City of Darebin

Storm and Flood Emergency Plan

A Sub-Plan of the Municipal Emergency Management Plan

For Darebin City Council
And
VICSES Heidelberg Unit

Draft Version 6.1
Reviewed December 2023

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Table of Contents

Document Transmittal Form / Amendment Certificate

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

Suggestions for amendments to this Plan should be forwarded to VICSES Regional Office via Western Regional Office, North West Metro, 239 Proximity Drive Sunshine West, Vic 3020.

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

Amendment Number	Date of Amendment	Amendment Entered By	Summary of Amendment
1	23 Nov 2011	Darebin CC	Preliminary amendments to document by FMP Committee
2	9 April 2012	A Tuxworth	Further populated document
3	November 2012	Darebin CC/SES	Further populated document
4 drafts	October 2014	G Abbott & R Butler – SES	Update of Appendix A, B, C, F & G
4.0	July 2016	R Gibney	Operationalise Plan
5.0	April 2018	R Butler – SES A. Barnard- SES Z. Smith CoD	Update of Appendix A, B, C, F & G, Corrected abbreviations and updated departments
6.0	August 2022	R Butler – SES	Application of new template. Updated parts of the body as well as Appendices A, B, C, F and G based on new data made available since previous version. Changes and edits to accommodate the *Emergency Management Legislation Amendment Act 2018* (EMLA Act) that amended the *Emergency Management Act 2013* (EM Act 2013).
6.1	December 2023	M Patton – SES	Administrative changes
6.1	February 2024	M Patton – SES	Accepted by Darebin MEMPC

This Plan will be maintained on the SES and Darebin City Council websites.
https://www.ses.vic.gov.au/plan-and-stay-safe/flood-guides/darebin-city-council and
www.darebin.vic.gov.au

List of Abbreviations & Acronyms

The following abbreviations and acronyms are used in the Plan:

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AAR	After Action Review	IMS	Incident Management System
AEP	Annual Exceedance Probability	IEMT	Incident Emergency Management Team
AHD	Australian Height Datum (the height of a location above mean sea level in metres)	IMT	Incident Management Team
AIDR	Australian Institute of Disaster Resilience	LSIO	Land Subject to Inundation Overlay
AIIMS	Australasian Inter-service Incident Management System	CEOC	Councill Emergency Operations Centre
AoCC	Area of Operations Control Centre / Command Centre	MEMO	Municipal Emergency Management Officer
ARI	Average Recurrence Interval	MEMP	Municipal Emergency Management Plan
AV	Ambulance Victoria	MEMPC	Municipal Emergency Management Planning Committee
BoM	Bureau of Meteorology	MERC	Municipal Emergency Response Coordinator
CEO	Chief Executive Officer	MRM	Municipal Recovery Manager
CERA	Community Emergency Risk Assessment	PMF	Probable Maximum Flood
CFA	Country Fire Authority	RAC	Regional Agency Commander
CMA	Catchment Management Authority	RCC	Regional Control Centre
DEECA	Department of Energy, Environment and Climate Action	RDO	Regional Duty Officer
DFFH	Department of Families, Fairness and Housing	RERC	Regional Emergency Response Coordinator
DH	Department of Health	RERCC	Regional Emergency Response Coordination Centre
DJPR	Department of Jobs, Precincts and Regions	SBO	Special Building Overlay
DoI	Department of Infrastructure	SCC	State Control Centre
DoT	Department of Transport	SEMP	State Emergency Management Plan
EMLO	Emergency Management Liaison Officer	SERP	State Emergency Response Plan
EMV	Emergency Management Victoria	SEWS	Standard Emergency Warning Signal
EO	Executive Officer	SHERP	State Health Emergency Response Plan
FO	Floodway Overlay	SOP	Standard Operating Procedure
FRV	Fire Rescue Victoria	VicPol	Victoria Police
FWS	Flood Warning System	VICSES	Victoria State Emergency Service
FZ	Floodway Zone		
IC	Incident Controller		
ICC	Incident Control Centre		

Glossary

Below are terms defined for the purpose of this plan:

