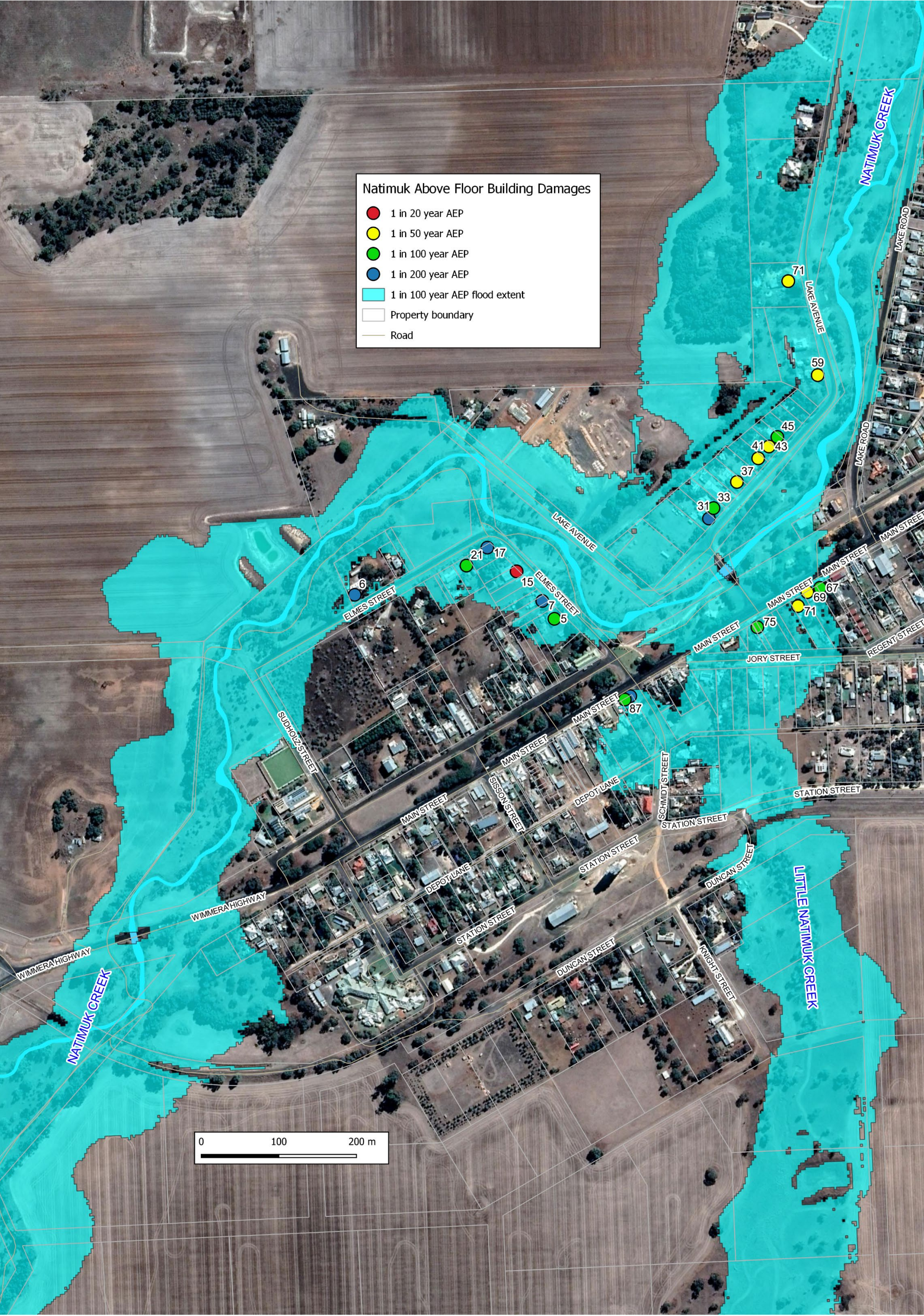


Figure 17. Natimuk buildings impacted by over floor flooding for a range of design flood events (Water Technology 2013).

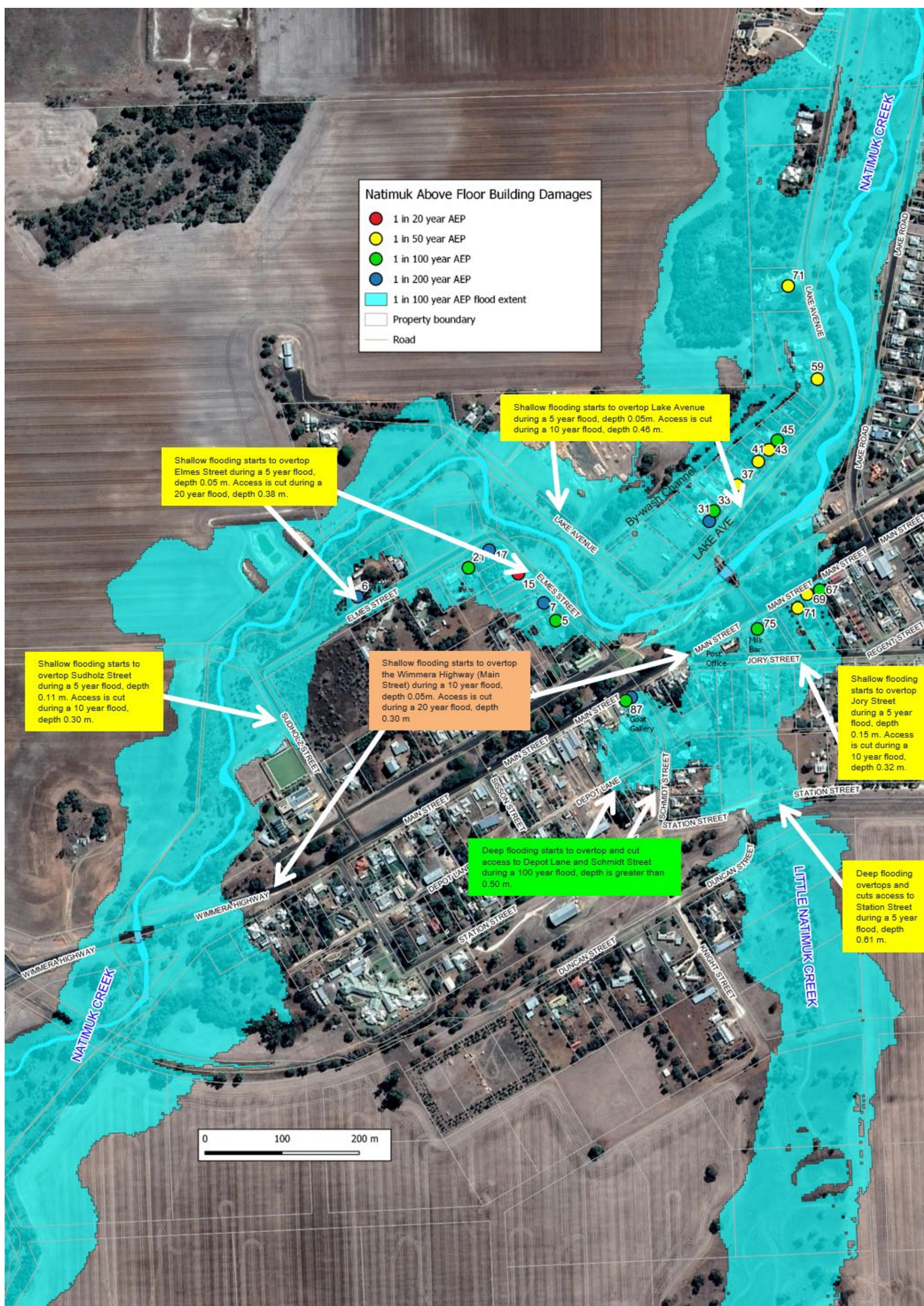


Figure 18. Natimuk roads impacted by flooding for a range of design flood events (Water Technology 2013)

Table 11. Natimuk Flood Intelligence Card (Natimuk Creek)

| Time to steep rise in floodwater in Natimuk 1 – 8 hours     |                                                         |                                                                |                                           |                                               |                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                           |                                                                                                                                                                                      |                                                                          |
|-------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------|-----------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Time to flood peak in Natimuk 8 -16 hours                   |                                                         |                                                                |                                           |                                               |                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                           |                                                                                                                                                                                      |                                                                          |
| Riverine flooding duration: 1 day                           |                                                         |                                                                |                                           |                                               |                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                           |                                                                                                                                                                                      |                                                                          |
| Design rainfall                                             | Natimuk Ck at Wimmera Highway gauge board height (mAHD) | Little Natimuk Ck at Wimmera Highway gauge board height (mAHD) | Annual Exceedance Probability (1 in year) | Natimuk Ck design peak flow at Natimuk (ML/d) | Natimuk damages total number properties flooded (above floor) | Consequence / Impact                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Houses/ buildings flooded / isolated                                                                                      | Road flood depth (m)                                                                                                                                                                 | Action                                                                   |
| ~15mm in 30 minutes to ~60mm in 24 hours                    | 117.98                                                  | 116.28                                                         | 5                                         | 1,400                                         | 16 (0)                                                        | Water at Station Street crossing up to 500mm deep.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                           | Elmes Street depth 0.05m<br>Lake Ave depth 0.05m<br>Jory Street depth 0.15m<br>Station Street depth 0.61m<br>Sudholz Street depth 0.11m<br>Mail Street (Wimmera Highway) depth 0m    |                                                                          |
| ~20mm in 30 minutes to ~70mm in 24 hours                    | 118.13                                                  | 116.59                                                         | 10                                        | 2,454                                         | 21 (0)                                                        | Rainfall totals of 71.6mm at Clear Lake (upstream of Natimuk) and 54.2mm Natimuk. Little Natimuk Creek peaked about 5 hours before Natimuk Creek. Several roads were inundated in Natimuk including the Wimmera Highway, Elmes Street and Lake Avenue (by Natimuk Creek) and Station Street and Jory Street (by Little Natimuk Creek). Water covered the back of 87 Main Street and entered the shed. A number of houses and buildings were sandbagged so that no houses were flooded above floor. |                                                                                                                           | Elmes Street depth 0.25m<br>Lake Ave depth 0.46m<br>Jory Street depth 0.32m<br>Station Street depth 0.70m<br>Sudholz Street depth 0.30m<br>Mail Street (Wimmera Highway) depth 0.05m | Council and Regional Roads Victoria deploy road closure signs as needed. |
| ~25mm in 30 minutes to ~80mm in 24 hours                    | 118.3                                                   | 116.81                                                         | 20                                        | 4,113                                         | 33 (1)                                                        | Over 100mm of rain was recorded upstream of Natimuk at the Clear Lake gauge (upstream of Natimuk). Little Natimuk Creek flooded properties along Jory Street. Twelve (12) homes were evacuated during the event. A total of twenty-one (21) buildings were inundated above floor level in Lake Avenue, Elmes Street, Wimmera Highway, Depot Lane and Jory Street. Main access roads impacted by flooding included the Wimmera Highway, Natimuk – Frances Road, Lake Road, Creek Road.              | 1 building flooded above floor:<br>15 Elmes Street.                                                                       | Elmes Street depth 0.38m<br>Lake Ave depth 0.48m<br>Jory Street depth 0.47m<br>Station Street depth 0.81m<br>Sudholz Street depth 0.48m<br>Mail Street (Wimmera Highway) depth 0.30m |                                                                          |
| ~30mm in 30 minutes to 95mm in 24 hours                     | 118.48                                                  | 117.08                                                         | December 2010 50                          | 6,186                                         | 49 (8)                                                        | Water up to 600mm deep along parts of Creek Road. Elmes Street almost entirely inundated. Access to homes along Elmes Street is limited with depths reaching up to 500mm. Lake Avenue flooded to greater than 600mm in parts. Increase in number of buildings flooded over-floor.                                                                                                                                                                                                                  | 7 additional buildings flooded above floor.                                                                               | Elmes Street depth 0.44m<br>Lake Ave depth 0.70m<br>Jory Street depth 0.60m<br>Station Street depth 0.93m<br>Sudholz Street depth 0.61m<br>Mail Street (Wimmera Highway) depth 0.38m | Council and Regional Roads Victoria deploy road closure signs as needed. |
| ~35mm in 30 minutes to 110mm in 24 hours                    | 118.65                                                  | 117.3                                                          | January 2011 100                          | 8,631                                         | 58 (14)                                                       | Jory Street flooded to a depth of around 800mm. Schmidt Street flooded to a depth of around 600mm. Flow across Wimmera Highway at Little Natimuk Creek of order 500mm and between 300mm and 400mm at the Natimuk Creek crossing.                                                                                                                                                                                                                                                                   | 0 additional buildings flooded above floor.<br>x2 Lake Avenue (33, 45), x2 Main Street (67, 75), x2 Elmes Street (5, 21). | Elmes Street depth 0.42m<br>Lake Ave depth 0.88m<br>Jory Street depth 0.73m<br>Station Street depth 1.02m<br>Sudholz Street depth 0.65m<br>Mail Street (Wimmera Highway) depth 0.49m |                                                                          |
| Heavy rain (> ~100mm in around 12 hours) on a wet catchment | 118.78                                                  | 117.45                                                         | 200                                       | 10,541                                        | 60 (20)                                                       | Severe deep flooding near the creek channels.                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0 additional buildings flooded above floor.<br>x3 Elmes Street (6, 7, 17), 87 Main Street, 31 Lake Avenue.                | Elmes Street depth 0.75m<br>Lake Ave depth 1m<br>Jory Street depth 0.83m<br>Station Street depth 1.07m<br>Sudholz Street depth 0.72m<br>Mail Street (Wimmera Highway) depth 0.62m    |                                                                          |

# Table 12. Natimuk Property Inundation (Water Technology 2006)

Colours used in the table below are the same used in the Natimuk flood risk maps above. Red, buildings flooded above floor in a 1 in 20 year AEP. Yellow, buildings flooded above floor in a 1 in 50 year AEP flood event, etc.

| No | Address                  | Depth of building over floor flooding for each AEP (1 in year) event (m) |      |      |      | Type of building             |
|----|--------------------------|--------------------------------------------------------------------------|------|------|------|------------------------------|
|    |                          | 20                                                                       | 50   | 100  | 200  |                              |
| 1  | 15 Elmes Street, Natimuk | 0.16                                                                     | 0.33 | 0.49 | 0.6  | Shed                         |
| 2  | 71 Main Street, Natimuk  |                                                                          | 0.21 | 0.34 | 0.45 | Residential -WB              |
| 3  | 41 Lake Avenue, Natimuk  |                                                                          | 0.09 | 0.3  | 0.41 | Residential -WB              |
| 4  | 43 Lake Avenue, Natimuk  |                                                                          | 0.09 | 0.28 | 0.39 | Residential -WB              |
| 5  | 37 Lake Avenue, Natimuk  |                                                                          | 0.04 | 0.23 | 0.33 | Residential -WB              |
| 6  | 69 Main Street, Natimuk  |                                                                          | 0.03 | 0.2  | 0.32 | Commercial –Brick on slab    |
| 7  | 59 Lake Avenue, Natimuk  |                                                                          | 0.03 | 0.2  | 0.29 | Residential -WB              |
| 8  | 71 Lake Avenue, Natimuk  |                                                                          | 0.01 | 0.18 | 0.29 | Residential –Brick on slab   |
| 9  | 45 Lake Avenue, Natimuk  |                                                                          |      | 0.16 | 0.26 | Residential -WB              |
| 10 | 75 Main Street, Natimuk  |                                                                          |      | 0.13 | 0.24 | Commercial -Steel            |
| 11 | 21 Elmes Street, Natimuk |                                                                          |      | 0.1  | 0.2  | Residential -WB              |
| 12 | 5 Elmes Street, Natimuk  |                                                                          |      | 0.3  | 0.19 | Residential -WB              |
| 13 | 33 Lake Avenue, Natimuk  |                                                                          |      | 0.05 | 0.15 | Residential -WB              |
| 14 | 67 Main Street, Natimuk  |                                                                          |      | 0.02 | 0.13 | Commercial –Iron on slab     |
| 15 | 7 Elmes Street, Natimuk  |                                                                          |      |      | 0.08 | Residential                  |
| 16 | 17 Elmes Street, Natimuk |                                                                          |      |      | 0.08 | Residential -Brick on stumps |
| 17 | 87 Main Street, Natimuk  |                                                                          |      |      | 0.07 | Western side – shop -Brick   |
| 18 | 31 Lake Avenue, Natimuk  |                                                                          |      |      | 0.05 | Residential -WB              |
| 19 | 6 Elmes Street, Natimuk  |                                                                          |      |      | 0.04 | Large Shed                   |
| 20 | 87 Main Street, Natimuk  |                                                                          |      |      | 0.01 | Eastern side – shop -Brick   |

## Appendix C2: Horsham Flood Emergency Plan

Horsham is a regional city in the Wimmera region of Western Victoria. Located on a bend in the Wimmera River, Horsham is approximately 300 kilometres northwest of Melbourne. As of the 2021 Census, Horsham had a population of 20,429. Being the largest population of any city in the Wimmera, it is the main administrative centre for the Rural City of Horsham local government area.

The city of Horsham is situated on the floodplain of the Wimmera River, south of the Dooen Swamp and north of the river's junction with MacKenzie River. The Wimmera River rises in the western slopes of the Pyrenees and then runs west towards Horsham before turning north at Quantong and heading north to Lake Hindmarsh and terminating in Lake Albacutya.

Several tributaries feed the Wimmera River between Horsham and Quantong with runoff from the northern Grampians Mountain Ranges. These include Burnt Creek, Bungalally Creek, Mackenzie River, Norton Creek, Darragan Creek, and Sandy Creek.

The Mackenzie River is fed by Wartook Reservoir, and intricately linked to Burnt Creek and Bungalally Creek. Burnt Creek receives flood waters distributed from the Mackenzie River. Further along Burnt Creek a similar distribution occurs to Bungalally Creek during flood events, which then flows back into the Mackenzie River. (Water Technology – Horsham and Wartook Flood Investigation)

A weir and associated weir pool control flows on the Wimmera River on the southern edge of the city, and a second weir is in place further downstream at Dimboola. The weirs can be manipulated to pass and capture stream flows and are considered valuable by the waterway manager, local government and the community for a variety of reasons including recreation, aesthetics and drought refuge.

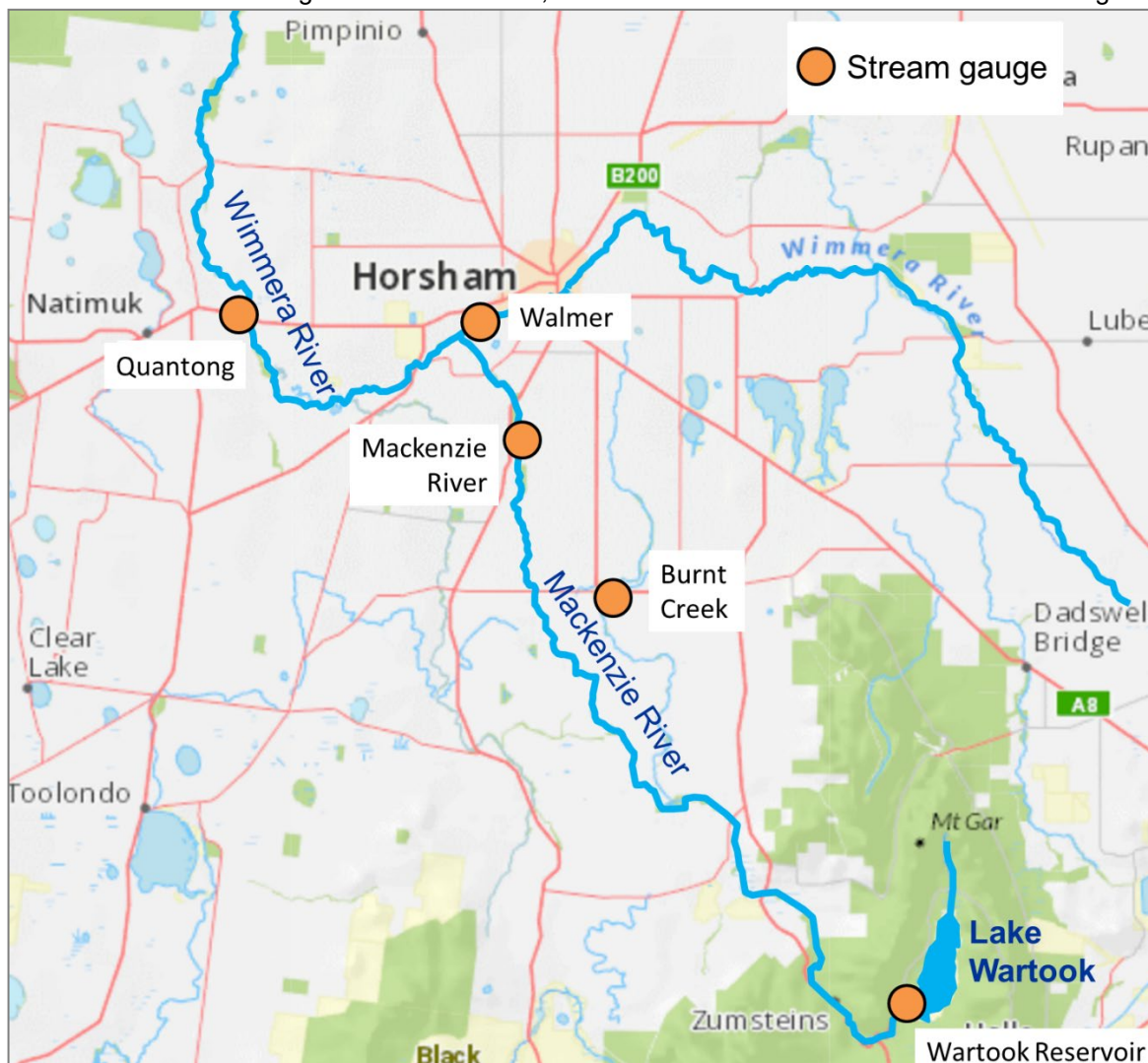


Figure 19. Waterways surrounding Horsham.

## Historic Flood Events

Flooding of Horsham from the Wimmera River has been a regular feature, with around 22 large floods occurring between 1889 and 2016. The largest of these was the 1909 event, followed by January 2011. The most recent flood event on record was the September 2016 event. (2022?)

The January 2011 flood is the largest recent flood on record for the Wimmera River. It is estimated to have been between a 1% and 0.5% AEP event in areas upstream of Horsham and between a 2% and 1% AEP event downstream of Horsham.

High rainfall totals were recorded across the Wimmera River catchment on Wednesday 12 January and Friday 14 January. Both the Horsham Aerodrome and Polkemmet Road rainfall gauges recorded around 100 mm in the 24 hours prior to 9 am on Friday the 14th. Prior to the heavy rainfall in January and in response to forecasts, the boards were fully removed from the Horsham weir on Monday 10 January 2011.

Flooding observed within the study area prior to 16 January can be attributed to direct rainfall and local runoff or flooding from the local tributaries (Burnt Creek, Mackenzie River etc.), while flooding after 16 January is predominately attributed to riverine flooding from the Wimmera River. (Wimmera CMA, July 2019 Horsham and Wartook Valley Flood Investigation) Flooding from Burnt Creek on Friday 14 January closed Williams Road. Properties along much of the Creek were sandbagged. The Burnt Creek at Wonwondah East gauge peaked on the afternoon of Saturday 15 January. At that time the Wimmera River was rising and recorded a gauge level of 3.32 m at Walmer, approximately 1 m below its eventual flood peak level. In the days preceding the maximum water level in the Wimmera River there was a substantial amount of inundation through suburban streets and riverine areas. Some suburban areas were inundated by water backing up through urban stormwater drains and into the street.

Media outlets reported that Horsham was completely cut by floodwaters on Tuesday the 18 January with no access to the town from the east (Melbourne side) due to floodwater inundating Hamilton Street from the river to Firebrace Street. The Wimmera River also started breaking out upstream of Peppertree Lane. Septic systems associated with homes on the outskirts of Horsham were affected on Wednesday 19 January with reports of raw sewerage entering floodwaters.

It is estimated that there were approximately 141 properties affected in Horsham, 260 properties without power and 500 properties isolated. Within Horsham there were 15 houses inundated above floor. This compares to the predicted 35 during a 1% AEP event and 111 in a 0.5% AEP event, as estimated in the Horsham Flood Study<sup>10</sup>. The Horsham North Kindergarten incurred structural damage, and 31 shops were affected by floodwaters. Within Horsham there were two aged care facilities evacuated, along with other municipal facilities and one Caravan Park. Horsham Rural City Council pushed up a levee on the Western Highway on the south-east side of Horsham and in the Burnt Creek drain to keep water in the creek corridor and flowing towards the Wimmera River. Riverside, located to the east of the main Horsham township, was also affected by flooding from the Wimmera River and Burnt Creek.



**Figure 20. Flooding Gardenia St, Horsham during the January 2011 event.**



**Figure 21. Flooding Wimmera River Horsham during the January 2011 event.**

## Horsham Weir Management during floods

Flood mapping from the Horsham Flood Investigation (Water Technology 2019) was used to assess buildings, roads and other assets impacted by flooding.

The Horsham Weir consists of eight weir gates and 24 drop board bays and has a capacity of 4,073 ML/d (Alluvium 2014), refer to the image below. The Weir is located to the west of Horsham where Barnes Boulevard intersects Weir Park, refer to the map below. Water in the Weir has a significant social value, serves to provide the community with both a recreational asset, but also a sense of place and forms part of the identity of the town. The weir pool is very important to the Horsham community for recreation use.

The maximum flow rate of the Horsham Weir is 4,073 ML/d. Triggers that the Horsham Rural City Council may use in their decision making to open the Horsham Weir gates include.

- When flooding occurs at Glenorchy, stream gauge height of 2.86m (flow of 4,000 ML/d) or greater.
- When flooding occurs along the lower Wimmera River, Walmer stream gauge height of 2.42m (flow of 4,000 ML/d) or greater.



**Figure 22. Horsham Weir 2022**



Figure 23. Location of the Horsham Weir.

## Horsham Flood Impacts and Required Actions

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

Table 13. Flooding Disruptions to services (Horsham)

| Service                   | Impact                                           | Trigger Point for action | Strategy/Temporary Measures                                                  |
|---------------------------|--------------------------------------------------|--------------------------|------------------------------------------------------------------------------|
| <b>Power</b>              | Loss of power supply to flooded areas of Horsham | 5% AEP flood predicted   | Power cut to substations in flooded areas of Horsham. (Includes part of CBD) |
| <b>Gas</b>                | Nil                                              |                          |                                                                              |
| <b>Rural school buses</b> | Low lying rural roads flooded                    | 20% AEP flood predicted  | Buses directed to alternative routes                                         |

|                          |                                       |                                                                                         |                                                                                                                                                                                        |
|--------------------------|---------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>City school buses</b> | Low lying areas of Horsham flooded    | 2% AEP flood predicted                                                                  | Buses directed to alternative routes                                                                                                                                                   |
| <b>Water</b>             | Nil                                   | Drinking water supply in the 2010-11 floods was not interrupted in Horsham and Natimuk. | People reliant on rainwater will need to assess whether their supply may have been contaminated.                                                                                       |
| <b>Sewerage</b>          | Toilets not useable in flooded areas. | 2% AEP flood predicted                                                                  | Evacuate affected properties.                                                                                                                                                          |
| <b>Stormwater system</b> | Drainage network backup (1)           | 2%                                                                                      | Horsham North drainage system may back up and impact on houses and roads in major flooding. Consider closing of railway line culvert on Dooen Rd opposite Peppertree Lane intersection |
|                          | Drainage network backup (1)           |                                                                                         | Horsham urban stormwater system can back up and impact. Some blocks able to be put in place. Pumping required at Wotonga Basin (discussed elsewhere)                                   |

## Horsham Emergency Service Impacts

During a 1% AEP flood event there is a significant impact to emergency services in central Horsham. The VICSES Horsham Unit and Ambulance Victoria station become isolated with no vehicle access, while the Horsham Fire Station is inundated and likely non-operational with expected levels to exceed 0.1m – 0.3m. This means response capacity in the CBD is severely compromised.

Key actions include relocating vehicles and personnel to flood-free staging points ahead of time, identifying alternative access routes into the area, and coordinating early with Emergency Service Organisations to ensure continuity of service. Timely public messaging is also critical to manage expectations and direct requests for assistance appropriately. Sandbagging of CFA facility entry/ exit points is appropriate to prevent long lasting damage.



Figure 24. 1% AEP Depth - Horsham Emergency Service Impacts

**Table 14. Horsham key assets at risk of flooding.**

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

| Facility                                             | Impact                                              | Trigger Point for action | Strategy/Temporary Measures                                                                                                           |
|------------------------------------------------------|-----------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Horsham Ambulance Station</b>                     | Ambulance access to station cut off by flood waters | 5% AEP predicted         | Plan for basing ambulances at Horsham Hospital. Plan to sandbag Madden Ave to facilitate north - south access for emergency vehicles. |
| <b>Horsham SES Unit</b>                              | Access cut off or restricted                        | 5% AEP predicted         | Relocation of operation                                                                                                               |
| <b>Horsham CFA Station</b>                           | Access cut off or restricted                        | 5% AEP predicted         | Relocation of operation                                                                                                               |
| <b>Kurrajong Lodge Age Care Home</b>                 | Inundation                                          | 5% AEP predicted         | Consider evacuate residents to alternative accommodation                                                                              |
| <b>Garden Village Age Care Facility (Unassisted)</b> | Access and sewerage issues                          | 5% AEP predicted         | Consider evacuate residents to alternative accommodation                                                                              |
| <b>Sunnyside Lutheran Rest Home</b>                  | Inundation                                          | 5% AEP predicted         | Consider evacuate residents to alternative accommodation                                                                              |
| <b>Holy Trinity Lutheran School</b>                  | Inundation                                          | 5% AEP predicted         | Close school for days of predicted flooding.                                                                                          |
| <b>Horsham Equestrian Centre</b>                     | Inundation                                          | 10% AEP predicted        | Close facility and relocate horses and assets.                                                                                        |
| <b>Showground Horse Stables</b>                      | Inundation                                          | 5% AEP predicted         | Close stables and relocate horses.                                                                                                    |
| <b>St Brigid's College</b>                           | Access Restricted                                   | TBD                      | School may be closed                                                                                                                  |
| <b>Horsham Riverside Caravan Park</b>                | Inundation                                          | 5% AEP predicted         | Close facility and relocate inhabitants                                                                                               |
| <b>Horsham Medical centre</b>                        | Access restricted                                   | 5% AEP predicted         | Possible relocation of operations to Hospital                                                                                         |
| <b>Horsham Primary School</b>                        | Access restricted                                   | 5% AEP predicted         | School may be closed                                                                                                                  |
| <b>Horsham YMCA</b>                                  | Access restricted                                   | 5% AEP predicted         | Close Facility                                                                                                                        |

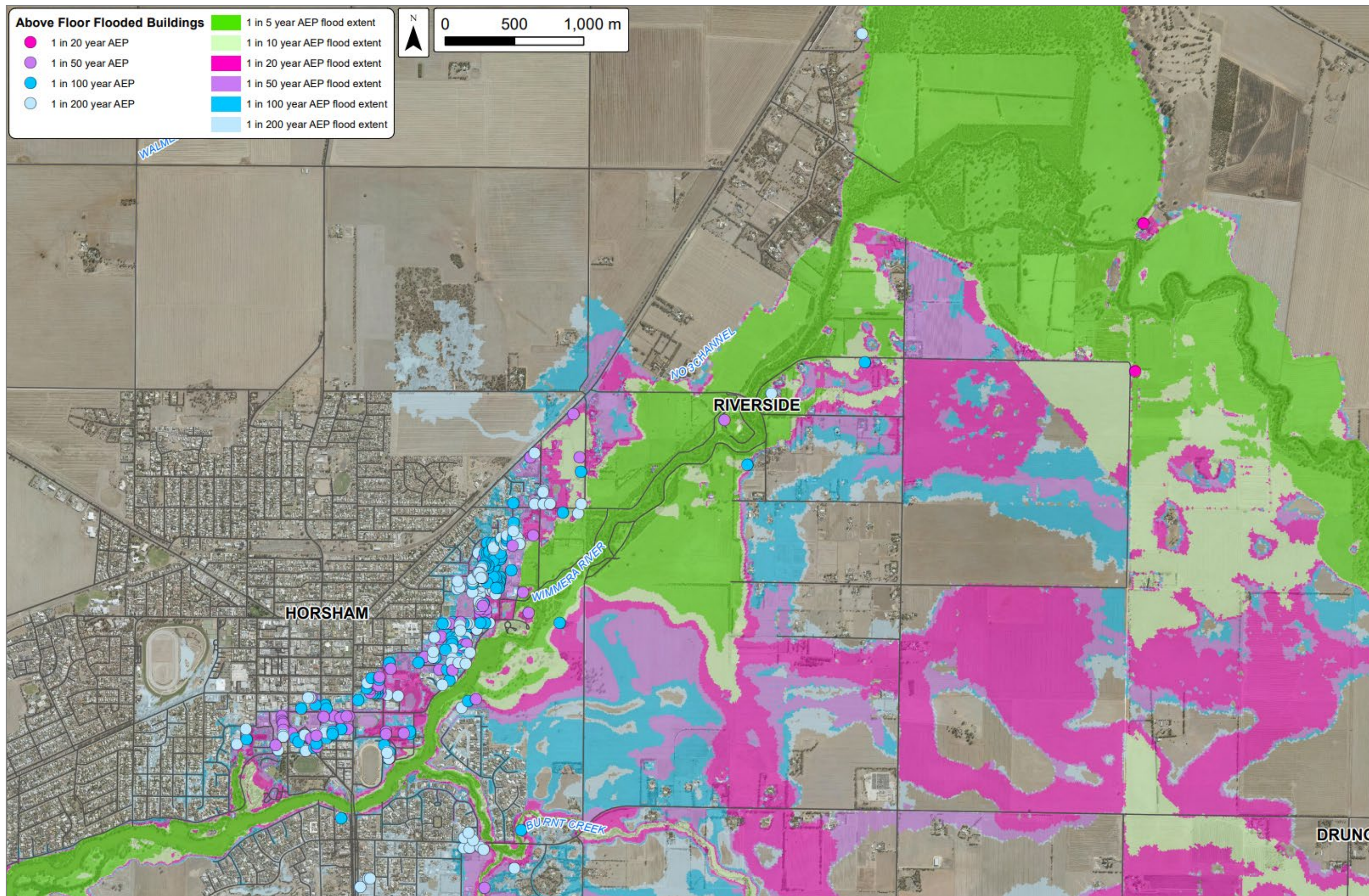


Figure 25. Horsham assets impacted by flooding for a range of design flood events (Water Technology 2019).



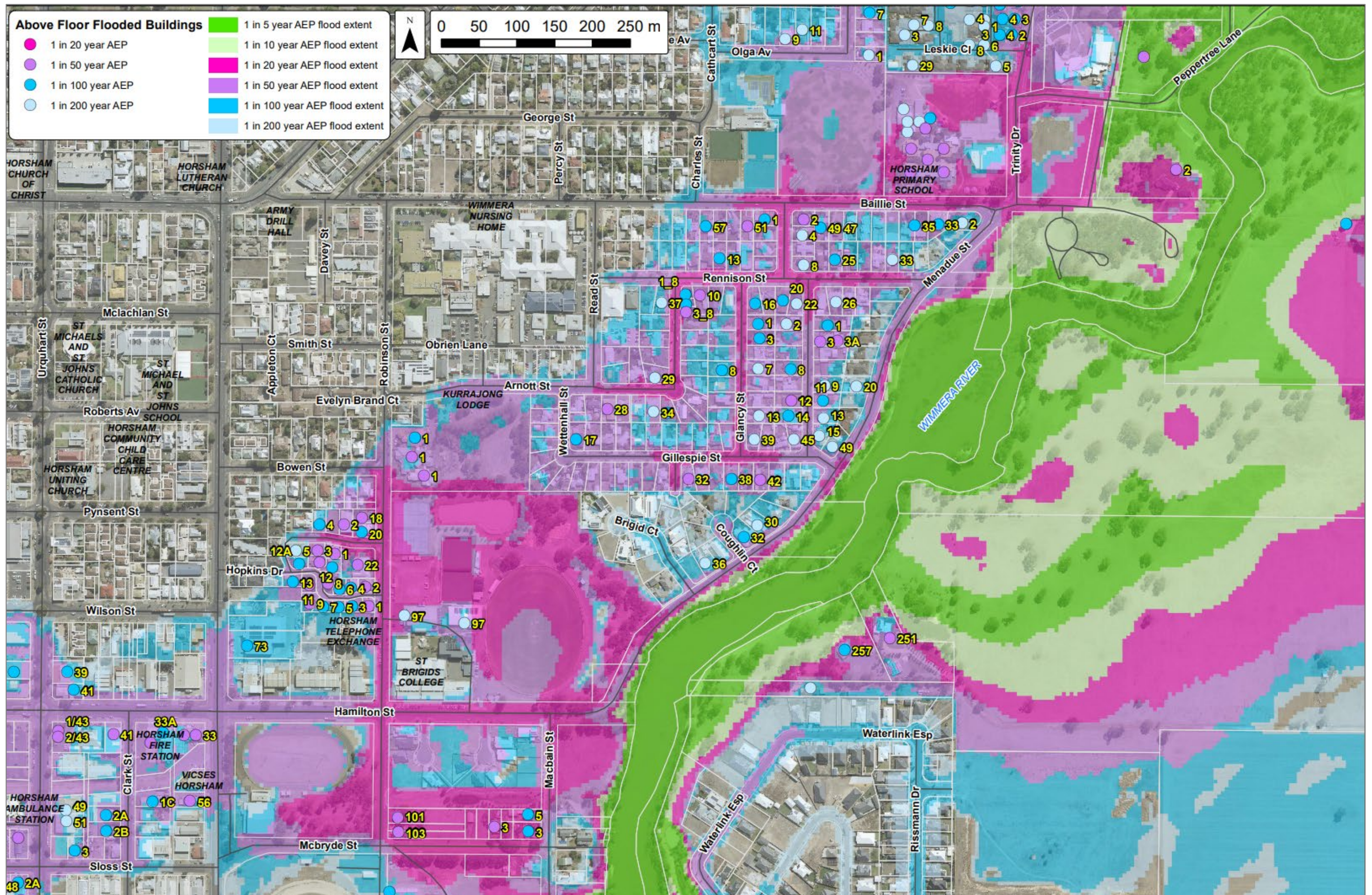


Figure 27. Horsham assets impacted by flooding for a range of design flood events (Water Technology 2019).





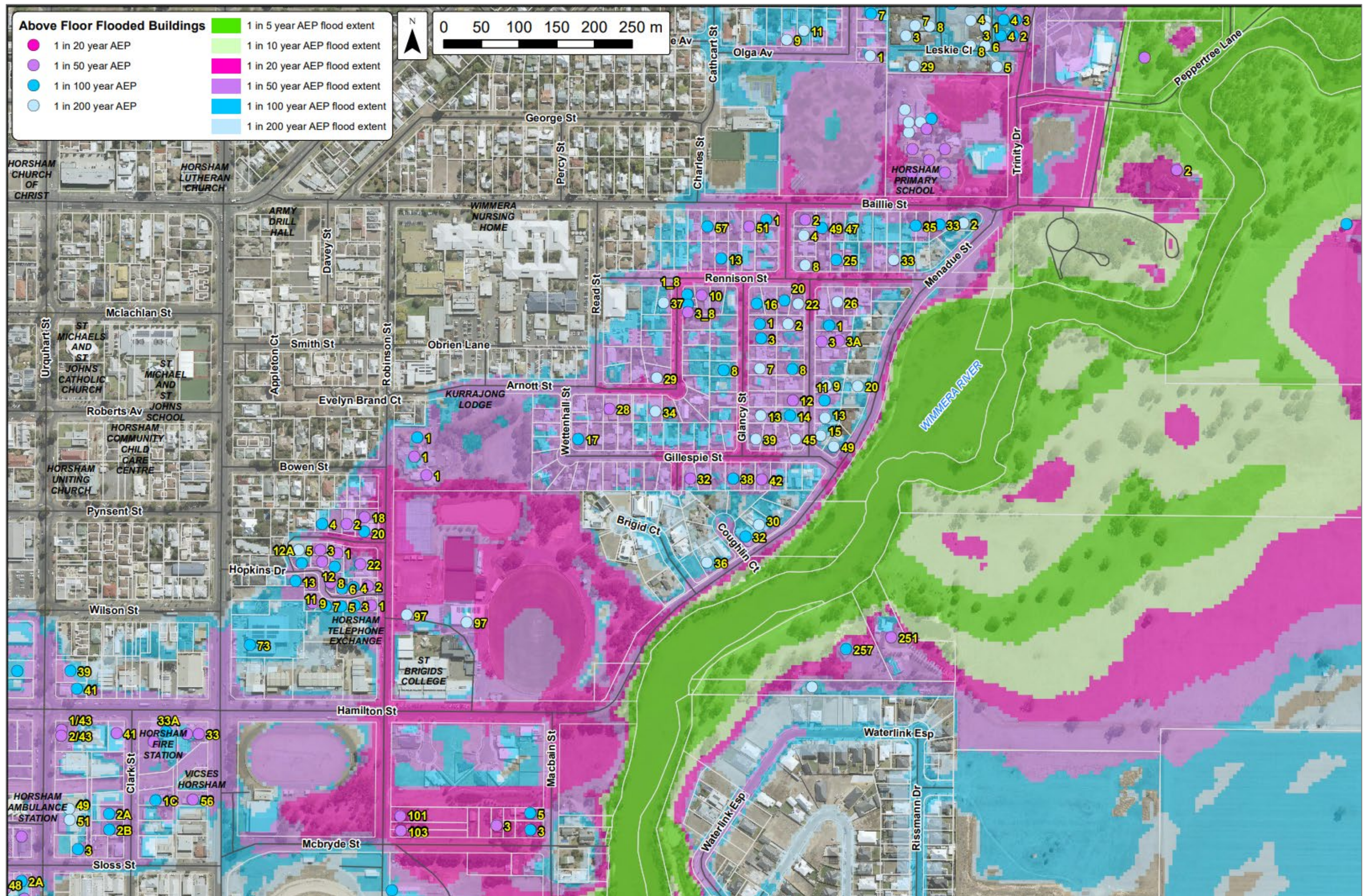


Figure 30. Horsham assets impacted by flooding for a range of design flood events (Water Technology 2019).