Term	Definition
Annual Recurrence Interval (ARI)	The average, or expected, value of the period between exceedances of a given rainfall or flow total accumulated over a given duration.
Annual Exceedance Probability (AEP)	The probability that a given total rainfall or flow is accumulated over a given duration will be exceeded in any one year.
Flash flooding	Sudden unexpected flooding caused by local heavy rainfall or rainfall in another area. Often defined as flooding which occurs within six hours of the rain which causes flooding.
Flood mapping	The process where the extent of flooding is documented in mapping software based on flood studies and surface elevations.
Floodplain	Area of land adjacent to a creek, river, estuary, lake, dam or artificial channel, which is subject to inundation.
Hot spot	A known flood problem area which has a history of repeat flooding of a road, crossing or property, often highlighted through anecdotal information and customer complaints. It is a localised issue which will vary from council to council.
Natural drainage system	Flow paths which are largely undeveloped by human sources, these include rivers, streams, natural depressions and wetlands. All-natural systems greater than 60 ha are managed by Melbourne Water.
Overland flooding	Flooding by local runoff caused by heavier than usual rainfall. Overland flooding can be caused by local flow exceeding the capacity of an urban stormwater drainage system or by the backwater effects of mainstream flooding causing urban stormwater drainage system to overflow. For local government areas this is over the 5-year ARI in residential or over 10yr ARI in commercial/industrial. For Melbourne Water catchment areas this is for all other ARIs up to the 100yr ARI.
Retarding Basin	A Retarding Basin is a large, open, free draining basin that temporarily stores collected stormwater runoff. These basins are normally maintained in a dry condition between storm events.
Stormwater drainage system	A series of drains and waterways into which surface and stormwater flows. Features of a stormwater drainage system can include underground pipe drains, open channels, retarding basins, floodways, waterway improvements, water sensitive urban design, integrated water management systems and environment protection measures. All drainage under 60 ha is maintained and operated by Council.
Stormwater Runoff	The amount of rainfall that enters the stormwater drainage system, (via pits, pipes, retarding basins, water sensitive structures, harvesting tanks and overland flow paths) after water which is not absorbed into the ground has been taken into account.

Part 1. INTRODUCTION

1.1 Municipal Endorsement

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

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

In accordance with its roles and responsibilities set out in the State Emergency Management Plan (SEMP), the Victoria State Emergency Service (VICSES) has prepared this plan in collaboration with the [Enter Committee Name for example, MFPC].

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

The plan is also consistent with and subordinate to:

- SEMP Flood Sub-Plan, SEMP Storm sub-plan
- the North West Metro Region Emergency Management Plan
- The North West Metro Region Flood Sub-Plan,
- Regional Storm sub-plan

This MEMPC prepared this plan in alignment with the Guidelines for Preparing State, Regional and Municipal Emergency Management Plans.

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

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

This Plan requires the approval of the North West Metro Regional Emergency Management Planning Committee.

This Plan was accepted by the Darebin MEMPC in February 2024 as a sub-plan to the MEMP.

Minor and administrative amendments will be made to this SFEP from time to time without re-presenting it to the MEMPC. Any major structural or policy changes will be considered before endorsement.

1.2 Purpose and Scope of this Storm and Flood Emergency Plan

The purpose of this SFEP is to detail the arrangements agreed for planning, preparedness/prevention, response and recovery from flood incidents within the City of Darebin.

As such, the scope of the Plan is to:

- Identify the storm and flood risk to the Darebin
- Support the implementation of measures to minimise the causes and impacts of storm and flood incidents within the Darebin
- Detail response and recovery arrangements including preparedness, incident management, command and control
- Identify linkages with local, regional and state emergency and wider planning arrangements with specific emphasis on those relevant to storm and flood.

1.3 Storm and Flood Planning Working Group (SFPWG)

Membership of the Storm and Flood Planning Working Group (SFPWG) will comprise of the following representatives from the following agencies and organisations:

- VICSES Regional Officer – Emergency Management **(Chair)**
- VICSES Heidelberg Unit representative
- Darebin City Council representatives
- Victoria Police (i.e. Municipal Emergency Response Co-ordinator) (MERC)

Other agencies as required

1.4 Responsibility for Planning, Review & Maintenance of this Plan

This SFEP must be maintained in order to remain effective.

VICSES through the SFPWG has responsibility for preparing, reviewing, maintaining and distributing this plan.

The working group will meet at least once per year or as required. The plan is currently being reviewed on a 3 year cycle subject to any new flood studies.

The plans should be reviewed and where necessary, arrangements and information contained within should be amended:

- Following any new flood or stormwater drainage study;
- Following a change in non-structural and/or structural flood mitigation measures;
- After the occurrence of a significant storm or flood event within the Municipality

Part 2. BEFORE: PREVENTION / PREPAREDNESS ARRANGEMENTS

2.1 Community Awareness for all Types of Flooding

Details of this SFEP will be released to the community through local media, the VICSES community education programs and websites (VICSES and the Municipality) upon endorsement by Darebin MEMPC.

VICSES with the support of the Darebin City Council and Melbourne Water will coordinate community education programs for storm flooding within the council area. (e.g. Local Flood Guides and public events).

2.2 Structural Flood Mitigation Measures

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

2.3 Non-structural Flood Mitigation Measures

2.3.1 Exercising the Plan

Arrangements for exercising this Plan will be at the discretion of the MEMPC. This Plan should be regularly exercised, preferably on an annual basis and/or reviewed after a significant event.

2.3.2 Storm and Flood Warning

Arrangements for storm and flood warning are contained within the State Flood Emergency Plan and State Storm Emergency Plan (ses.vic.gov.au/em-sector/vicses-emergency-plans), the SEMP and on the Bureau of Meteorology (BoM) website (bom.gov.au).