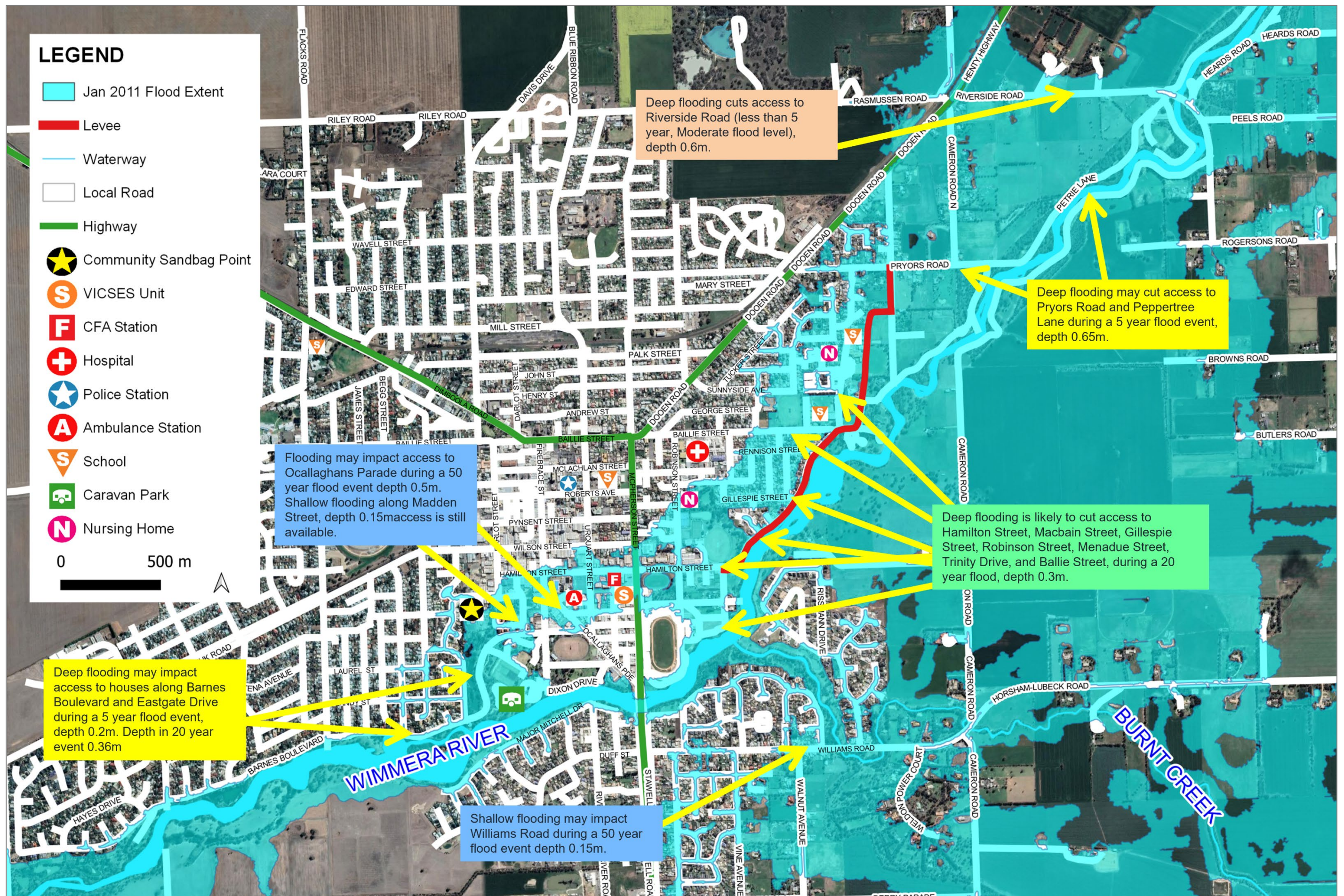


Figure 31. Horsham roads impacted by flooding for a range of design flood events with the 1 in 100 year AEP depth map (Water Technology 2019).

**Table 15. Horsham Flood Intelligence Card**

| Flood travel time                                 |                                                 |                                           |                             |                                                                                  | Stormwater flooding time from start of rain to flooding 2-3 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                  |                                                                                                                                                                          |
|---------------------------------------------------|-------------------------------------------------|-------------------------------------------|-----------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                   |                                                 |                                           |                             |                                                                                  | Time between Glenorchy peak and steep rise in Riverside is 1 – 2 days                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                  |                                                                                                                                                                          |
|                                                   |                                                 |                                           |                             |                                                                                  | Time between Glenorchy to Walmer peak 3.2 to 3.8 days                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                  |                                                                                                                                                                          |
|                                                   |                                                 |                                           |                             |                                                                                  | Riverine flooding duration: 2 - 3 days                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                  |                                                                                                                                                                          |
| Wimmera River at Glenorchy gauge height 415201(m) | Wimmera River at Walmer gauge height 415200 (m) | Annual Exceedance Probability (1 in year) | Horsham Design Flows (ML/d) | Horsham damages total number of properties flooded (above floor) Water Tech 2019 | Consequences/ Impact/ Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Houses/ buildings flooded / isolated                                                                                                                                                                                                                                                                                                                    | Roads Impacted                                                                                                                                   | Action                                                                                                                                                                   |
|                                                   | 2.47                                            |                                           | 5,154                       |                                                                                  | Horsham Weir will reach capacity, remove the Horsham Weir (open all gates and remove weir boards), to prevent flooding on adjacent property. Notify Hindmarsh Shire MEMO of increased downstream flows.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                  | Horsham Rural City Council remove Horsham Weir boards, notify Hindmarsh MEMO and downstream landholders.                                                                 |
| 4                                                 | 2.8                                             | Minor flood level                         |                             |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                  |                                                                                                                                                                          |
| 4.5                                               | 3.1                                             | Moderate flood level                      |                             |                                                                                  | Flooding in Wotonga Basin may start to impact the area along Eastgate Drive. Water pressure from the river is likely to push backwards up into Wotonga Basin, contributing to flooding of the towns stormwater system. Local heavy rainfall will cause the stormwater system to be at capacity and increased flows will begin to flow out of the stormwater drainage network and appear above ground. Powercor assets, such as substation at intersection of Stawell Road and the Henty Highway may be under threat due to local heavy rainfall.                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                  | Monitor Powercor substation if local heavy rainfall occurs.                                                                                                              |
|                                                   | 3.31                                            |                                           |                             |                                                                                  | Properties within Horsham may experience below floor flooding, particularly at western end of Barnes Boulevard, Peppertree Lane, Pryors Road and Riverside Road. Deep flooding cuts access along Riverside Road, more than 1m deep in places. Land surrounding the Horsham Equestrian Centre, Pony Club and Riverside Recreation Reserve (Riverside Road), depth up to 0.5m.                                                                                                                                                                                                                                                                                           | <b>Assets inundated:</b><br>Horsham Equestrian Centre, Pony Club and Riverside Recreation Reserve<br>East Horsham                                                                                                                                                                                                                                       | Riverside Road depth 0.6m                                                                                                                        | Advise landholders around Quantong Bridge so that stock can be moved to higher ground. Landholders along Riverside Road need to relocate their animals to higher ground. |
| 4.81                                              | 3.33                                            | September 2010                            |                             |                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                  |                                                                                                                                                                          |
| 4.89                                              | 3.36                                            | September 2016                            |                             |                                                                                  | No buildings were flooded above floor. Low lying properties were impacted by minor flooding.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                  |                                                                                                                                                                          |
| 4.68                                              | 3.44                                            | 5                                         | 13,100                      | 74 (0)                                                                           | Low lying sections of the Horsham Show Grounds, Baillie Street Helicopter Pad start to be impacted by flooding. Holy Trinity Lutheran College Ovals are impacted by deep flooding, 0.8m depth. Low lying sections of the Horsham Motocross Complex and the Horsham Go Kart Club (650 Henty Highway Dooen) are impacted by flooding. Access is cut to the Apex Island Playground (Barnes Boulevard) and the walkway bridge. Deep flooding along Barnes Boulevard may cut access to some houses (70, 72, 106) and impact low lying properties. Deep flooding may cut access to Pryors Road, Peppertree Lane, Barnes Boulevard. Shallow flooding overtops Eastgate Drive. | <b>Additional assets impacted.</b><br>Low parts of the Horsham Motocross Complex and Horsham Go Kart Club (650 Henty Highway Dooen), Baillie Street Helicopter Pad, Horsham Show Grounds, Holy Trinity Lutheran College Ovals.<br><b>Additional assets isolated:</b><br>Barnes Boulevard (70, 72, 106), Adventure Island Playground and walkway bridge. | Riverside Road depth 0.6m<br>Pryors Road depth 0.65m<br>Peppertree Lane depth 0.86m<br>Barnes Boulevard depth 0.3m<br>Eastgate Drive depth 0.20m |                                                                                                                                                                          |
|                                                   | 3.47                                            |                                           |                             |                                                                                  | Properties within Horsham will experience below floor flooding, particularly at Peppertree Lane, Pryors Road, and western end of Barnes Boulevard. These properties may experience below floor flooding.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                  |                                                                                                                                                                          |

|      |      |                   |        |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                            |
|------|------|-------------------|--------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 4.8  | 3.6  | Major flood level |        |          | Shallow flooding (up to 0.25m deep) on land adjacent to Burnt Creek upstream (south and north) of Williams Road. The Wotonga Basin Weir is overtopped.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                            |
| 4.81 | 3.70 | 10                | 19,200 | 111 (0)  | The Horsham town levee is not likely to be overtopped (but close). Stormwater drainage is likely to be at capacity by this stage, causing water to creep out of many drains throughout town. Deeper flooding occurs surrounding the Horsham Showground, also impacting properties in McBain Street, Weldon Power Court, Horsham Caravan Park, and Botanic Gardens. Deep flooding may cut access to Eastgate Drive.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Additional assets inundated:</b><br>Horsham Riverside Caravan Park, Horsham Showgrounds.                                                                                                                                                                                                                                                                                                                                                                                | Riverside Road depth 0.72m<br>Pryors Road depth 1m<br>Peppertree Lane depth 1.28m<br>Barnes Boulevard depth 0.43m<br>Eastgate Drive depth 0.25m                                                                                                                                                                                                                                                      | Victoria Police: evacuate the Horsham Riverside Caravan Park and the Horsham Show Grounds. |
|      | 3.79 |                   |        |          | <b>The Horsham town levee is overtopped</b> , flooding breaks out around upstream end of Peppertree Lane, Menadue Street areas if the levee and overtopping of Menadue Street near the St Brigid's College Oval.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                            |
| 4.89 | 3.92 | 20                | 25,000 | 172 (0)  | Deep flooding along Baillie Street and Trinity Drive may cut access to the Holy Trinity Lutheran College, the Sunnyside Lutheran Retirement Village. Deep flooding along Hamilton Street and Robinson Street may also cut access to St Brigid's College (0.5m depth). Extensive flooding across the St Brigid's College Oval and Coughlin Park Bowls Club and Tennis Courts. Deep flooding along Hamilton Street (up to 0.3m depth) may cut access to houses in Griffin Court, Brady Court, McBryde Street and Macbain Street. Deep flooding may occur in Gillespie Street, Read Street, Arnott Street, Glancy Street and Carr Street (up to 0.22m). Deep flooding may cut access to Hamilton Street, Macbain Street, Gillespie Street, Robinson Street, Menadue Street, Trinity Drive and Baillie Street. No building is likely to be impacted by above floor flooding, flooding is close to buildings in McBryde Street, Peppertree Lane, Cameron Road and Robinson Street.                                                                               | <b>Flooding is close to flooding X7 buildings flooded above floor:</b><br><b>Horsham:</b> x2 ROBINSON STREET (101, 103), x2 CAMERON ROAD (44, 52), 67 PEPPERTREE LANE, 3 MCBRYDE STREET<br><b>Additional assets inundated:</b><br>Coughlin Park Bowls Club and Tennis Courts. St Brigids College, residents in McBryde Street and Macbain Street.<br><b>Additional assets isolated:</b><br>Sunnyside Lutheran Retirement Village, residents in Griffin Court, Brady Court, | Hamilton Street depth 0.3m<br>Riverside Road depth 0.83m<br>Pryors Road depth 1.26m<br>Peppertree Lane depth 1.57m<br>Barnes Boulevard depth 0.55m<br>Eastgate Drive depth 0.36m<br>Macbain Street depth 0.27m<br>Gillespie Street depth 0.22m<br>Robinson Street depth 0.30m<br>Menadue Street depth 0.26m<br>Trinity Drive depth 0.56m<br>Baillie Street depth 0.28m<br>Stockton Drive depth 0.25m |                                                                                            |
| 4.96 | 4.15 | 50                | 31,900 | 578 (35) | Significant flooding likely to occur through the centre of Horsham within the anabranch area of town, from eastern end of Hamilton Street through to the Horsham Botanic Gardens and Wotonga Basin. Access may be cut to the Horsham SES Unit (depth 0.35m), Horsham CFA Station (0.8m) and the Horsham Ambulance Station (depth 0.6m). Deep flooding may impact the 289 Campus of the Horsham Primary School, the Holy Trinity Lutheran College (0.3m depth) and parts of the Sunnyside Lutheran Retirement Village and Kurralong Lodge Retirement Village (Arnott Street) (CHECK BUILDING FLOODED ABOVE FLOOR??). Horsham Velodrome and the Horsham Basketball Stadium (CHECK BUILDING FLOODED ABOVE FLOOR). Deep flooding along Barnes Boulevard may cut access to some houses between Farrar Ave and Bennett Road. Deep flooding may cut access to houses along Cameron Road, Read Street, Arnott Street, Glancy Street, Carr Street, McPherson Street, O'Callaghans Parade and Cameron Road. Shallow flooding from Burnt Creek overtops Williams Road. | <b>X30 buildings flooded above floor:</b><br><b>Horsham:</b> x6 HOPKINS DRIVE (1, 2, 8, 9, 11, 12), x4 ARNOTT STREET (1, 28), X3 COOK STREET (1, 2, 3, ), x3 CARR STREET (3, 3A, 12), x2 RENNISON STREET (3/8, 10), x2 ROBINSON STREET (18, 22), 2 BAILLIE STREET, 251 CAMERON ROAD, 6 REGAL COURT, 42 GILLESPIE STREET, 7 LAWRENCE STREET, 8 Weldon Power Crt, 200 Dooen ROAD, 2 MARGARET STREET, 13 MADDEN STREET.                                                       | Trinity Drive depth 0.8m<br>Baillie Street depth 0.58m<br>Hamilton Street depth 0.68m<br>Riverside Road depth 0.72m<br>Pryors Road depth 1.45m<br>Peppertree Lane depth 1.78m<br>Barnes Boulevard depth 0.60m<br>Williams Road depth 0.15m<br>McPherson Street depth 0.85m<br>Eastgate Drive depth 0.58m                                                                                             |                                                                                            |

|      |      |              |        |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
|------|------|--------------|--------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|      |      |              |        |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>Longerenong: 88 LONGERNONG ROAD</b><br/> <b>Additional assets inundated.</b><br/> 298 Campus of the Horsham Primary School, Holy Trinity Lutheran College, Sunnyside Lutheran Retirement Village (Trinity Drive), Kurrajong Lodge Retirement Village (Arnott Street), Horsham Basketball Stadium.<br/> <b>Additional assets isolated:</b><br/> SES Unit, CFA Station, Horsham Ambulance Station, Power Substation Riverside East Road (not inundated), Houses along Barnes Boulevard between Farrar Ave and Bennett Road. Houses along Cameron Road,</p> | Macbain Street depth 0.53m<br>Gillespie Street depth 0.40m<br>Robinson Street depth 0.72m<br>Menadue Street depth 0.45m<br>Madden Street depth 0.15m<br>O'Callaghans Pde depth 1.08m<br>Cameron Road depth 0.3m<br>Stockton Drive depth 0.35m                                                                                                                                                                                                                       |  |
| 5.03 | 4.27 | January 2011 |        |           | 100 mm of rainfall was recorded at the Horsham Aerodrome. Several buildings were impacted by stormwater flooding. The Horsham North Kindergarten incurred structural damage, and 31 shops, buildings at the Holy Trinity Lutheran College and 298 Campus of the Horsham Primary School were affected by flooding. The Sunnyside Lutheran Retirement Village (Trinity Drive) and the Kurrajong Lodge Retirement Village (Arnott Street) were evacuated and the Horsham Riverside Caravan Park. Access was cut to a significant number of roads, isolating more than 570 properties. More than 260 properties experienced power outages. More than 182 buildings were flooded above floor. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| 5.01 | 4.29 | 100          | 36,500 | 773 (135) | <p>Deep flooding across the Read Street Medical Centre car park (CHECK floor levels if building impacted) (0.25m).<br/> Deep flooding may cut access to most houses along Barnes Boulevard between Dixon Court and Wotonga Drive. This may also cut access to street adjacent including Sayer Court, River Park Rise, Wimmera Rise, Dixon Court, Wotonga Drive, Harmer Court, and Finlayson Court.</p>                                                                                                                                                                                                                                                                                   | <p><b>X99 Additional buildings flooded above floor: (refer to attached table)</b><br/> <b>Additional assets inundated.</b><br/> <b>Additional assets isolated:</b><br/> Houses along Brigid Court and Coughlin Court, Read Street Medical Centre.</p>                                                                                                                                                                                                                                                                                                          | Trinity Drive depth 1.05m<br>Baillie Street depth 0.76m<br>Hamilton Street depth 0.84m<br>Riverside Road depth 1.12m<br>Pryors Road depth 1.62m<br>Peppertree Lane depth 1.90m<br>Barnes Boulevard depth 0.62m<br>Williams Road depth 0.28m<br>Weldon Power Court depth 0.16m<br>McPherson Street depth 1m<br>Eastgate Drive depth 0.75m<br>Macbain Street depth 0.73m<br>Gillespie Street depth 0.55m<br>Robinson Street depth 0.88m<br>Menadue Street depth 0.63m |  |

|      |      |     |        |           |  |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
|------|------|-----|--------|-----------|--|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|      |      |     |        |           |  |                                                                                                                                   | Madden Street<br>depth 0.16m<br>O'Callaghan's Pde<br>depth 1.18m<br>Cameron Road<br>depth 0.48m<br>Stockton Drive<br>depth 0.35m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 5.05 | 4.40 | 200 | 40,700 | 890 (231) |  | <b>X97 Additional buildings<br/>flooded above floor:<br/>Additional assets<br/>inundated.<br/>Additional assets<br/>isolated;</b> | Trinity Drive depth<br>1.15m<br>Baillie Street depth<br>0.85m<br>Hamilton Street<br>depth 0.96m<br>Riverside Road<br>depth 1.18m<br>Pryors Road depth<br>1.68m<br>Peppertree Lane<br>depth 2m<br>Barnes Boulevard<br>depth 0.64m<br>Williams Road<br>depth 0.32m<br>Weldon Power<br>Court depth 0.30m<br>McPherson Street<br>depth 1.16m<br>Eastgate Drive<br>depth 0.90m<br>Macbain Street<br>depth 0.87m<br>Gillespie Street<br>depth 0.64m<br>Robinson Street<br>depth 0.90m<br>Menadue Street<br>depth 0.75m<br>Madden Street<br>depth 0.17m<br>O'Callaghans Pde<br>depth 1.29m<br>Cameron Road<br>depth 0.59m<br>Stockton Drive<br>depth 0.35m |  |

**Table 16. Horsham Property Inundation Table (Water Technology 2019)**

Colours used in the table below are the same used in the Horsham flood risk maps above. Yellow, buildings flooded above floor in a 1 in 50-year AEP. Green, buildings flooded above floor in a 1 in 100-year AEP flood event, etc.

| No | Address                     | Depth of building over floor flooding for each AEP (1 in year) event (m) |       |       | Type of building |
|----|-----------------------------|--------------------------------------------------------------------------|-------|-------|------------------|
|    |                             | 50                                                                       | 100   | 200   |                  |
| 1  | 13 MADDEN STREET HORSHAM    | 0.421                                                                    | 0.501 | 0.575 |                  |
| 2  | 3 MCBRYDE STREET HORSHAM    | 0.281                                                                    | 0.449 | 0.569 |                  |
| 3  | 2 COOK STREET HORSHAM       | 0.276                                                                    | 0.468 | 0.584 |                  |
| 4  | 103 ROBINSON STREET HORSHAM | 0.254                                                                    | 0.423 | 0.543 |                  |
| 5  | 28 ARNOTT STREET HORSHAM    | 0.172                                                                    | 0.301 | 0.383 |                  |
| 6  | 3 COOK STREET HORSHAM       | 0.166                                                                    | 0.358 | 0.472 |                  |
| 7  | 3/8 RENNISON STREET HORSHAM | 0.164                                                                    | 0.326 | 0.419 |                  |
| 8  | 44 CAMERON ROAD HORSHAM     | 0.151                                                                    | 0.285 | 0.351 |                  |
| 9  | 25 PEPPERTREE LANE HORSHAM  | 0.136                                                                    | 0.277 | 0.353 |                  |
| 10 | 2 BAILLIE STREET HORSHAM    | 0.131                                                                    | 0.277 | 0.358 |                  |
| 11 | 67 PEPPERTREE LANE HORSHAM  | 0.12                                                                     | 0.256 | 0.325 |                  |
| 12 | 101 ROBINSON STREET HORSHAM | 0.114                                                                    | 0.283 | 0.403 |                  |
| 13 | 18 ROBINSON STREET HORSHAM  | 0.106                                                                    | 0.298 | 0.415 |                  |
| 14 | 22 ROBINSON STREET HORSHAM  | 0.096                                                                    | 0.288 | 0.404 |                  |
| 15 | 12 HOPKINS DRIVE HORSHAM    | 0.096                                                                    | 0.287 | 0.399 |                  |
| 16 | 251 CAMERON ROAD HORSHAM    | 0.092                                                                    | 0.248 | 0.35  |                  |
| 17 | 10 RENNISON STREET HORSHAM  | 0.079                                                                    | 0.242 | 0.335 |                  |
| 18 | 2 HOPKINS DRIVE HORSHAM     | 0.066                                                                    | 0.257 | 0.372 |                  |
| 19 | 8 HOPKINS DRIVE HORSHAM     | 0.056                                                                    | 0.247 | 0.359 |                  |
| 20 | 1 ARNOTT STREET HORSHAM     | 0.036                                                                    | 0.229 | 0.346 |                  |
| 21 | 3A CARR STREET HORSHAM      | 0.032                                                                    | 0.199 | 0.294 |                  |
| 22 | 3 CARR STREET HORSHAM       | 0.031                                                                    | 0.198 | 0.292 |                  |
| 23 | 6 REGAL COURT HORSHAM       | 0.025                                                                    | 0.222 | 0.308 |                  |
| 24 | 1 HOPKINS DRIVE HORSHAM     | 0.024                                                                    | 0.216 | 0.332 |                  |
| 25 | 42 GILLESPIE STREET HORSHAM | 0.02                                                                     | 0.178 | 0.267 |                  |
| 26 | 2 MARGARET STREET HORSHAM   | 0.019                                                                    | 0.188 | 0.283 |                  |
| 27 | 1 COOK STREET HORSHAM       | 0.016                                                                    | 0.208 | 0.323 |                  |
| 28 | 9 HOPKINS DRIVE HORSHAM     | 0.016                                                                    | 0.206 | 0.313 |                  |
| 29 | 12 CARR STREET HORSHAM      | 0.016                                                                    | 0.18  | 0.273 |                  |
| 30 | 1 ARNOTT STREET HORSHAM     | 0.012                                                                    | 0.208 | 0.326 |                  |
| 31 | 7 LAWRENCE STREET HORSHAM   | 0.01                                                                     | 0.214 | 0.3   |                  |

| No | Address                     | Depth of building over floor flooding for each AEP (1 in year) event (m) |       |       | Type of building                       |
|----|-----------------------------|--------------------------------------------------------------------------|-------|-------|----------------------------------------|
|    |                             | 50                                                                       | 100   | 200   |                                        |
| 32 | 8 WELON POWER CRT HORSHAM   | 0.007                                                                    | 0.364 | 0.458 | Galvanised iron - concrete slab - shed |
| 33 | 11 HOPKINS DRIVE HORSHAM    | 0.006                                                                    | 0.197 | 0.306 |                                        |
| 34 | 1 ARNOTT STREET HORSHAM     | 0.001                                                                    | 0.208 | 0.326 |                                        |
| 35 | 200 Dooen ROAD HORSHAM      | 0.001                                                                    | 0.136 | 0.202 | Weatherboard-concrete slab             |
| 36 | 68 WILLIAMS ROAD HORSHAM    |                                                                          | 0.284 | 0.374 |                                        |
| 37 | 32 GILLESPIE STREET HORSHAM |                                                                          | 0.211 | 0.3   |                                        |
| 38 | 9 LAWRENCE STREET HORSHAM   |                                                                          | 0.193 | 0.28  |                                        |
| 39 | 2 GROSS COURT HORSHAM       |                                                                          | 0.191 | 0.272 |                                        |
| 40 | 6 GROSS COURT HORSHAM       |                                                                          | 0.181 | 0.262 |                                        |
| 41 | 17 LAWRENCE STREET HORSHAM  |                                                                          | 0.18  | 0.266 |                                        |
| 42 | 6 HOPKINS DRIVE HORSHAM     |                                                                          | 0.177 | 0.29  |                                        |
| 43 | 51 BAILLIE STREET HORSHAM   |                                                                          | 0.173 | 0.266 |                                        |
| 44 | 3 HOPKINS DRIVE HORSHAM     |                                                                          | 0.167 | 0.282 |                                        |
| 45 | 4 HOPKINS DRIVE HORSHAM     |                                                                          | 0.167 | 0.282 |                                        |
| 46 | 5 HOPKINS DRIVE HORSHAM     |                                                                          | 0.167 | 0.279 |                                        |
| 47 | 1 MARGARET STREET HORSHAM   |                                                                          | 0.167 | 0.26  |                                        |
| 48 | 11 LAWRENCE STREET HORSHAM  |                                                                          | 0.164 | 0.251 |                                        |
| 49 | 1 GROSS COURT HORSHAM       |                                                                          | 0.161 | 0.242 |                                        |
| 50 | 15A LAWRENCE STREET HORSHAM |                                                                          | 0.158 | 0.244 |                                        |
| 51 | 10 HOPKINS DRIVE HORSHAM    |                                                                          | 0.157 | 0.27  |                                        |
| 52 | 15B LAWRENCE STREET HORSHAM |                                                                          | 0.156 | 0.243 |                                        |
| 53 | 49 BAILLIE STREET HORSHAM   |                                                                          | 0.153 | 0.25  |                                        |
| 54 | 5 GROSS COURT HORSHAM       |                                                                          | 0.151 | 0.232 |                                        |
| 55 | 5 MACBAIN STREET HORSHAM    |                                                                          | 0.143 | 0.263 |                                        |
| 56 | 2 LESKIE CLOSE HORSHAM      |                                                                          | 0.142 | 0.225 |                                        |
| 57 | 35 BAILLIE STREET HORSHAM   |                                                                          | 0.139 | 0.23  |                                        |
| 58 | 3 GROSS COURT HORSHAM       |                                                                          | 0.139 | 0.22  |                                        |
| 59 | 4 GROSS COURT HORSHAM       |                                                                          | 0.138 | 0.22  |                                        |
| 60 | 7 HOPKINS DRIVE HORSHAM     |                                                                          | 0.137 | 0.246 |                                        |
| 61 | 3 EDMONDS COURT HORSHAM     |                                                                          | 0.136 | 0.158 |                                        |
| 62 | 80A WILLIAMS ROAD HORSHAM   |                                                                          | 0.133 | 0.254 |                                        |
| 63 | 14 TRINITY DRIVE HORSHAM    |                                                                          | 0.131 | 0.212 |                                        |
| 64 | 4 LESKIE CLOSE HORSHAM      |                                                                          | 0.123 | 0.206 |                                        |
| 65 | 12 TRINITY DRIVE HORSHAM    |                                                                          | 0.121 | 0.202 |                                        |
| 66 | 33 BAILLIE STREET HORSHAM   |                                                                          | 0.119 | 0.211 |                                        |
| 67 | 14B LAWRENCE STREET HORSHAM |                                                                          | 0.117 | 0.203 |                                        |
| 68 | 52 CAMERON ROAD HORSHAM     |                                                                          | 0.114 | 0.179 |                                        |

| No  | Address                      | Depth of building over floor flooding for each AEP (1 in year) event (m) |       |       | Type of building      |
|-----|------------------------------|--------------------------------------------------------------------------|-------|-------|-----------------------|
|     |                              | 50                                                                       | 100   | 200   |                       |
| 69  | 16 RENNISON STREET HORSHAM   |                                                                          | 0.107 | 0.202 |                       |
| 70  | 10 LAWRENCE STREET HORSHAM   |                                                                          | 0.104 | 0.191 |                       |
| 72  | 8 CARR STREET HORSHAM        |                                                                          | 0.101 | 0.194 |                       |
| 73  | 36 ARNOTT STREET HORSHAM     |                                                                          | 0.097 | 0.186 |                       |
| 74  | 13 HOPKINS DRIVE HORSHAM     |                                                                          | 0.096 | 0.201 |                       |
| 75  | 1 GLANCY STREET HORSHAM      |                                                                          | 0.094 | 0.188 |                       |
| 76  | 7 CULLIVER STREET HORSHAM    |                                                                          | 0.092 | 0.185 |                       |
| 77  | CAMERON ROAD HORSHAM         |                                                                          | 0.092 | 0.174 |                       |
| 78  | 21 LAWRENCE STREET HORSHAM   |                                                                          | 0.091 | 0.176 |                       |
| 79  | 43 CULLIVER STREET HORSHAM   |                                                                          | 0.09  | 0.18  |                       |
| 80  | 38 GILLESPIE STREET HORSHAM  |                                                                          | 0.088 | 0.177 |                       |
| 81  | 12A HOPKINS DRIVE HORSHAM    |                                                                          | 0.087 | 0.196 |                       |
| 82  | 12 LAWRENCE STREET HORSHAM   |                                                                          | 0.086 | 0.172 |                       |
| 83  | 41 CULLIVER STREET HORSHAM   |                                                                          | 0.082 | 0.166 |                       |
| 84  | 9 SCHIER COURT HORSHAM       |                                                                          | 0.08  | 0.172 |                       |
| 85  | 14A LAWRENCE STREET HORSHAM  |                                                                          | 0.076 | 0.163 |                       |
| 86  | 1 MARDON DRIVE HORSHAM       |                                                                          | 0.076 | 0.142 |                       |
| 87  | 72 WILLIAMS ROAD HORSHAM     |                                                                          | 0.075 | 0.175 |                       |
| 88  | 1 WEBSTER STREET HORSHAM     |                                                                          | 0.072 | 0.157 |                       |
| 89  | 25 STAWELL ROAD HORSHAM      |                                                                          | 0.069 | 0.202 | Weatherboard - stumps |
| 90  | 6 SCHIER COURT HORSHAM       |                                                                          | 0.069 | 0.158 |                       |
| 91  | 5 SCHIER COURT HORSHAM       |                                                                          | 0.068 | 0.157 |                       |
| 92  | 2/8 RENNISON STREET HORSHAM  |                                                                          | 0.067 | 0.16  |                       |
| 93  | 7 SCHIER COURT HORSHAM       |                                                                          | 0.066 | 0.156 |                       |
| 94  | 77 WILLIAMS ROAD HORSHAM     |                                                                          | 0.065 | 0.095 |                       |
| 95  | 80 WILLIAMS ROAD HORSHAM     |                                                                          | 0.06  | 0.151 |                       |
| 96  | 17 GILLESPIE STREET HORSHAM  |                                                                          | 0.059 | 0.132 |                       |
| 97  | 4 WELDON POWER COURT HORSHAM |                                                                          | 0.058 | 0.174 |                       |
| 98  | 4 COOK STREET HORSHAM        |                                                                          | 0.058 | 0.174 |                       |
| 99  | 8 GLANCY STREET HORSHAM      |                                                                          | 0.057 | 0.148 |                       |
| 100 | 1 CARR STREET HORSHAM        |                                                                          | 0.05  | 0.145 |                       |
| 101 | 10 SCHIER COURT HORSHAM      |                                                                          | 0.049 | 0.141 |                       |
| 102 | 11 CARR STREET HORSHAM       |                                                                          | 0.04  | 0.133 |                       |
| 103 | 20 ROBINSON STREET HORSHAM   |                                                                          | 0.038 | 0.154 |                       |
| 104 | 257 CAMERON ROAD HORSHAM     |                                                                          | 0.037 | 0.149 |                       |
| 105 | 3 MCBAIN STREET HORSHAM      |                                                                          | 0.034 | 0.154 |                       |

| No  | Address                     | Depth of building over floor flooding for each AEP (1 in year) event (m) |       |       | Type of building      |
|-----|-----------------------------|--------------------------------------------------------------------------|-------|-------|-----------------------|
|     |                             | 50                                                                       | 100   | 200   |                       |
| 106 | 19 LAWRENCE STREET HORSHAM  |                                                                          | 0.032 | 0.117 |                       |
| 107 | 39 CULLIVER STREET HORSHAM  |                                                                          | 0.032 | 0.116 |                       |
| 109 | 13 RENNISON STREET HORSHAM  |                                                                          | 0.031 | 0.124 |                       |
| 110 | 1/8 RENNISON STREET HORSHAM |                                                                          | 0.031 | 0.124 | ADDRESS INCONSISTENCY |
| 111 | 57 BAILLIE STREET HORSHAM   |                                                                          | 0.03  | 0.123 |                       |
| 112 | 17 PRYORS ROAD HORSHAM      |                                                                          | 0.029 | 0.103 |                       |
| 113 | 16 KNOWLES STREET HORSHAM   |                                                                          | 0.027 | 0.112 | Brick - concrete slab |
| 114 | 13 LAWRENCE STREET HORSHAM  |                                                                          | 0.025 | 0.112 |                       |
| 115 | 70 WILLIAMS ROAD HORSHAM    |                                                                          | 0.025 | 0.108 |                       |
| 116 | 56 PRYORS ROAD HORSHAM      |                                                                          | 0.025 | 0.093 |                       |
| 117 | 32 MENADUE STREET HORSHAM   |                                                                          | 0.024 | 0.143 |                       |
| 118 | 1 REGAL COURT HORSHAM       |                                                                          | 0.024 | 0.11  |                       |
| 119 | SELKIRK STREET HORSHAM      |                                                                          | 0.021 | 0.161 |                       |
| 120 | 4 SHALOM PLACE HORSHAM      |                                                                          | 0.02  | 0.114 |                       |
| 121 | 3 KNOWLES STREET HORSHAM    |                                                                          | 0.02  | 0.106 |                       |
| 122 | 5 SHALOM PLACE HORSHAM      |                                                                          | 0.019 | 0.113 |                       |
| 123 | 16 LAWRENCE STREET HORSHAM  |                                                                          | 0.018 | 0.104 |                       |
| 124 | 9 WEBSTER STREET HORSHAM    |                                                                          | 0.017 | 0.101 |                       |
| 125 | TRINITY DRIVE HORSHAM       |                                                                          | 0.016 | 0.11  |                       |
| 126 | 3 GLANCY STREET HORSHAM     |                                                                          | 0.014 | 0.107 |                       |
| 127 | 14 CARR STREET HORSHAM      |                                                                          | 0.014 | 0.106 |                       |
| 128 | 8 SCHIER COURT HORSHAM      |                                                                          | 0.014 | 0.105 |                       |
| 129 | 6 SHALOM PLACE HORSHAM      |                                                                          | 0.013 | 0.108 |                       |
| 130 | 7 SHALOM PLACE HORSHAM      |                                                                          | 0.013 | 0.107 |                       |
| 131 | 10 TRINITY DRIVE HORSHAM    |                                                                          | 0.01  | 0.09  |                       |
| 132 | 8 TRINITY DRIVE HORSHAM     |                                                                          | 0.008 | 0.095 |                       |
| 133 | 25 RENNISON STREET HORSHAM  |                                                                          | 0.007 | 0.105 |                       |
| 134 | 20 RENNISON STREET HORSHAM  |                                                                          | 0.002 | 0.098 |                       |
| 135 | 5 KNOWLES STREET HORSHAM    |                                                                          | 0.001 | 0.087 |                       |
| 136 | SELKIRK STREET HORSHAM      |                                                                          |       | 0.169 |                       |
| 137 | 24 BRADSHAW STREET HORSHAM  |                                                                          |       | 0.168 | Colourbond - slab     |
| 138 | 03/24 CITRUS AVENUE HORSHAM |                                                                          |       | 0.131 | Brick - concrete slab |
| 139 | 02/24 CITRUS AVENUE HORSHAM |                                                                          |       | 0.131 | Brick - concrete slab |
| 140 | 01/24 CITRUS AVENUE HORSHAM |                                                                          |       | 0.111 | Brick - concrete slab |

| No  | Address                       | Depth of building over floor flooding for each AEP (1 in year) event (m) |     |       | Type of building      |
|-----|-------------------------------|--------------------------------------------------------------------------|-----|-------|-----------------------|
|     |                               | 50                                                                       | 100 | 200   |                       |
| 141 | 7 MELALEUCA PLACE HORSHAM     |                                                                          |     | 0.104 | Brick - concrete slab |
| 142 | 8 MELALEUCA PLACE HORSHAM     |                                                                          |     | 0.1   | Brick - concrete slab |
| 143 | CAMERON ROAD HORSHAM          |                                                                          |     | 0.096 |                       |
| 144 | 22 RENNISON STREET HORSHAM    |                                                                          |     | 0.089 |                       |
| 145 | 36 MENADUE STREET HORSHAM     |                                                                          |     | 0.087 |                       |
| 146 | 3 SHALOM PLACE HORSHAM        |                                                                          |     | 0.086 |                       |
| 147 | 6 MELALEUCA PLACE HORSHAM     |                                                                          |     | 0.085 | Brick - concrete slab |
| 148 | 29 ARNOTT STREET HORSHAM      |                                                                          |     | 0.083 |                       |
| 149 | 45 BAILLIE STREET HORSHAM     |                                                                          |     | 0.083 |                       |
| 150 | 13 STOCKTON DRIVE HORSHAM     |                                                                          |     | 0.082 |                       |
| 151 | 168B FIREBRACE STREET HORSHAM |                                                                          |     | 0.081 |                       |
| 152 | 04/24 CITRUS AVENUE HORSHAM   |                                                                          |     | 0.081 | Brick - concrete slab |
| 153 | 49 GILLESPIE STREET HORSHAM   |                                                                          |     | 0.08  |                       |
| 154 | 8 BANKSIA COURT HORSHAM       |                                                                          |     | 0.079 | Brick - concrete slab |
| 155 | 1 SHALOM PLACE HORSHAM        |                                                                          |     | 0.077 |                       |
| 156 | 34 ARNOTT STREET HORSHAM      |                                                                          |     | 0.074 |                       |
| 157 | 13 CARR STREET HORSHAM        |                                                                          |     | 0.073 |                       |
| 158 | 9 OLGA AVENUE HORSHAM         |                                                                          |     | 0.072 | Weatherboard - stumps |
| 159 | 168A FIREBRACE STREET HORSHAM |                                                                          |     | 0.071 |                       |
| 160 | 2 EDMONDS COURT HORSHAM       |                                                                          |     | 0.071 |                       |
| 161 | 2 SHALOM PLACE HORSHAM        |                                                                          |     | 0.07  |                       |
| 162 | 33 RENNISON STREET HORSHAM    |                                                                          |     | 0.069 |                       |
| 163 | 2 CARR STREET HORSHAM         |                                                                          |     | 0.064 |                       |
| 164 | 9 CULLIVER STREET HORSHAM     |                                                                          |     | 0.063 |                       |
| 165 | 100 Peppertree LANE HORSHAM   |                                                                          |     | 0.062 | Brick - concrete slab |
| 166 | 37 ARNOTT STREET HORSHAM      |                                                                          |     | 0.061 |                       |
| 167 | 8 MARGARET STREET HORSHAM     |                                                                          |     | 0.061 |                       |
| 168 | 81 WILLIAMS ROAD HORSHAM      |                                                                          |     | 0.061 |                       |
| 169 | 6 ROYAL COURT HORSHAM         |                                                                          |     | 0.059 |                       |
| 170 | 15 CARR STREET HORSHAM        |                                                                          |     | 0.058 |                       |
| 171 | 43 PRYORS ROAD HORSHAM        |                                                                          |     | 0.057 |                       |
| 172 | 2/1 KNOWLES STREET HORSHAM    |                                                                          |     | 0.056 |                       |
| 173 | 18 LAWRENCE STREET HORSHAM    |                                                                          |     | 0.056 |                       |
| 174 | 11 CULLIVER STREET HORSHAM    |                                                                          |     | 0.054 |                       |

| No  | Address                      | Depth of building over floor flooding for each AEP (1 in year) event (m) |     |       | Type of building      |
|-----|------------------------------|--------------------------------------------------------------------------|-----|-------|-----------------------|
|     |                              | 50                                                                       | 100 | 200   |                       |
| 175 | 7 GLANCY STREET HORSHAM      |                                                                          |     | 0.052 |                       |
| 176 | 2/98 Peppertree LANE HORSHAM |                                                                          |     | 0.051 | Brick - concrete slab |
| 177 | 6 KNOWLES STREET HORSHAM     |                                                                          |     | 0.051 |                       |
| 178 | 5 MELALEUCA PLACE HORSHAM    |                                                                          |     | 0.051 | Brick - concrete slab |
| 179 | 73 PRYORS ROAD HORSHAM       |                                                                          |     | 0.048 |                       |
| 180 | 30 MENADUE STREET HORSHAM    |                                                                          |     | 0.046 |                       |
| 181 | 9 CARR STREET HORSHAM        |                                                                          |     | 0.045 |                       |
| 182 | 1/1 KNOWLES STREET HORSHAM   |                                                                          |     | 0.044 |                       |
| 183 | 13 GLANCY STREET HORSHAM     |                                                                          |     | 0.044 |                       |
| 184 | 15 VINE AVENUE HORSHAM       |                                                                          |     | 0.043 | Brick - concrete slab |
| 185 | 35 PRYORS ROAD HORSHAM       |                                                                          |     | 0.042 |                       |
| 186 | 1 ROYAL COURT HORSHAM        |                                                                          |     | 0.041 | Brick - concrete slab |
| 187 | 1 HESLOP COURT HORSHAM       |                                                                          |     | 0.039 | Brick - concrete slab |
| 188 | 4 WEBSTER STREET HORSHAM     |                                                                          |     | 0.037 |                       |
| 189 | 20 MENADUE STREET HORSHAM    |                                                                          |     | 0.037 |                       |
| 190 | 5 VINE AVENUE HORSHAM        |                                                                          |     | 0.036 | Brick - concrete slab |
| 191 | 8 KNOWLES STREET HORSHAM     |                                                                          |     | 0.035 |                       |
| 192 | 3 GREVILLEA COURT HORSHAM    |                                                                          |     | 0.035 | Brick - concrete slab |
| 193 | 7 BANKSIA COURT HORSHAM      |                                                                          |     | 0.034 | Brick - concrete slab |
| 194 | 55 BAILLIE STREET HORSHAM    |                                                                          |     | 0.033 |                       |
| 195 | 29 CITRUS AVENUE HORSHAM     |                                                                          |     | 0.033 | Brick - concrete slab |
| 196 | 11 OLGA AVENUE HORSHAM       |                                                                          |     | 0.032 |                       |
| 197 | 8 SHALOM PLACE HORSHAM       |                                                                          |     | 0.031 |                       |
| 198 | 2 REGAL COURT HORSHAM        |                                                                          |     | 0.03  |                       |
| 199 | 6 LESKIE CLOSE HORSHAM       |                                                                          |     | 0.03  | Brick - concrete slab |
| 200 | 4 MELALEUCA PLACE HORSHAM    |                                                                          |     | 0.03  | Brick - concrete slab |
| 201 | 39 PRYORS ROAD HORSHAM       |                                                                          |     | 0.03  |                       |
| 202 | 2 BAKER STREET HORSHAM       |                                                                          |     | 0.027 |                       |
| 203 | 9 SHALOM PLACE HORSHAM       |                                                                          |     | 0.026 |                       |
| 204 | 45 GILLESPIE STREET HORSHAM  |                                                                          |     | 0.025 |                       |
| 205 | 7 GREVILLEA COURT HORSHAM    |                                                                          |     | 0.025 | Brick - concrete slab |
| 206 | 3 MARDON DRIVE HORSHAM       |                                                                          |     | 0.024 |                       |
| 207 | 11 STOCKTON DRIVE HORSHAM    |                                                                          |     | 0.022 |                       |
| 208 | 26 RENNISON STREET HORSHAM   |                                                                          |     | 0.021 |                       |
| 209 | 52 WALNUT AVENUE HORSHAM     |                                                                          |     | 0.021 | Brick - concrete slab |
| 210 | 7 KNOWLES STREET HORSHAM     |                                                                          |     | 0.019 |                       |
| 211 | 4 MARGARET STREET HORSHAM    |                                                                          |     | 0.019 |                       |
| 212 | 1 CULLIVER STREET HORSHAM    |                                                                          |     | 0.018 |                       |
| 213 | 1 O'DONNELL COURT HORSHAM    |                                                                          |     | 0.017 |                       |

| No  | Address                      | Depth of building over floor flooding for each AEP (1 in year) event (m) |     |       | Type of building      |
|-----|------------------------------|--------------------------------------------------------------------------|-----|-------|-----------------------|
|     |                              | 50                                                                       | 100 | 200   |                       |
| 214 | 14A STOCKTON DRIVE HORSHAM   |                                                                          |     | 0.016 |                       |
| 215 | 3 ROYAL COURT HORSHAM        |                                                                          |     | 0.015 | Brick - concrete slab |
| 216 | 4 TRINITY DRIVE HORSHAM      |                                                                          |     | 0.015 |                       |
| 217 | 10 SHALOM PLACE HORSHAM      |                                                                          |     | 0.015 |                       |
| 218 | 8 GREVILLEA COURT HORSHAM    |                                                                          |     | 0.013 | Brick - concrete slab |
| 219 | 5 COOK STREET HORSHAM        |                                                                          |     | 0.011 |                       |
| 221 | 4/06 LAWRENCE STREET HORSHAM |                                                                          |     | 0.009 |                       |
| 222 | 1A EDMONDS DRIVE HORSHAM     |                                                                          |     | 0.008 |                       |
| 223 | 2 WEBSTER STREET HORSHAM     |                                                                          |     | 0.006 |                       |
| 224 | 16 WILLIAMS ROAD HORSHAM     |                                                                          |     | 0.006 | Weatherboard - stumps |
| 225 | 4 EDMONDS COURT HORSHAM      |                                                                          |     | 0.005 |                       |
| 226 | 5 LESKIE CLOSE HORSHAM       |                                                                          |     | 0.004 | Brick - concrete slab |
| 227 | 3 LESKIE CLOSE HORSHAM       |                                                                          |     | 0.003 |                       |
| 228 | 47 BAILLIE STREET HORSHAM    |                                                                          |     | 0.002 |                       |
| 229 | 5 EDMONDS COURT HORSHAM      |                                                                          |     | 0.002 |                       |
| 230 | 2 WETTENHALL STREET HORSHAM  |                                                                          |     | 0.001 |                       |
| 231 | 11 WEBSTER STREET HORSHAM    |                                                                          |     | 0.001 |                       |

## Appendix C3: Riverside Flood Emergency Plan

Riverside is a small Victorian Rural Location, classified as a suburb within the local government area of Horsham. It is located approximately 271kms from Melbourne covering an area of 27.0033 square kilometres. At the last Census Riverside had a recorded population of 276 residents

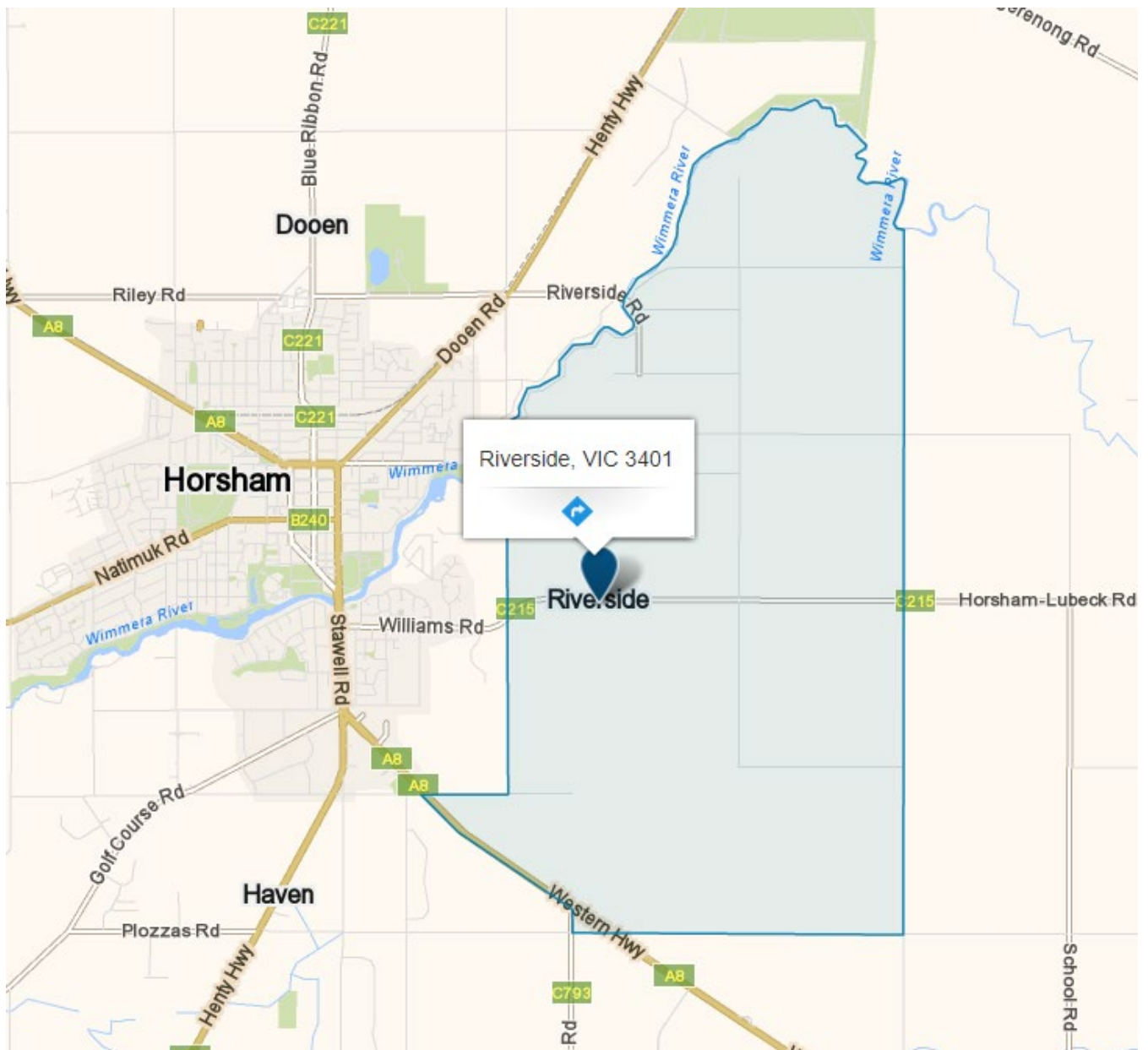


Figure 32. Riverside township.

## Riverside Flood Impacts and Required Actions

The Riverside area has yet to have a flood study dedicated to it, it is anticipated that it will be included in a wider study to be undertaken for the Wimmera Catchment (Horsham and surrounds). Given that no specific flood study has been undertaken for stormwater flooding in Riverside, flood risk information provided below was sourced from historic flood information provided by the Horsham City Council, Wimmera CMA, Horsham VICSES Unit and the VICSES Request for Assistance Database.

For additional flood risk information refer to the Riverside Flood Intelligence Card, table, and maps below.

**Table 17. Riverside key assets at risk of flooding.**

| Asset register                                                                                                |                                           |                                                                                                                                                                                                                                                              |                                                                  |                 |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------|
| Asset Name and location                                                                                       | Annual Exceedance Probability (1 in year) | Consequence / Impact                                                                                                                                                                                                                                         | Mitigation/ Action                                               | Lead Agency     |
| Residence 318 Rokeskys Rd Below floor flooding                                                                | 5 year flood (stormwater)                 | Roads impacted. <ul style="list-style-type: none"> <li>Riverside Road 0.46m</li> <li>Heards Rd 0.1m</li> <li>Rokeskys Rd 0.01m</li> <li>Peels Rd 0.07m</li> </ul>                                                                                            | Deploy road closure/Water over road signs as needed.             | Council         |
| Deeper and more extensive flooding along Heards Rd, Peels Rd, Rokeskys Rd, Horsham Lubeck Rd and Riverside Rd | 10 year flood (stormwater)                | Roads impacted. <ul style="list-style-type: none"> <li>Riverside Road 0.66m</li> <li>Heards Rd 0.27m</li> <li>Rokeskys Rd 0.1m</li> <li>Peels Rd 0.39m</li> <li>School Rd 0.07m</li> <li>Horsham Lubeck Rd 0.24m</li> <li>Riverside East Rd 0.1m</li> </ul>  | Sandbag building as needed. Deploy road closure signs as needed. | VICSES /Council |
| 318 Rokeskys Rd flooded above floor.<br>98 Heards Rd Flooding below floor                                     | 20 year flood (stormwater)                | Roads impacted. <ul style="list-style-type: none"> <li>Riverside Road 0.83m</li> <li>Heards Rd 0.38m</li> <li>Rokeskys Rd 0.27m</li> <li>Peels Rd 0.56m</li> <li>School Rd 0.24m</li> <li>Horsham Lubeck Rd 0.54</li> <li>Riverside East Rd 0.24</li> </ul>  | Sandbag building as needed. Deploy road closure signs as needed. | VICSES /Council |
| 88 Longerenong Rd flooded above floor.<br>164 Riverside Rd, 7 Peels Rd Flooded below floor                    | 50 year flood (stormwater)                | Roads impacted. <ul style="list-style-type: none"> <li>Riverside Road 0.98m</li> <li>Heards Rd 0.48m</li> <li>Rokeskys Rd 0.38m</li> <li>Peels Rd 0.72m</li> <li>School Rd 0.25m</li> <li>Horsham Lubeck Rd 0.56</li> <li>Riverside East Rd 0.33</li> </ul>  | Sandbag building as needed. Deploy road closure signs as needed. | VICSES /Council |
| 95 Heard Rd, 164 Riverside Rd flooded above floor.<br>63 Heards Rd, 40 Peels Rd flooded below floor           | 100 year flood (stormwater)               | Roads impacted. <ul style="list-style-type: none"> <li>Riverside Road 1.10m</li> <li>Heards Rd 0.59m</li> <li>Rokeskys Rd 0.46m</li> <li>Peels Rd 0.85m</li> <li>School Rd 0.26m</li> <li>Horsham Lubeck Rd 0.61m</li> <li>Riverside East Rd 0.5m</li> </ul> | Sandbag building as needed. Deploy road closure signs as needed. | VICSES /Council |

For more detailed information regarding buildings and roads impacted refer to the Riverside Flood Intelligence Card below.

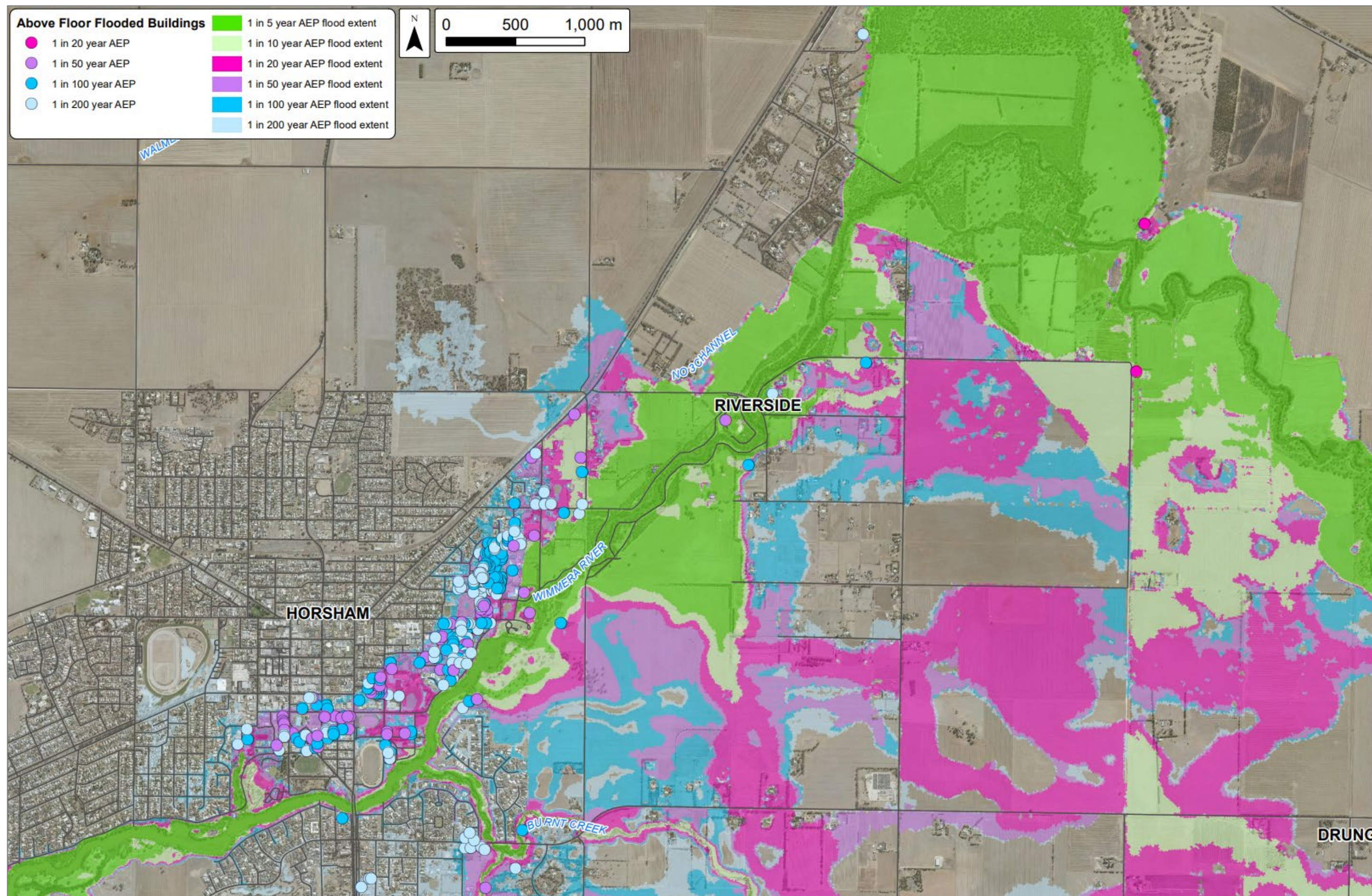


Figure 33. Riverside assets impacted by flooding for a range of design flood events (Water Technology 2019).

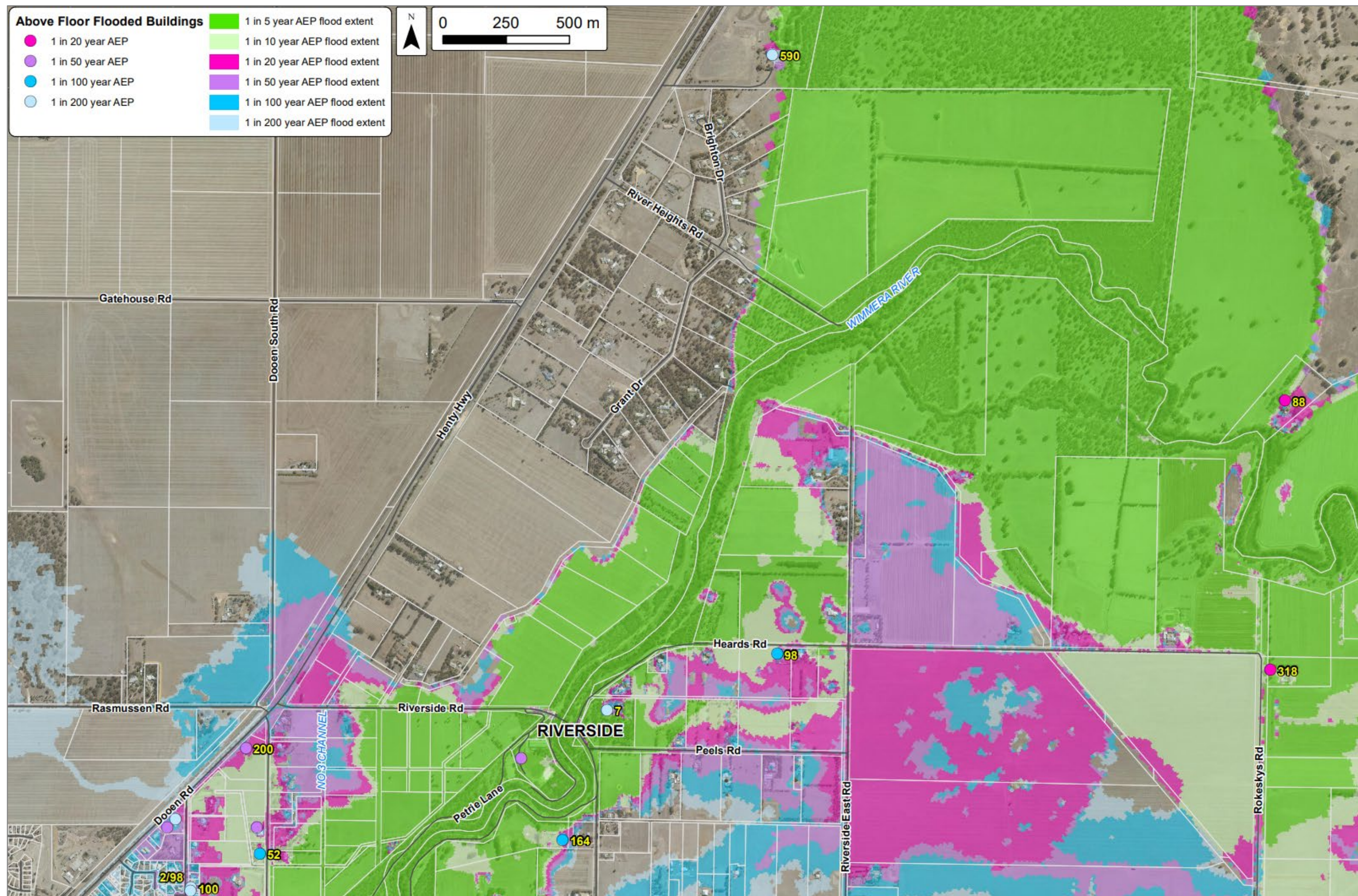


Figure 34. Riverside assets impacted by flooding for a range of design flood events (Water Technology 2019).

**Table 18. Riverside Flood Intelligence Card (Wimmera River)**

| Flood travel time                                 |                                                 |                                           |                             |                                                                                  | Stormwater flooding time from start of rain to flooding 2-3 hours                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                   |                                                                                                                                                                                                               |                                                                                                                                      |
|---------------------------------------------------|-------------------------------------------------|-------------------------------------------|-----------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
|                                                   |                                                 |                                           |                             |                                                                                  | Time between Glenorchy peak and steep rise in Riverside is 1 – 2 days                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                   |                                                                                                                                                                                                               |                                                                                                                                      |
|                                                   |                                                 |                                           |                             |                                                                                  | Time between Glenorchy to Walmer peak 3.2 to 3.8 days                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                   |                                                                                                                                                                                                               |                                                                                                                                      |
|                                                   |                                                 |                                           |                             |                                                                                  | Riverine flooding duration: 2 - 3 days                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                   |                                                                                                                                                                                                               |                                                                                                                                      |
| Wimmera River at Glenorchy gauge height 415201(m) | Wimmera River at Walmer gauge height 415200 (m) | Annual Exceedance Probability (1 in year) | Horsham Design Flows (ML/d) | Horsham damages total number of properties flooded (above floor) Water Tech 2019 | Consequences/ Impact/ Actions                                                                                                                                                                                                                                                                                                                          | Houses/ buildings / isolated                                                                                                                                                      | Roads Impacted                                                                                                                                                                                                | Action                                                                                                                               |
|                                                   | 2.47                                            |                                           | 5,154                       |                                                                                  |                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                   |                                                                                                                                                                                                               |                                                                                                                                      |
| 4                                                 | 2.8                                             | Minor flood level                         |                             |                                                                                  |                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                   |                                                                                                                                                                                                               |                                                                                                                                      |
| 4.5                                               | 3.1                                             | Moderate flood level                      |                             |                                                                                  |                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                   |                                                                                                                                                                                                               |                                                                                                                                      |
| 4.81                                              | 3.33                                            | September 2010                            |                             |                                                                                  |                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                   |                                                                                                                                                                                                               | Council clear debris from waterway crossings, drains and culverts to reduce blockages.                                               |
| 4.89                                              | 3.36                                            | September 2016                            |                             |                                                                                  |                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                   |                                                                                                                                                                                                               |                                                                                                                                      |
| 4.68                                              | 3.44                                            | 5                                         | 13,100                      | 74 (0)                                                                           | A house at 318 Rokeskys Road is flooded below floor. Flooding breaks out of Dooen Swamp and the Wimmera River causing shallow flooding to impact Heards Road, Peels Road and Rokeskys Road. Flooding starts to impact the Riverside Recreation Reserve. Flooding may cut access to Riverside Road.                                                     | <b>Buildings flooded below floor.</b><br>318 Rokeskys Road                                                                                                                        | Riverside Road depth 0.46m<br>Heards Road depth 0.1m<br>Rokeskys Road depth 0.01m<br>Peels Road depth 0.17m<br>School Road depth 0m<br>Horsham Lubeck Road depth 0m<br>Riverside East Road depth 0m           | VICSES activate ground flood observers as needed.                                                                                    |
| 4.8                                               | 3.6                                             | Major flood level                         |                             |                                                                                  |                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                   |                                                                                                                                                                                                               |                                                                                                                                      |
| 4.81                                              | 3.70                                            | 10                                        | 19,200                      | 111 (0)                                                                          | Deeper and more extensive flooding along Heards Road, Peels Road, Rokeskys Road, Horsham-Lubeck Road and Riverside Road. Flooding may cut access to additional roads, these include Peels Road, Heards Road, and the Horsham-Lubeck Road. There are many properties impacted by flooding, flooding will cause a large number of houses to be isolated. |                                                                                                                                                                                   | Riverside Road depth 0.66m<br>Heards Road depth 0.27m<br>Rokeskys Road depth 0.1m<br>Peels Road depth 0.39m<br>School Road depth 0.07m<br>Horsham Lubeck Road depth 0.24m<br>Riverside East Road depth 0.1m   | Victoria Police: evacuate houses at risk of being isolated.                                                                          |
| 4.89                                              | 3.92                                            | 20                                        | 25,000                      | 172 (1)                                                                          | A building at 318 Rokeskys Road is flooded above floor. Flooding may cut access to additional roads, these include Rokeskys Road, School Road, and Riverside East Road. Flooding may cause most houses in the Riverside area to be isolated.                                                                                                           | <b>Building flooded above floor.</b><br>318 Rokeskys Road<br><br><b>Additional buildings flooded below floor.</b><br>98 HEARDS ROAD                                               | Riverside Road depth 0.83m<br>Heards Road depth 0.38m<br>Rokeskys Road depth 0.27m<br>Peels Road depth 0.56m<br>School Road depth 0.24m<br>Horsham Lubeck Road depth 0.54m<br>Riverside East Road depth 0.24m | Victoria Police: evacuate house at risk of flooding above floor and most houses in the Riverside area are at risk of being isolated. |
| 4.96                                              | 4.15                                            | 50                                        | 31,900                      | 578 (2)                                                                          | An additional building at 88 LONGERNONG ROAD is flooded above floor.                                                                                                                                                                                                                                                                                   | <b>1 additional building flooded above floor.</b><br>88 LONGERNONG ROAD<br><br><b>Additional buildings flooded below floor.</b><br>164 RIVERSIDE ROAD, 7 PEELS ROAD, CAMERON ROAD | Riverside Road depth 0.98m<br>Heards Road depth 0.48m<br>Rokeskys Road depth 0.38m<br>Peels Road depth 0.72m<br>School Road depth 0.25m<br>Horsham Lubeck Road depth 0.56m<br>Riverside East Road depth 0.33m |                                                                                                                                      |

|      |      |              |        |         |                                                     |                                                                                                                                                                                                      |                                                                                                                                                                                                               |  |
|------|------|--------------|--------|---------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 5.03 | 4.27 | January 2011 |        |         |                                                     |                                                                                                                                                                                                      |                                                                                                                                                                                                               |  |
| 5.01 | 4.29 | 100          | 36,500 | 773 (5) | Three additional buildings are flooded above floor. | <b>3 additional buildings flooded above floor.</b><br>98 HEARDS ROAD,<br>CAMERON ROAD,<br>164 RIVERSIDE ROAD<br><b>Additional buildings flooded below floor.</b><br>63 HEARDS ROAD, 40<br>PEELS ROAD | Riverside Road depth 1.10m<br>Heards Road depth 0.59m<br>Rokeskys Road depth 0.46m<br>Peels Road depth 0.85m<br>School Road depth 0.26m<br>Horsham Lubeck Road depth 0.61m<br>Riverside East Road depth 0.5m  |  |
| 5.05 | 4.40 | 200          | 40,700 | 890 (7) | Two additional buildings are flooded above floor.   | <b>2 additional buildings flooded above floor.</b><br>7 PEELS ROAD, 590 Henty Hwy, Dooen                                                                                                             | Riverside Road depth 1.16m<br>Heards Road depth 0.63m<br>Rokeskys Road depth 0.53m<br>Peels Road depth 0.91m<br>School Road depth 0.32m<br>Horsham Lubeck Road depth 0.65m<br>Riverside East Road depth 0.56m |  |

### Table 19. Riverside Property Inundation (Water Technology 2019)

Colours used in the table below are the same used in the Riverside flood risk maps above. Red, buildings flooded above floor in a 1 in 20-year AEP. Yellow, buildings flooded above floor in a 1 in 50-year AEP flood event, etc.

| No | Address              | Depth of building over floor flooding for each AEP (1 in year) event (m) |       |       |       | Type of building |
|----|----------------------|--------------------------------------------------------------------------|-------|-------|-------|------------------|
|    |                      | 20                                                                       | 50    | 100   | 200   |                  |
| 1  | 318 ROKESKYS ROAD    | 0.04                                                                     | 0.086 | 0.129 | 0.145 | Residential      |
| 2  | 88 LONGERENONG ROAD  |                                                                          | 0.148 | 0.274 | 0.317 | Residential      |
| 3  | 164 RIVERSIDE ROAD   |                                                                          |       | 0.105 | 0.165 | Residential      |
| 4  | CAMERON ROAD         |                                                                          |       | 0.092 | 0.174 | Residential      |
| 5  | 98 HEARDS ROAD       |                                                                          |       | 0.044 | 0.091 | Residential      |
| 6  | 7 PEELS ROAD         |                                                                          |       |       | 0.049 | Residential      |
| 7  | 590 Henty Hwy, Dooen |                                                                          |       |       | 0.047 | Commercial       |

## Appendix C4: Quantong Flood Emergency Plan

Quantong is a small Victorian Rural Location; it is located approximately 286kms from Melbourne and 15kms west of Horsham.

Flooding at Quantong is generally a result of over bank flows from the Wimmera River. The Wimmera River between Horsham and Quantong is feed from runoff from the Northern Grampians ranges which is delivered via several tributaries which include Burnt Creek, Bungalally Creek, MacKenzie River, Norton Creek, Darragan Creek and Sandy creek.

The January 2011 flood event was the largest recent flood event recorded in Quantong.

There are a number of stream flow gauges measuring stream flows in the Wimmera River and its tributaries between Horsham and Quantong.

415200 Wimmera River- Horsham (Walmer)

415261 Wimmera River – Quantong

415202 Mackenzie River – Wartook Reservoir

415223 Burnt Creek – Wonwondah East

415249 Bungalally Creek- McKenzie creek

415273 Norton Creek – Lower Norton

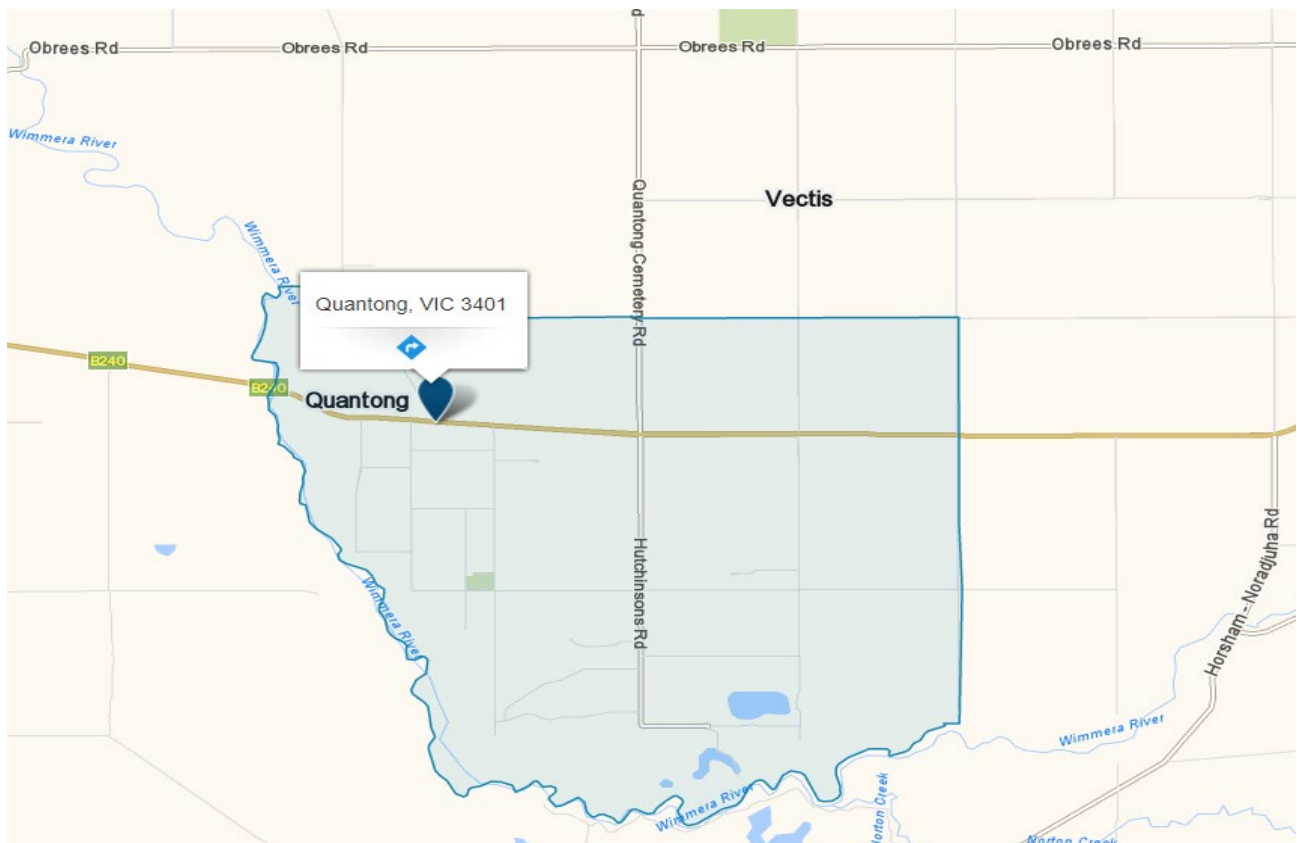
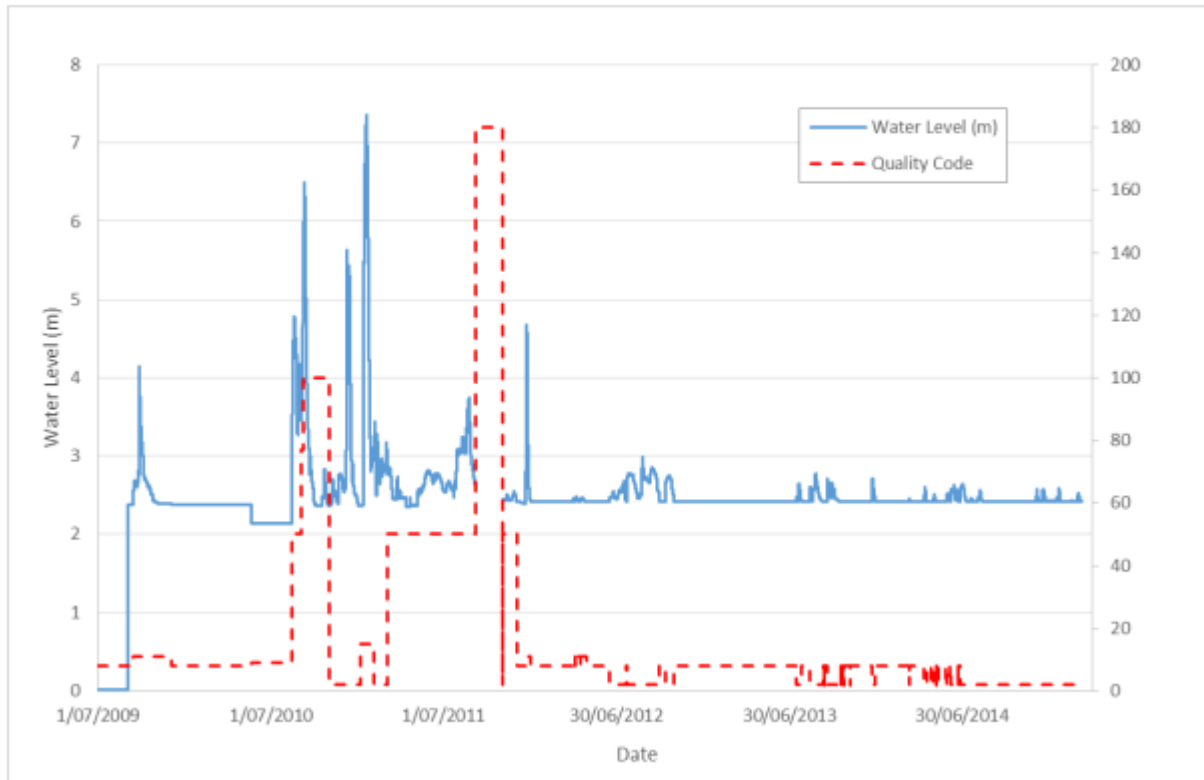


Figure 35. Quantong Locality Map

## Historic Flood Events

The Wimmera River at Quantong is a water level gauge only. The gauge has a record spanning from July 2009 to March 2015. The gauge record shows the highest recorded level was 7.364 m on 18th January 2011. This event had a Thiess Quality Code of 15, indicating minor editing. There is a small period of gauge record where no heights were recorded due to equipment malfunction in September, October, and November 2011. The gauged heights and Thiess Quality Codes are shown in Figure 4-8. Given lack of flows and short period of available record no high flow statistical analysis can be completed at the Quantong Gauge, however, the record will be useful for calibrating the hydraulic model to height and timing.



**Figure 36. Quantong historic flood events.**

The January 2011 flood was Quantong largest recent flood event on record, estimated to be approximately a 1 in 100 AEP event. Prior to this flood event the catchment was already wet due to recent flood events in 2010.

## Quantong Flood Impacts and Required Actions

Flood risk information provided below was sourced from historic flood information provided by the Horsham VIC SES Unit and the Horsham Rural City Council as well as the Horsham and Wartook Valley Flood Study (2019) and Lower Wimmera Flood Study (2016). Assets at risk of riverine flooding were estimated using the 1 in 100-year AEP flood extent. It's important to note the information used to estimate assets at risk of flooding below has a low level of accuracy and should be used as a guide only.