Specific details of local flood warning system arrangements are provided in **Appendix E**.

2.3.1 Local Knowledge

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

There are no official Community Flood Observers within City of Darebin, however local knowledge is incorporated into this plan through consultation with local response agencies. Previous event history and likely operational considerations are noted in the Flood Intelligence Cards in **Appendix C**.

In line with the VICSES Local Knowledge Policy, reviews of this Plan will be undertaken with input from multiple local sources to ensure appropriate local knowledge can be captured before, during and after incidents.

Part 3. DURING: RESPONSE ARRANGEMENTS

3.1 Introduction

3.1.1 Activation of Response

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

In the case of more significant level 2 (regional level) or level 3 (an incident that has high complexity and may have statewide implications)

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

The VICSES Incident Controller (IC)/RDO/RAC will activate agencies as required as documented in the SEMP Flood sub-plan or SEMP Storm sub-plan.

3.1.2 Responsibilities

There are a number of agencies with specific roles that will act in support of VICSES and provide support to the community in the event of a serious storm or flood within the City of Darebin. These agencies will be engaged through the Incident Emergency Management Team (IEMT).

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

Appendix H lists the roles and capabilities of other agencies when assisting VICSES to respond to storm events.

3.1.3 Council Emergency Operations Centre (CEOC)

If established, liaison with the emergency operations centre will be through the established Division/Sector Command and through Municipal involvement in the IEMT, in particular the Municipal Emergency Response Coordinator (MERC). The VICSES RDO or ICC will liaise with the centre directly if they have not established division or sector command arrangements.

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

3.1.4 Escalation

Many flood or storm incidents are of local concern and an appropriate response can usually be coordinated using local resources. However, when these resources are exhausted, the State's 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.

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

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

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

3.1.5 Control

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

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

All flood and storm response activities within the City of Darebin including those arising from a dam failure or retarding basin / levee bank failure incident will therefore be under the control of the appointed Incident Controller, or delegated representative

3.1.6 Incident Controller

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

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

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

3.1.7 Incident Control Centre (ICC)

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

For more operational or sensitive information, a log-in may be required, such as for documents saved on the Emergency Management Common Operating Picture (EM-COP), including Joint Standard Operating Procedures (JSOPs). VICSES readiness and activation levels for Flood and Severe Weather are detailed in JSOP 2.03

Pre-determined Incident Control Centre - (Level 3) locations in North West Metro, Eastern Metro and Southern Metro are listed below:

Location	ICC Location	Facility owner
Sunshine	239 Proximity Drive, Sunshine West 3020	VICSES
Ferntree Gully	Unit 27 / 69 Acacia Road, Ferntree Gully 3156	CFA
Dandenong	45 Assembly Drive, Dandenong South 3175	CFA

3.1.8 Divisions and Sectors

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

Divisions and Sectors may be established to assist with the management of storms and flooding within the Municipality.

Pre-determined Division Command and Sector locations are allocated on a as needs basis.

3.1.9 Incident Management Team (IMT)

The IC will form an IMT in following consultation with the Regional Controller. The positions and size of the IMT will be based on Australasian Inter-service Incident Management System (AIIMS) principles.

Refer to the SEMP for guidance on IMTs.

3.1.10 Emergency Management Team (EMT)

The IC will establish a multi-agency IEMT to assist with the storm and/or flood response. The IEMT will consist of key personnel, with appropriate authority, from stakeholder agencies and relevant organisations who need to be informed of strategic issues related to incident control and who are able to provide high-level strategic guidance and policy advice to the IC for consideration in developing incident management strategies.

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

Refer to the SEMP for guidance on IEMTs.

3.1.11 On Receipt of a Flood Watch / Severe Weather Warning

The IC or VICSES RDO (until an IC is appointed) will undertake actions as defined within the flood intelligence cards (appendix C).

General considerations by the IC / VICSES RDO will be as follows:

- Review storm and flood intelligence to assess likely flood consequences
- Monitor weather and flood information – www.bom.gov.au
- Assess Command and Control requirements.
- Review local resources and consider needs for further resources regarding personnel, property protection, storm/ flood rescue and air support.

- Notify and brief appropriate officers. This includes RCC (if established), SCC (if established), Council, or other emergency services through the EMT.
- Assess ICC readiness (including staffing of IMT and EMT) and open if required
- Ensure flood bulletins and community information are prepared and issued to the community
- Monitor watercourses and undertake reconnaissance of low-lying areas
- Develop media and community information management strategy
- Ensure storm and flood mitigation works are being checked by owners
- Develop and issue incident action plan, if required
- Develop and issue situation report, if required

3.1.12 On Receipt of the First and Subsequent Storm and Flood Warnings

VICSES North West MetroRDO/ IC will undertake actions as defined within the flood intelligence cards (**Appendix C**). General considerations by the VICSES North West MetroRDO/ IC will be as follows:

- Develop an appreciation of current flood levels and predicted levels. Are floodwaters, rising, peaking or falling?

  Review flood intelligence to assess likely flood consequences. Consider:

  - What areas may be at risk of inundation
  - What areas may be at risk of isolation
  - What areas may be at risk of indirect affects as a consequence of power, gas, water, telephone, sewerage, health, transport or emergency service infrastructure interruption
  - The characteristics of the populations at risk
- Determine what the at-risk community need to know and do as the storm and/or flood develop.
- Warn the at-risk community including ensuring that an appropriate warning and community information strategy is implemented including. This includes:
  - The current storm and/or flood situation
  - Storm and/or Flood predictions
  - What the consequences of predicted activity and/or levels may be
  - Public safety advice
  - Who to contact for further information
  - Who to contact for emergency assistance
- Liaise with relevant asset owners as appropriate (i.e. water and power utilities)

- Implement response strategies as required based upon storm and/or flood consequence assessment.
- Continue to monitor the flood situation – www.bom.gov.au/vic/flood/
- Continue to conduct reconnaissance of low-lying areas

3.2 Community Information and Warnings

Guidelines for the distribution of community information and warnings are contained in the VICSES North West Metro Emergency Plans and State Emergency Plan. Refer to JSOP J04.01- Public Information and Warnings.

Community information and warnings communication methods available include but not limited to::

- Emergency Alert; SEWS
- Radio and Television;
- Verbal Messages (i.e. doorknocking);
- VIC Emergency and Council websites,
- VICSES Flood Storm Information Line;
- Variable Message Signs (i.e. road signs);
- Community meetings;
- Printed material eg newspapers
- Digital material, Apps, agency websites, email, social media and/or social networking sites
- Newsletters and letter drops;

Refer to **Appendix E** for the specific details of how community information and warnings are to be provided.

The release of flood bulletins and information with regard to response activities at the time of a flood event is the responsibility of VICSES, as the Control Agency.

Council has a responsibility to assist VICSES to provide information to the community including activation of flood warning systems, where they exist. Responsibility for public information, including media briefings, rest with VICSES as the Control Agency.

Other agencies such as CFA, DEECA and VicPol may be requested to assist VICSES with the communication of community storm and/or flood warnings.

In cases where severe flash flooding is predicted, dam failure or landslip is likely or flooding necessitating evacuation of communities is predicted, the IC may consider the use of the Emergency Alert System and SEWS.

DHHS will coordinate information regarding public health precautions.

3.3 Media Communication

The IC through the Public Information Unit established at the ICC will manage Media communication. If the ICC is not established the VICSES North West Metro RDO will manage all media communication.

3.4 Impact Assessment (IA)

Impact Assessments (IA) can be conducted in accordance with State doctrine and Standard Operating Procedures (SOPs) to assess and record the extent and nature of damage caused by storms and/or flooding. This information may then be used to provide the basis for further needs assessment and recovery planning by City of Darebin, DFFH and other applicable recovery agencies.

The control agency is responsible for coordinating the collection, collation and dissemination of IA information on a whole of government basis during the emergency response.

The purpose, function and conduct of IA are outlined in the State Flood Emergency Plan and the State Storm Emergency Plan. All IA should be conducted in accordance with current State impact assessment doctrine and SOPs.

3.5 Preliminary Deployments

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

3.6 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 VICSES North West MetroStorm and Flood Emergency Plans.

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

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

2. Should evacuation be the adopted strategy, it must be supported by a public information capability and a rescue contingency plan;

3. Where it is likely people will become trapped by floodwaters, safety advice needs to be provided to people at risk not to attempt to flee by entering floodwater if they become trapped, and that it may be safer to seek the highest point within the building and to telephone 000 if they require rescue.

4. For buildings known to be structurally un-suitable an earlier evacuation trigger will need to be established (return to step 1 of this cycle).

5. If an earlier evacuation is not possible then specific preparations must be made to rescue occupants trapped in structurally unsuitable buildings either pre-empting or as those people call for help.

6. Contact the MERC and Darebin MEMO at the earliest opportunity to allow relief preparation to commence.

Due the rapid development of flash flooding it will sometimes be difficult to establish emergency relief centres prior to the triggering the request to evacuate.

Response arrangements for flash flood events may be contained in **Appendix C**.

Refer to Vic Roads Website for road closures http://alerts.vicroads.vic.gov.au.

3.7 Evacuation

In Victoria, evacuation is largely voluntary however in particular circumstances, legislation provides some emergency services with authority to remove people from areas or prohibit their entry.

The decision to recommend or warn people to prepare to evacuate or to evacuate immediately rests with the IC and where possible the EMT. It is the choice of individuals as to how they respond to that recommendation.

Once the decision is made, VicPol are responsible for the coordination 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 delegate to Australian Red Cross) may take on the responsibility of registering people affected by the emergency (through the 'Register.Find.Reunite' program) including those who have been evacuated.