For additional flood risk information refer to the Quantong Flood Intelligence Card,

**Table 20. Quantong key assets at risk of flooding.**

| Asset register                                                                                                                                                                                          |                                           |                                                                                                             |                                                                    |                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------------------|
| Asset Name and location                                                                                                                                                                                 | Annual Exceedance Probability (1 in year) | Consequence / Impact                                                                                        | Mitigation/ Action                                                 | Lead Agency                  |
| 176 Hughes St flooded below floor                                                                                                                                                                       | 5 year Flood                              | Road Impacts<br>Horsham-Noradjuha Rd 0.2m<br>Hateley Rd 0.2m                                                | Sandbag as required                                                | VIC SES                      |
| 165 Horsham Noradjuha Road, Vectis, Flooded below floor                                                                                                                                                 | 10 Year Flood                             | Road Impacts<br>Horsham-Noradjuha Rd 0.6m<br>Struthers Avenue 0.2m<br>Hateley Rd 0.4m                       | Deploy road closure signs as needed.                               | Council/Vic Roads            |
| 38 Creasey Court, Vectis, 185 Horsham Noradjuha Rd Vectis flooded below floor.<br><br>198 Hughes Rd Quantong may be isolated.                                                                           | 20 Year Flood                             | Road Impacts<br>Horsham-Noradjuha Rd 0.7m<br>Struthers Avenue 0.28m<br>Hateley Rd 0.6m                      | Deploy Road closure signs as required.<br>Sand Bagging as required | Council/Vic Roads<br>VIC SES |
| 39 Creasey Crt Vectis.<br>1771 Obrees Rd Natimuk flooded below floor.<br><br>87, 96, 133, Blocks Rd Quantong. 55 Struthers Av Quantong, 378 Hateleys Rd Natimuk. 166 Hughes Rd Quantong may be isolated | 50 year flood                             | Road Impacts<br>Horsham-Noradjuha Rd 1.0m<br>Struthers Avenue 0.5m<br>Blocks Road 0.4M<br>Hateley Rd 0.8m   | Deploy Road closure signs as required.<br>Sand Bagging as required | Council/Vic Roads<br>VIC SES |
| 63 Bal Rd Lower Norton, 41 Creasey Court Vectis, 55 Struthers Av Quantong, 133 Blocks Rd Quantong flooded below floor                                                                                   | 100 year flood                            | Road Impacts<br>Horsham-Noradjuha Rd 1.1m<br>Struthers Avenue 0.7m<br>Blocks Road 0.45M<br>Hateley Rd 0.89m | Deploy Road closure signs as required.<br>Sand Bagging as required | Council/Vic Roads<br>VIC SES |

For more detailed information regarding buildings and roads impacted refer to the Quantong Flood Intelligence Card below and flood impact maps below. Also refer to the Quantong flood depth maps in **Appendix F..**

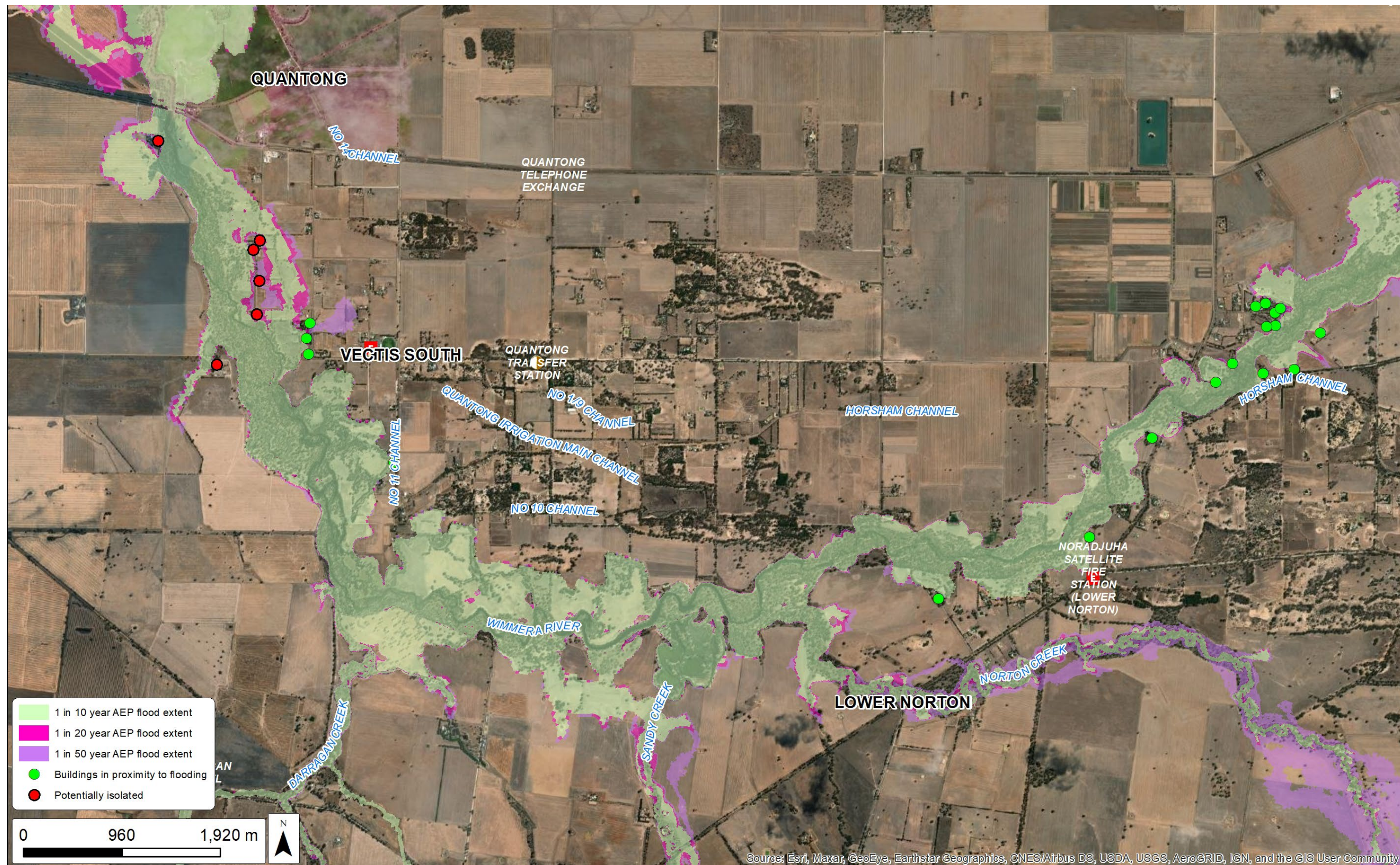


Figure 37. Quantong buildings close to flooding and potentially isolated for a range of flood extents.

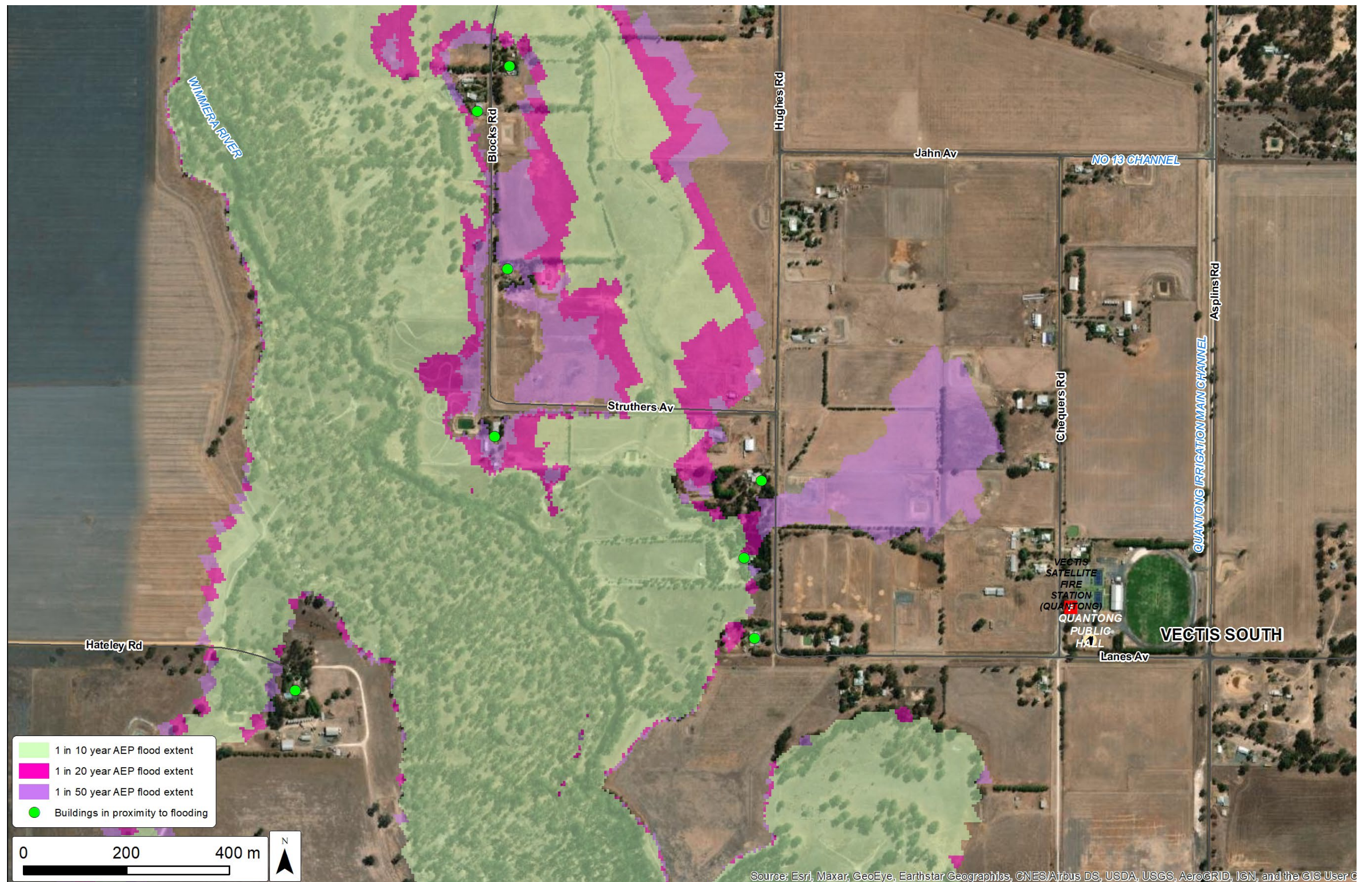


Figure 38. Quantong buildings close to flooding and potentially isolated for a range of flood extents.

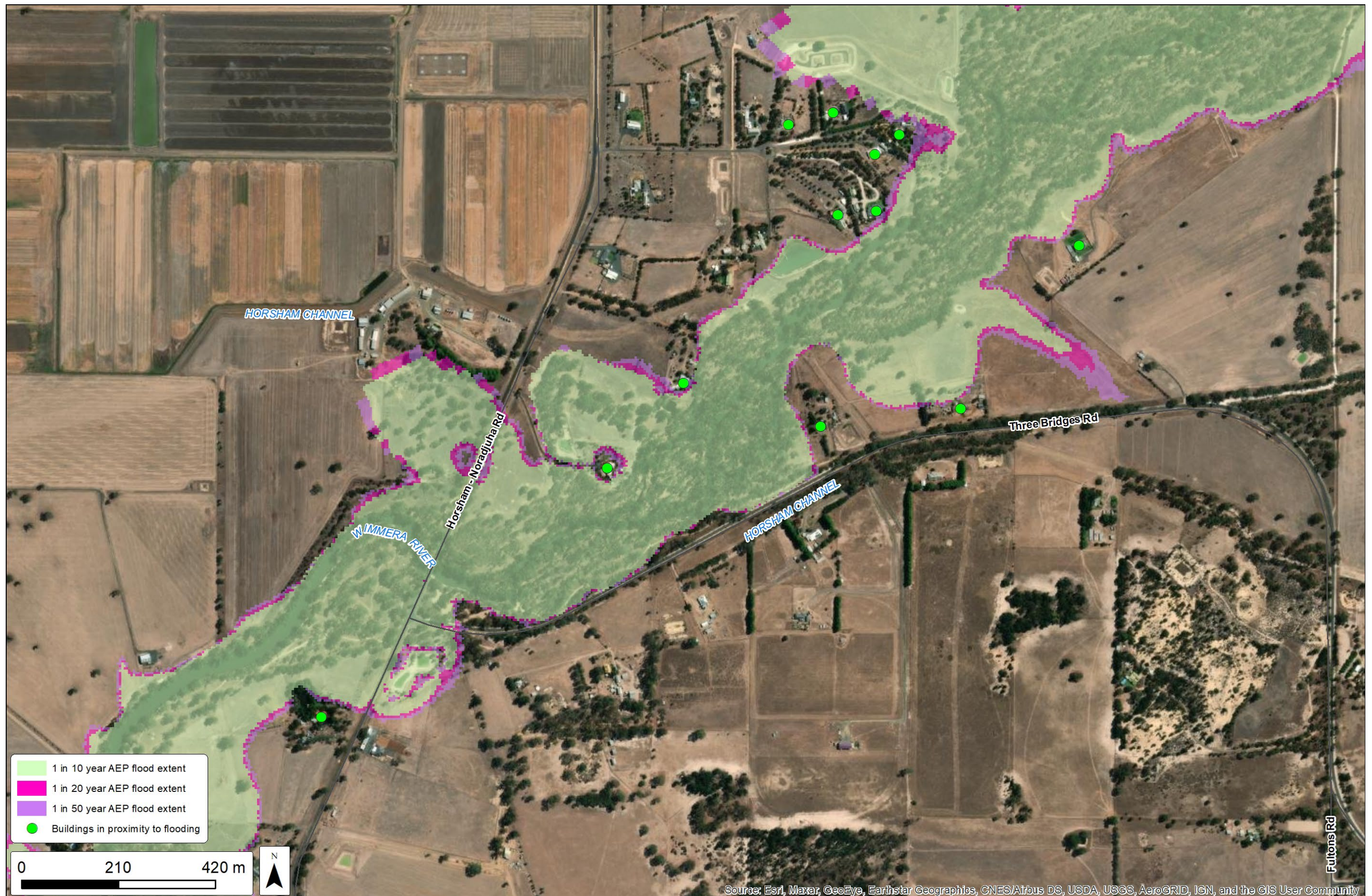


Figure 39. Quantong buildings close to flooding and potentially isolated for a range of flood extents.

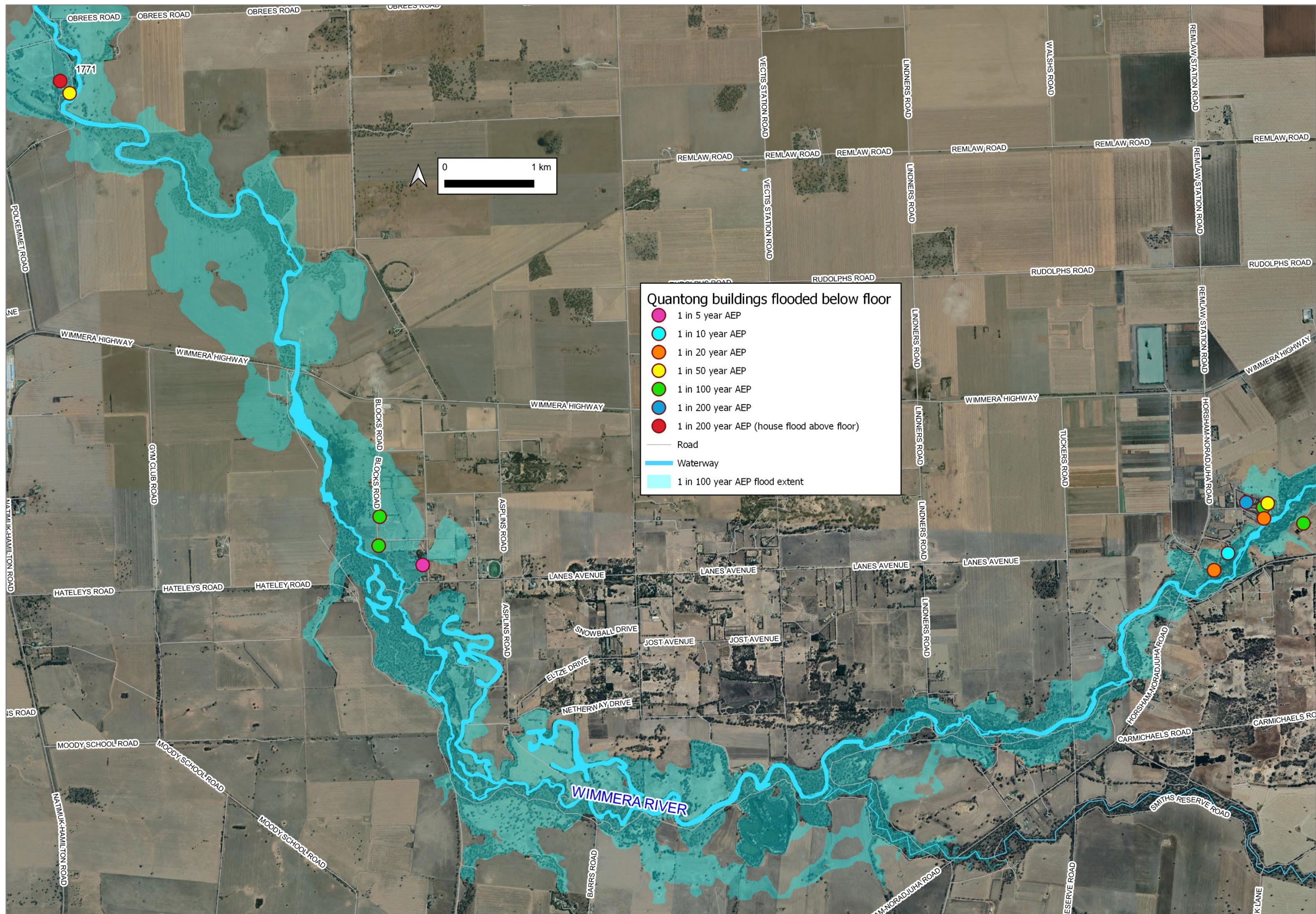


Figure 40. Quantong buildings flooded below floor.

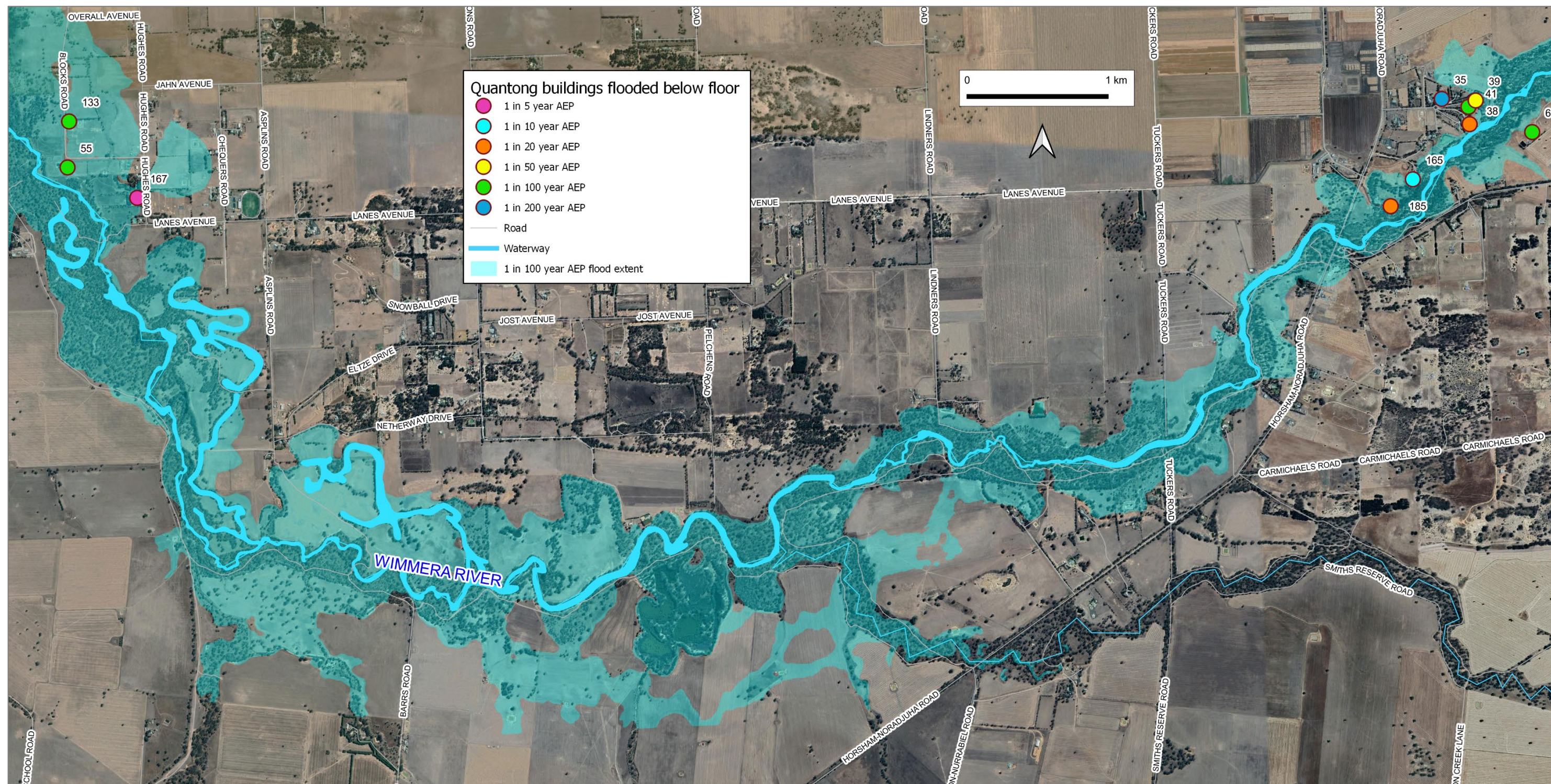


Figure 41. Quantong buildings flooded below floor.

Table 21. Quantong Flood Intelligence Card

| Flood travel time                                 |                                                 |                                           |                             |                                                                                   | Time between Glenorchy peak and steep rise in Quantong is 32 - 48 hours                                                                                                                                       |                                                                                                                                                                                                                                                                                       |                                                                                                                         |                                                                                                                                             |
|---------------------------------------------------|-------------------------------------------------|-------------------------------------------|-----------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
|                                                   |                                                 |                                           |                             |                                                                                   | Time between Glenorchy to Quantong peak 3.2 to 4 days                                                                                                                                                         |                                                                                                                                                                                                                                                                                       |                                                                                                                         |                                                                                                                                             |
|                                                   |                                                 |                                           |                             |                                                                                   | Riverine flooding duration: 2 - 3 days                                                                                                                                                                        |                                                                                                                                                                                                                                                                                       |                                                                                                                         |                                                                                                                                             |
| Wimmera River at Glenorchy gauge height 415201(m) | Wimmera River at Walmer gauge height 415200 (m) | Annual Exceedance Probability (1 in year) | Horsham Design Flows (ML/d) | Quantong damages total number of properties flooded (above floor) Water Tech 2019 | Consequences/ Impact/ Actions                                                                                                                                                                                 | Houses/ buildings flooded / isolated                                                                                                                                                                                                                                                  | Roads Impacted                                                                                                          | Action                                                                                                                                      |
|                                                   | 2.47                                            |                                           | 5,154                       |                                                                                   | The Horsham Weir will reach capacity, remove the Horsham Weir (open all gates and remove weir boards), to prevent flooding on adjacent property. Notify Hindmarsh Shire MEMO of increased downstream flows.   |                                                                                                                                                                                                                                                                                       |                                                                                                                         | Horsham Rural City Council remove Horsham Weir boards, notify Hindmarsh MEMO and certain downstream impacted landholders re stock movement. |
| 4                                                 | 2.8                                             | Minor flood level                         |                             |                                                                                   |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |                                                                                                                         |                                                                                                                                             |
| 4.5                                               | 3.1                                             | Moderate flood level                      |                             |                                                                                   |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |                                                                                                                         | Advise landholders around Quantong Bridge so that stock can be moved to higher ground.                                                      |
| 4.81                                              | 3.33                                            | September 2010                            |                             |                                                                                   |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |                                                                                                                         |                                                                                                                                             |
| 4.89                                              | 3.36                                            | September 2016                            |                             |                                                                                   |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |                                                                                                                         |                                                                                                                                             |
| 4.68                                              | 3.44                                            | 5                                         | 13,100                      | 72 (0)                                                                            | Deep flooding impacts a large number of properties adjacent to the Wimmera River. Minor roads and farmland are significantly impacted by flooding. Flooding may impact a house below floor along Hughes Road. | <b>Building flooded below floor:</b><br>176 HUGHES ROAD QUANTONG                                                                                                                                                                                                                      | Horsham-Noradjuha Road depth 0.2m<br>Struthers Avenue depth 0m<br>Blocks Road depth 0m<br>Hateley Road depth 0.2m       |                                                                                                                                             |
| 4.8                                               | 3.6                                             | Major flood level                         |                             |                                                                                   |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |                                                                                                                         |                                                                                                                                             |
| 4.81                                              | 3.70                                            | 10                                        | 19,200                      | 78 (0)                                                                            | Deep flooding may cut access to the Horsham-Noradjuha Road and Hateley Road. Flooding may impact a house below floor along Horsham-Noradjuha Road.                                                            | <b>X1 Additional building flooded below floor:</b><br>165 HORSHAM-NORADJUHA ROAD, VECTIS                                                                                                                                                                                              | Horsham-Noradjuha Road depth 0.6m<br>Struthers Avenue depth 0.2m<br>Blocks Road depth 0m<br>Hateley Road depth 0.4m     |                                                                                                                                             |
|                                                   | 3.79                                            |                                           |                             |                                                                                   |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |                                                                                                                         |                                                                                                                                             |
| 4.89                                              | 3.92                                            | 20                                        | 25,000                      | 86 (0)                                                                            | Deep flooding may cut access to Struthers Avenue and Blocks Road. Flooding may impact additional houses below floor along Horsham-Noradjuha Road and Creasey Court.                                           | <b>X2 Additional buildings flooded below floor:</b><br>38 CREASEY COURT, VECTIS, 185 HORSHAM-NORADJUHA ROAD, VECTIS<br><b>Building may be isolated.</b><br>198 HUGHES ROAD, QUANTONG (Wimmera Highway, west of river).                                                                | Horsham-Noradjuha Road depth 0.7m<br>Struthers Avenue depth 0.3m<br>Blocks Road depth 0.28m<br>Hateley Road depth 0.6m  |                                                                                                                                             |
| 4.96                                              | 4.15                                            | 50                                        | 31,900                      | 88 (0)                                                                            |                                                                                                                                                                                                               | <b>X2 Additional buildings flooded below floor:</b><br>39 CREASEY COURT, VECTIS<br>1771 OBREES ROAD, NATIMUK<br><b>Additional buildings may be isolated.</b><br>(87, 96, 133 BLOCKS ROAD QUANTONG, 55 STRUTHERS AVENUE QUANTONG, 378 HATELEYS ROAD NATIMUK, 166 HUGHES ROAD QUANTONG. | Horsham-Noradjuha Road depth 1m<br>Struthers Avenue depth 0.5m<br>Blocks Road depth 0.4m<br>Hateley Road depth 0.8m     |                                                                                                                                             |
| Lo5.03                                            | 4.27                                            | January 2011                              |                             |                                                                                   |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                       |                                                                                                                         |                                                                                                                                             |
| 5.01                                              | 4.29                                            | 100                                       | 36,500                      | 105 (0)                                                                           | Four additional houses may be flooded below floor along Ball Road, Creasey Court, Struthers Avenue and Blocks Road.                                                                                           | <b>X4 additional buildings flooded below floor:</b><br>63 BALL ROAD LOWER NORTON, 41 CREASEY COURT VECTIS, 55 STRUTHERS AVENUE QUANTONG, 133 BLOCKS ROAD QUANTONG.                                                                                                                    | Horsham-Noradjuha Road depth 1.1m<br>Struthers Avenue depth 0.7m<br>Blocks Road depth 0.45m<br>Hateley Road depth 0.89m |                                                                                                                                             |
| 5.05                                              | 4.40                                            | 200                                       | 40,700                      | 256 (1)                                                                           |                                                                                                                                                                                                               | <b>X1 building flooded above floor:</b><br>1771 OBREES ROAD, NATIMUK<br><b>Additional building flooded below floor:</b> 35 CREASEY COURT VECTIS,                                                                                                                                      | Horsham-Noradjuha Road depth 1.2m<br>Struthers Avenue depth 0.81m<br>Blocks Road depth 0.48m<br>Hateley Road depth 0.9m |                                                                                                                                             |

**Table 22. Quantong buildings flooded above floor (Water Technology 2016)**

The colour used in the table below are the same used in the Quantong flood risk maps above. Red, there is only one building flooded above floor in a 1 in 200 year AEP.

| No | Address                   | Depth of building over floor flooding for each AEP (1 in year) event (m) | Type of building |
|----|---------------------------|--------------------------------------------------------------------------|------------------|
|    |                           | 200                                                                      |                  |
| 1  | 1771 OBREES ROAD, NATIMUK | 0.06                                                                     | Shed             |

**Table 23. Quantong buildings flooded below floor (Water Technology 2016)**

Colours used in the table below are the same used in the Quantong flood risk maps above. Pink, buildings flooded below floor in a 1 in 5 year AEP. Light blue, buildings flooded below floor in a 1 in 10 year AEP flood event, etc.

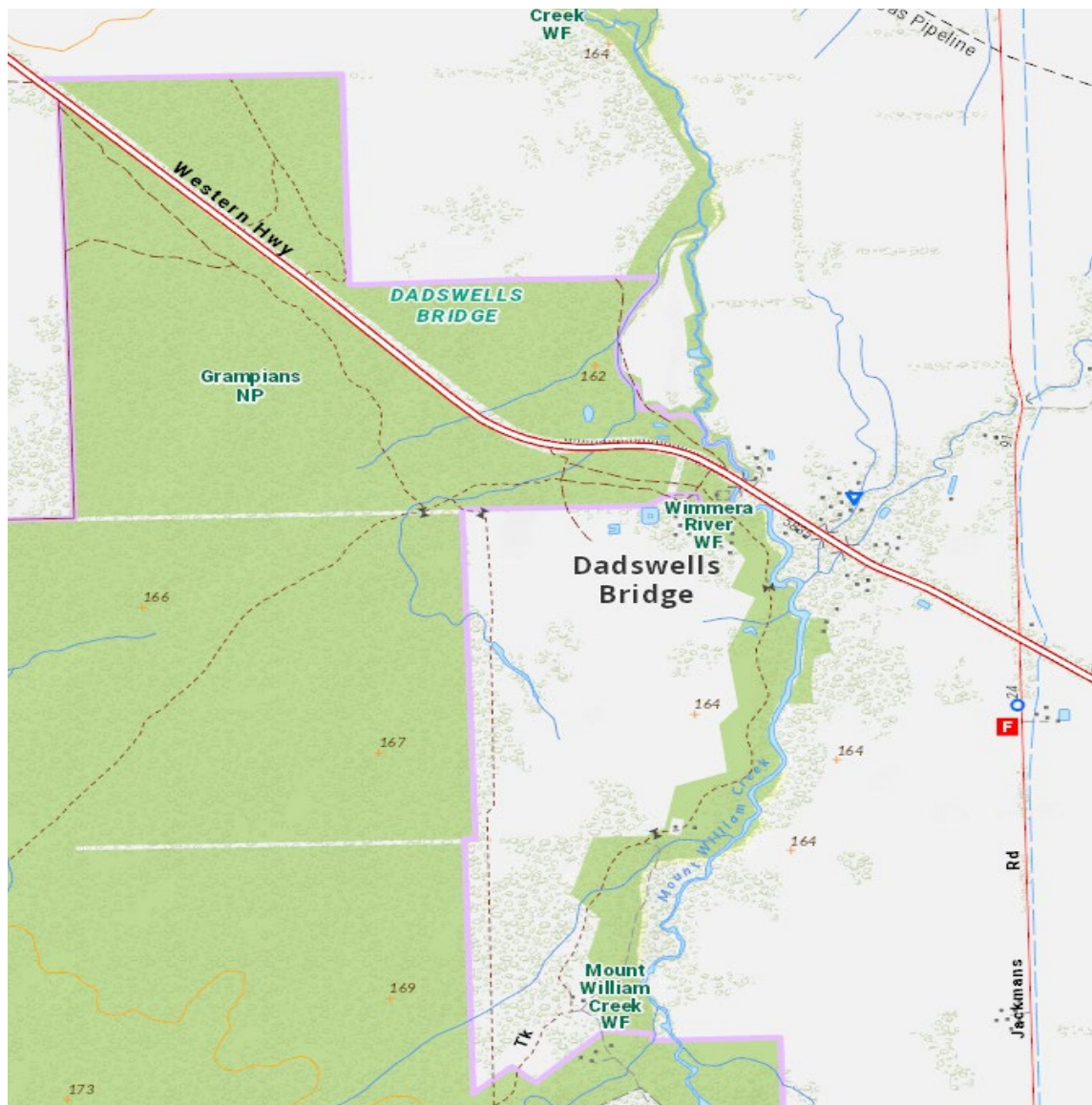
| No | Address                            | Depth of building below floor flooding for each AEP (1 in year) event (m) |        |        |        |        |        | Type of building                  |
|----|------------------------------------|---------------------------------------------------------------------------|--------|--------|--------|--------|--------|-----------------------------------|
|    |                                    | 5                                                                         | 10     | 20     | 50     | 100    | 200    |                                   |
| 1  | 176 HUGHES ROAD QUANTONG           | 117.41                                                                    | 117.74 | 117.99 | 118.18 | 118.28 | 118.38 | 2 STOREY WEATHERBOARD DWELLING    |
| 2  | 165 HORSHAM-NORADJUHA ROAD, VECTIS |                                                                           | 122.78 | 123.10 | 123.39 | 123.56 | 123.71 | WEATHERBOARD DWELLING             |
| 3  | 38 CREASEY COURT, VECTIS           |                                                                           |        | 123.24 | 123.55 | 123.74 | 123.89 | BRICK DWELLING                    |
| 4  | 185 HORSHAM-NORADJUHA ROAD, VECTIS |                                                                           |        | 123.09 | 123.37 | 123.55 | 123.69 | BRICK DWELLING                    |
| 5  | 39 CREASEY COURT, VECTIS           |                                                                           |        |        | 123.58 | 123.77 | 123.92 | WEATHERBOARD DWELLING             |
| 6  | 1771 OBREES ROAD, NATIMUK          |                                                                           |        |        | 115.60 | 115.64 | 115.71 | GALV. IRON SHED (NON RESIDENTIAL) |
| 7  | 63 BALL ROAD, LOWER NORTON         |                                                                           |        |        |        | 123.77 | 123.93 | WEATHERBOARD DWELLING             |
| 8  | 41 CREASEY COURT, VECTIS           |                                                                           |        |        |        | 123.75 | 123.91 | WEATHERBOARD DWELLING             |
| 9  | 55 STRUTHERS AVENUE, QUANTONG      |                                                                           |        |        |        | 118.22 | 118.31 | WEATHERBOARD DWELLING             |
| 10 | 133 BLOCKS ROAD, QUANTONG          |                                                                           |        |        |        | 118.04 | 118.16 | WEATHERBOARD DWELLING             |
| 11 | 35 CREASEY COURT, VECTIS           |                                                                           |        |        |        |        | 123.93 | BRICK DWELLING                    |

## Appendix C5: Dadswells Bridge Flood Emergency Plan

The township of Dadswells Bridge is situated on the banks of Mt William Creek adjacent to the Western Highway, Located at the northern end of the Mt William Catchment approximately 28 km northeast of Stawell. The majority of the catchment is used for agriculture, predominantly grazing.

Flooding in the Mt William Creek catchment (1300 km<sup>2</sup>) is generally caused by significant rainfall over the catchment upstream of Lake Lonsdale, the catchment includes several waterways: Salt Ck, Fyans Ck, Pleasant Ck, Sheepwash Ck. However, it must be noted that the catchment upstream of Dadswells Bridge (and downstream of Lake Lonsdale) is of sufficient size to result in flooding of the local area during times of heavy rain, this flood event will escalate if Lake Lonsdale is also spilling in combination resulting in a more significant flood event. Flooding in the downstream reaches is also heavily influenced by the Wimmera River during flood events reducing the drainage capacity of the catchment at high flows.

2011 was the largest flood event on record for Dadswells Bridge, resulting in over floor flooding to 7 properties including the motel, 2 houses and 2 shops, heavy impacts on the caravan park and the closure of the Western Highway.



**Figure 42. Dadswells Bridge and surrounding waterways**

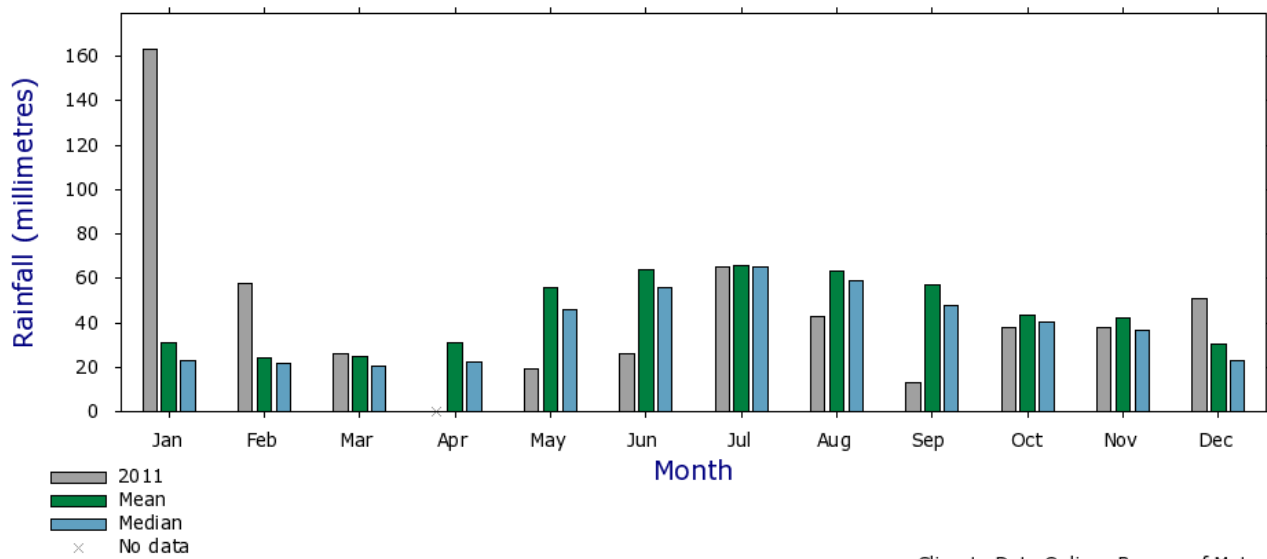
## Historic Flood Events

Dadswells Bridge has a history of flooding, significant flood events have occurred in 1911, 1912, 1922, 1956, 1957, 1974, 1975, 1990, 1993, 2010 and 2011. In January 2011, Dadswells Bridge experienced its largest ever flood when Mt William received 279 millimetres of rainfall over four days, with 146 millimetres falling on 14 January 2011. It took more than 2 days for floodwater in Mt William Creek to travel from Mt William to Dadswells Bridge. The Western Highway was closed at Dadswells Bridge for more than 2 days. More than nine buildings were inundated above floor, including the Town Hall, Indian Restaurant, the Giant Koala, Grampians Motel, Dadswells Bridge Caravan Park, turkey farm buildings, and several houses. The Lake Lonsdale stream gauge (415203) peak (highest recorded level) was 2.65 metres.



**Figure 43. Flooding Dadswells Bridge Jan 2011**

Dadswells Bridge (079077) 2011 Rainfall (millimetres)

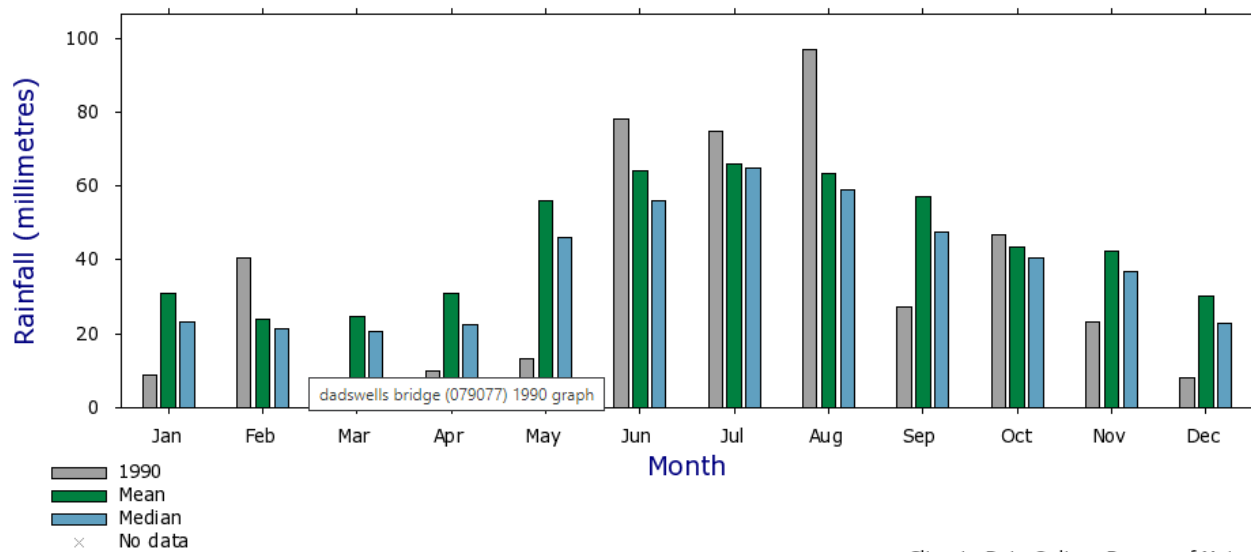


Note: Data may not have completed quality control

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Figure 44. Dadswells Bridge Rainfall record 2011 event

Dadswells Bridge (079077) 1990 Rainfall (millimetres)



Note: Data may not have completed quality control

Climate Data Online, Bureau of Meteorology  
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Figure 45. Dadswells Bridge Rainfall record 2011 event



**Figure 46. Dadswells Bridge 2011 Flood event Koala Tourist Park**



**Figure 47. Dadswells Bridge 2011 Flood Event Western Highway**



Figure 48. Dadswells Bridge buildings flooded above floor.

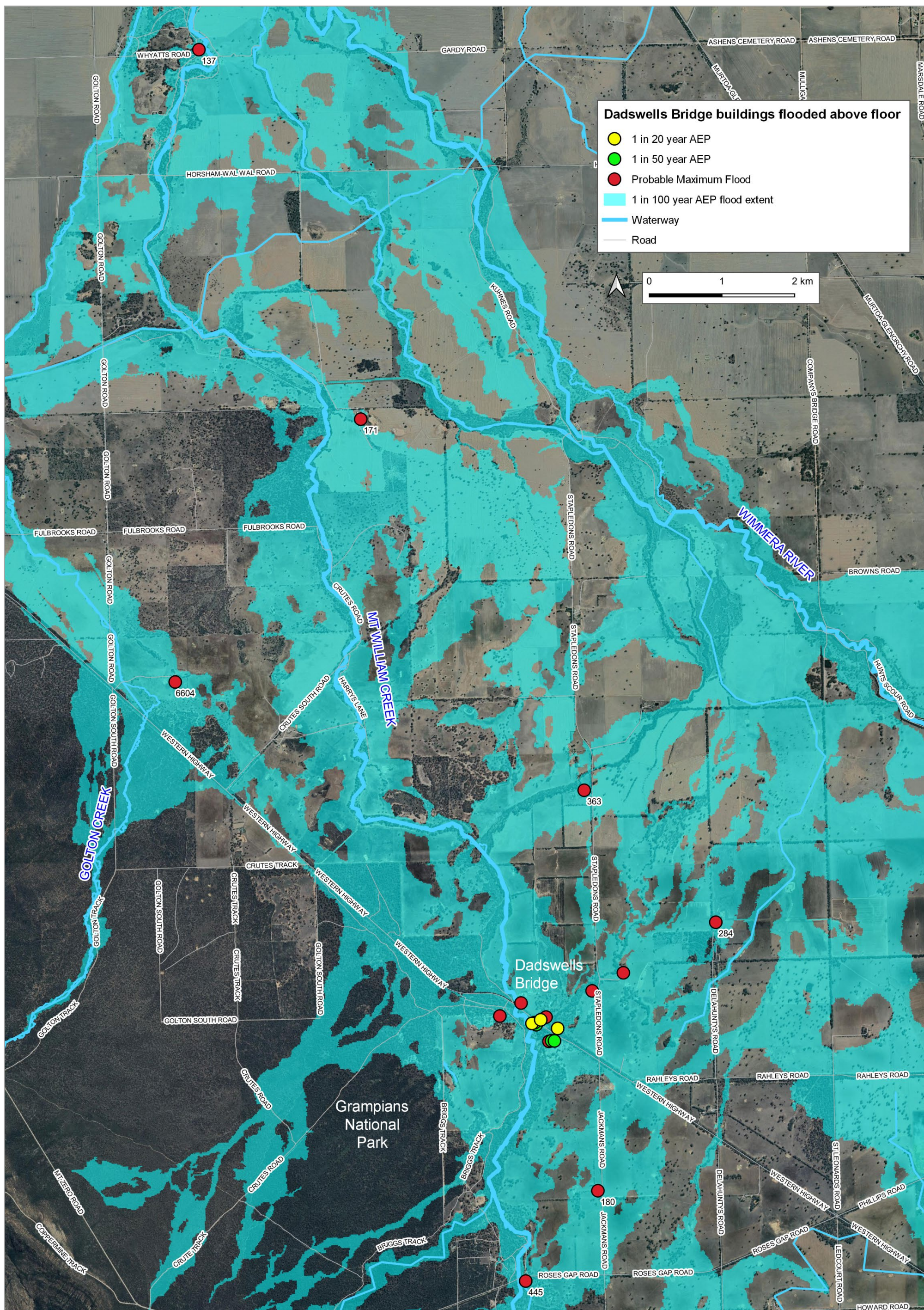


Figure 49. Dadswells Bridge and surrounding area buildings flooded above floor.

## Flood Behaviour

Mt William Creek drains the eastern ranges of the Grampians National Park and flows north from Mt William towards Dadswells Bridge. Flooding can take 1 to 3 days to arrive in Dadswells Bridge from the start of heavy rainfall in the upper Mt William catchment. Most of the floodwater from Mt William Creek flows into Lake Lonsdale. During flood events Lake Lonsdale often spills into the lower Mt William Creek, causing significant flood impacts downstream at Dadswells Bridge. Flooding may take 8 to 12 hours to arrive in Dadswells Bridge from spills in Lake Lonsdale. The size of the flood event at Dadswells Bridge is dependent on rainfall and level of Lake Lonsdale prior to a flood event. Current Lake Lonsdale levels can be found at the GWM Water website [storagemanager.com.au/reservoir-levels-and-other-information/](https://storagemanager.com.au/reservoir-levels-and-other-information/), although this is only updated weekly.

Lake Lonsdale is a large shallow lake located on the Mt William Creek, 20km upstream of Dadswells Bridge. Lake Lonsdale plays a significant role in supplying environmental water and is highly valued for its recreational use. When full Lake Lonsdale has a storage capacity of 65,480 ML. Lake Lonsdale has a long history of spilling into Mt William Creek, flooding Dadswells Bridge. The January 2011 flood event was the largest event on record. During January 2011 Lake Lonsdale's peak spill was 38,527 ML/day, with lower flows continuing for several days. This spill caused significant flooding at Dadswells Bridge, flooding houses, cutting access to the Western Highway in several places, having significant impacts on local businesses. The Lake Lonsdale stream gauge downstream of Lake Lonsdale is used to monitor flood flows into Mt William Creek. It is important to note that this stream gauge has a low level of accuracy.

## Flood Impacts and Actions Required

**Table 24. Key assets at risk of flooding in Dadswells Bridge.**

| Asset register                                                                               |                                           |                                                                                |                                                                     |
|----------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Asset Name and location                                                                      | Annual Exceedance Probability (1 in year) | Consequence / Impact                                                           | Mitigation/ Action                                                  |
| Western Hwy                                                                                  | 5 year flood                              | Minor Flood Impacts, Dependant on level of lake Lonsdale prior to the event    | Deploy road closure signs as needed.                                |
| Western Hwy                                                                                  | 10 year flood                             | Moderate Flood Impacts, Dependant on Level of Lake Lonsdale prior to the event | Deploy road closure signs as needed.                                |
| <b>Western Hwy</b>                                                                           | 20year flood                              | Western Hwy may be impacted by flooding                                        | Deploy road closure signs as needed.                                |
| <b>Restaurant and Motel</b>                                                                  | 20 year flood                             | Potential for over floor flooding impacts                                      | Sandbag building as needed.                                         |
| Western Hwy - Shop                                                                           | 50 year flood                             | Potential for over floor impacts and land inundation                           | Sandbag building as needed.                                         |
| <b>Grampians Motel, Restaurant and associated dwellings, Turkey farm</b>                     | 100 year flood                            | Potential for over floor flooding and land inundation                          | Deploy road closure signs as needed.<br>Sandbag building as needed. |
| Western Hwy (Delahuntys Road), Western Hwy (Dadswells Bridge) Western Hwy (Mt William Creek) | 100 year flood                            | Possible flood impacts, and access to associated properties                    | Deploy road closure signs as needed.                                |

For more detailed information regarding buildings and roads impacted refer to the Dadswells Bridge Flood Intelligence Card below.

**Table 25. Dadswells Bridge Flood Intelligence Card (Mt William Creek)**

| Flood travel time                                                                                           |                                                                                                       |                                                                                                                     |                                           |                                                                                                         |                                                              |                                                                                                      | Time from start of rain to steep rise in floodwater at Dadswells Bridge 1 - 3 days                                                                                                       |                                                                                                                                          |                                                                                                                                   |                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                             |                                                                                                       |                                                                                                                     |                                           |                                                                                                         |                                                              |                                                                                                      | Time between Mokepilly and Dadswells Bridge peak 1 - 2.5 days                                                                                                                            |                                                                                                                                          |                                                                                                                                   |                                                                                                                                     |
|                                                                                                             |                                                                                                       |                                                                                                                     |                                           |                                                                                                         |                                                              |                                                                                                      | Time between Lake Lonsdale tail gauge and Dadswells Bridge peak 12 - 24 hrs                                                                                                              |                                                                                                                                          |                                                                                                                                   |                                                                                                                                     |
|                                                                                                             |                                                                                                       |                                                                                                                     |                                           |                                                                                                         |                                                              |                                                                                                      | Time between Lake Lonsdale spill and Dadswells Bridge peak 8 - 12 hrs                                                                                                                    |                                                                                                                                          |                                                                                                                                   |                                                                                                                                     |
| Mount William Creek at Mokepilly gauge flow 415252 (ML/d) BMT 2014 * only within channel flows are accurate | Fyans Creek at Fyans Creek gauge flow 415250 (ML/d) BMT 2014 * only within channel flows are accurate | Mount William Creek at Lake Lonsdale tail gauge height 415203 (m) BMT 2014 * only within channel flows are accurate | Annual Exceedance Probability (1 in year) | Mount William Creek at Dadswells Bridge proposed gauge board height (U/S of Western Highway Bridge) (m) | Mount William Creek flow at Dadswells Bridge (ML/d) BMT 2014 | Dadswells Bridge and surrounding area damages total number properties flooded (above floor) BMT 2014 | Consequence / Impact                                                                                                                                                                     | Houses/ buildings flooded / isolated                                                                                                     | Roads Impacted                                                                                                                    | Action                                                                                                                              |
| 8,204                                                                                                       | 770                                                                                                   | 0.85 (980 ML/d)                                                                                                     | 5                                         | 3.70                                                                                                    | 1,292                                                        |                                                                                                      | Flooding is highly dependent on rainfall totals and the level of Lake Lonsdale prior to the event.                                                                                       |                                                                                                                                          | Western Highway depth 0m<br>Stapledons Road depth 0m<br>Delahuntys Road 0m<br>Jackmans Road depth 0m<br>Crutes Road 0m            |                                                                                                                                     |
|                                                                                                             |                                                                                                       |                                                                                                                     | Proposed minor flood level                | 4.11                                                                                                    |                                                              |                                                                                                      |                                                                                                                                                                                          |                                                                                                                                          |                                                                                                                                   |                                                                                                                                     |
| 13,020                                                                                                      | 790                                                                                                   | 1.4 (3,420 ML/d)                                                                                                    | 10                                        | 4.23                                                                                                    | 4,029                                                        |                                                                                                      |                                                                                                                                                                                          |                                                                                                                                          | Western Highway depth 0m<br>Stapledons Road depth 0m<br>Delahuntys Road 0m<br>Jackmans Road depth 0m<br>Crutes Road 0m            | <b>Council</b> clear debris from waterway crossings, drains and culverts as needed. Consider deploying road closed signs as needed. |
|                                                                                                             |                                                                                                       |                                                                                                                     | Proposed moderate flood level             | 4.45                                                                                                    |                                                              |                                                                                                      |                                                                                                                                                                                          |                                                                                                                                          |                                                                                                                                   |                                                                                                                                     |
| 19,300                                                                                                      | 810                                                                                                   | 2.0 (7,990 ML/d)                                                                                                    | 20                                        | 4.56                                                                                                    | 11,057                                                       | 4 (4)                                                                                                | The Western Highway at Dadswells Bridge may be impacted by flooding. 4 buildings are flooded above floor; 2 houses on the Western Highway, the Indian Restaurant and the adjacent Motel. | 4 buildings flooded above floor.<br>Restaurant and Motel (5835 Western Highway), Big Koala (5828 Western Highway), 5805 Western Highway. | Western Highway depth 0m<br>Stapledons Road depth 0.13m<br>Delahuntys Road 0m<br>Jackmans Road depth 0m<br>Crutes Road 0.28m      | <b>VICSES</b> and <b>Victoria Police</b> evacuate and sandbag the buildings as needed.                                              |
|                                                                                                             |                                                                                                       |                                                                                                                     | Proposed major flood level                | 4.60                                                                                                    |                                                              |                                                                                                      |                                                                                                                                                                                          |                                                                                                                                          |                                                                                                                                   |                                                                                                                                     |
| 28,390                                                                                                      | 840                                                                                                   | 2.38 (16,150 ML/d)                                                                                                  | 50                                        | 4.70                                                                                                    | 21,152                                                       | 7 (7)                                                                                                | 3 additional buildings are flooded above floor; a shop, a house and a shed on the Western Highway.                                                                                       | 3 additional buildings are flooded above floor. 5799, 5805 and 5829 Western Highway.                                                     | Western Highway depth 0.2m<br>Stapledons Road depth 0.24m<br>Delahuntys Road 0m<br>Jackmans Road depth 0.16m<br>Crutes Road 0.47m |                                                                                                                                     |

|        |     |                       |                        |      |         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                |                                                                                                                                       |  |
|--------|-----|-----------------------|------------------------|------|---------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--|
|        |     | 2.65<br>(29,400 ML/d) | January 2011           |      | 29,400  |         | The Western Highway at Mount William Creek was inundated, with one lane remaining open. Dadswells Bridge was evacuated due to a major flood warning being issued for the Mount William Creek. 2 homes, the Grampians Motel, Giant Koala, Indian Restaurant and a commercial turkey farm were inundated, with rural homes also isolated. Stream gauging downstream of Lake Lonsdale measured the peak spill volume of 38,527 ML/d. At the start of the event Lake Lonsdale was at 93.8% capacity (49,986 ML). The Town Hall was flooded, but since has been raised. A number of buildings at the Dadswells Bridge Caravan Park were damaged by flooding including the amenities block. |                                                                                                                                                                                                                                                                |                                                                                                                                       |  |
| 36,850 | 860 | 2.54<br>(23,570 ML/d) | 100                    | 4.78 | 29,940  | 9 (7)   | In addition to below, flood water may impact access/egress to two dwellings on the Western Highway and Delahuntys Road. The Western Highway at Dadswells Bridge may be impassable for 2 to 3 days.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                | Western Highway depth 0.3m<br>Stapledons Road depth 0.29m<br>Delahuntys Road 0.23m<br>Jackmans Road depth 0.26m<br>Crutes Road 0.53m  |  |
| 45,620 | 880 | 2.7<br>(32,420 ML/d)  | 200                    | 4.81 | 40,289  | 9 (7)   | No additional buildings are impacted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                | Western Highway depth 0.35m<br>Stapledons Road depth 0.33m<br>Delahuntys Road 0.34m<br>Jackmans Road depth 0.30m<br>Crutes Road 0.58m |  |
|        |     |                       | Probable Maximum Flood | 5.27 | 302,400 | 17 (19) | 11 additional buildings are flooded above floor in Crutes Road, Delahuntys Road, Jackmans Road, Kruse Road, Stapledons Road, and one house north of Dadswells Bridge, 137 Whyatts Road (Saint Helens Plains).                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11 additional buildings are flooded above floor.<br>x4 Western Hwy (5803, 5828, 5835, 5862), x3 Stapledons Rd (91, 96, 363), 284 Delahuntys Rd, 180 Jackmans Rd, 171 Crutes Rd.<br>Surrounding area: 137 Whyatts Rd, Helens Plains, 445 Roses Gap Rd, Ledcourt |                                                                                                                                       |  |

**Table 26. Dadswells Bridge and surrounding area property inundation table.**

Colours used in the table below are the same used in the Dadswells Bridge and surrounding area flood risk maps above. Yellow, buildings flooded above floor in a 1 in 20 year AEP. Green, buildings flooded above floor in a 1 in 50 year AEP flood event, etc.

| No | Address                                         | Depth of building over floor flooding for each AEP (1 in year) event (m) |      |      |      |                        |
|----|-------------------------------------------------|--------------------------------------------------------------------------|------|------|------|------------------------|
|    |                                                 | 20                                                                       | 50   | 100  | 200  | Probable Maximum Flood |
| 1  | 5835 Western Hwy, Dadswells Bridge - Restaurant | 0.33                                                                     | 0.60 | 0.70 | 0.75 | 1.18                   |
| 2  | 5835 Western Hwy, Dadswells Bridge - Motel      | 0.26                                                                     | 0.52 | 0.63 | 0.68 | 1.12                   |
| 3  | 5828 Western Hwy, Dadswells Bridge - Shop       | 0.26                                                                     | 0.41 | 0.46 | 0.48 | 0.93                   |
| 4  | 5802 Western Hwy, Dadswells Bridge - House      | 0.21                                                                     | 0.36 | 0.41 | 0.44 | 0.99                   |
| 5  | 5805 Western Hwy, Dadswells Bridge - Shed       |                                                                          | 0.31 | 0.47 | 0.55 | 1.08                   |
| 6  | 5829 Western Hwy, Dadswells Bridge - Shop       |                                                                          | 0.27 | 0.37 | 0.43 | 0.88                   |
| 7  | 5799 Western Hwy, Dadswells Bridge - House      |                                                                          | 0.02 | 0.18 | 0.25 | 0.78                   |
| 8  | 445 Roses Gap Rd, Ledcourt - House              |                                                                          |      |      |      | 1.40                   |
| 9  | 284 Delahuntys Rd, Dadswells Bridge - House     |                                                                          |      |      |      | 0.98                   |
| 10 | 180 Jackmans Rd, Dadswells Bridge - House       |                                                                          |      |      |      | 0.82                   |
| 11 | 137 Whyatts Rd, Helens Plains - House           |                                                                          |      |      |      | 0.73                   |
| 12 | 171 Crutes Rd, Dadswells Bridge - House         |                                                                          |      |      |      | 0.63                   |
| 13 | 96 Stapledons Rd, Dadswells Bridge - House      |                                                                          |      |      |      | 0.48                   |
| 14 | 5828 Western Hwy, Dadswells Bridge - House      |                                                                          |      |      |      | 0.41                   |
| 15 | 91 Stapledons Rd, Dadswells Bridge - House      |                                                                          |      |      |      | 0.37                   |
| 16 | 5862 Western Hwy, Dadswells Bridge - House      |                                                                          |      |      |      | 0.24                   |
| 17 | 5803 Western Hwy, Dadswells Bridge - House      |                                                                          |      |      |      | 0.20                   |
| 18 | 363 Stapledons Rd, Dadswells Bridge - House     |                                                                          |      |      |      | 0.19                   |
| 19 | 5835 Western Hwy, Dadswells Bridge - Restaurant |                                                                          |      |      |      | 0.01                   |

## Appendix D - Flood Evacuation Arrangements

### Phase 1 - Decision to Evacuate –

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

Once the Incident Controller has made the decision to evacuation the IC must notify Victoria Police representative, IMT, IEMT, agency chain of command and incident personnel.

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

- Properties are likely to become inundated.
- Properties are likely to become isolated and occupants are not suitable for isolated conditions.
- Public health is at threat because of flooding and 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 / Department of Transport 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 as per requirements at the time.

## 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. Relief / Recovery Centres are listed in the MEMP.

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 management guidelines are provided in the Horsham Rural City Council Municipal Emergency Animal Welfare Plan along with the location and contact details for appropriate animal welfare entities.

Matters relating to the welfare of livestock and companion animals (including feeding and rescue) are to be referred to Department of Agriculture. This includes requests for emergency supply and / or delivery of fodder to stranded livestock or for livestock rescue.

Matters relating to the welfare of wildlife are to be referred to Department of Environment, Land, Water and Planning (DEECA).

## 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 Vic Emergency 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.

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

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 information.