Evacuation operations should be consistent with the Joint Standard Operating Procedure on Evacuation (JSOP3.12). Guidelines for best practice for planning evacuations are provided in Australian Institute for Disaster Resilience Handbook 4, available at: knowledge.aidr.org.au/resources/handbook-evacuation-planning/.

Refer to details within the Darebin City MEMP for further guidance on evacuations for emergencies. If evacuation is determined as appropriate, the Darebin MEMO and MRM should be notified as soon as possible.

Refer to **Appendix D** of this Plan for detailed evacuation arrangements for City of Darebin.

3.8 Flood Rescue

VicPol as the designated Control Agency for water rescue coordinates rescues undertaken during flood events.

In order to activate water rescue services, VICSES as a Control Agency for overall flood response, will identify areas at risk of requiring rescue and notify the Officer in Charge of the Water Police Search and Rescue Squad to request pre-deployment of rescue resources to those areas.

In conducting rescues VicPol may require the assistance of appropriately trained and equipped personnel. In these circumstances, appropriately trained and equipped VICSES units or other agencies 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.

3.9 Aircraft Management

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

Air support operations will be conducted under the control of the IC in line with State Aircraft Unit Policies.

3.10 Resupply

Communities, neighbourhoods or households can become isolated during storms and/or 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 and if time permits then VICSES will advise businesses and/or households that they should stock up on essential items.

After the impact, VICSES and other agencies can assist with the transport of essential items to isolated communities and assist with logistics functions.

Resupply operations are included as part of the emergency relief arrangements as outlined in the Darebin MEMP.

3.11 Essential Community Infrastructure and Property Protection

Essential Infrastructure and Property (e.g. roads, utilities, telecommunications etc.) may be affected in the event of a storm and/or flood.

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

The Darebin Council does not maintain a small stock of sandbags for the protection of council facilities; supplies if required are available through the VICSES Regional Headquarters. The IC will determine the priorities related to the use of sandbags, which will be consistent with the strategic priorities.

If VICSES sandbags are becoming limited in supply, then priority will be given to protection of Essential 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 Melbourne Water, Council and VICPOL and within appropriate approval frameworks.

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

3.12 Disruption to Services

Disruption to services other than essential community infrastructure and property can occur in storm and flood events. Refer to **Appendices C and D** for specific details of likely disruption to services in the City of Darebin.

3.13 Levee Management

Levee owners/operators are responsible for the maintenance, operation and monitoring of their levees. Levee owners/operators must keep the IC informed of levee status and be prepared to provide expert advice to the IC about the design and construction of their levees. In accordance with the strategic emergency management priorities, the IC may assist levee owners to coordinate resources, both technical and physical, to provide advice and affect temporary repairs to or augmentation of levees.

3.14 Road Closures

Darebin City Council, VicPol and the Department of Transport (DoT) will carry out their formal functions of road closures. This includes the observation and placement of warning signs and road blocks to its designated local and regional roads, bridges, walking and bike trails. VicPol may also liaise with and advise Darebin staff and DoT of the need to erect warning signs and / or of closure of roads and bridges under its jurisdiction. DoT are responsible for designated main roads and highways and the Council are responsible for the designated local and regional road network.

DoT, VicPol and the Darebin Council will communicate community information regarding road closures..

3.15 Dam Spilling / Failure

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

Major dams with potential to cause structural and community damage within the Municipality are contained in **Appendix A**. Further information for Dams can be sourced through DEECA and Melbourne Water

3.16 Waste Water related Public Health Issues and Critical Sewerage Assets

Overflows of stormwater through the sewerage network and Melbourne Water emergency relief structures 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 and the City of Darebin MEMO 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.

The Darebin Health officers will liaise with the Environmental Protection Agency and Melbourne Water on any water quality issues relating to flooding. Council's Health officers will report to the MEMO and the ICC on any identified water quality issues arising from flood events. Drainage and sewerage assets over the areas where land is subjected to inundation and special building overlays (Fig 3.1) should be considered as critical assets that need to be monitored in the event of a flood. Sewerage assets at risk of inundation are identified in **Appendix C**.

3.17 Access to Technical Specialists

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

3.18 After Action Review

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

All agencies involved in the storm/flood incident should be represented at the After-Action Review.

Part 4. AFTER: EMERGENCY RELIEF AND RECOVERY ARRANGEMENTS

4.1 General

Arrangements for recovery from a storm/ flood incident within the City of Darebin are detailed in the City of Darebin MEMP and the Relief and Recovery Sub-plan.

4.2 Emergency Relief

The IC determines the need for emergency relief services with advice from the emergency management team (such as the IEMT), including the MRM, in accordance with the SEMP Relief arrangements. The IC is responsible for ensuring that relief arrangements have been considered and implemented where required under the State Emergency Relief and Recovery Plan. This should be carried out in line with the Melton MEMP.

The IC should ensure that the MERC, the Regional Recovery Coordinator and the MRM are kept informed of arrangements for relief.

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

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

Details of the relief arrangements are available in the Darebin MEMP.