## Appendix F - Horsham Property Inundation Tables

| HORSHAM CITY                                   |                                                                                     |       |            |       |       |                                                                                                      |                    |                      |          |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|------------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |            |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|                                                | 3.47m                                                                               | 3.61m | 3.72m      | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 24 Arnott Street                               | ---                                                                                 | ---   | 0.11m      | 0.41m | 0.59m |                                                                                                      |                    |                      |          |
| 25 Arnott Street                               | ---                                                                                 | ---   | ---        | ---   | 0.12m |                                                                                                      |                    |                      |          |
| 26 Arnott Street                               | ---                                                                                 | ---   | ---        | 0.11m | 0.30m |                                                                                                      |                    |                      |          |
| 27 Arnott Street                               | ---                                                                                 | ---   | ---        | 0.05m | 0.25m |                                                                                                      |                    |                      |          |
| 28 Arnott Street                               | ---                                                                                 | ---   | ---        | 0.07m | 0.25m |                                                                                                      | 0.04m              | 0.22m                |          |
| 29 Arnott Street                               | ---                                                                                 | ---   | 0.001<br>m | 0.38m | 0.57m |                                                                                                      |                    |                      |          |
| 30 Arnott Street                               | ---                                                                                 | ---   | ---        | ---   | 0.22m |                                                                                                      |                    |                      |          |
| 31 Arnott Street                               | ---                                                                                 | ---   | ---        | 0.07m | 0.27m |                                                                                                      |                    |                      |          |
| 32 Arnott Street                               | ---                                                                                 | ---   | ---        | ---   | 0.20m |                                                                                                      |                    |                      |          |
| 33 Arnott Street                               | ---                                                                                 | ---   | ---        | ---   | 0.21m |                                                                                                      |                    |                      |          |
| 34 Arnott Street                               | ---                                                                                 | ---   | ---        | ---   | 0.22m |                                                                                                      |                    |                      |          |
| 35 Arnott Street                               | ---                                                                                 | ---   | ---        | ---   | 0.12m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                                                                         |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|------------------------------------------------------------------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                  |
| 36 Arnott Street                               | ---                                                                                 | ---   | ---   | ---   | 0.23m |                                                                                                      |                    | 0.02m                |                                                                                                                  |
| 37 Arnott Street                               | ---                                                                                 | ---   | ---   | ---   | 0.21m |                                                                                                      |                    |                      |                                                                                                                  |
| 38 Arnott Street                               | ---                                                                                 | ---   | ---   | ---   | 0.22m |                                                                                                      |                    |                      |                                                                                                                  |
| 40 Arnott Street                               | ---                                                                                 | ---   | ---   | 0.17m | 0.37m |                                                                                                      |                    |                      |                                                                                                                  |
| 42 Arnott Street                               | ---                                                                                 | ---   | ---   | 0.28m | 0.48m |                                                                                                      |                    |                      |                                                                                                                  |
| 44 Arnott Street                               | ---                                                                                 | ---   | ---   | 0.20m | 0.41m |                                                                                                      |                    |                      |                                                                                                                  |
| 46 Arnott Street                               | ---                                                                                 | ---   | ---   | 0.26m | 0.47m |                                                                                                      |                    |                      |                                                                                                                  |
| 48 Arnott Street                               | ---                                                                                 | ---   | ---   | 0.27m | 0.48m |                                                                                                      |                    |                      |                                                                                                                  |
| 50 Arnott Street                               | ---                                                                                 | ---   | 0.01m | 0.34m | 0.55m |                                                                                                      |                    |                      |                                                                                                                  |
| 2 Baillie Street                               | ---                                                                                 | ---   | 0.13m | 0.33m | 0.50m |                                                                                                      | 0.01m              | 0.19m                | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur." |
| 33 Baillie Street                              | ---                                                                                 | ---   | ---   | 0.08m | 0.29m |                                                                                                      |                    | 0.05m                |                                                                                                                  |
| 35 Baillie Street                              | ---                                                                                 | ---   | ---   | ---   | 0.17m |                                                                                                      |                    | 0.06m                |                                                                                                                  |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 39 Baillie Street                              | ---                                                                                 | ---   | ---   | ---   | 0.17m |                                                                                                      |                    |                      |          |
| 45 Baillie Street                              | ---                                                                                 | ---   | ---   | ---   | 0.09m |                                                                                                      |                    |                      |          |
| 47 Baillie Street                              | ---                                                                                 | ---   | ---   | ---   | 0.21m |                                                                                                      |                    |                      |          |
| 49 Baillie Street                              | ---                                                                                 | ---   | ---   | 0.09m | 0.32m |                                                                                                      |                    | 0.09m                |          |
| 51 Baillie Street                              | ---                                                                                 | ---   | ---   | 0.05m | 0.26m |                                                                                                      |                    | 0.11m                |          |
| 53 Baillie Street                              | ---                                                                                 | ---   | ---   | 0.10m | 0.32m |                                                                                                      |                    |                      |          |
| 55 Baillie Street                              | ---                                                                                 | ---   | ---   | 0.05m | 0.27m |                                                                                                      |                    |                      |          |
| 57 Baillie Street                              | ---                                                                                 | ---   | ---   | ---   | 0.19m |                                                                                                      |                    |                      |          |
| 59 Baillie Street                              | ---                                                                                 | ---   | ---   | ---   | 0.17m |                                                                                                      |                    |                      |          |
| 61 Baillie Street                              | ---                                                                                 | ---   | ---   | ---   | 0.14m |                                                                                                      |                    |                      |          |
| 43 A/B/C Baillie Street                        | ---                                                                                 | ---   | ---   | ---   | 0.19m |                                                                                                      |                    |                      |          |
| 43 A/B/C Baillie Street                        | ---                                                                                 | ---   | ---   | ---   | 0.13m |                                                                                                      |                    |                      |          |
| 43 A/B/C Baillie Street                        | ---                                                                                 | ---   | ---   | ---   | 0.09m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                                                                          |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 1 Bank Street                                  | ---                                                                                 | ---   | ---   | ---   | 0.14m |                                                                                                      |                    |                      |                                                                                                                   |
| 2 Bank Street                                  | ---                                                                                 | ---   | ---   | 0.04m | 0.27m |                                                                                                      |                    |                      |                                                                                                                   |
| 14 Barnes Boulevard                            | ---                                                                                 | ---   | ---   | ---   | 0.01m |                                                                                                      |                    |                      |                                                                                                                   |
| 18 Barnes Boulevard                            | ---                                                                                 | ---   | ---   | ---   | 0.11m |                                                                                                      |                    |                      |                                                                                                                   |
| 22 Barnes Boulevard                            | ---                                                                                 | ---   | ---   | ---   | 0.05m |                                                                                                      |                    |                      |                                                                                                                   |
| 96 Barnes Boulevard                            | ---                                                                                 | ---   | ---   | ---   | 0.04m |                                                                                                      |                    |                      |                                                                                                                   |
| 112 Barnes Boulevard                           | ---                                                                                 | ---   | ---   | ---   | 0.02m |                                                                                                      |                    | N/A                  |                                                                                                                   |
| 137 Barnes Boulevard                           | 0.29m                                                                               | 0.50m | 0.70m | 0.78m | 0.95m |                                                                                                      |                    |                      |                                                                                                                   |
| 145 Barnes Boulevard                           | ---                                                                                 | ---   | ---   | ---   | 0.13m |                                                                                                      |                    | N/A                  |                                                                                                                   |
| 147 Barnes Boulevard                           | 0.39m                                                                               | 0.61m | 0.80m | 0.86m | 1.05m |                                                                                                      |                    |                      |                                                                                                                   |
| 149 Barnes Boulevard                           | ---                                                                                 | ---   | ---   | ---   | 0.03m |                                                                                                      |                    | N/A                  |                                                                                                                   |
| 417 Browns Road                                |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments                                                                                                          |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| Cameron Road                                | ---                                                                           | ---   | 0.40m | 0.61m | 0.77m |                                                                                          | 0.06m              | 0.22m                | Unknown locations                                                                                                 |
|                                             | ---                                                                           | ---   | 0.06m | 0.27m | 0.43m |                                                                                          |                    |                      | Unknown locations                                                                                                 |
| Cameron Road                                | ---                                                                           | ---   | 0.43m | 0.64m | 0.83m |                                                                                          |                    | 0.03m                | Modelling of water depth on road, at the deepest point.                                                           |
| Cameron Road                                | ---                                                                           | ---   | ---   | ---   | 0.22m |                                                                                          |                    |                      |                                                                                                                   |
| 40A Cameron Road                            | ---                                                                           | ---   | 0.17m | 0.38m | 0.54m |                                                                                          |                    |                      |                                                                                                                   |
| 44 Cameron Road                             |                                                                               |       |       |       |       |                                                                                          |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 52 Cameron Road                             | ---                                                                           | 0.51m | 0.89m | 1.10m | 1.27m |                                                                                          |                    | 0.05m                | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 251 Cameron Road                            | ---                                                                           | ---   | 0.06m | 0.31m | 0.51m |                                                                                          |                    | 0.19m                |                                                                                                                   |
| 257 Cameron Road                            | ---                                                                           | ---   | 0.04m | 0.28m | 0.48m |                                                                                          |                    |                      |                                                                                                                   |
| 37 Cameron Road                             | ---                                                                           | ---   | 0.16m | 0.37m | 0.53m |                                                                                          |                    |                      |                                                                                                                   |
| 31 Cameron Road                             | ---                                                                           | ---   | 0.19m | 0.40m | 0.56m |                                                                                          |                    |                      |                                                                                                                   |
| 49 Cameron Road                             | ---                                                                           | ---   | 0.21m | 0.41m | 0.57m |                                                                                          |                    |                      |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 1 Cameron Road                                 | ---                                                                                 | ---   | ---   | 0.21m | 0.31m |                                                                                                      |                    |                      |          |
| 1 Carr Street                                  | ---                                                                                 | ---   | ---   | 0.13m | 0.35m |                                                                                                      |                    |                      |          |
| 2 Carr Street                                  | ---                                                                                 | ---   | ---   | 0.03m | 0.25m |                                                                                                      |                    |                      |          |
| 3 Carr Street                                  | ---                                                                                 | ---   | ---   | 0.26m | 0.48m |                                                                                                      |                    | 0.13m                |          |
| 3A Carr Street                                 | ---                                                                                 | ---   | ---   | 0.10m | 0.32m |                                                                                                      |                    | 0.13m                |          |
| 4 Carr Street                                  | ---                                                                                 | ---   | ---   | 0.09m | 0.31m |                                                                                                      |                    |                      |          |
| 5 Carr Street                                  | ---                                                                                 | ---   | ---   | 0.12m | 0.33m |                                                                                                      |                    |                      |          |
| 6 Carr Street                                  | ---                                                                                 | ---   | ---   | ---   | 0.26m |                                                                                                      |                    |                      |          |
| 7 Carr Street                                  | ---                                                                                 | ---   | ---   | 0.07m | 0.29m |                                                                                                      |                    |                      |          |
| 8 Carr Street                                  | ---                                                                                 | ---   | ---   | 0.01m | 0.23m |                                                                                                      |                    | 0.03m                |          |
| 9 Carr Street                                  | ---                                                                                 | ---   | ---   | 0.08m | 0.30m |                                                                                                      |                    |                      |          |
| 10 Carr Street                                 | ---                                                                                 | ---   | ---   | 0.06m | 0.27m |                                                                                                      |                    |                      |          |
| 11 Carr Street                                 | ---                                                                                 | ---   | ---   | 0.16m | 0.38m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 12 Carr Street                                 | ---                                                                                 | ---   | ---   | 0.14m | 0.35m |                                                                                                      |                    | 0.10m                |          |
| 13 Carr Street                                 | ---                                                                                 | ---   | ---   | 0.02m | 0.24m |                                                                                                      |                    |                      |          |
| 14 Carr Street                                 | ---                                                                                 | ---   | ---   | ---   | 0.21m |                                                                                                      |                    |                      |          |
| 15 Carr Street                                 | ---                                                                                 | ---   | ---   | 0.30m | 0.52m |                                                                                                      |                    |                      |          |
| 1A Clark Street                                | ---                                                                                 | ---   | ---   | 0.08m | 0.35m |                                                                                                      |                    |                      |          |
| 1B Clark Street                                | ---                                                                                 | ---   | ---   | ---   | 0.15m |                                                                                                      |                    |                      |          |
| 1C Clark Street                                | ---                                                                                 | ---   | ---   | 0.12m | 0.41m |                                                                                                      |                    | 0.25m                |          |
| 2A Clark Street                                | ---                                                                                 | ---   | ---   | 0.21m | 0.47m |                                                                                                      |                    | 0.19m                |          |
| 2B Clark Street                                | ---                                                                                 | ---   | ---   | 0.34m | 0.60m |                                                                                                      |                    | 0.13m                |          |
| 2 Clover Court                                 | ---                                                                                 | ---   | ---   | ---   | 0.15m |                                                                                                      |                    |                      |          |
| 3 Clover Court                                 | ---                                                                                 | ---   | ---   | ---   | 0.06m |                                                                                                      |                    |                      |          |
| 4 Clover Court                                 | ---                                                                                 | ---   | ---   | ---   | 0.20m |                                                                                                      |                    | N/A                  |          |
| 5 Clover Court                                 | ---                                                                                 | ---   | ---   | ---   | 0.14m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                                                                          |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 1 Cook Street                                  | ---                                                                                 | ---   | ---   | 0.31m | 0.55m |                                                                                                      |                    | 0.23m                |                                                                                                                   |
| 3 Cook Street                                  | ---                                                                                 | ---   | ---   | 0.46m | 0.70m |                                                                                                      | 0.14m              | 0.38m                |                                                                                                                   |
| 1 Coughlin Court                               | ---                                                                                 | ---   | ---   | ---   | 0.17m |                                                                                                      |                    |                      |                                                                                                                   |
| 4 Coughlin Court                               | ---                                                                                 | ---   | ---   | ---   | 0.01m |                                                                                                      |                    |                      |                                                                                                                   |
| 1 Culliver Street                              | ---                                                                                 | ---   | ---   | 0.04m | 0.25m |                                                                                                      |                    |                      |                                                                                                                   |
| 3 Culliver Street                              | ---                                                                                 | ---   | ---   | 0.01m | 0.22m |                                                                                                      |                    |                      |                                                                                                                   |
| 5 Culliver Street                              | ---                                                                                 | ---   | ---   | 0.01m | 0.22m |                                                                                                      |                    |                      |                                                                                                                   |
| 7Culliver Street                               | ---                                                                                 | ---   | ---   | 0.01m | 0.22m |                                                                                                      |                    | 0.01m                |                                                                                                                   |
| 9 Culliver Street                              | ---                                                                                 | ---   | ---   | 0.10m | 0.31m |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 11 Culliver Street                             | ---                                                                                 | ---   | ---   | 0.12m | 0.34m |                                                                                                      |                    |                      |                                                                                                                   |
| 13 Culliver Street                             | ---                                                                                 | ---   | ---   | 0.01m | 0.23m |                                                                                                      |                    |                      |                                                                                                                   |
| 15 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.18m |                                                                                                      |                    |                      |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 18 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.10m |                                                                                                      |                    |                      |          |
| 19 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.23m |                                                                                                      |                    |                      |          |
| 20 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.06m |                                                                                                      |                    |                      |          |
| 21 Culliver Street                             | ---                                                                                 | ---   | ---   | 0.05m | 0.27m |                                                                                                      |                    |                      |          |
| 22 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.09m |                                                                                                      |                    |                      |          |
| 23 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.18m |                                                                                                      |                    |                      |          |
| 24 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.01m |                                                                                                      |                    |                      |          |
| 1-25 Culliver Street                           | ---                                                                                 | ---   | ---   | 0.13m | 0.35m |                                                                                                      |                    |                      |          |
| 2-25 Culliver Street                           | ---                                                                                 | ---   | ---   | ---   | 0.11m |                                                                                                      |                    |                      |          |
| 3-25 Culliver Street                           | ---                                                                                 | ---   | ---   | ---   | 0.01m |                                                                                                      |                    |                      |          |
| 27 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.28m |                                                                                                      |                    |                      |          |
| 35 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.19m |                                                                                                      |                    |                      |          |
| 37 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.20m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                                                                          |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 39 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.26m |                                                                                                      |                    |                      |                                                                                                                   |
| 41 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.16m |                                                                                                      |                    |                      |                                                                                                                   |
| 43 Culliver Street                             | ---                                                                                 | ---   | ---   | ---   | 0.18m |                                                                                                      |                    |                      |                                                                                                                   |
| Dooen Road                                     | ---                                                                                 | ---   | ---   | 0.04m | 0.20m |                                                                                                      |                    | 0.10m                | Modelling of water depth on road, at the deepest point.                                                           |
| 144 Dooen Road                                 | ---                                                                                 | ---   | ---   | ---   | 0.10m |                                                                                                      |                    |                      |                                                                                                                   |
| 146 Dooen Road                                 | ---                                                                                 | ---   | ---   | ---   | 0.16m |                                                                                                      |                    |                      |                                                                                                                   |
| 148 Dooen Road                                 | ---                                                                                 | ---   | ---   | 0.12m | 0.28m |                                                                                                      |                    |                      |                                                                                                                   |
| 150 Dooen Road                                 | ---                                                                                 | ---   | ---   | ---   | 0.06m |                                                                                                      |                    |                      |                                                                                                                   |
| 200 Dooen Road                                 |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 1 Edmonds Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.28m |                                                                                                      |                    |                      |                                                                                                                   |
| 1A Edmonds Drive                               | ---                                                                                 | ---   | ---   | ---   | 0.27m |                                                                                                      |                    |                      |                                                                                                                   |
| 2 Edmonds Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.18m |                                                                                                      |                    |                      |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                                                                             |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------------------------------------------------------------------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                      |
| 3 Edmonds Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.14m |                                                                                                      |                    |                      |                                                                                                                      |
| 4 Edmonds Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.17m |                                                                                                      |                    |                      | (Jan 11) This property reported water in their yard to MECC. Neither MECC nor PIA recorded water entering the house. |
| 5 Edmonds Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.08m |                                                                                                      |                    |                      |                                                                                                                      |
| 6 Edmonds Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.07m |                                                                                                      |                    | N/A                  |                                                                                                                      |
| 8 Edmonds Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.08m |                                                                                                      |                    | N/A                  |                                                                                                                      |
| 9 Edmonds Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.08m |                                                                                                      |                    |                      |                                                                                                                      |
| Firebrace Street                               | ---                                                                                 | ---   | 0.60m | 0.99m | 1.13m | N/A                                                                                                  | N/A                | N/A                  | Modelling of water depth on road, at the deepest point.                                                              |
| 107 Firebrace Street                           | ---                                                                                 | ---   | ---   | ---   | 0.02m |                                                                                                      |                    |                      |                                                                                                                      |
| 109 Firebrace Street                           | ---                                                                                 | ---   | ---   | 0.26m | 0.47m |                                                                                                      |                    |                      |                                                                                                                      |
| 109 Firebrace Street                           | ---                                                                                 | ---   | ---   | 0.46m | 0.68m |                                                                                                      |                    |                      |                                                                                                                      |
| 113 Firebrace Street                           | ---                                                                                 | ---   | ---   | 0.17m | 0.36m |                                                                                                      |                    |                      |                                                                                                                      |
| 115 Firebrace Street                           | ---                                                                                 | ---   | ---   | ---   | 0.06m |                                                                                                      |                    |                      |                                                                                                                      |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 121 Firebrace Street                           | ---                                                                                 | ---   | ---   | ---   | 0.23m |                                                                                                      |                    | N/A                  |          |
| 146 Firebrace Street                           | ---                                                                                 | ---   | ---   | ---   | 0.03m |                                                                                                      |                    |                      |          |
| 148 Firebrace Street                           | ---                                                                                 | ---   | 0.41m | 0.78m | 0.86m | 0.32m                                                                                                | 0.69m              | 0.77m                |          |
| 152 Firebrace Street                           | ---                                                                                 | ---   | 0.59m | 0.95m | 1.04m |                                                                                                      | 0.15m              | 0.24m                |          |
| 156 Firebrace Street                           | ---                                                                                 | ---   | 0.15m | 0.51m | 0.60m |                                                                                                      | 0.08m              | 0.16m                |          |
| 156 Firebrace Street                           | ---                                                                                 | ---   | ---   | 0.32m | 0.40m |                                                                                                      | 0.03m              | 0.11m                |          |
| 156 Firebrace Street                           | ---                                                                                 | ---   | ---   | 0.11m | 0.17m |                                                                                                      | N/A                | N/A                  |          |
| 166 Firebrace Street                           | ---                                                                                 | ---   | ---   | 0.05m | 0.14m |                                                                                                      |                    | 0.03m                |          |
| 168 Firebrace Street                           | ---                                                                                 | ---   | 0.07m | 0.47m | 0.60m |                                                                                                      |                    |                      |          |
| 168A Firebrace Street                          | ---                                                                                 | ---   | 0.15m | 0.55m | 0.70m |                                                                                                      |                    |                      |          |
| 168B Firebrace Street                          | ---                                                                                 | ---   | 0.27m | 0.67m | 0.82m |                                                                                                      |                    |                      |          |
| 170 Firebrace Street                           | ---                                                                                 | ---   | ---   | ---   | 0.05m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments                                                                                                          |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 190 Firebrace Street<br>(Caravan Park)      |                                                                               |       | 0.60m | 0.99m | 1.13m |                                                                                          |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 16 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.13m | 0.32m |                                                                                          |                    |                      |                                                                                                                   |
| 17 Gillespie Street                         | ---                                                                           | ---   | 0.11m | 0.42m | 0.60m |                                                                                          |                    |                      |                                                                                                                   |
| 18 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.08m | 0.29m |                                                                                          |                    |                      |                                                                                                                   |
| 19 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.19m | 0.37m |                                                                                          |                    |                      |                                                                                                                   |
| 20 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.15m | 0.35m |                                                                                          |                    |                      |                                                                                                                   |
| 21 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.10m | 0.28m |                                                                                          |                    |                      |                                                                                                                   |
| 22 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.11m | 0.30m |                                                                                          |                    |                      |                                                                                                                   |
| 23 Gillespie Street                         | ---                                                                           | ---   | ---   | ---   | 0.15m |                                                                                          |                    |                      |                                                                                                                   |
| 24 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.06m | 0.23m |                                                                                          |                    |                      |                                                                                                                   |
| 25 Gillespie Street                         | ---                                                                           | ---   | ---   | ---   | 0.13m |                                                                                          |                    |                      |                                                                                                                   |
| 26 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.13m | 0.32m |                                                                                          |                    |                      |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 27 Gillespie Street                            | ---                                                                                 | ---   | ---   | ---   | 0.10m |                                                                                                      |                    |                      |          |
| 28 Gillespie Street                            | ---                                                                                 | ---   | ---   | 0.21m | 0.41m |                                                                                                      |                    |                      |          |
| 29 Gillespie Street                            | ---                                                                                 | ---   | ---   | ---   | 0.13m |                                                                                                      |                    |                      |          |
| 31 Gillespie Street                            | ---                                                                                 | ---   | ---   | ---   | 0.18m |                                                                                                      |                    |                      |          |
| 32 Gillespie Street                            | ---                                                                                 | ---   | 0.08m | 0.37m | 0.55m |                                                                                                      |                    |                      |          |
| 32 Gillespie Street                            | ---                                                                                 | ---   | 0.05m | 0.33m | 0.52m |                                                                                                      |                    | 0.11m                |          |
| 33 Gillespie Street                            | ---                                                                                 | ---   | ---   | ---   | 0.16m |                                                                                                      |                    |                      |          |
| 34 Gillespie Street                            | ---                                                                                 | ---   | ---   | ---   | 0.19m |                                                                                                      |                    |                      |          |
| 35 Gillespie Street                            | ---                                                                                 | ---   | ---   | 0.05m | 0.25m |                                                                                                      |                    |                      |          |
| 36 Gillespie Street                            | ---                                                                                 | ---   | ---   | ---   | 0.22m |                                                                                                      |                    |                      |          |
| 37 Gillespie Street                            | ---                                                                                 | ---   | ---   | 0.12m | 0.32m |                                                                                                      |                    |                      |          |
| 38 Gillespie Street                            | ---                                                                                 | ---   | ---   | 0.14m | 0.34m |                                                                                                      |                    |                      |          |
| 39 Gillespie Street                            | ---                                                                                 | ---   | ---   | 0.28m | 0.49m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 40 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.14m | 0.34m |                                                                                          |                    |                      |          |
| 41 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.17m | 0.38m |                                                                                          |                    |                      |          |
| 42 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.13m | 0.34m |                                                                                          |                    | 0.09m                |          |
| 43 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.16m | 0.37m |                                                                                          |                    |                      |          |
| 44 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.07m | 0.27m |                                                                                          |                    |                      |          |
| 45 Gillespie Street                         | ---                                                                           | ---   | ---   | 0.13m | 0.34m |                                                                                          |                    |                      |          |
| 46 Gillespie Street                         | ---                                                                           | ---   | ---   | ---   | 0.16m |                                                                                          |                    |                      |          |
| 49 Gillespie Street                         | ---                                                                           | ---   | ---   | ---   | 0.20m |                                                                                          |                    |                      |          |
| 1 Glancy Street                             | ---                                                                           | ---   | ---   | 0.18m | 0.39m |                                                                                          |                    | 0.02m                |          |
| 2 Glancy Street                             | ---                                                                           | ---   | ---   | 0.07m | 0.28m |                                                                                          |                    |                      |          |
| 3 Glancy Street                             | ---                                                                           | ---   | ---   | 0.22m | 0.43m |                                                                                          |                    |                      |          |
| 4 Glancy Street                             | ---                                                                           | ---   | ---   | ---   | 0.15m |                                                                                          |                    |                      |          |
| 5 Glancy Street                             | ---                                                                           | ---   | ---   | 0.17m | 0.38m |                                                                                          |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |            |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|------------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m      | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 6 Glancy Street                                | ---                                                                                 | ---   | ---        | ---   | 0.14m |                                                                                                      |                    |                      |          |
| 7 Glancy Street                                | ---                                                                                 | ---   | ---        | 0.21m | 0.42m |                                                                                                      |                    |                      |          |
| 8 Glancy Street                                | ---                                                                                 | ---   | ---        | ---   | 0.16m |                                                                                                      |                    |                      |          |
| 9 Glancy Street                                | ---                                                                                 | ---   | ---        | 0.20m | 0.41m |                                                                                                      |                    |                      |          |
| 10 Glancy Street                               | ---                                                                                 | ---   | ---        | ---   | 0.21m |                                                                                                      |                    |                      |          |
| 11 Glancy Street                               | ---                                                                                 | ---   | 0.002<br>m | 0.26m | 0.47m |                                                                                                      |                    |                      |          |
| 12 Glancy Street                               | ---                                                                                 | ---   | ---        | ---   | 0.24m |                                                                                                      |                    |                      |          |
| 13 Glancy Street                               | ---                                                                                 | ---   | ---        | 0.23m | 0.44m |                                                                                                      |                    |                      |          |
| 14 Glancy Street                               | ---                                                                                 | ---   | ---        | ---   | 0.21m |                                                                                                      |                    |                      |          |
| 1 Gross Court                                  | ---                                                                                 | ---   | ---        | 0.07m | 0.29m |                                                                                                      |                    | 0.01m                |          |
| 2 Gross Court                                  | ---                                                                                 | ---   | ---        | 0.20m | 0.41m |                                                                                                      |                    | 0.04m                |          |
| 3 Gross Court                                  | ---                                                                                 | ---   | ---        | 0.06m | 0.28m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments                                                |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------------------------------------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                         |
| 4 Gross Court                               | ---                                                                           | ---   | ---   | 0.16m | 0.38m |                                                                                          |                    |                      |                                                         |
| 5 Gross Court                               | ---                                                                           | ---   | ---   | 0.16m | 0.38m |                                                                                          |                    |                      |                                                         |
| 6 Gross Court                               | ---                                                                           | ---   | ---   | 0.04m | 0.26m |                                                                                          |                    | 0.03m                |                                                         |
| 20 Johnson Street                           | ---                                                                           | ---   | ---   | ---   | 0.14m |                                                                                          |                    |                      |                                                         |
| 22 Johnson Street                           | ---                                                                           | ---   | ---   | ---   | 0.05m |                                                                                          |                    |                      |                                                         |
| 23 Johnson Street                           | ---                                                                           | ---   | ---   | ---   | 0.13m |                                                                                          |                    |                      |                                                         |
| 25 Johnson Street                           | ---                                                                           | ---   | ---   | ---   | 0.20m |                                                                                          |                    |                      |                                                         |
| 27 Johnson Street                           | ---                                                                           | ---   | ---   | ---   | 0.21m |                                                                                          |                    |                      |                                                         |
| Hamilton Street                             | ---                                                                           | ---   | ---   | 0.29m | 0.56m |                                                                                          |                    | 0.23m                | Modelling of water depth on road, at the deepest point. |
| Hamilton Street                             | ---                                                                           | ---   | ---   | 0.08m | 0.35m |                                                                                          | 0.02m              | 0.29m                |                                                         |
| Hamilton Street                             | ---                                                                           | ---   | ---   | ---   | 0.16m |                                                                                          |                    | 0.51m                |                                                         |
| 31 Hamilton Street                          | ---                                                                           | ---   | ---   | 0.07m | 0.31m |                                                                                          |                    |                      |                                                         |
| 33 Hamilton Street                          | ---                                                                           | ---   | ---   | 0.20m | 0.49m |                                                                                          | 0.05m              | 0.34m                |                                                         |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                         |
| 33A Hamilton Street                            | ---                                                                                 | ---   | ---   | 0.14m | 0.42m |                                                                                                      | 0.02m              | 0.30m                |                                                         |
| 41 Hamilton Street                             | ---                                                                                 | ---   | ---   | 0.37m | 0.63m |                                                                                                      | 0.02m              | 0.29m                |                                                         |
| 42 Hamilton Street                             | ---                                                                                 | ---   | ---   | 0.08m | 0.35m |                                                                                                      |                    |                      |                                                         |
| 43 Hamilton Street                             | ---                                                                                 | ---   | 0.24m | 0.67m | 0.92m |                                                                                                      |                    |                      |                                                         |
| 43 Hamilton Street                             | ---                                                                                 | ---   | ---   | 0.38m | 0.64m |                                                                                                      |                    |                      |                                                         |
| 44 Hamilton Street                             | ---                                                                                 | ---   | ---   | ---   | 0.17m |                                                                                                      |                    | 0.05m                |                                                         |
| 50 Hamilton Street                             | ---                                                                                 | ---   | ---   | 0.22m | 0.43m |                                                                                                      |                    | 0.10m                |                                                         |
| 15707 Hamilton Street                          | ---                                                                                 | ---   | 0.29m | 0.72m | 0.97m |                                                                                                      | 0.10m              | 0.35m                |                                                         |
| 15738 Hamilton Street                          | ---                                                                                 | ---   | 0.29m | 0.73m | 0.98m |                                                                                                      | 0.11m              | 0.36m                |                                                         |
| Heards Road                                    | ---                                                                                 | 0.23m | 0.46m | 0.63m | 0.74m |                                                                                                      |                    | 0.01m                | Modelling of water depth on road, at the deepest point. |
| 18 Heards Road                                 | ---                                                                                 | ---   | ---   | 0.09m | 0.21m |                                                                                                      |                    |                      |                                                         |
| 40 Heards Road                                 | ---                                                                                 | ---   | ---   | 0.05m | 0.15m |                                                                                                      |                    |                      |                                                         |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments                                                                                                          |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 63 Heards Road                              | ---                                                                           | ---   | ---   | ---   | ---   |                                                                                          |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 66 Heards Road                              | ---                                                                           | ---   | ---   | 0.11m | 0.22m |                                                                                          |                    |                      |                                                                                                                   |
| 98 Heards Road                              | ---                                                                           | ---   | 0.15m | 0.31m | 0.42m |                                                                                          |                    | 0.04m                | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 1 Hopkins Drive                             | ---                                                                           | ---   | ---   | 0.19m | 0.43m |                                                                                          |                    | 0.24m                |                                                                                                                   |
| 2 Hopkins Drive                             | ---                                                                           | ---   | ---   | 0.28m | 0.52m |                                                                                          | 0.04m              | 0.28m                |                                                                                                                   |
| 3 Hopkins Drive                             | ---                                                                           | ---   | ---   | 0.09m | 0.32m |                                                                                          |                    | 0.18m                |                                                                                                                   |
| 4 Hopkins Drive                             | ---                                                                           | ---   | ---   | 0.20m | 0.43m |                                                                                          |                    | 0.19m                |                                                                                                                   |
| 5 Hopkins Drive                             | ---                                                                           | ---   | ---   | 0.05m | 0.28m |                                                                                          |                    | 0.18m                |                                                                                                                   |
| 6 Hopkins Drive                             | ---                                                                           | ---   | ---   | 0.27m | 0.50m |                                                                                          |                    | 0.20m                |                                                                                                                   |
| 7 Hopkins Drive                             | ---                                                                           | ---   | ---   | 0.13m | 0.35m |                                                                                          |                    | 0.14m                |                                                                                                                   |
| 8 Hopkins Drive                             | ---                                                                           | ---   | ---   | 0.44m | 0.67m |                                                                                          | 0.03m              | 0.26m                |                                                                                                                   |
| 9 Hopkins Drive                             | ---                                                                           | ---   | ---   | 0.04m | 0.25m |                                                                                          |                    | 0.17m                |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 10 Hopkins Drive                            | ---                                                                           | ---   | ---   | 0.28m | 0.51m |                                                                                          |                    | 0.17m                |          |
| 11 Hopkins Drive                            | ---                                                                           | ---   | ---   | 0.23m | 0.45m |                                                                                          |                    | 0.21m                |          |
| 12 Hopkins Drive                            | ---                                                                           | ---   | ---   | 0.33m | 0.56m |                                                                                          | 0.07m              | 0.30m                |          |
| 12A Hopkins Drive                           | ---                                                                           | ---   | ---   | 0.16m | 0.39m |                                                                                          |                    | 0.10m                |          |
| 13 Hopkins Drive                            | ---                                                                           | ---   | ---   | 0.11m | 0.33m |                                                                                          |                    | 0.10m                |          |
| 6 Jardwa Court                              | ---                                                                           | ---   | ---   | 0.04m | 0.21m |                                                                                          |                    |                      |          |
| 1-1 Knowles Street                          | ---                                                                           | ---   | ---   | ---   | 0.24m |                                                                                          |                    |                      |          |
| 2-1 Knowles Street                          | ---                                                                           | ---   | ---   | 0.10m | 0.33m |                                                                                          |                    |                      |          |
| 3 Knowles Street                            | ---                                                                           | ---   | ---   | 0.09m | 0.32m |                                                                                          |                    |                      |          |
| 5 Knowles Street                            | ---                                                                           | ---   | ---   | 0.06m | 0.30m |                                                                                          |                    |                      |          |
| 6 Knowles Street                            | ---                                                                           | ---   | ---   | 0.30m | 0.54m |                                                                                          |                    |                      |          |
| 7 Knowles Street                            | ---                                                                           | ---   | ---   | ---   | 0.25m |                                                                                          |                    |                      |          |
| 8 Knowles Street                            | ---                                                                           | ---   | ---   | 0.17m | 0.42m |                                                                                          |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 9 Knowles Street                               | ---                                                                                 | ---   | ---   | ---   | 0.21m |                                                                                                      |                    | N/A                  |          |
| 11 Knowles Street                              | ---                                                                                 | ---   | ---   | ---   | 0.07m |                                                                                                      |                    |                      |          |
| 17 Knowles Street                              | ---                                                                                 | ---   | ---   | ---   | 0.11m |                                                                                                      |                    |                      |          |
| 18 Knowles Street                              | ---                                                                                 | ---   | ---   | ---   | 0.21m |                                                                                                      |                    |                      |          |
| 20 Knowles Street                              | ---                                                                                 | ---   | ---   | ---   | 0.05m |                                                                                                      |                    |                      |          |
| 22 Knowles Street                              | ---                                                                                 | ---   | ---   | 0.02m | 0.29m |                                                                                                      |                    |                      |          |
| 24 Knowles Street                              | ---                                                                                 | ---   | ---   | 0.02m | 0.11m |                                                                                                      |                    |                      |          |
| 6 Latus Drive                                  | ---                                                                                 | ---   | ---   | ---   | 0.12m |                                                                                                      |                    |                      |          |
| 2 Lawrence Street                              | ---                                                                                 | ---   | ---   | 0.08m | 0.30m |                                                                                                      |                    |                      |          |
| 7 Lawrence Street                              | ---                                                                                 | ---   | ---   | 0.28m | 0.50m |                                                                                                      |                    | 0.07m                |          |
| 9 Lawrence Street                              | ---                                                                                 | ---   | ---   | 0.06m | 0.29m |                                                                                                      |                    | 0.05m                |          |
| 10 Lawrence Street                             | ---                                                                                 | ---   | ---   | 0.03m | 0.25m |                                                                                                      |                    |                      |          |
| 11 Lawrence Street                             | ---                                                                                 | ---   | ---   | 0.08m | 0.30m |                                                                                                      |                    | 0.02m                |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 12 Lawrence Street                             | ---                                                                                 | ---   | ---   | 0.01m | 0.23m |                                                                                                      |                    |                      |          |
| 13 Lawrence Street                             | ---                                                                                 | ---   | ---   | 0.08m | 0.30m |                                                                                                      |                    |                      |          |
| 14A Lawrence Street                            | ---                                                                                 | ---   | ---   | 0.18m | 0.40m |                                                                                                      |                    |                      |          |
| 14B Lawrence Street                            | ---                                                                                 | ---   | ---   | ---   | 0.20m |                                                                                                      |                    |                      |          |
| 15A Lawrence Street                            | ---                                                                                 | ---   | ---   | 0.20m | 0.42m |                                                                                                      |                    | 0.01m                |          |
| 15B Lawrence Street                            | ---                                                                                 | ---   | ---   | 0.20m | 0.42m |                                                                                                      |                    | 0.01m                |          |
| 16 Lawrence Street                             | ---                                                                                 | ---   | ---   | 0.10m | 0.32m |                                                                                                      |                    |                      |          |
| 17 Lawrence Street                             | ---                                                                                 | ---   | ---   | 0.24m | 0.46m |                                                                                                      |                    | 0.03m                |          |
| 18 Lawrence Street                             | ---                                                                                 | ---   | ---   | 0.16m | 0.39m |                                                                                                      |                    |                      |          |
| 19 Lawrence Street                             | ---                                                                                 | ---   | ---   | 0.24m | 0.46m |                                                                                                      |                    |                      |          |
| 21 Lawrence Street                             | ---                                                                                 | ---   | ---   | 0.38m | 0.61m |                                                                                                      |                    |                      |          |
| 4 Lawrence Street                              | ---                                                                                 | ---   | ---   | ---   | 0.19m |                                                                                                      |                    |                      |          |
| 2 Leskie Close                                 | ---                                                                                 | ---   | ---   | 0.05m | 0.27m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments                                                                                                          |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 4 Leskie Close                              | ---                                                                           | ---   | ---   | 0.22m | 0.44m |                                                                                          |                    |                      |                                                                                                                   |
| 6 Lewis Street                              | ---                                                                           | ---   | ---   | 0.02m | 0.24m |                                                                                          |                    |                      |                                                                                                                   |
| 88 Longerenong Road                         |                                                                               |       |       |       |       |                                                                                          |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 488 Lubeck Rd                               |                                                                               |       |       |       |       |                                                                                          |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 3 MacBain Street                            | ---                                                                           | ---   | 0.72m | 1.02m | 1.23m | N/A                                                                                      | N/A                | N/A                  |                                                                                                                   |
| 3 Madden Street                             | ---                                                                           | ---   | 0.17m | 0.54m | 0.62m | N/A                                                                                      | N/A                | N/A                  |                                                                                                                   |
| 3 Madden Street                             | ---                                                                           | ---   | 0.42m | 0.78m | 0.86m | N/A                                                                                      | N/A                | N/A                  |                                                                                                                   |
| 3 Madden Street                             | ---                                                                           | ---   | ---   | ---   | 0.34m |                                                                                          |                    | N/A                  |                                                                                                                   |
| 9 Madden Street                             | ---                                                                           | ---   | 0.52m | 0.88m | 0.96m |                                                                                          |                    |                      |                                                                                                                   |
| 11 Madden Street                            | ---                                                                           | ---   | 0.68m | 1.03m | 1.12m | N/A                                                                                      | N/A                | N/A                  |                                                                                                                   |
| 13 Madden Street                            | ---                                                                           | ---   | 0.38m | 0.74m | 0.82m |                                                                                          | 0.30m              | 0.38m                |                                                                                                                   |
| 15 Madden Street                            | ---                                                                           | ---   | ---   | 0.19m | 0.28m |                                                                                          |                    |                      |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 1 Mardon Drive                                 | ---                                                                                 | ---   | ---   | 0.15m | 0.38m |                                                                                                      |                    |                      |          |
| 3 Mardon Drive                                 | ---                                                                                 | ---   | ---   | 0.10m | 0.33m |                                                                                                      |                    |                      |          |
| 5 Mardon Drive                                 | ---                                                                                 | ---   | ---   | ---   | 0.28m |                                                                                                      |                    |                      |          |
| 7 Mardon Drive                                 | ---                                                                                 | ---   | ---   | ---   | 0.26m |                                                                                                      |                    |                      |          |
| 13 Mardon Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.17m |                                                                                                      |                    |                      |          |
| 15 Mardon Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.29m |                                                                                                      |                    |                      |          |
| 17 Mardon Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.15m |                                                                                                      |                    |                      |          |
| 21 Mardon Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.16m |                                                                                                      |                    |                      |          |
| 22 Mardon Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.19m |                                                                                                      |                    |                      |          |
| 23 Mardon Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.16m |                                                                                                      |                    |                      |          |
| 24 Mardon Drive                                | ---                                                                                 | ---   | ---   | 0.13m | 0.35m |                                                                                                      |                    |                      |          |
| 25 Mardon Drive                                | ---                                                                                 | ---   | ---   | ---   | 0.18m |                                                                                                      |                    |                      |          |
| 1 Margaret Street                              | ---                                                                                 | ---   | ---   | 0.20m | 0.42m |                                                                                                      |                    | 0.11m                |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                         |
| 2 Margaret Street                              | ---                                                                                 | ---   | ---   | 0.23m | 0.46m |                                                                                                      |                    | 0.12m                |                                                         |
| 3 Margaret Street                              | ---                                                                                 | ---   | ---   | 0.15m | 0.36m |                                                                                                      |                    |                      |                                                         |
| 4 Margaret Street                              | ---                                                                                 | ---   | ---   | 0.23m | 0.46m |                                                                                                      |                    |                      |                                                         |
| 5 Margaret Street                              | ---                                                                                 | ---   | ---   | ---   | 0.28m |                                                                                                      |                    |                      |                                                         |
| 6 Margaret Street                              | ---                                                                                 | ---   | ---   | 0.17m | 0.39m |                                                                                                      |                    |                      |                                                         |
| 7 Margaret Street                              | ---                                                                                 | ---   | ---   | 0.13m | 0.35m |                                                                                                      |                    |                      |                                                         |
| 8 Margaret Street                              | ---                                                                                 | ---   | ---   | 0.23m | 0.45m |                                                                                                      |                    |                      |                                                         |
| 9 Major Mitchell Drive                         | ---                                                                                 | ---   | ---   | ---   | 0.05m |                                                                                                      |                    | N/A                  |                                                         |
| 19 Major Mitchell Drive                        | ---                                                                                 | ---   | ---   | ---   | 0.06m |                                                                                                      |                    | N/A                  |                                                         |
| 1-31 Major Mitchell<br>Drive                   | ---                                                                                 | ---   | ---   | ---   | 0.12m |                                                                                                      |                    |                      |                                                         |
| MacBain Street                                 | ---                                                                                 | 0.16m | 0.60m | 0.85m | 1.07m |                                                                                                      | 0.16m              | 0.38m                | Modelling of water depth on road, at the deepest point. |
| 1 MacBain Street                               | ---                                                                                 | ---   | 0.49m | 0.77m | 0.98m |                                                                                                      |                    |                      |                                                         |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments                                                                                                          |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 2 MacBain Street                            | ---                                                                           | ---   | 0.39m | 0.64m | 0.86m |                                                                                          |                    |                      |                                                                                                                   |
| 3 MacBain Street                            | ---                                                                           | ---   | 0.57m | 0.86m | 1.08m |                                                                                          |                    | 0.10m                |                                                                                                                   |
| 4 MacBain Street                            | ---                                                                           | ---   | ---   | ---   | 0.10m |                                                                                          |                    |                      |                                                                                                                   |
| 5 MacBain Street                            | ---                                                                           | ---   | 0.40m | 0.71m | 0.93m |                                                                                          | 0.01m              | 0.23m                |                                                                                                                   |
| 6 MacBain Street                            | ---                                                                           | ---   | ---   | ---   | 0.14m |                                                                                          |                    |                      |                                                                                                                   |
| 8 MacBain Street                            | ---                                                                           | ---   | 0.13m | 0.39m | 0.61m |                                                                                          |                    |                      |                                                                                                                   |
| McBryde Street                              | ---                                                                           | ---   | 0.54m | 0.84m | 1.05m |                                                                                          |                    |                      | Modelling of water depth on road, at the deepest point.                                                           |
| McBryde Street                              | ---                                                                           | ---   | ---   | 0.08m | 0.29  |                                                                                          | 0.07m              | 0.29m                |                                                                                                                   |
| McBryde Street                              | ---                                                                           | ---   | ---   | ---   | 0.07  |                                                                                          |                    |                      |                                                                                                                   |
| 3 McBryde Street                            | ---                                                                           | ---   | 0.60m | 0.90m | 1.11m | 0.01m                                                                                    | 0.30m              | 0.51m                | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 56 McPherson Street                         | ---                                                                           | ---   | ---   | 0.12m | 0.40m |                                                                                          | 0.01m              | 0.29m                |                                                                                                                   |
| 58 McPherson Street                         | ---                                                                           | ---   | ---   | ---   | 0.15m |                                                                                          |                    |                      |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments                                                                                                                                                 |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                                                          |
| 60 McPherson Street                         | ---                                                                           | ---   | ---   | ---   | 0.13m |                                                                                          |                    |                      |                                                                                                                                                          |
| 62A McPherson Street                        | ---                                                                           | ---   | ---   | ---   | 0.03m |                                                                                          |                    |                      |                                                                                                                                                          |
| 73 McPherson Street                         | ---                                                                           | ---   | ---   | 0.07m | 0.33m |                                                                                          | N/A                | N/A                  |                                                                                                                                                          |
| 73 McPherson Street                         | ---                                                                           | ---   | ---   | ---   | 0.29m |                                                                                          |                    |                      |                                                                                                                                                          |
| 77 McPherson Street                         | ---                                                                           | ---   | ---   | ---   | 0.24m |                                                                                          |                    |                      |                                                                                                                                                          |
| 68 McTavish Boulevard                       |                                                                               |       |       |       |       |                                                                                          |                    |                      | (Jan 11) This property reported to MECC that it experienced water on the property. No further information available – thought to possibly be stormwater. |
| 2 Menadue Street                            | ---                                                                           | ---   | ---   | ---   | 0.19m |                                                                                          |                    |                      |                                                                                                                                                          |
| 4 Menadue Street                            | ---                                                                           | ---   | ---   | ---   | 0.15m |                                                                                          |                    |                      |                                                                                                                                                          |
| 8 Menadue Street                            | ---                                                                           | ---   | ---   | ---   | 0.21m |                                                                                          |                    |                      |                                                                                                                                                          |
| 22 Menadue Street                           | ---                                                                           | ---   | ---   | ---   | 0.08m |                                                                                          |                    |                      |                                                                                                                                                          |
| 26 Menadue Street                           | ---                                                                           | ---   | ---   | ---   | 0.16m |                                                                                          |                    |                      |                                                                                                                                                          |
| 28 Menadue Street                           | ---                                                                           | ---   | ---   | ---   | 0.27m |                                                                                          |                    |                      |                                                                                                                                                          |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 30 Menadue Street                           | ---                                                                           | ---   | ---   | ---   | 0.20m |                                                                                          |                    |                      |          |
| 32 Menadue Street                           | ---                                                                           | ---   | ---   | 0.20m | 0.40m |                                                                                          |                    | 0.01m                |          |
| 34 Menadue Street                           | ---                                                                           | ---   | ---   | ---   | 0.08m |                                                                                          |                    |                      |          |
| 36 Menadue Street                           | ---                                                                           | ---   | ---   | 0.01m | 0.24m |                                                                                          |                    |                      |          |
| 2 O'Callaghans Parade                       | ---                                                                           | ---   | 0.28m | 0.69m | 0.88m |                                                                                          | 0.01m              | 0.20m                |          |
| 6 O'Callaghans Parade                       | ---                                                                           | ---   | ---   | 0.20m | 0.39m |                                                                                          |                    | 0.11m                |          |
| 8 O'Callaghans Parade                       | ---                                                                           | ---   | ---   | 0.14m | 0.34m |                                                                                          |                    | 0.07m                |          |
| 12 O'Callaghans Parade                      | ---                                                                           | ---   | ---   | ---   | 0.23m |                                                                                          |                    |                      |          |
| 15-17 O'Callaghans Parade                   | ---                                                                           | ---   | ---   | 0.18m | 0.39m |                                                                                          | 0.02m              | 0.23m                |          |
| 18 O'Callaghans Parade                      | ---                                                                           | ---   | ---   | 0.09m | 0.30m |                                                                                          |                    |                      |          |
| 18 O'Callaghans Parade                      | ---                                                                           | ---   | ---   | 0.08m | 0.29m |                                                                                          |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments                                                                                                                                                                          |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                                                                                   |
| 19-21 O'Callaghans Parade                   | ---                                                                           | ---   | ---   | 0.19m | 0.40m |                                                                                          |                    | 0.09m                |                                                                                                                                                                                   |
| 52 O'Callaghans Parade                      | ---                                                                           | ---   | 0.23m | 0.66m | 0.86m |                                                                                          |                    |                      |                                                                                                                                                                                   |
| 52 O'Callaghans Parade                      | ---                                                                           | ---   | ---   | 0.30m | 0.50m |                                                                                          |                    |                      |                                                                                                                                                                                   |
| 18 O'Connor Drive                           |                                                                               |       |       |       |       |                                                                                          |                    |                      | (Jan 11) This property reported to MECC that water in their yard was caused by runoff from Horsham College Senior campus. Neither MECC nor PIA recorded water entering the house. |
| 20 O'Connor Drive                           |                                                                               |       |       |       |       |                                                                                          |                    |                      | (Jan 11) This property reported to MECC that water in their yard was caused by runoff from Horsham College Senior campus. Neither MECC nor PIA recorded water entering the house. |
| O'Donnell Drive                             | ---                                                                           | ---   | ---   | ---   | 0.29m |                                                                                          |                    | N/A                  | Modelling of water depth on road, at the deepest point.                                                                                                                           |
| 1A O'Donnell Drive                          | ---                                                                           | ---   | ---   | ---   | 0.08m |                                                                                          |                    |                      |                                                                                                                                                                                   |
| 11 Olga Avenue                              | ---                                                                           | ---   | ---   | ---   | 0.24m |                                                                                          |                    |                      |                                                                                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                                                                                                           |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                                                    |
| 13 Olga Avenue                                 | ---                                                                                 | ---   | ---   | ---   | 0.07m |                                                                                                      |                    |                      |                                                                                                                                                    |
| 15 Olga Avenue                                 | ---                                                                                 | ---   | ---   | ---   | 0.12m |                                                                                                      |                    |                      |                                                                                                                                                    |
| 77 Peels Road                                  | ---                                                                                 | ---   | ---   | 0.38m | 0.42m |                                                                                                      |                    |                      |                                                                                                                                                    |
| 80 Peels Road                                  | ---                                                                                 | ---   | ---   | 0.15m | 0.19m |                                                                                                      | 0.28m              | 0.32m                |                                                                                                                                                    |
| 70 Peels Road                                  | ---                                                                                 | ---   | ---   | 0.21m | 0.25m |                                                                                                      |                    |                      |                                                                                                                                                    |
| 55 Peels Road                                  | ---                                                                                 | ---   | ---   | 0.01m | 0.09m |                                                                                                      |                    |                      |                                                                                                                                                    |
| RMB 3312 Peels Road                            | ---                                                                                 | ---   | ---   | ---   | 0.07m |                                                                                                      |                    |                      |                                                                                                                                                    |
| 40 Peels Road                                  | ---                                                                                 | ---   | ---   | 0.01m | 0.10m |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * But not supported by other data. |
| Peppertree Lane                                | 0.47m                                                                               | 0.89m | 1.32m | 1.53m | 1.70m |                                                                                                      | 0.03m              | 0.21m                | Modelling of water depth on road, at the deepest point.                                                                                            |
| Peppertree Lane                                | ---                                                                                 | ---   | ---   | 0.22m | 0.39m |                                                                                                      | N/A                | N/A                  |                                                                                                                                                    |
| Peppertree Lane                                | ---                                                                                 | ---   | ---   | 0.08m | 0.24m |                                                                                                      |                    |                      |                                                                                                                                                    |
| Peppertree Lane                                | ---                                                                                 | ---   | ---   | 0.18m | 0.34m |                                                                                                      |                    |                      |                                                                                                                                                    |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                                                                          |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 25 Peppertree Lane                             |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 64 Peppertree Lane                             | ---                                                                                 | ---   | ---   | 0.11m | 0.27m |                                                                                                      |                    |                      |                                                                                                                   |
| 67 Peppertree Lane                             | ---                                                                                 | ---   | ---   | 0.74m | 0.90m |                                                                                                      | 0.02m              | 0.18m                | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 77 Peppertree Lane                             | ---                                                                                 | ---   | 0.15m | 0.61m | 0.78m |                                                                                                      |                    |                      |                                                                                                                   |
| 98 Peppertree Lane                             | ---                                                                                 | ---   | 0.08m | 0.30m | 0.46m |                                                                                                      |                    |                      |                                                                                                                   |
| 126 Peppertree Lane                            |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
|                                                |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| Pryors Road                                    | 1.80m                                                                               | 2.10m | 2.46m | 2.66m | 2.82m |                                                                                                      |                    |                      | Modelling of water depth on road, at the deepest point.                                                           |
| 17 Pryors Road                                 | ---                                                                                 | ---   | ---   | ---   | 0.13m |                                                                                                      |                    |                      |                                                                                                                   |
| 21 Pryors Road                                 | ---                                                                                 | ---   | ---   | ---   | 0.16m |                                                                                                      |                    |                      |                                                                                                                   |
| 28 Pryors Road                                 | ---                                                                                 | ---   | ---   | ---   | 0.12m |                                                                                                      |                    | N/A                  |                                                                                                                   |
| 29 Pryors Road                                 | ---                                                                                 | ---   | ---   | 0.13m | 0.31m |                                                                                                      | N/A                | N/A                  |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                                                                          |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 29 Pryors Road                                 | ---                                                                                 | ---   | ---   | ---   | 0.21m |                                                                                                      |                    |                      |                                                                                                                   |
| 30 Pryors Road                                 | ---                                                                                 | ---   | ---   | ---   | 0.14m |                                                                                                      |                    |                      |                                                                                                                   |
| 31 Pryors Road                                 | ---                                                                                 | ---   | ---   | 0.17m | 0.34  |                                                                                                      | N/A                | N/A                  |                                                                                                                   |
| 33 Pryors Road                                 | ---                                                                                 | ---   | ---   | 0.29m | 0.47m |                                                                                                      |                    |                      |                                                                                                                   |
| 34 Pryors Road                                 | ---                                                                                 | ---   | ---   | 0.37m | 0.53m |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 35 Pryors Road                                 | ---                                                                                 | ---   | ---   | 0.03m | 0.20m |                                                                                                      |                    |                      |                                                                                                                   |
| 37 Pryors Road                                 | ---                                                                                 | ---   | ---   | 0.13m | 0.31m |                                                                                                      |                    |                      |                                                                                                                   |
| 39 Pryors Road                                 | ---                                                                                 | ---   | ---   | 0.15m | 0.32m |                                                                                                      |                    |                      |                                                                                                                   |
| 41 Pryors Road                                 | ---                                                                                 | ---   | ---   | 0.18m | 0.34m |                                                                                                      | N/A                | N/A                  |                                                                                                                   |
| 43 Pryors Road                                 | ---                                                                                 | ---   | 0.36m | 0.57m | 0.73  | N/A                                                                                                  | N/A                | N/A                  |                                                                                                                   |
| 43 Pryors Road                                 | ---                                                                                 | ---   | ---   | 0.19m | 0.36m |                                                                                                      |                    |                      |                                                                                                                   |
| 50 Pryors Road                                 | ---                                                                                 | ---   | ---   | 0.18m | 0.35m |                                                                                                      |                    |                      |                                                                                                                   |
| 56 Pryors Road                                 | ---                                                                                 | ---   | 0.42m | 0.64m | 0.80m |                                                                                                      |                    |                      |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                                                                          |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 73 Pryors Road                                 | ---                                                                                 | ---   | 0.24m | 0.45m | 0.62m |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 75 Pryors Road                                 | ---                                                                                 | ---   | 0.39m | 0.60m | 0.76m |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| RMB 3229 Pryors Road                           | ---                                                                                 | ---   | 0.45m | 0.66m | 0.82m |                                                                                                      |                    |                      |                                                                                                                   |
| 1 Rahley Court                                 | ---                                                                                 | ---   | ---   | ---   | 0.14m |                                                                                                      |                    |                      |                                                                                                                   |
| 3 Rahley Court                                 | ---                                                                                 | ---   | ---   | ---   | 0.06m |                                                                                                      |                    |                      |                                                                                                                   |
| 4 Rahley Court                                 | ---                                                                                 | ---   | ---   | ---   | 0.10m |                                                                                                      |                    |                      |                                                                                                                   |
| 2 Read Street                                  | ---                                                                                 | ---   | ---   | 0.20m | 0.39m |                                                                                                      |                    |                      |                                                                                                                   |
| 4 Read Street                                  | ---                                                                                 | ---   | ---   | 0.13m | 0.32m |                                                                                                      |                    |                      |                                                                                                                   |
| 1 Regal Court                                  | ---                                                                                 | ---   | ---   | 0.40m | 0.63m |                                                                                                      |                    |                      |                                                                                                                   |
| 2 Regal Court                                  | ---                                                                                 | ---   | ---   | 0.11m | 0.30m |                                                                                                      |                    |                      |                                                                                                                   |
| 3 Regal Court                                  | ---                                                                                 | ---   | ---   | 0.13m | 0.32m |                                                                                                      | N/A                | N/A                  |                                                                                                                   |
| 4 Regal Court                                  | ---                                                                                 | ---   | ---   | 0.05m | 0.28m |                                                                                                      |                    |                      |                                                                                                                   |
| 5 Regal Court                                  | ---                                                                                 | ---   | ---   | 0.15m | 0.38m |                                                                                                      | N/A                | N/A                  |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments                                                                                                          |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 6 Regal Court                               | ---                                                                           | ---   | ---   | 0.34m | 0.56m |                                                                                          |                    | 0.06m                |                                                                                                                   |
| 4 Rennison Street                           | ---                                                                           | ---   | ---   | 0.11m | 0.33m |                                                                                          |                    |                      |                                                                                                                   |
| 5 Rennison Street                           | ---                                                                           | ---   | ---   | ---   | 0.12m |                                                                                          |                    |                      |                                                                                                                   |
| 7 Rennison Street                           | ---                                                                           | ---   | ---   | ---   | 0.25m |                                                                                          |                    |                      |                                                                                                                   |
| 1-8 Rennison Street                         | ---                                                                           | ---   | 0.01m | 0.36m | 0.57m |                                                                                          |                    |                      |                                                                                                                   |
| 2-8 Rennison Street                         | ---                                                                           | ---   | ---   | 0.31m | 0.52m |                                                                                          |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 3-8 Rennison Street                         | ---                                                                           | ---   | ---   | 0.38m | 0.59m |                                                                                          | 0.03m              | 0.25m                |                                                                                                                   |
| 9 Rennison Street                           | ---                                                                           | ---   | ---   | 0.10m | 0.32m |                                                                                          |                    |                      |                                                                                                                   |
| 10 Rennison Street                          | ---                                                                           | ---   | ---   | 0.12m | 0.33m |                                                                                          |                    | 0.16m                |                                                                                                                   |
| 11 Rennison Street                          | ---                                                                           | ---   | ---   | 0.17m | 0.39m |                                                                                          |                    |                      |                                                                                                                   |
| 12 Rennison Street                          | ---                                                                           | ---   | ---   | 0.09m | 0.31m |                                                                                          |                    |                      |                                                                                                                   |
| 13 Rennison Street                          | ---                                                                           | ---   | ---   | 0.19m | 0.41m |                                                                                          |                    |                      |                                                                                                                   |
| 14 Rennison Street                          | ---                                                                           | ---   | ---   | 0.11m | 0.32m |                                                                                          |                    |                      |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 15 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.17m | 0.39m |                                                                                                      |                    |                      |          |
| 16 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.26m | 0.48m |                                                                                                      |                    | 0.03m                |          |
| 1-17 Rennison Street                           | ---                                                                                 | ---   | ---   | 0.15m | 0.37m |                                                                                                      |                    |                      |          |
| 2-17 Rennison Street                           | ---                                                                                 | ---   | ---   | 0.14m | 0.36m |                                                                                                      |                    |                      |          |
| 3-17 Rennison Street                           | ---                                                                                 | ---   | ---   | 0.14m | 0.36m |                                                                                                      |                    |                      |          |
| 18 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.15m | 0.37m |                                                                                                      |                    |                      |          |
| 20 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.18m | 0.40m |                                                                                                      |                    |                      |          |
| 22 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.22m | 0.44m |                                                                                                      |                    |                      |          |
| 23 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.17m | 0.39m |                                                                                                      |                    |                      |          |
| 24 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.32m | 0.54m |                                                                                                      |                    |                      |          |
| 25 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.14m | 0.37m |                                                                                                      |                    |                      |          |
| 26 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.09m | 0.31m |                                                                                                      |                    |                      |          |
| 27 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.03m | 0.25m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                         |
| 28 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.06m | 0.28m |                                                                                                      |                    |                      |                                                         |
| 29 Rennison Street                             | ---                                                                                 | ---   | ---   | ---   | 0.22m |                                                                                                      |                    |                      |                                                         |
| 30 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.07m | 0.29m |                                                                                                      |                    |                      |                                                         |
| 31 Rennison Street                             | ---                                                                                 | ---   | ---   | ---   | 0.19m |                                                                                                      |                    |                      |                                                         |
| 33 Rennison Street                             | ---                                                                                 | ---   | ---   | 0.08m | 0.31m |                                                                                                      |                    |                      |                                                         |
| 35 Rennison Street                             | ---                                                                                 | ---   | ---   | ---   | 0.08m |                                                                                                      |                    |                      |                                                         |
| 37 Rennison Street                             | ---                                                                                 | ---   | ---   | ---   | 0.05m |                                                                                                      |                    |                      |                                                         |
| Riverside Road                                 | 0.41m                                                                               | 0.64m | 0.92m | 1.11m | 1.25m |                                                                                                      |                    |                      | Modelling of water depth on road, at the deepest point. |
| Riverside Road                                 | 0.25m                                                                               | 0.49m | 0.77m | 0.96m | 1.10m |                                                                                                      |                    |                      |                                                         |
| Riverside Road                                 | 0.46m                                                                               | 0.69m | 0.98m | 1.17m | 1.31m |                                                                                                      |                    | 0.12m                |                                                         |
| RMB 3250 Riverside<br>Road                     | ---                                                                                 | ---   | 0.19m | 0.38m | 0.53m |                                                                                                      |                    |                      |                                                         |
| RMB 3252 Riverside<br>Road                     | ---                                                                                 | ---   | ---   | 0.04m | 0.18m |                                                                                                      |                    |                      |                                                         |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                                                                          |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| RMB 3334 Riverside Road                        | ---                                                                                 | ---   | 0.27m | 0.46m | 0.60m |                                                                                                      |                    | 0.07m                |                                                                                                                   |
| 495 Riverside East Road                        |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 499 Riverside East Road                        |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 532 Riverside East Road                        |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 721 Riverside East Road                        |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 22 Robinson Street                             | ---                                                                                 | ---   | ---   | 0.26m | 0.50m |                                                                                                      | 0.07m              | 0.31m                |                                                                                                                   |
| 99 Robinson Street                             | ---                                                                                 | ---   | 0.25m | 0.56m | 0.78m | N/A                                                                                                  | N/A                | N/A                  |                                                                                                                   |
| 101 Robinson Street                            | ---                                                                                 | ---   | 0.51m | 0.81m | 1.03m |                                                                                                      | 0.14m              | 0.36m                |                                                                                                                   |
| 102 Robinson Street                            |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 103 Robinson Street                            | ---                                                                                 | ---   | 0.32m | 0.63m | 0.84m |                                                                                                      | 0.28m              | 0.50m                | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 318 Rodeskys Road                              |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 1 Royal Court                               | ---                                                                           | ---   | ---   | 0.47m | 0.73m |                                                                                          | N/A                | N/A                  |          |
| 2 Royal Court                               | ---                                                                           | ---   | ---   | 0.09m | 0.35m |                                                                                          |                    |                      |          |
| 3 Royal Court                               | ---                                                                           | ---   | ---   | ---   | 0.18m |                                                                                          |                    |                      |          |
| 4 Royal Court                               | ---                                                                           | ---   | ---   | 0.10m | 0.25m |                                                                                          |                    |                      |          |
| 5 Royal Court                               | ---                                                                           | ---   | ---   | ---   | 0.16m |                                                                                          |                    |                      |          |
| 6 Royal Court                               | ---                                                                           | ---   | ---   | 0.30m | 0.55m |                                                                                          |                    |                      |          |
| 1 Schier Court                              | ---                                                                           | ---   | ---   | ---   | 0.17m |                                                                                          |                    |                      |          |
| 2 Schier Court                              | ---                                                                           | ---   | ---   | ---   | 0.17m |                                                                                          |                    |                      |          |
| 3 Schier Court                              | ---                                                                           | ---   | ---   | ---   | 0.13m |                                                                                          |                    |                      |          |
| 4 Schier Court                              | ---                                                                           | ---   | ---   | ---   | 0.24m |                                                                                          |                    |                      |          |
| 5 Schier Court                              | ---                                                                           | ---   | ---   | 0.05m | 0.28m |                                                                                          |                    |                      |          |
| 6 Schier Court                              | ---                                                                           | ---   | ---   | ---   | 0.22m |                                                                                          |                    |                      |          |
| 7 Schier Court                              | ---                                                                           | ---   | ---   | 0.09m | 0.31m |                                                                                          |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                         |
| 8 Schier Court                                 | ---                                                                                 | ---   | ---   | 0.11m | 0.33m |                                                                                                      |                    |                      |                                                         |
| 9 Schier Court                                 | ---                                                                                 | ---   | ---   | ---   | 0.14m |                                                                                                      |                    |                      |                                                         |
| 10 Schier Court                                | ---                                                                                 | ---   | ---   | ---   | 0.19m |                                                                                                      |                    |                      |                                                         |
| Selkirk Street                                 | ---                                                                                 | ---   | ---   | ---   | 0.23m |                                                                                                      |                    |                      | Modelling of water depth on road, at the deepest point. |
| Selkirk Street                                 | ---                                                                                 | ---   | ---   | ---   | 0.06m |                                                                                                      |                    |                      |                                                         |
| Selkirk Street                                 | ---                                                                                 | ---   | ---   | ---   | 0.22m |                                                                                                      |                    | 0.17m                |                                                         |
| Selkirk Street                                 | ---                                                                                 | ---   | ---   | 0.23m | 0.45m |                                                                                                      |                    |                      |                                                         |
| Selkirk Street                                 | ---                                                                                 | ---   | ---   | 0.01m | 0.22m |                                                                                                      |                    |                      |                                                         |
| Selkirk Street                                 | ---                                                                                 | ---   | ---   |       | 0.19m |                                                                                                      |                    | 0.12m                |                                                         |
| 1 Shalom Place                                 | ---                                                                                 | ---   | ---   | 0.06m | 0.27m |                                                                                                      |                    |                      |                                                         |
| 2 Shalom Place                                 | ---                                                                                 | ---   | ---   | 0.08m | 0.30m |                                                                                                      |                    |                      |                                                         |
| 3 Shalom Place                                 | ---                                                                                 | ---   | ---   | 0.08m | 0.30m |                                                                                                      |                    |                      |                                                         |
| 4 Shalom Place                                 | ---                                                                                 | ---   | ---   | ---   | 0.24m |                                                                                                      |                    |                      |                                                         |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                         |
| 5 Shalom Place                                 | ---                                                                                 | ---   | ---   | ---   | 0.25m |                                                                                                      |                    |                      |                                                         |
| 6 Shalom Place                                 | ---                                                                                 | ---   | ---   | 0.06m | 0.28m |                                                                                                      |                    |                      |                                                         |
| 7 Shalom Place                                 | ---                                                                                 | ---   | ---   | ---   | 0.25m |                                                                                                      |                    |                      |                                                         |
| 8 Shalom Place                                 | ---                                                                                 | ---   | ---   | ---   | 0.17m |                                                                                                      |                    |                      |                                                         |
| 9 Shalom Place                                 | ---                                                                                 | ---   | ---   | ---   | 0.18m |                                                                                                      |                    |                      |                                                         |
| 10 Shalom Place                                | ---                                                                                 | ---   | ---   | ---   | 0.20m |                                                                                                      |                    |                      |                                                         |
| 11 Shalom Place                                | ---                                                                                 | ---   | ---   | ---   | 0.23m |                                                                                                      |                    |                      |                                                         |
| 12 Shalom Place                                | ---                                                                                 | ---   | ---   | 0.05m | 0.26m |                                                                                                      |                    |                      |                                                         |
| 13 Shalom Place                                | ---                                                                                 | ---   | ---   | 0.08m | 0.29m |                                                                                                      |                    |                      |                                                         |
| Sloss Street                                   | ---                                                                                 | ---   | ---   | 0.37m | 0.61m |                                                                                                      | N/A                | N/A                  | Modelling of water depth on road, at the deepest point. |
| Sloss Street                                   | ---                                                                                 | ---   | ---   | 0.35m | 0.59m |                                                                                                      | 0.40m              | 0.64m                |                                                         |
| 1 Sloss Street                                 | ---                                                                                 | ---   | ---   | 0.45m | 0.70m |                                                                                                      |                    |                      |                                                         |
| 1 Sloss Street                                 | ---                                                                                 | ---   | ---   | 0.14m | 0.37m |                                                                                                      | N/A                | N/A                  |                                                         |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 1A Sloss Street                                | ---                                                                                 | ---   | ---   | 0.09m | 0.29m |                                                                                                      |                    |                      |          |
| 1B Sloss Street                                | ---                                                                                 | ---   | ---   | ---   | 0.22m |                                                                                                      |                    | 0.25                 |          |
| 2 Sloss Street                                 | ---                                                                                 | ---   | ---   | ---   | 0.20m |                                                                                                      |                    |                      |          |
| 2A Sloss Street                                | ---                                                                                 | ---   | ---   | 0.15m | 0.37m |                                                                                                      |                    | 0.17m                |          |
| 3 Sloss Street                                 | ---                                                                                 | ---   | ---   | ---   | 0.24m |                                                                                                      |                    | 0.14m                |          |
| 5 Sloss Street                                 | ---                                                                                 | ---   | ---   | 0.36m | 0.61m |                                                                                                      | 0.06m              | 0.31m                |          |
| 7 Sloss Street                                 | ---                                                                                 | ---   | ---   | 0.17m | 0.42m |                                                                                                      |                    |                      |          |
| 13 Sloss Street                                | ---                                                                                 | ---   | ---   | 0.16m | 0.43m |                                                                                                      |                    |                      |          |
| Stawell Road                                   | ---                                                                                 | ---   | ---   | 0.07m | 0.26m |                                                                                                      |                    |                      |          |
| 8 Stockton Drive                               | ---                                                                                 | ---   | ---   | ---   | 0.04m |                                                                                                      |                    |                      |          |
| 12 Stockton Drive                              | ---                                                                                 | ---   | ---   | ---   | 0.02m |                                                                                                      |                    |                      |          |
| 13 Stockton Drive                              | ---                                                                                 | ---   | ---   | ---   | 0.12m |                                                                                                      |                    |                      |          |
| 14 Stockton Drive                              | ---                                                                                 | ---   | ---   | ---   | 0.14m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name & Number) | Depth of flooding at property for selected river heights on the Walmer gauge. |       |       |       |       | Depth of over floor flooding at property for selected river heights on the Walmer gauge. |                    |                      | Comments                                                |
|---------------------------------------------|-------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------|--------------------|----------------------|---------------------------------------------------------|
|                                             | 3.47m                                                                         | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                       | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                         |
| 14A Stockton Drive                          | ---                                                                           | ---   | ---   | ---   | 0.19m |                                                                                          |                    |                      |                                                         |
| 15 Stockton Drive                           | ---                                                                           | ---   | ---   | ---   | 0.02m |                                                                                          |                    |                      |                                                         |
| 16 Stockton Drive                           | ---                                                                           | ---   | ---   | ---   | 0.04m |                                                                                          |                    |                      |                                                         |
| 17 Stockton Drive                           | ---                                                                           | ---   | ---   | ---   | 0.01m |                                                                                          |                    |                      |                                                         |
| Trinity Drive                               | ---                                                                           | ---   | ---   | 0.02m | 0.23m |                                                                                          |                    | 0.18m                | Modelling of water depth on road, at the deepest point. |
| Trinity Drive                               | ---                                                                           | ---   | ---   | ---   | 0.07m |                                                                                          |                    |                      |                                                         |
| 2 Trinity Drive                             | ---                                                                           | ---   | ---   | ---   | 0.20m |                                                                                          |                    |                      |                                                         |
| 4 Trinity Drive                             | ---                                                                           | ---   | ---   | ---   | 0.19m |                                                                                          |                    |                      |                                                         |
| 8 Trinity Drive                             | ---                                                                           | ---   | ---   | 0.10m | 0.32m |                                                                                          |                    |                      |                                                         |
| 10 Trinity Drive                            | ---                                                                           | ---   | ---   | ---   | 0.23m |                                                                                          |                    |                      |                                                         |
| 12 Trinity Drive                            | ---                                                                           | ---   | ---   | ---   | 0.21m |                                                                                          |                    |                      |                                                         |
| 14 Trinity Drive                            | ---                                                                           | ---   | ---   | 0.14m | 0.36m |                                                                                          |                    |                      |                                                         |
| Urquhart Street                             | ---                                                                           | ---   | 0.61m | 1.04m | 1.29m | N/A                                                                                      | N/A                | N/A                  | Modelling of water depth on road, at the deepest point. |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| Urquhart Street                                | ---                                                                                 | ---   | ---   | ---   | 0.24m |                                                                                                      |                    | N/A                  |          |
| Urquhart Street                                | ---                                                                                 | ---   | ---   | 0.09m | 0.35m |                                                                                                      |                    | 0.19m                |          |
| 39 Urquhart Street                             | ---                                                                                 | ---   | ---   | 0.16m | 0.41m |                                                                                                      |                    | 0.20m                |          |
| 40 Urquhart Street                             | ---                                                                                 | ---   | ---   | 0.24m | 0.49m |                                                                                                      |                    |                      |          |
| 41 Urquhart Street                             | ---                                                                                 | ---   | 0.08m | 0.52m | 0.77m |                                                                                                      |                    |                      |          |
| 41 Urquhart Street                             | ---                                                                                 | ---   | ---   | 0.31m | 0.56m |                                                                                                      |                    | 0.22m                |          |
| 42-46 Urquhart Street                          | ---                                                                                 | ---   | ---   | ---   | 0.16m |                                                                                                      |                    | 0.04m                |          |
| 42-46 Urquhart Street                          | ---                                                                                 | ---   | ---   | ---   | 0.30m |                                                                                                      |                    |                      |          |
| 45-47 Urquhart Street                          | ---                                                                                 | ---   | ---   | 0.15m | 0.40m |                                                                                                      |                    |                      |          |
| 48 Urquhart Street                             | ---                                                                                 | ---   | ---   | ---   | 0.20m |                                                                                                      |                    | 0.17m                |          |
| 49 Urquhart Street                             | ---                                                                                 | ---   | ---   | 0.35m | 0.60m |                                                                                                      |                    | 0.05m                |          |
| 51 Urquhart Street                             | ---                                                                                 | ---   | ---   | 0.34m | 0.59m |                                                                                                      |                    | 0.04m                |          |
| 1 Webster Street                               | ---                                                                                 | ---   | ---   | 0.33m | 0.56m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 2 Webster Street                               | ---                                                                                 | ---   | ---   | ---   | 0.16m |                                                                                                      |                    |                      |          |
| 3 Webster Street                               | ---                                                                                 | ---   | ---   | 0.22m | 0.47m |                                                                                                      |                    |                      |          |
| 4 Webster Street                               | ---                                                                                 | ---   | ---   | ---   | 0.17m |                                                                                                      |                    |                      |          |
| 5 Webster Street                               | ---                                                                                 | ---   | ---   | 0.09m | 0.31m |                                                                                                      |                    |                      |          |
| 7 Webster Street                               | ---                                                                                 | ---   | ---   | ---   | 0.24m |                                                                                                      |                    |                      |          |
| 9 Webster Street                               | ---                                                                                 | ---   | ---   | 0.04m | 0.27m |                                                                                                      |                    |                      |          |
| 11 Webster Street                              | ---                                                                                 | ---   | ---   | ---   | 0.18m |                                                                                                      |                    |                      |          |
| 13 Webster Street                              | ---                                                                                 | ---   | ---   | ---   | 0.14m |                                                                                                      |                    |                      |          |
| 2 Weldon Power Court                           | ---                                                                                 | 0.08m | 0.26m | 0.46m | 0.67m |                                                                                                      |                    |                      |          |
| 4 Weldon Power Court                           | ---                                                                                 | ---   | ---   | 0.12m | 0.33m |                                                                                                      |                    |                      |          |
| 6 Weldon Power Court                           | ---                                                                                 | ---   | ---   | 0.40m | 0.61m |                                                                                                      |                    |                      |          |
| 8 Weldon Power Court                           | ---                                                                                 | ---   | ---   | ---   | 0.19m |                                                                                                      |                    |                      |          |
| 10 Weldon Power Court                          | 0.07m                                                                               | 0.16m | 0.22m | 0.29m | 0.44m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments                                                                                                          |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |                                                                                                                   |
| 11 Weldon Power Court                          | ---                                                                                 | ---   | ---   | ---   | 0.07m |                                                                                                      |                    |                      |                                                                                                                   |
| 12 Weldon Power Court                          | 0.14m                                                                               | 0.42m | 0.48m | 0.52m | 0.65m | N/A                                                                                                  | N/A                | N/A                  |                                                                                                                   |
| 13 Weldon Power Court                          | 0.05m                                                                               | 0.11m | 0.15m | 0.17m | 0.21m |                                                                                                      |                    |                      |                                                                                                                   |
| 14 Weldon Power Court                          | 0.07m                                                                               | 0.14m | 0.18m | 0.21m | 0.29m |                                                                                                      |                    |                      |                                                                                                                   |
| 16 Weldon Power Court                          | 0.13m                                                                               | 0.19m | 0.24m | 0.25m | 0.31m |                                                                                                      |                    |                      |                                                                                                                   |
| 470 West Road                                  |                                                                                     |       |       |       |       |                                                                                                      |                    |                      | PIA coordinator reported this property as 'inundated' during the Jan 2011 event. Over floor flooding did occur. * |
| 2 Wettenhall Street                            | ---                                                                                 | ---   | ---   | 0.07m | 0.23m |                                                                                                      |                    |                      |                                                                                                                   |
| 4 Wettenhall Street                            | ---                                                                                 | ---   | ---   | 0.06m | 0.29m |                                                                                                      |                    |                      |                                                                                                                   |
| 6 Wettenhall Street                            | ---                                                                                 | ---   | ---   | 0.05m | 0.29m |                                                                                                      |                    |                      |                                                                                                                   |
| 8 Wettenhall Street                            | ---                                                                                 | ---   | ---   | 0.03m | 0.26m |                                                                                                      |                    |                      |                                                                                                                   |
| 10 Wettenhall Street                           | ---                                                                                 | ---   | ---   | 0.07m | 0.31m |                                                                                                      |                    |                      |                                                                                                                   |
| 12 Wettenhall Street                           | ---                                                                                 | ---   | ---   | 0.05m | 0.29m |                                                                                                      |                    |                      |                                                                                                                   |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| Williams Road                                  | ---                                                                                 | ---   | ---   | ---   | 0.15m |                                                                                                      |                    | N/A                  |          |
| 35 Williams Road                               | ---                                                                                 | ---   | ---   | 0.21m | 0.42m |                                                                                                      |                    |                      |          |
| 68 Williams Road                               | ---                                                                                 | ---   | ---   | 0.12m | 0.33m |                                                                                                      |                    | 0.17m                |          |
| 69 Williams Road                               | ---                                                                                 | ---   | ---   | ---   | 0.13m |                                                                                                      |                    |                      |          |
| 70 Williams Road                               | ---                                                                                 | ---   | ---   | 0.07m | 0.28m |                                                                                                      |                    |                      |          |
| 71 Williams Road                               | ---                                                                                 | ---   | ---   | ---   | 0.12m |                                                                                                      |                    |                      |          |
| 72 Williams Road                               | ---                                                                                 | ---   | ---   | 0.11m | 0.32m |                                                                                                      |                    |                      |          |
| 74 Williams Road                               | ---                                                                                 | ---   | ---   | 0.13m | 0.34m |                                                                                                      |                    |                      |          |
| 75 Williams Road                               | ---                                                                                 | ---   | ---   | ---   | 0.13m |                                                                                                      |                    |                      |          |
| 76 Williams Road                               | ---                                                                                 | ---   | ---   | 0.11m | 0.33m |                                                                                                      |                    |                      |          |
| 77 Williams Road                               | ---                                                                                 | ---   | ---   | ---   | 0.16m |                                                                                                      |                    |                      |          |
| 78 Williams Road                               | ---                                                                                 | ---   | ---   | 0.17m | 0.38m |                                                                                                      |                    |                      |          |
| 79 Williams Road                               | ---                                                                                 | ---   | ---   | ---   | 0.20m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 80 Williams Road                               | ---                                                                                 | ---   | 0.08m | 0.28m | 0.50m |                                                                                                      |                    |                      |          |
| 80A Williams Road                              | ---                                                                                 | ---   | ---   | 0.16m | 0.37m |                                                                                                      |                    | 0.08m                |          |
| 81 Williams Road                               | ---                                                                                 | ---   | ---   | ---   | 0.29m |                                                                                                      |                    |                      |          |
| 95 Williams Road                               | 0.41m                                                                               | 0.55m | 0.73m | 0.92m | 1.14m |                                                                                                      |                    | 0.18m                |          |
| 133 Williams Road                              | ---                                                                                 | ---   | ---   | ---   | 0.03m |                                                                                                      |                    |                      |          |
| 1 Willow Court                                 | ---                                                                                 | ---   | ---   | 0.02m | 0.10m |                                                                                                      |                    |                      |          |
| 2 Willow Court                                 | ---                                                                                 | ---   | ---   | ---   | 0.20m |                                                                                                      |                    |                      |          |
| 3 Willow Court                                 | ---                                                                                 | ---   | ---   | 0.10m | 0.28m |                                                                                                      | N/A                | N/A                  |          |
| 4 Willow Court                                 | ---                                                                                 | ---   | ---   | ---   | 0.17m |                                                                                                      |                    |                      |          |
| 1 Wilson Street                                | ---                                                                                 | ---   | ---   | ---   | 0.46m |                                                                                                      |                    |                      |          |
| 7 Wilson Street                                | ---                                                                                 | ---   | ---   | ---   | 0.21m |                                                                                                      |                    |                      |          |
| 7A Wilson Street                               | ---                                                                                 | ---   | ---   | ---   | 0.10m |                                                                                                      |                    |                      |          |
| 7B Wilson Street                               | ---                                                                                 | ---   | ---   | ---   | 0.31m |                                                                                                      |                    |                      |          |

## HORSHAM CITY

| Location of House<br>(Street Name &<br>Number) | Depth of flooding at property for<br>selected river heights on the Walmer<br>gauge. |       |       |       |       | Depth of over floor<br>flooding at property<br>for selected river<br>heights on the<br>Walmer gauge. |                    |                      | Comments |
|------------------------------------------------|-------------------------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------------------------------------------|--------------------|----------------------|----------|
|                                                | 3.47m                                                                               | 3.61m | 3.72m | 3.79m | 3.86m | 3.72m<br>2%<br>AEP                                                                                   | 3.79m<br>1%<br>AEP | 3.86m<br>0.5%<br>AEP |          |
| 9 Wilson Street                                | ---                                                                                 | ---   | ---   | ---   | 0.11m |                                                                                                      |                    |                      |          |
| 11 Wilson Street                               | ---                                                                                 | ---   | ---   | ---   | 0.05m |                                                                                                      |                    |                      |          |
| 23 Wilson Street                               | ---                                                                                 | ---   | ---   | 0.30m | 0.55m |                                                                                                      |                    |                      |          |
| 27 Wilson Street                               | ---                                                                                 | ---   | ---   | 0.05m | 0.30m |                                                                                                      | 0.01m              | 0.26m                |          |
| 29 Wilson Street                               | ---                                                                                 | ---   | ---   | ---   | 0.28m |                                                                                                      |                    | 0.01m                |          |
| 31 Wilson Street                               | ---                                                                                 | ---   | ---   | ---   | 0.24m |                                                                                                      |                    | 0.06m                |          |
| 1/5 Wilson Street                              | ---                                                                                 | ---   | ---   | ---   | 0.04m |                                                                                                      |                    |                      |          |
| 2/5 Wilson Street                              | ---                                                                                 | ---   | ---   | ---   | 0.02m |                                                                                                      |                    |                      |          |
| 38110 Wilson Street                            | ---                                                                                 | ---   | ---   | ---   | 0.25m |                                                                                                      |                    |                      |          |
| 38111 Wilson Street                            | ---                                                                                 | ---   | ---   | ---   | 0.16m |                                                                                                      |                    |                      |          |
| 42826 Wilson Street                            | ---                                                                                 | ---   | ---   | ---   | 0.02m |                                                                                                      |                    |                      |          |
| 14 Wotonga Drive                               | ---                                                                                 | ---   | ---   | ---   | 0.20m |                                                                                                      |                    |                      |          |
| 2-15 Wotonga Drive                             | ---                                                                                 | ---   | ---   | ---   | 0.01m |                                                                                                      |                    |                      |          |

## Property Inundation Table East Horsham

| Location  |             |             |                  | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|-------------|-------------|------------------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name | Street Type | Locality         | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
| 8836      | WESTERN     | HWY         | BUNGALALLY       | 0.73                                                      | 0.74 | 0.88 | 0.92 | 0.94  | 0.97  | -                              | -    | -    | -    | -     | -     |
| 480       | DELAHUNTYS  | RD          | DADSWELLS BRIDGE | 1.68                                                      | 1.74 | 1.90 | 1.96 | 2.00  | 2.06  | -                              | -    | -    | -    | -     | --    |
| 11        | CAMERON     | RDN         | DOOEN            | -                                                         | -    | -    | 0.57 | 0.76  | 0.93  | -                              | -    | -    | -    | 0.07  | 0.22  |
| 49        | CAMERON     | RDN         | DOOEN            | -                                                         | 0.08 | 0.67 | 0.99 | 1.18  | 1.34  | -                              | -    | -    | -    | 0.07  | 0.23  |
| 25        | CAMERON     | RDN         | DOOEN            | -                                                         | -    | -    | 0.69 | 0.88  | 1.05  | -                              | -    | -    | -    | 0.16  | 0.25  |
| 31        | CAMERON     | RDN         | DOOEN            | -                                                         | -    | -    | 0.56 | 0.75  | 0.92  | -                              | -    | -    | -    | 0.16  | 0.31  |
| 37        | CAMERON     | RDN         | DOOEN            | -                                                         | -    | 0.39 | 0.71 | 0.90  | 1.06  | -                              | -    | -    | -    | -     | 0.06  |
| 372       | HENTY       | HWY         | DOOEN            | 3.71                                                      | 3.88 | 4.36 | 4.55 | 4.67  | 4.78  | -                              | -    | -    | -    | -     |       |
| 1         | CAMERON     | RDN         | DOOEN            | -                                                         | -    | -    | 0.23 | 0.50  | 0.68  | -                              | -    | -    | -    | 0.06  | 0.24  |
| 354       | HENTY       | HWY         | DOOEN            | -                                                         | -    | -    | -    | -     | 0.22  | -                              | -    | -    | -    | -     | -     |
| 43        | GRANT       | DR          | DOOEN            | 1.25                                                      | 1.44 | 1.97 | 2.19 | 2.31  | 2.39  | -                              | -    | -    | -    | -     | -     |
| 49        | GRANT       | DR          | DOOEN            | -                                                         | -    | 0.23 | 0.41 | 0.52  | 0.61  | -                              | -    | -    | -    | -     | -     |
| 61        | GRANT       | DR          | DOOEN            | -                                                         | 0.12 | 2.33 | 2.52 | 2.63  | 2.73  | -                              | -    | -    | -    | -     | -     |
| 67        | GRANT       | DR          | DOOEN            | -                                                         | 0.18 | 2.29 | 2.48 | 2.59  | 2.69  | -                              | -    | -    | -    | -     | -     |
| 77        | GRANT       | DR          | DOOEN            | -                                                         | 0.32 | 0.75 | 0.94 | 1.05  | 1.15  | -                              | -    | -    | -    | -     | -     |

| Location  |               |             |          | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|---------------|-------------|----------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name   | Street Type | Locality | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
| 87        | GRANT         | DR          | DOOEN    | -                                                         | 0.32 | 0.75 | 0.94 | 1.05  | 1.15  | -                              | -    | -    | -    | -     | -     |
| 764       | HENTY         | HWY         | DOOEN    | -                                                         | -    | 1.21 | 1.43 | 1.54  | 1.63  | -                              | -    | -    | -    | -     | -     |
| 650       | HENTY         | HWY         | DOOEN    | 8.22                                                      | 8.40 | 8.95 | 9.17 | 9.29  | 9.37  | -                              | -    | -    | 0.33 | 0.45  | 0.53  |
| 11        | GRANT         | DR          | DOOEN    | 2.32                                                      | 2.50 | 3.05 | 3.27 | 3.38  | 3.47  | -                              | -    | -    | -    | -     | -     |
| 21        | GRANT         | DR          | DOOEN    | 1.72                                                      | 1.90 | 2.45 | 2.67 | 2.78  | 2.87  | -                              | -    | -    | -    | -     | -     |
| 38        | BRIGHTON      | DR          | DOOEN    | 4.59                                                      | 4.77 | 5.32 | 5.54 | 5.66  | 5.74  | -                              | -    | -    | -    | -     | -     |
| 30        | BRIGHTON      | DR          | DOOEN    | 4.73                                                      | 4.91 | 5.46 | 5.69 | 5.80  | 5.89  | -                              | -    | -    | -    | -     | -     |
| 24        | BRIGHTON      | DR          | DOOEN    | 5.52                                                      | 5.70 | 6.25 | 6.47 | 6.59  | 6.67  | -                              | -    | -    | -    | -     | -     |
| 14        | BRIGHTON      | DR          | DOOEN    | 5.14                                                      | 5.32 | 5.87 | 6.09 | 6.21  | 6.29  | -                              | -    | -    | -    | -     | -     |
| 64        | RIVER HEIGHTS | RD          | DOOEN    | 2.32                                                      | 2.50 | 3.05 | 3.27 | 3.38  | 3.47  | -                              | -    | -    | -    | -     | -     |
| 88        | LONGERENONG   | RD          | DOOEN    | 5.12                                                      | 5.23 | 5.52 | 5.66 | 5.73  | 5.79  | -                              | -    | -    | 0.22 | 0.33  | 0.42  |
| 10        | LONGERENONG   | RD          | DOOEN    | 0.25                                                      | 0.43 | 0.98 | 1.21 | 1.32  | 1.40  | -                              | -    | -    | -    | -     | -     |
| 28        | LONGERENONG   | RD          | DOOEN    | 0.38                                                      | 0.56 | 1.11 | 1.33 | 1.45  | 1.53  | -                              | -    | -    | -    | -     | -     |
| 36        | LONGERENONG   | RD          | DOOEN    | 0.49                                                      | 0.67 | 2.16 | 2.38 | 2.50  | 2.58  | -                              | -    | -    | -    | -     | -     |
|           | LONGERENONG   | RD          | DOOEN    | 5.51                                                      | 5.57 | 5.82 | 5.97 | 6.06  | 6.14  | -                              | -    | -    | -    | -     | -     |
| 43        | PETRIE        | LA          | DOOEN    | 3.20                                                      | 3.34 | 3.88 | 4.19 | 4.38  | 4.54  | -                              | -    | -    | 0.63 | 0.82  | 0.76  |

| Location  |                    |             |          | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|--------------------|-------------|----------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name        | Street Type | Locality | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
| 37        | RIVERSIDE          | RD          | DOOEN    | -                                                         | -    | 0.62 | 0.88 | 1.05  | 1.20  | -                              | -    | -    | -    | -     | -     |
| 55        | CAMERON            | RDN         | DOOEN    | 1.34                                                      | 1.46 | 2.04 | 2.36 | 2.55  | 2.71  | -                              | -    | -    | -    | -     | -     |
| 94        | RIVERSIDE          | RD          | DOOEN    | 0.63                                                      | 0.78 | 1.23 | 1.47 | 1.64  | 1.78  | -                              | -    | 0.22 | 0.46 | 0.62  | 0.77  |
| 67        | RIVERSIDE          | RD          | DOOEN    | 0.16                                                      | 1.62 | 2.05 | 2.28 | 2.43  | 2.57  | -                              | -    | -    | -    | -     | -     |
| 24        | RIVERSIDE          | RD          | DOOEN    | -                                                         | 0.46 | 0.87 | 1.14 | 1.31  | 1.45  | -                              | -    | -    | -    | -     | 0.13  |
| 2         | BRIGHTON           | DR          | DOOEN    | 4.86                                                      | 5.04 | -    | 5.81 | 5.93  | 6.01  | -                              | -    | -    | -    | -     | -     |
| 50        | GROSS              | RD          | DRUNG    | 2.98                                                      | 3.01 | 3.25 | 3.29 | 3.32  | 3.34  | -                              | -    | -    | -    | -     | -     |
| 318       | ROKESKYS           | RD          | DRUNG    | 1.35                                                      | 1.51 | 1.81 | 1.93 | 1.99  | 2.04  | -                              | -    | -    | -    | 0.06  | 0.12  |
| 212       | ROKESKYS           | RD          | DRUNG    | 3.63                                                      | 3.74 | 6.70 | 6.90 | 7.01  | 7.10  | -                              | -    | -    | -    | -     | -     |
| 354       | WEST               | RD          | DRUNG    | 2.51                                                      | 2.50 | 6.70 | 6.90 | 7.01  | 7.10  | -                              | -    | -    | -    | -     | -     |
| 470       | WEST               | RD          | DRUNG    | -                                                         | -    | -    | 1.47 | 1.70  | 1.88  | -                              | -    | -    | -    | -     | 0.09  |
| 417       | BROWNS             | RD          | DRUNG    | -                                                         | -    | -    | 1.16 | 1.24  | 1.32  | -                              | -    | -    | 0.84 | 0.91  | 1.00  |
| 409       | SCHOOL             | RD          | DRUNG    | -                                                         | -    | -    | 5.39 | 5.45  | 5.52  | -                              | -    | -    | -    | -     | -     |
| 244       | DOMASCHENZ         | RD          | DRUNG    | 0.39                                                      | 0.40 | 1.97 | 2.11 | 2.16  | 2.21  | -                              | -    | -    | -    | -     | -     |
| 327       | TAYLORS LAKE NORTH | RD          | DRUNG    | -                                                         | -    | 1.37 | 1.46 | 1.49  | 1.53  | -                              | -    | -    | -    | -     | -     |
|           | HORSHAM LUBECK     | RD          | DRUNG    | -                                                         | -    | -    | 6.90 | 7.00  | 7.10  | -                              | -    | -    | -    | -     | -     |

| Location  |                |             |          | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|----------------|-------------|----------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name    | Street Type | Locality | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
| 1133      | HORSHAM LUBECK | RD          | DRUNG    | 0.68                                                      | 0.69 | 1.44 | 1.57 | 1.63  | 1.67  | -                              | -    | -    | -    | -     | -     |
| 488       | HORSHAM LUBECK | RD          | DRUNG    | -                                                         | -    | 0.24 | 0.83 | 0.99  | 1.11  | -                              | -    | -    | -    | 0.18  | 0.28  |
| 950       | HORSHAM LUBECK | RD          | DRUNG    | -                                                         | -    | 0.54 | 1.39 | 2.52  | 2.65  | -                              | -    | -    | -    | -     | -     |
| 774       | HORSHAM LUBECK | RD          | DRUNG    | -                                                         | -    | 0.28 | 0.34 | 1.83  | 1.96  | -                              | -    | -    | -    | -     | -     |
| 18        | GROSS          | RD          | DRUNG    | 3.30                                                      | 3.33 | 3.64 | 3.70 | 3.72  | 3.75  | -                              | -    | -    | -    | -     | -     |
| 977       | HORSHAM LUBECK | RD          | DRUNG    | 1.14                                                      | 1.15 | 1.23 | 1.30 | 1.34  | 1.37  | -                              | -    | -    | -    | -     | -     |
| 808       | EAST           | RD          | DRUNG    | 3.59                                                      | 3.67 | 4.34 | 4.55 | 4.66  | 4.79  | -                              | -    | -    | -    | -     | 0.00  |
| 591       | SCHOOL         | RD          | DRUNG    | -                                                         | -    | -    | -    | 1.39  | 1.49  | -                              | -    | -    | -    | 0.07  | 0.12  |
| 606       | SCHOOL         | RD          | DRUNG    | -                                                         | 0.61 | 1.10 | 1.31 | 1.41  | 1.52  | -                              | -    | -    | -    | -     | 0.00  |
|           | HORSHAM LUBECK | RD          | DRUNG    | 0.99                                                      | 1.02 | 2.21 | 2.46 | 2.65  | 2.79  | -                              | -    | -    | -    | -     | 0.20  |
|           | HORSHAM LUBECK | RD          | DRUNG    | 3.72                                                      | 3.79 | 4.41 | 4.57 | 4.65  | 4.76  | -                              | -    | -    | -    | -     |       |
| 644       | HORSHAM LUBECK | RD          | DRUNG    | 0.16                                                      | 7.44 | 8.17 | 8.40 | 8.55  | 8.66  | -                              | -    | -    | -    | 0.11  | 0.18  |
| 146       | MCINTYRES      | RD          | DRUNG    | 0.85                                                      | 0.86 | 0.92 | 0.93 | 0.94  | 0.95  | -                              | -    | -    | -    | -     | -     |
| 200       | NORTH          | RD          | DRUNG    | 1.21                                                      | 7.44 | 8.17 | 8.40 | 8.55  | 8.66  | -                              | -    | -    | -    | -     | -     |
| 73        | NORTH          | RD          | DRUNG    | 0.68                                                      | 0.69 | 1.26 | 1.31 | 1.34  | 1.36  | -                              | -    | -    | -    | -     | -     |
| 224       | NORTH          | RD          | DRUNG    | 1.77                                                      | 7.44 | 8.17 | 8.40 | 8.55  | 8.66  | -                              | -    | -    | -    | -     | -     |

| Location  |                       |             |             | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|-----------------------|-------------|-------------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name           | Street Type | Locality    | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
| 273       | NORTH                 | RD          | DRUNG       | 1.15                                                      | 1.16 | 1.69 | 1.89 | 1.99  | 2.09  | -                              | -    | -    | -    | -     | -     |
| 417       | HORSHAM LUBECK        | RD          | DRUNG       | -                                                         | -    | -    | 0.75 | 0.90  | 1.01  | -                              | -    | -    | -    | -     | -     |
|           | SCHOOL                | RD          | DRUNG       | -                                                         | 0.21 | 0.70 | 0.90 | 1.00  | 1.11  | -                              | -    | -    | -    | -     | 0.00  |
| 538       | HORSHAM LUBECK        | RD          | DRUNG       | -                                                         | -    | -    | -    | -     | 0.56  | -                              | -    | -    | -    | -     | -     |
|           | LUBECK HORSHAM/GOLTON | RD          | DRUNG DRUNG | -                                                         | -    | -    | -    | -     | -     | -                              | -    | -    | -    | -     | -     |
|           | LUBECK HORSHAM        | RD          | DRUNG DRUNG | -                                                         | -    | -    | -    | -     | -     | -                              | -    | -    | -    | -     | -     |
|           | BURNT CLAY            | RD          | DRUNG DRUNG | -                                                         | -    | -    | -    | -     | -     | -                              | -    | -    | -    | -     | -     |
| 61        | PRYORS                | RD          | HORSHAM     |                                                           | 0.49 | 0.81 | 0.97 | 1.10  | 1.29  | -                              | -    | -    | -    | -     | 0.10  |
| 52        | CAMERON               | RD          | HORSHAM     | -                                                         | -    | 0.86 | 5.06 | 5.25  | 5.42  | -                              | -    | -    | -    | -     | -     |
| 44        | CAMERON               | RD          | HORSHAM     | -                                                         | -    | -    | 1.47 | -     | 1.83  | -                              | -    | -    | 0.17 | 0.25  | 0.41  |
| 40        | CAMERON               | RD          | HORSHAM     | -                                                         | -    | -    | 1.18 | 1.37  | 1.54  | -                              | -    | -    | 0.17 | 0.29  | 0.45  |
| 64        | PRYORS                | RD          | HORSHAM     | -                                                         | -    | -    | 0.82 | 1.01  | 1.18  | -                              | -    | -    | -    | 0.17  | 0.33  |
|           | CAMERON               | RD          | HORSHAM     | 4.06                                                      | 4.16 | 4.79 | 5.13 | 5.33  | 5.50  | -                              | -    | -    | 0.04 | 0.22  | 0.39  |
| 325       | CAMERON               | RD          | HORSHAM     | -                                                         | -    | -    | -    | -     | 2.71  | -                              | -    | -    | -    | -     | -     |
| 325       | CAMERON               | RD          | HORSHAM     | 4.13                                                      | 4.29 | 5.02 | 5.37 | 5.57  | 5.75  | -                              | -    | -    | 0.66 | 0.86  | 1.03  |

| Location  |              |             |             | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|--------------|-------------|-------------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name  | Street Type | Locality    | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
| 289       | CAMERON      | RD          | HORSHAM     | -                                                         | -    | -    | -    | -     | -     | -                              | -    | -    | -    | 0.05  | 0.20  |
| 217       | CAMERON      | RD          | HORSHAM     | 3.38                                                      | 3.58 | 4.55 | 4.98 | 5.25  | 5.49  | -                              | -    | -    | 0.07 | 0.36  | 0.60  |
| 191       | CAMERON      | RD          | HORSHAM     | -                                                         | -    | 0.27 | 0.43 | 0.46  | 0.57  | -                              | -    | -    | -    | -     | -     |
| 139       | CAMERON      | RD          | HORSHAM     | 0.68                                                      | 0.69 | 0.87 | 0.97 | 1.19  | 1.55  | -                              | -    | -    | -    | -     | -     |
| 141       | CAMERON      | RD          | HORSHAM     | -                                                         | -    | 0.14 | 0.18 | 0.20  | 0.24  | -                              | -    | -    | 0.09 | 0.11  | 0.15  |
| 217       | CAMERON      | RD          | HORSHAM     | -                                                         | -    | 0.23 | 0.27 | 0.29  | 0.35  | -                              | -    | -    | -    | 0.04  | 0.07  |
| 73        | PRYORS       | RD          | HORSHAM     | 3.30                                                      | 3.51 | 4.43 | 4.89 | 5.19  | 5.44  | -                              | -    | -    | -    | -     | -     |
| 505       | TUCKERS      | RD          | JUNG        | -                                                         | -    | 0.30 | 0.63 | 0.82  | -     | -                              | -    | -    | 0.18 | 0.36  | 0.55  |
| 131       | DOUG TUCKERS | RD          | LONGERENONG | 0.44                                                      | 0.43 | 0.72 | 0.89 | 1.00  | 1.16  | -                              | -    | -    | -    | -     | -     |
|           | DRUNG JUNG   | RD          | LONGERENONG | 4.32                                                      | 4.37 | 4.52 | 4.55 | 4.57  | 4.59  | -                              | -    | -    | -    | -     | -     |
| 420       | DRUNG JUNG   | RD          | LONGERENONG | 3.54                                                      | 3.55 | 3.71 | 3.75 | 3.77  | 3.78  | -                              | -    | 0.00 | 0.00 | 0.00  | 0.00  |
| 286       | MAGEES       | RD          | LONGERENONG | 2.01                                                      | 2.03 | 2.85 | 2.86 | 2.84  | 2.85  | -                              | -    | -    | -    | -     | -     |
| 89        | MILLS        | RD          | LONGERENONG | 5.19                                                      | 7.42 | 8.13 | 8.36 | 8.50  | 8.63  | -                              | -    | -    | -    | -     | -     |
| 38        | TRALEE       | LA          | LONGERENONG | 3.35                                                      | 3.41 | 3.49 | 3.54 | 3.56  | 3.59  | -                              | -    | -    | -    | -     | -     |
| 37        | FIELD DAYS   | RD          | LONGERENONG | 2.99                                                      | 2.98 | 3.32 | 3.56 | 3.69  | 3.85  | -                              | -    | -    | -    | -     | -     |
| 37        | DOUG TUCKERS | RD          | LONGERENONG | -                                                         | -    | 0.21 | 0.53 | 0.72  | 3.52  | -                              | -    | -    | -    | -     | 0.00  |