4.3 Animal Welfare

Matters relating to the welfare of livestock (including feeding and rescue), are to be referred to the Department of Jobs, Precincts and Regions (DJPR).

Matters relating to companion animals will be shared between City of Darebin and RSPCA. Council assists, where possible, in the support and temporary rehousing of displaced companion animals.

Matters relating to the welfare of wildlife are to be referred to DEECA and Darebin City Council.

Darebin council will manage Animal welfare which will be provided at all relief centres. The RSPCA based in Epping will assist with housing of animals as per pre-planned arrangements. Council will arrange and assist in the transport of animals and also provide limited shelter.

4.4 Transition from Response to Recovery

VICSES, as the Control Agency, is responsible for ensuring effective transition from response to recovery. Transition should occur in consultation with emergency management teams (including the IEMT and MRM). Further information about transition is provided in the SEMP and the Darebin MEMP.

APPENDIX A - FLOOD THREATS FOR CITY OF DAREBIN

General

The City of Darebin covers an area of 53km^2 and is located in Melbourne's northern suburbs, 5-15km from the Melbourne CBD (see map B in Appendix F). Suburbs of Darebin include Kingsbury, Northcote, Preston, Reservoir and Thornbury and also parts of Alphington, Bundoora, Fairfield and Macleod.

The Municipality is bounded by the City of Whittlesea to the north, City of Banyule to the east, City of Boroondara to the south east, the City of Yarra to the south and south west, City of Moreland to the west and City of Hume to the northwest. The City of Darebin has a population of 144,086 (2012), 40% of whom were born overseas.

Land use consists of established residential, commercial, industrial and parklands. Development within the City of Darebin has occurred over a long period during which community expectations and the design standard of urban areas, in terms of stormwater drainage systems and subdivisional layouts, varied from current standards. As a result, most stormwater drains were originally designed to meet the 20% AEP (5-year ARI) standard and overland flow paths were not required. As a result, many of the Municipality's drainage lines lack a continuous and unobstructed overland flow path to cater for flows in excess of capacity of the piped system. Buildings and other infrastructure are at risk of being damaged by flooding. Increases in the density of urban development, and thus increases in runoff volumes, have exacerbated the issue.

Where practical, excess flows are carried to low points via the road network, from where a combination of pipes and overland flow paths carry water to Merri Creek or Darebin Creek.

Around 5% of the City of Darebin is geographically flood prone. Major contributors to this are developments on floodplains and in overland flow paths, old drainage systems that were designed to what are now outdated standards and increased housing density.

Description of Major Waterways and Drains

There are three major waterways running through the City of Darebin:

- Merri Creek rises in Melbourne's outer north between Craigieburn and Kalkallo and flows south along the boundaries of the Cities of Hume and Whittlesea receiving several creeks, tributaries and drains before entering the City of Darebin at Mahoneys Road, Reservoir. Merri Creek then forms the western boundary of the municipality, flowing through Reservoir, exiting Darebin near Newlands Road and re-entering the Municipality to continue the western boundary at Bell Street, Preston after receiving Edgars Creek. Merri Creek continues south through Preston, Thornbury and Northcote before exiting the City at Heidelberg Road. Merri Creek discharges into Yarra River at Yarra Bend Park in Fairfield. See **Appendix F** for a schematic of Merri Creek.
- Darebin Creek rises to the northeast of Donnybrook and flows south through Donnybrook, Mernda, Epping, Mill Park and Bundoora receiving several creeks, tributaries and drains before entering the City of Darebin at Bundoora Park. Flow continues south through Bundoora and Kingsbury before forming the eastern boundary of the Municipality south of Latrobe University Bundoora. Darebin Creek continues south through Reservoir, Preston, Thornbury and Alphington before exiting Darebin at Heidelberg Road, Alphington. Darebin Creek discharges into the Yarra

River adjacent to Green Acres Golf Club in Kew. See **Appendix F** for a schematic of Darebin Creek

- Edgars Creek is a tributary of Merri Creek, beginning in two branches in the City of Whittlesea at Wollert before converging and continuing south through Epping, Lalor and Thomastown before entering the City of Darebin and continuing through Reservoir before discharging into Merri Creek north of Murray Road, Coburg.

Waterway / Drain	Description
Salt Creek	Rises in the Gresswell Forest Wildlife Reserve within the grounds of Latrobe University. It drains to Darebin Creek through the Latrobe University wetlands at the western end of Crissane Road.
Darebin Creek	Darebin Creek is one of the two major creeks within the Municipality. It rises to the north of Donnybrook and flows almost due south through Epping, Bundoora and the City of Darebin to join the Yarra River upstream of Chandler Highway. Darebin Creek forms a little over half the eastern boundary of the Municipality to the south of Latrobe University.
Edgars Creek	Edgars Creek is a tributary of Merri Creek and has its headwaters in the suburb of Lalor in the City of Whittlesea. It flows through the Municipality downstream of Mahoneys Road into Edwardes Lake upstream of its confluence with Merri Creek just upstream (to the north) of Bell Street.
Central Creek	Central Creek is a tributary of Merri Creek and rises north of Mahoneys Road in Thomastown within the City of Whittlesea. It flows into Merri Creek just upstream (to the north) of Broadhurst Road in Reservoir.
Merri Creek	Merri Creek is the other major creek within the Municipality. It rises in the rural area to the north of Craigieburn and to the east of Kalkallo and the Hume Highway. Merri Creek flows almost due south and forms a major part of the western boundary of the Municipality from downstream of Mahoneys Road. Merri Creek flows into the Yarra River a little upstream of Dights Falls near the intersection of the Eastern Freeway and Hoddle Street.
Bell Street Main Drain	Starts near the corner of Inverloch and Gower Street in Preston and discharges into Darebin Creek near Raglan Street in Preston.
Broadway Main Drain	Starts near Clark Street in Reservoir and discharges into Darebin Creek through the Arch Gibson Reserve south of Dunne Street in Kingsbury.
Chauvel Street Main Drain	Starts near Ryan Street in Reservoir and joins Merrilands Main Drain near O'Connor Street. Discharges into Edgars Creek in Reservoir.
Elizabeth Street Main Drain	Starts near the intersection of Beatty Street and Gilbert Street in Reservoir and discharges into Merri Creek through the City of Moreland.
Fairfield Main Drain	Starts near the corner of Victoria Street and Rossmoyne Street in Thornbury, passes through Fairfield and Alphington and discharges into the Yarra River near the end of Yarraford Avenue to the west of Chandler Highway in the City of Yarra.
Green Street Main Drain	Starts near the corner of Ellesmere Street and Bastings Street and discharges into Merri Creek just upstream (to the north) of Heidelberg Road.
Kellett Street Main Drain	Starts near the corner of Christmas and Wilmoth Streets in Northcote and joins Fairfield Main Drain near Separation Street.
Merrilands Main Drain	Starts near Clough and Bridgeton Street in Reservoir and discharges into Edgars Creek near Leamington Street in Reservoir.
Mont Park Main Drain	Starts in the grounds of Latrobe University and discharges to Darebin Creek through the City of Banyule.
Power Street Main Drain	Starts near the corner of Power Street and Bingo Street in Preston and joins the Bell Street Main Drain near the Albert Street – Bell Street intersection. Discharges into Darebin Creek near Raglan Street in Preston.
Preston Main Drain	Starts near the corner of Lunette Avenue and Wood Street in Preston and discharges into Merri Creek through Northcote golf course beside Mayer Park in Thornbury.
Purinuan Road Main Drain	Starts near Purinuan Road in Reservoir and discharges into Darebin Creek through the Darebin Creek Reserve in Reservoir.
Quarry Street Main Drain	Starts near the corner of Matisi Street and Flinders Street in Thornbury and discharges into Darebin Creek near Clarendon Street in Thornbury.
Spring Street Main Drain	Starts near the Cameron Street – Spring Street intersection and joins Preston Main Drain near Murray Road. Discharges into Merri Creek through Northcote golf course beside Mayer Park in Thornbury.

Waterway / Drain	Description
Steane Street Main Drain	Starts near the corner of Ashton and McComas Street Reservoir and discharges into Darebin Creek near Wood Street in Preston.
Sumner Avenue Main Drain	Starts near the corner of High Street and Normanby Avenue in Thornbury and discharges into Merri Creek near Merri Park in Northcote.
Merri Creek Levees	In response to a major flood in 1974, an earthen levee bank system was built across Merri Park in the 1980s. Part of this area was made into a retarding basin which echoes the form of the original creek bend and is designed to fill during major flooding events.

Table A1 – Melbourne Water Drains and Waterways within or bordering the City of Darebin

Historic Floods

3rd February 2005- Water levels at Bell Street (Coburg) and St Georges Rd (Northcote) reached Moderate flood levels. At Bell St (Coburg), the creek level overtopped its banks at 1:00am, causing minor flooding of low areas adjacent to the banks, particularly around bicycle/pedestrian paths and parklands.

Downstream of Merri Creek at St Georges Rd, overbank flow occurred at 2:00am, Associated with the flood flow was moderate level of inundation, including property flooding at Northcote and Coburg. At 6:00pm on the same day, water levels at both locations receded below the minor flood level.

Bank Capacity was also exceeded for Darebin Creek at Ivanhoe and Bundoora.

Though rainfalls were extreme, climatic conditions prior to the event left the catchment very dry, so much of the rainfall was retained in soil and storages, leading to lower-than-expected discharge levels.

3rd December 2003- Significant flows of up to approximately 50-year (ARI) were experienced in a number of waterways, including Merri and Darebin Creeks. This resulted in some damage to these creeks, including the loss of a footbridge.