| Location  |                        |             |             | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|------------------------|-------------|-------------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name            | Street Type | Locality    | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
| 875       | LONGERENONG            | RD          | LONGERENONG | 1.55                                                      | 1.62 | 1.73 | 1.77 | 1.80  | 1.86  | -                              | -    | 0.00 | 0.00 | 0.00  | 0.00  |
| 26        | WEST                   | RD          | LONGERENONG | 2.81                                                      | 2.85 | 3.02 | 3.20 | 3.32  | 3.50  | -                              | -    | -    | -    | -     | -     |
| 464       | LONGERENONG            | RD          | LONGERENONG | 3.09                                                      | 7.93 | 8.48 | 8.71 | 8.82  | 8.91  | -                              | -    | -    | -    | -     | -     |
| 464       | LONGERENONG            | RD          | LONGERENONG | 3.49                                                      | 3.57 | 6.70 | 6.90 | 7.00  | 7.10  | -                              | -    | -    | -    | -     | -     |
|           | LONGERENONG            | RD          | LONGERENONG | 3.49                                                      | 3.57 | 6.70 | 6.90 | 7.00  | 7.10  | -                              | -    | -    | -    | -     | -     |
|           | LONGERENONG/BURNT CLAY | RD          | LONGERENONG | -                                                         | -    | -    | 0.11 | 0.19  | 0.37  | -                              | -    | -    | -    | -     | -     |
| 108       | CAMERON                | RD          | RIVERSIDE   | -                                                         | -    | -    | -    | -     | -     | -                              | -    | -    | -    | -     | -     |
| 76        | CAMERON                | RD          | RIVERSIDE   | 1.99                                                      | 1.99 | 2.08 | 2.13 | 2.15  | 2.20  | -                              | -    | -    | -    | -     | -     |
| 553       | RIVERSIDE EAST         | RD          | RIVERSIDE   | 0.96                                                      | 0.97 | 1.10 | 1.19 | 1.22  | 1.28  | -                              | -    | -    | -    | -     | -     |
| 5         | BUTLERS                | RD          | RIVERSIDE   | -                                                         | -    | -    | -    | 0.56  | 0.62  | -                              | -    | -    | -    | -     | -     |
| 532       | RIVERSIDE EAST         | RD          | RIVERSIDE   | -                                                         | -    | -    | 0.81 | 0.88  | 0.94  | -                              | -    | -    | -    | 0.05  | 0.09  |
| 532       | RIVERSIDE EAST         | RD          | RIVERSIDE   | -                                                         | -    | -    | 3.30 | 3.37  | 3.43  | -                              | -    | -    | 0.19 | 0.28  | 0.34  |
| 76        | ROGERSONS              | RD          | RIVERSIDE   | -                                                         | -    | -    | 3.30 | 3.37  | 3.43  | -                              | -    | -    | 0.19 | 0.28  | 0.34  |
| 481       | RIVERSIDE EAST         | RD          | RIVERSIDE   | -                                                         | -    | -    | -    | 0.38  | 0.60  | -                              | -    | -    | -    | -     | -     |
|           | ANDREWS                | RD          | RIVERSIDE   | -                                                         | -    | -    | 0.67 | 0.76  | 0.82  | -                              | -    | -    | 0.06 | 0.11  | 0.17  |

| Location  |                |             |           | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|----------------|-------------|-----------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name    | Street Type | Locality  | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
|           | WEST           | RD          | RIVERSIDE | -                                                         | -    | -    | 1.21 | 1.42  | 1.65  | -                              | -    | -    | -    | -     | -     |
| 286       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | -    | 1.68 | 1.81  | 2.05  | -                              | -    | -    | -    | -     | -     |
| 371       | WEST           | RD          | RIVERSIDE | 2.00                                                      | 2.00 | 2.07 | 2.12 | 2.14  | 2.20  | -                              | -    | -    | -    | -     | -     |
| 310       | BROWNS         | RD          | RIVERSIDE | -                                                         | -    | -    | 3.60 | 3.74  | 3.84  | -                              | -    | -    | -    | -     | -     |
| 120       | ROGERSONS      | RD          | RIVERSIDE | -                                                         | -    | -    | 0.51 | 0.58  | 0.62  | -                              | -    | -    | 0.12 | 0.19  | 0.23  |
| 567       | RIVERSIDE EAST | RD          | RIVERSIDE | 3.37                                                      | 3.47 | 4.13 | 4.47 | 4.67  | 4.83  | -                              | -    | -    | -    | -     | -     |
| 161       | BROWNS         | RD          | RIVERSIDE | -                                                         | -    | -    | -    | -     | -     | -                              | -    | -    | -    | -     | -     |
| 272       | BROWNS         | RD          | RIVERSIDE | 0.33                                                      | 0.83 | 1.15 | 4.25 | 4.45  | 4.60  | -                              | -    | -    | -    | -     | -     |
| 167       | RIVERSIDE      | RD          | RIVERSIDE | -                                                         | -    | -    | 1.46 | 1.52  | 1.55  | -                              | -    | -    | 0.10 | 0.15  | 0.19  |
| 133       | BROWNS         | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 1.00  | 1.04  | -                              | -    | -    | -    | -     | -     |
| 73        | BUTLERS        | RD          | RIVERSIDE | 0.60                                                      | 0.70 | 1.39 | 1.73 | 1.93  | 2.09  | -                              | -    | -    | -    | -     | -     |
| 23        | BUTLERS        | RD          | RIVERSIDE | -                                                         | -    | 0.43 | 1.03 | 1.09  | 1.14  | -                              | -    | -    | -    | 0.08  | 0.12  |
| 47        | BUTLERS        | RD          | RIVERSIDE | -                                                         | -    | -    | 0.59 | 0.70  | 0.78  | -                              | -    | -    | -    | 0.16  | 0.20  |
| 68        | BUTLERS        | RD          | RIVERSIDE | -                                                         | -    | -    | 1.00 | 1.11  | 1.18  | -                              | -    | -    | -    | -     | 0.15  |
| 20        | BUTLERS        | RD          | RIVERSIDE | -                                                         | -    | -    | 1.10 | 1.14  | 1.17  | -                              | -    | -    | -    | -     | -     |
| 80        | PEELS          | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 0.30  | 0.33  | -                              | -    | -    | -    | 0.12  | 0.13  |

| Location  |                |             |           | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|----------------|-------------|-----------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name    | Street Type | Locality  | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
| 181       | HEARDS         | RD          | RIVERSIDE | -                                                         | -    | -    | 0.14 | 0.31  | 0.46  | -                              | -    | -    | -    | -     | 0.08  |
| 52        | PEELS          | RD          | RIVERSIDE | 1.14                                                      | 1.32 | 1.87 | 2.10 | 2.21  | 2.30  | -                              | -    | -    | -    | 0.07  | 0.19  |
| 832       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | -    | 0.37 | 0.55  | 0.71  | -                              | -    | -    | -    | -     | 0.11  |
| 261       | HEARDS         | RD          | RIVERSIDE | 6.40                                                      | 6.57 | 7.13 | 7.35 | 7.47  | 7.55  | -                              | -    | -    | -    | 0.09  | 0.18  |
| 465       | WEST           | RD          | RIVERSIDE | 6.11                                                      | 6.29 | 6.84 | 7.07 | 7.19  | 7.28  | -                              | -    | -    | 0.07 | 0.19  | 0.27  |
| 483       | WEST           | RD          | RIVERSIDE | -                                                         | -    | -    | 0.33 | 0.63  | 0.90  | -                              | -    | -    | -    | -     | -     |
| 256       | HORSHAM LUBECK | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 0.37  | 0.46  | -                              | -    | -    | -    | -     | -     |
| 352       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 0.51  | 0.56  | -                              | -    | -    | -    | -     | -     |
| 290       | HORSHAM LUBECK | RD          | RIVERSIDE | 0.42                                                      | 0.42 | 0.47 | 0.50 | 0.56  | 0.67  | -                              | -    | -    | -    | -     | -     |
| 99        | HORSHAM LUBECK | RD          | RIVERSIDE | 0.31                                                      | 0.32 | 0.37 | 3.43 | 3.58  | 3.74  | -                              | -    | -    | -    | -     | -     |
| 178       | HORSHAM LUBECK | RD          | RIVERSIDE | -                                                         | -    | 0.70 | 1.04 | 1.15  | 1.27  | -                              | -    | -    | -    | -     | 0.10  |
| 379       | RIVERSIDE EAST | RD          | RIVERSIDE | 0.22                                                      | 0.22 | 0.25 | 0.27 | 0.29  | 2.73  | -                              | -    | -    | -    | -     | -     |
| 142       | CAMERON        | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 0.16  | 0.26  | -                              | -    | -    | -    | -     | -     |
| 80        | HORSHAM LUBECK | RD          | RIVERSIDE | 3.75                                                      | 3.76 | 3.95 | 4.05 | 4.10  | 4.27  | -                              | -    | -    | -    | -     | -     |
| 142       | HORSHAM LUBECK | RD          | RIVERSIDE | 2.08                                                      | 2.09 | 2.26 | 2.33 | 2.36  | 2.44  | -                              | -    | -    | -    | -     | -     |
| 52        | HORSHAM LUBECK | RD          | RIVERSIDE | 2.09                                                      | 2.09 | 2.21 | 2.26 | 2.29  | 2.35  | -                              | -    | -    | -    | -     | -     |

| Location  |                |             |           | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|----------------|-------------|-----------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name    | Street Type | Locality  | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
| 151       | HORSHAM LUBECK | RD          | RIVERSIDE | 2.19                                                      | 2.20 | 2.38 | 2.46 | 2.49  | 2.61  | -                              | -    | -    | -    | -     | -     |
|           | HORSHAM LUBECK | RD          | RIVERSIDE | -                                                         | -    | 0.19 | 0.35 | 0.46  | 0.54  | -                              | -    | -    | -    | -     | -     |
| 69        | HORSHAM LUBECK | RD          | RIVERSIDE | -                                                         | -    | -    | 2.23 | 2.30  | 2.34  | -                              | -    | -    | 1.78 | 1.85  | 1.44  |
| 69        | HORSHAM LUBECK | RD          | RIVERSIDE | -                                                         | -    | 0.80 | 0.86 | 0.97  | 1.10  | -                              | -    | -    | -    | -     | -     |
| 53        | HORSHAM LUBECK | RD          | RIVERSIDE | -                                                         | -    | 0.80 | 0.86 | 0.97  | 1.10  | -                              | -    | -    | -    | -     | -     |
| 131       | HORSHAM LUBECK | RD          | RIVERSIDE | -                                                         | -    | 0.46 | 2.03 | 2.10  | 2.26  | -                              | -    | -    | -    | -     | -     |
| 131       | HORSHAM LUBECK | RD          | RIVERSIDE | -                                                         | -    | 0.75 | 1.84 | 1.95  | 2.03  | -                              | -    | -    | -    | -     | -     |
| 480       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | -    | 0.67 | 0.74  | 0.80  | -                              | -    | -    | -    | -     | -     |
| 102       | HORSHAM LUBECK | RD          | RIVERSIDE | 2.04                                                      | 2.05 | 2.20 | 2.27 | 2.31  | 2.39  | -                              | -    | -    | -    | -     | -     |
| 425       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | -    | 0.32 | 0.45  | 0.52  | -                              | -    | -    | -    | -     | -     |
| 77        | PEELS          | RD          | RIVERSIDE | -                                                         | -    | -    | 0.70 | 0.82  | 0.93  | -                              | -    | -    | -    | -     | 0.12  |
| 98        | HEARDS         | RD          | RIVERSIDE | -                                                         | -    | 0.41 | 0.85 | 0.96  | 1.07  | -                              | -    | -    | 0.06 | 0.19  | 0.23  |
| 102       | HEARDS         | RD          | RIVERSIDE | -                                                         | -    | -    | 0.49 | 0.62  | 0.73  | -                              | -    | -    | -    | 0.04  | 0.14  |
| 40        | PEELS          | RD          | RIVERSIDE | -                                                         | -    | 0.21 | 0.66 | 0.81  | 0.96  | -                              | -    | -    | -    | 0.13  | 0.25  |
| 66        | HEARDS         | RD          | RIVERSIDE | -                                                         | -    | 0.45 | 0.65 | 0.77  | 0.88  | -                              | -    | -    | 0.10 | 0.22  | 0.26  |
| 7         | PEELS          | RD          | RIVERSIDE | -                                                         | 0.70 | 1.16 | 1.39 | 1.54  | 1.69  | -                              | -    | -    | -    | -     | 0.16  |

| Location  |             |             |           | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|-------------|-------------|-----------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name | Street Type | Locality  | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
| 33        | PEELS       | RD          | RIVERSIDE | -                                                         | 0.43 | 0.89 | 1.13 | 1.29  | 1.44  | -                              | -    | -    | -    | -     |       |
| 40        | HEARDS      | RD          | RIVERSIDE | -                                                         | -    | 0.60 | 0.78 | 0.90  | 1.02  | -                              | -    | -    | 0.12 | 0.24  | 0.29  |
| 53        | PEELS       | RD          | RIVERSIDE | -                                                         | -    | 0.45 | 0.70 | 0.88  | 1.06  | -                              | -    | -    | -    | 0.13  | 0.24  |
| 151       | RIVERSIDE   | RD          | RIVERSIDE | 0.52                                                      | 0.64 | 1.10 | 1.33 | 1.48  | 1.63  | -                              | -    | -    | -    | -     | -     |
| 12        | ROGERSONS   | RD          | RIVERSIDE | -                                                         | -    | -    | 0.42 | 1.45  | 1.53  | -                              | -    | -    | -    | -     | -     |
| 103       | ROGERSONS   | RD          | RIVERSIDE | -                                                         | 0.38 | 0.85 | 1.20 | 1.39  | 1.56  | -                              | -    | -    | -    | -     | -     |
| 99        | ROGERSONS   | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 0.35  | 0.41  | -                              | -    | -    | -    | -     | -     |
| 87        | ROGERSONS   | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 0.60  | 0.66  | -                              | -    | -    | -    | -     | -     |
| 68        | ROGERSONS   | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 0.91  | 1.01  | -                              | -    | -    | -    | -     | -     |
| 44        | ROGERSONS   | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 0.29  | 0.38  | -                              | -    | -    | -    | 0.13  | 0.19  |
| 164       | RIVERSIDE   | RD          | RIVERSIDE | 0.19                                                      | 0.48 | 1.02 | 1.30 | 1.48  | 1.63  | -                              | -    | -    | -    | 0.22  | 0.28  |
| 104       | ROGERSONS   | RD          | RIVERSIDE | -                                                         | 0.57 | 1.07 | 1.37 | 1.56  | 1.72  | -                              | -    | -    | -    | -     | -     |
| 158       | RIVERSIDE   | RD          | RIVERSIDE | -                                                         | -    | 0.21 | 0.44 | 0.59  | 0.73  | -                              | -    | -    | -    | -     | -     |
|           | WESTERN     | HWY         | RIVERSIDE | 2.40                                                      | 2.41 | 2.58 | 2.64 | 2.67  | 2.73  | -                              | -    | -    | -    | -     | -     |
|           | WEST        | RD          | RIVERSIDE | 2.74                                                      | 2.75 | 2.84 | 2.89 | 2.92  | 2.96  | -                              | -    | -    | -    | 0.06  | 0.08  |
| 70        | PEELS       | RD          | RIVERSIDE | -                                                         | -    | -    | 0.38 | 0.53  | 0.68  | -                              | -    | -    | -    | 0.04  | 0.18  |

| Location  |                |             |           | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|----------------|-------------|-----------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name    | Street Type | Locality  | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
| 59        | ROGERSONS      | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 0.30  | 0.37  | -                              | -    | -    | -    | -     | -     |
| 324       | RIVERSIDE EAST | RD          | RIVERSIDE | 1.37                                                      | 1.37 | 1.42 | 1.45 | 1.52  | 1.65  | -                              | -    | 0.08 | 0.11 | 0.25  | 0.40  |
| 42        | BUTLERS        | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 0.15  | 1.30  | -                              | -    | -    | -    | -     | -     |
| 495       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | -    | 1.00 | 1.05  | 1.10  | -                              | -    | -    | 0.18 | 0.25  | 0.31  |
| 63        | HEARDS         | RD          | RIVERSIDE | 1.52                                                      | 1.67 | 2.11 | 2.31 | 2.42  | 2.53  | -                              | -    | -    | 0.12 | 0.24  | 0.35  |
| 744       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | 0.20 | 0.74 | 0.86  | 0.98  | -                              | -    | -    | 0.25 | 0.37  | 0.49  |
| 795       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | 0.33 | 1.44 | 1.58  | 1.69  | -                              | -    | -    | -    | -     | -     |
| 786       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | 0.15 | 1.18 | 1.30  | 1.43  | -                              | -    | -    | -    | -     | -     |
| 636       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | -    | -    | 0.16  | 0.27  | -                              | -    | -    | -    | -     | -     |
| 721       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | -    | 0.90 | 1.03  | 1.15  | -                              | -    | -    | 0.32 | 0.45  | 0.56  |
| 102       | ANDREWS        | RD          | RIVERSIDE | 1.00                                                      | 1.00 | 1.16 | 1.23 | 1.42  | 1.57  | -                              | -    | -    | -    | 0.05  | 0.17  |
| 75        | PRYORS         | RD          | RIVERSIDE | 0.30                                                      | 0.52 | 1.1  | 1.3  | 1.6   | 1.8   | -                              | -    | -    | 0.28 | 0.47  | 0.64  |
| 425       | RIVERSIDE EAST | RD          | RIVERSIDE | -                                                         | -    | -    | -    | -     | -     | -                              | -    | -    | -    | -     | -     |
| 831       | RIVERSIDE EAST | RD          | RIVERSIDE | 1.5                                                       | 1.7  | 2.2  | 2.5  | 2.6   | 2.75  | -                              | -    | -    | -    | -     | -     |
| 205       | HEARDS         | RD          | RIVERSIDE | 2.25                                                      | 2.43 | 2.99 | 3.22 | 3.33  | 3.42  | -                              | -    | -    | -    | -     | -     |
| 154       | HORSHAM LUBECK | RD          | RIVERSIDE | 0.22                                                      | 0.22 | 0.26 | 0.28 | 0.30  | 0.37  | -                              | -    | -    | -    | -     | -     |

| Location  |                    |             |                  | Depth of flooding at lowest part of property for each ARI |      |      |      |       |       | Depth at building for each ARI |      |      |      |       |       |
|-----------|--------------------|-------------|------------------|-----------------------------------------------------------|------|------|------|-------|-------|--------------------------------|------|------|------|-------|-------|
| House No. | Street Name        | Street Type | Locality         | 5yr                                                       | 10yr | 20yr | 50yr | 100yr | 200yr | 5yr                            | 10yr | 20yr | 50yr | 100yr | 200yr |
|           | HORSHAM LUBECK     | RD          | RIVERSIDE        | -                                                         | -    | 0.95 | 1.31 | 1.52  | 1.66  | -                              | -    | -    | -    | -     | -     |
|           | HORSHAM LUBECK     | RD          | ST HELENS PLAINS | -                                                         | -    | 0.18 | 0.19 | 0.19  | 0.20  | -                              | -    | -    | -    | -     | -     |
|           | DOMASCHENZ         | RD          | ST HELENS PLAINS | -                                                         | -    | 1.87 | 2.70 | 3.54  | 3.55  | -                              | -    | -    | -    | -     | -     |
| 476       | TAYLORS LAKE NORTH | RD          | ST HELENS PLAINS | 4.38                                                      | 4.42 | 4.55 | 4.58 | 4.59  | 4.61  | -                              | -    | -    | 0.00 | 0.00  | 0.00  |
| 212       | TAYLORS LAKE NORTH | RD          | ST HELENS PLAINS | -                                                         | -    | 2.15 | 2.21 | 2.24  | 2.27  | -                              | -    | -    | -    | -     | -     |
| 1253      | ST HELENS          | RD          | ST HELENS PLAINS | 1.90                                                      | 1.95 | 2.25 | 2.30 | 2.33  | 2.37  | -                              | -    | -    | -    | -     | -     |

## Appendix G: Flood Observers

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.

### Flood Observers

When a VICSES Incident Control Centre is activated with knowledge of a potential Flooding event, Flood observers should be contacted to determine availability to assist. The process for activating flood observers is as follows.



\*VICSES Flood observers-The Intelligence Cell in consultation with the RDO/RAC will contact the Unit Duty Officer (UDO) of Units with Flood observers in the area where observations are required. The UDO will contact Flood observers to determine their availability. Available Flood observer's names and contact details will be provided to the intelligence cell from the UDO so they can be contacted and activated under normal resourcing arrangements. In no-notice flooding events, the full list of observers will be provided by the RDO or RAC to the incident Controller, for use by the intelligence cell once activated.

If non VICSES Flood observers witness an unexpected significant flood event, they will notify VICSES via the 132 500 number and share flood photos via the Snap Send Solve app.

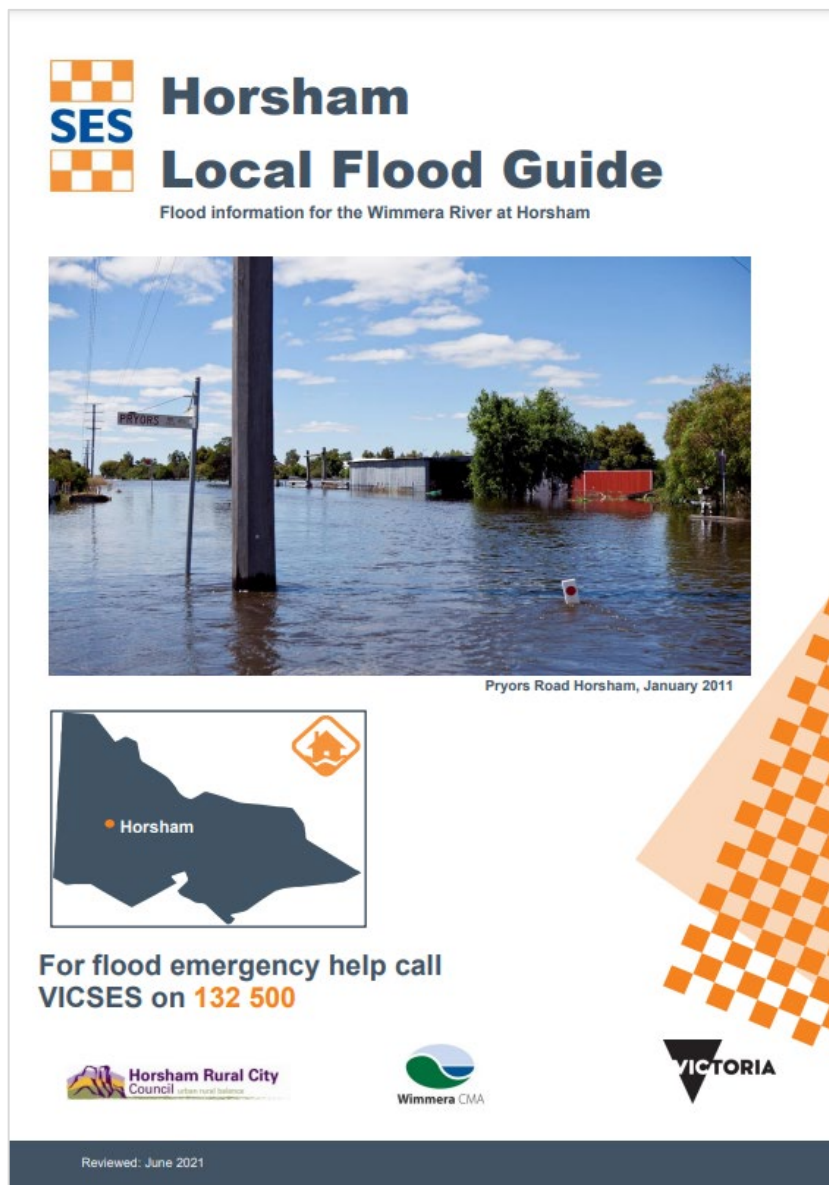
Targeted Flood observer training will be undertaken by VICSES on an as needs basis for high flood risk towns where limited stream gauge monitoring is available.

## Appendix H: Local flood information

Three Local Flood Guides have been developed for the Horsham Rural City Council for Horsham, Natimuk and Dadswells Bridge.

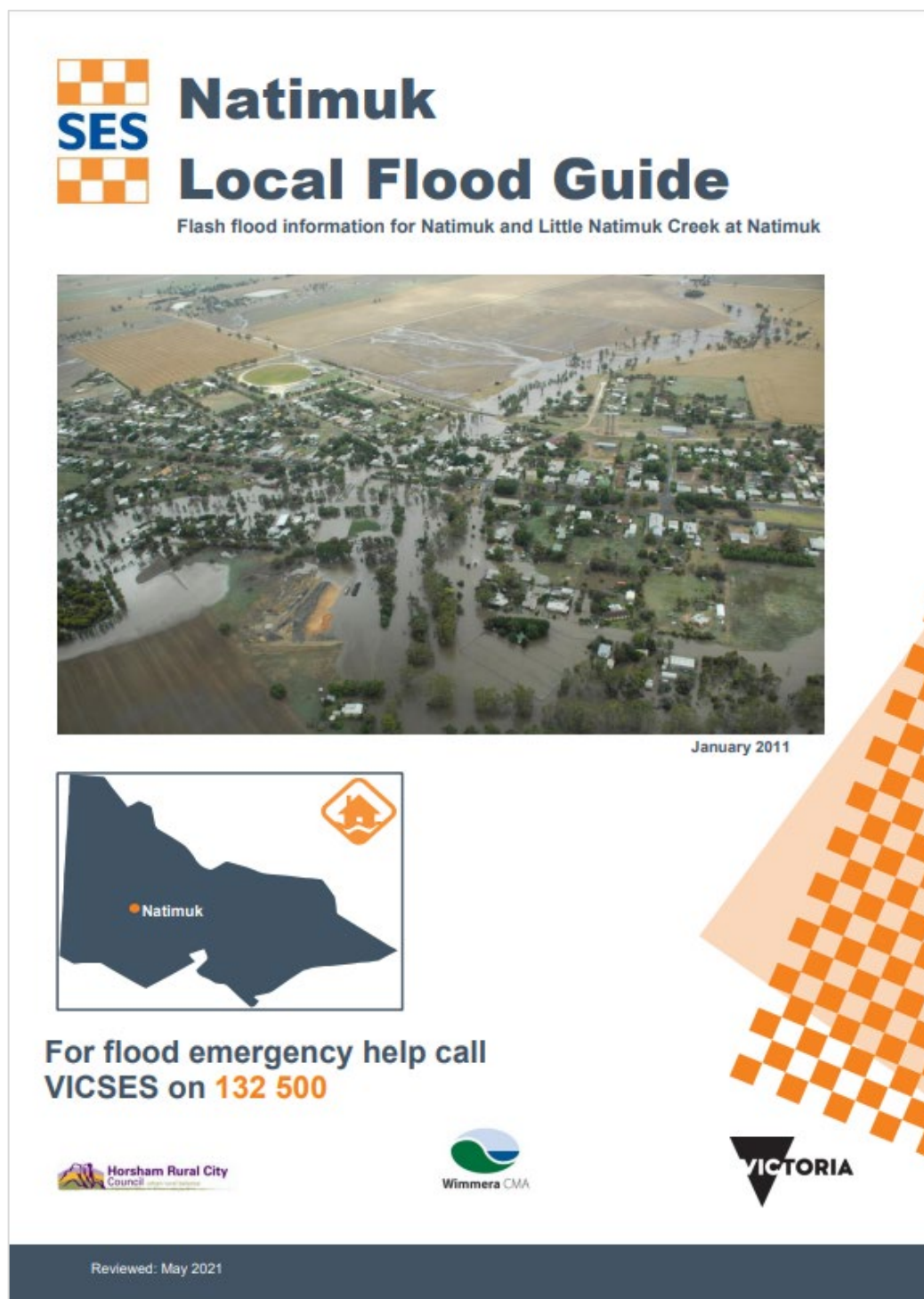
Refer to the link below for the Horsham Local Flood Guide:

<https://www.ses.vic.gov.au/documents/8655930/9320097/Horsham+-+LFG++Horsham+Council+8th+August+2022.pdf/3f03edd9-9421-135f-722b-2f07c4b2fee9?t=1660006442161>



Refer to the link below for the Natimuk Local Flood Guide:

<https://www.ses.vic.gov.au/documents/8655930/9320097/Local+Flood+Guide+%28LFG%29+-+Natimuk.pdf/cf00f645-68fc-a6a2-e513-fe18ee88970a?t=1625635452449>



Refer to the link below for the Dadswells Bridge Local Flood Guide:

<https://www.ses.vic.gov.au/documents/8655930/9320097/Dadswells+Bridge+LFG++Horsham+Council+Dec+2021+v1.pdf/01b17daf-62b9-8c42-87fe-6215a1dfb9c9?t=1645142891161>

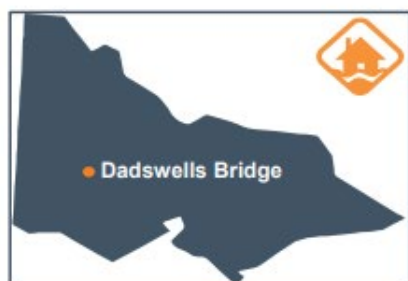


# Dadswells Bridge Local Flood Guide

Flood information for the Mt William Creek at Dadswells Bridge



The Big Koala at Dadswells Bridge, January 2011



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



Reviewed: December 2021

## Appendix I: Horsham Rural City Community Sandbag Collection Points

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

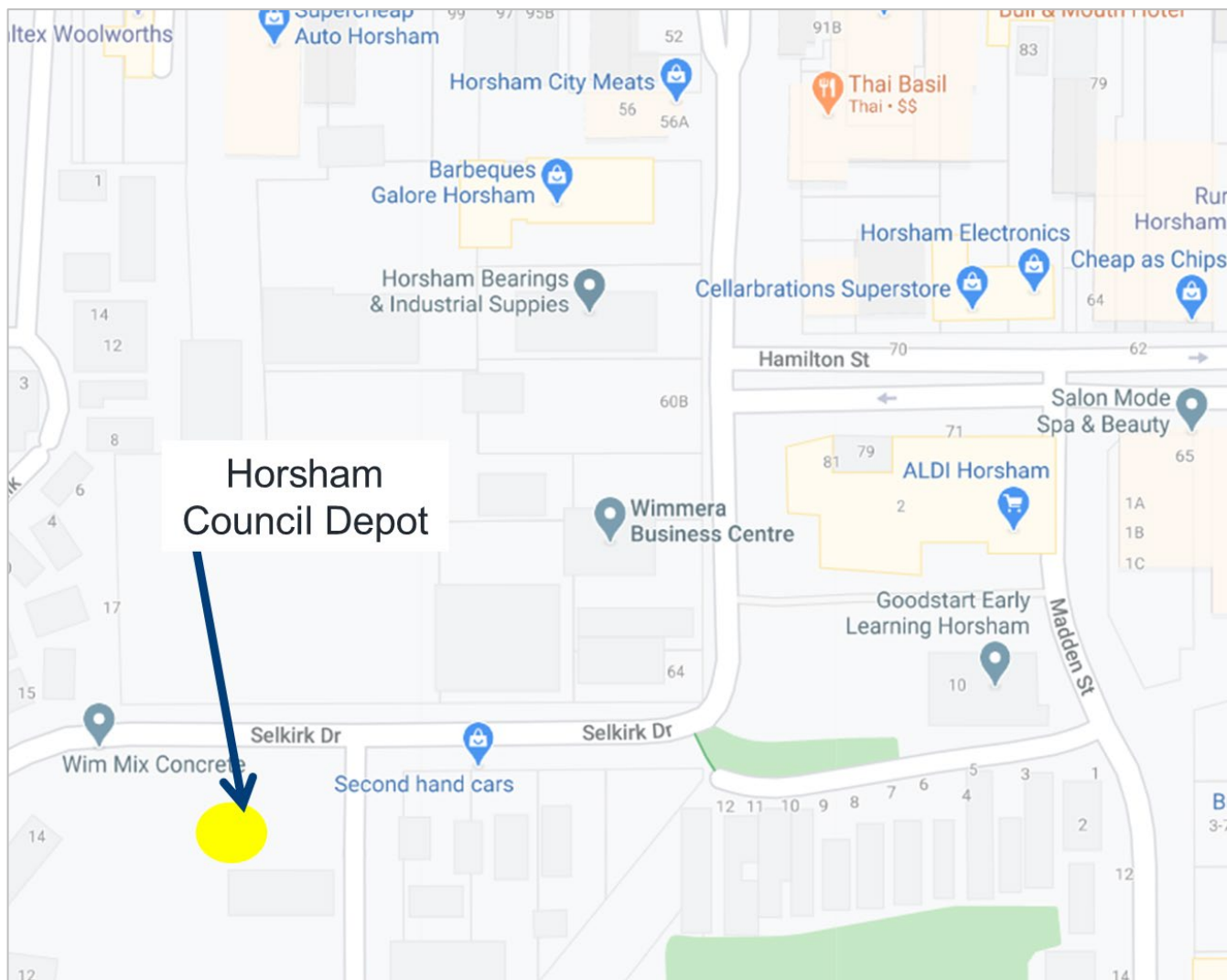
- BOM flood watch has been issued for the town / catchment area
- Significant rainfall is predicted for the town/catchment area (greater than 50mm)
- BOM has high certainty the rainfall event will impact a town/catchment area listed below.
- Flooding is imminent

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

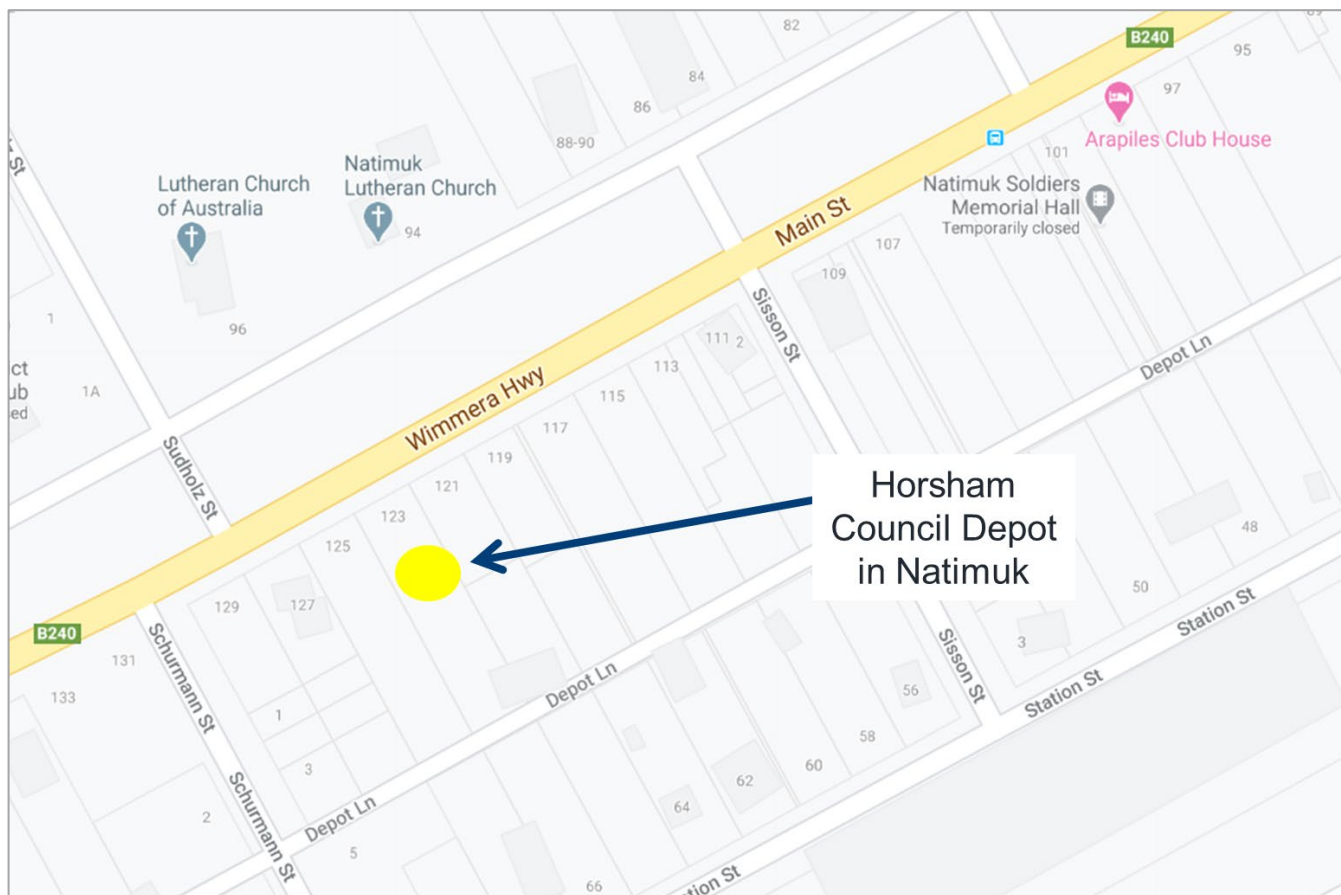
- Horsham Rural City Council Depot: 17 Selkirk Drive, Horsham.
- Natimuk, Horsham Rural City Council Depot: 123 Main Street, Natimuk.

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.                                                                                                                                                                                      |
| Horsham Rural City               | Deliver sand to sandbag filling points documented below.                                                                                                                                                                                                                                     |
| Horsham Rural City/ VICSES / CFA | Deliver prefilled sandbags either directly to buildings that need to be sandbagged or to the nominated community Sandbag collection point.<br>Provide staff/volunteers to set up the community sandbag point.<br>Provide staff/volunteers to distribute prefilled sandbags to the community. |
| Horsham Rural City/ VICSES       | Notify the community of the location of the community sandbag collection point via local radio and social media channels.                                                                                                                                                                    |



**Figure 50. Horsham Sandbag collection Point**



**Figure 51. Natimuk Sandbag collection Point**

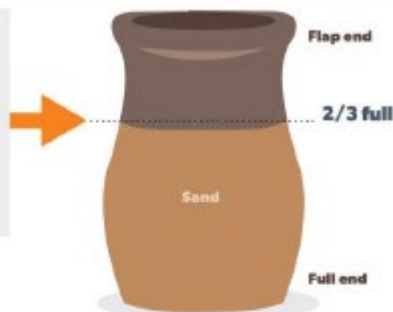


# Sandbagging

**Sandbags won't stop the water completely, but can reduce the amount of water entering your home.**

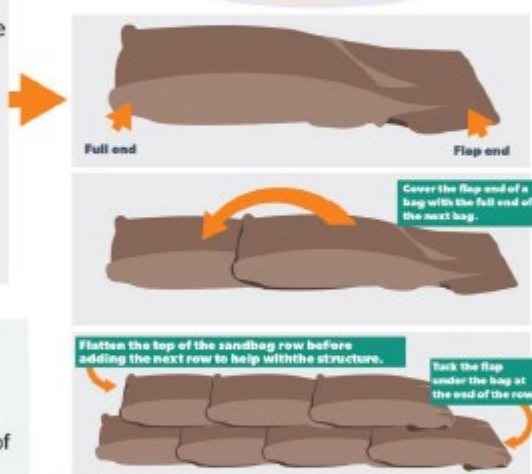
## How do I fill a sandbag?

- Only use sand to fill hessian bags. Do not use dirt.
- Only fill sandbag two-thirds full.
- Do not over fill the sandbag as it will be too heavy to carry.
- Do not tie the top of the sandbag.
- Take care when filling and lifting the sandbag, to avoid injury.



## How do I lay sandbags?

- Lay sandbags like brickwork. Stagger rows so that the joins do not line up.
- Start at one end and work to the other end.
- Ensure the unfilled part of the bag is covered by the next bag.
- Tuck flap under the bag at the end of the row.
- If the sandbag wall is going to be more than five (5) bags high, you will need to lay two (2) rows wide.



## Where do I place the sandbags?

- Place sandbags in plastic bags to cover drainage holes in home (e.g. showers, toilets, sinks) to stop back flow of water.
- Place a small wall across doorways, at least the height of the expected water level. Be careful not to trap yourself inside.
- If available, plastic sheeting may be used under sandbags to reduce the seepage.

### Block it

Toilets, bath and all drain holes



## What do I do once I have finished with the sandbags?

- Sturdy gloves should be worn when handling wet sandbags as they can contain chemicals, waste and diseases.
- Sandbags that have been in contact with floodwater need to be thrown away.
- Contact your local council to find out how to dispose of your sandbags safely.

## References

BMT (2014), Mount William Creek Flood Investigation, Final Report.

BMT (2013), Upper Wimmera Flood Investigation, Final Report.

Federation University, 2014, Understanding the 2011 Grampians Natural Disaster, addressing the risk and resilience Executive Summary (report link: <http://maynard.cerdi.com.au>).

Water Technology (2022) Flood Intelligence Report, St Arnaud Flood Investigation (Aug 2022)

Water Technology (2013) East Horsham Flood Plan – Flood Intelligence Report.

Water Technology (2013) Natimuk Flood Investigation Study Report.

Water Technology (2015) Horsham and Wartook Valley Flood Investigation: Data Collection and Review Report.

Water Technology (2018) Horsham and Wartook Valley Flood Investigation: Design Modelling Report.

Water Technology (2018) Horsham and Wartook Valley Flood Investigation: Calibration Report.

Water Technology (2019) Horsham and Wartook Valley Flood Investigation: Final Report.

WCMA (2011), Wimmera Regional Flood Report: January 2011.

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For Lower Wimmera either refer final report 2017 or

Water Technology - Regional Flood Mapping Lower Wimmera – Flood Intelligence (R04) November 2016