Significant floods (with high flood gauge levels and likely flooding consequences to property and infrastructure) to have occurred within the City of Darebin are as follows in the table below. Levels and rain totals in black indicate large-scale impacts to surrounding areas were recorded, whereas grey figures indicate localised impacts if any occurred. To view the locations of a selection of these severe weather events, see mapping in **Appendix F**.

Event	Merri Creek at Coburg East (229645A)		Merri Creek at Northcote (229149A)		Edgars Creek at Reservoir (229610A)	Darebin Creek at Bundoora (229612A)		Darebin Creek at Ivanhoe (229403A)	
	Rainfall at Gauge	Creek Level	Rainfall at Gauge	Creek Level	Creek Level	Rainfall at Gauge	Creek Level	Rainfall at Gauge	Creek Level
Normal Water Level		0.5m		0.3m	0.05m		0.45m		0.20m
Minor Flood Class		2.9m		3.2m	Not Classified		Not Classified		Not Classified
Moderate Flood Class		3.4m		3.8m	Not Classified		Not Classified		Not Classified
Major Flood Class		4.8m		5.0m	Not Classified		Not Classified		Not Classified
18th September 1960	-	-	-	-	-	-	3.66m	-	-
13th July 1963	-	-	-	-	-	-	3.89m	-	-
15th May 1974	-	-	-	-	-	-	**4.82m**	-	-
25th October 1975	-	-	-	3.36m	0.45m	-	-	-	-
7th April 1977	-	-	-	**4.81m**	0.69m	-	-	-	-
19th June 1977	-	-	-	3.39m	0.52m	-	-	-	-
8th August 1978	-	-	-	3.29m	0.46m	-	2.15m	-	-
19th November 1978	-	-	-	3.32m	0.68m	83mm / 21 hrs	2.60m	-	-
16th October 1983	84mm / 33 hrs	3.18m	-	3.64m	0.69m	83mm / 35 hrs	2.68m	-	-
30th July 1987	59mm / 33 hrs	3.91m	-	3.98m	0.57m	57mm / 37 hrs	3.28m	-	-
5th April 1989	44mm / 10 hrs	2.55m	-	2.76m	0.77m	-	3.78m	-	-
11th June 1989	32mm / 23 hrs	3.98m	-	3.91m	0.66m	37mm / 22 hrs	3.15m	-	-
14th December 1989	77mm / 9 hrs	2.4m	-	3.40m	0.76m	57mm / 9 hrs	2.86m	-	-
18th July 1990	32mm / 3 hrs	3.27m	-	3.34m	0.62m	34mm / 6 hrs	3.23m	-	-
5th December 1992	17mm / 2 hrs	2.33m	-	2.81m	0.86m	15mm / 2 hrs	4.41m	-	-
27th December 1993	125mm / 38 hrs	2.95m	-	3.69m	0.57m	76mm / 39 hrs	2.94m	-	-
23rd June 1996	47mm / 24 hrs	1.59m	-	2.39m	0.57m	53mm / 22 hrs	3.18m	-	-
27th December 1999	110mm / 54 hrs	2.75m	121mm / 54 hrs	2.87m	1.19m	131mm / 54 hrs	2.08m	48mm / 48 hrs	2.12m
3rd December 2003	105mm / 2 hrs	4.13m	86mm / 2 hrs	4.64m	-	37mm / 3 hrs	0.91m	92mm / 4 hrs	2.14m
3rd February 2005	136mm / 28 hrs	**4.28m**	133mm / 28 hrs	4.35m	1.19m	133mm / 27 hrs	2.60m	139mm / 27 hrs	2.59m
5th February 2011	68mm / 15 hrs	3.08m	74mm / 15 hrs	3.09m	0.95m	88mm / 14 hrs	2.77m	77mm / 15 hrs	2.19m
25th December 2011	42mm / 5 hrs	3.33m	46mm / 5 hrs	3.68m	0.13m	77mm / 5 hrs	3.17m	52mm / 5 hrs	2.71m
1st June 2013	73mm / 13 hrs	3.85m	79mm / 14 hrs	4.21m	1.29m	107mm / 13 hrs	3.25m	93mm / 16 hrs	**3.21m**

Event	Merri Creek at Coburg East (229645A)		Merri Creek at Northcote (229149A)		Edgars Creek at Reservoir (229610A)	Darebin Creek at Bundoora (229612A)		Darebin Creek at Ivanhoe (229403A)	
	Rainfall at Gauge	Creek Level	Rainfall at Gauge	Creek Level	Creek Level	Rainfall at Gauge	Creek Level	Rainfall at Gauge	Creek Level
Normal Water Level		0.5m		0.3m	0.05m		0.45m		0.20m
Minor Flood Class		2.9m		3.2m	Not Classified		Not Classified		Not Classified
Moderate Flood Class		3.4m		3.8m	Not Classified		Not Classified		Not Classified
Major Flood Class		4.8m		5.0m	Not Classified		Not Classified		Not Classified
29th December 2016	62mm / 10 hrs	3.64m	41mm / 10 hrs	3.89m	**1.63m**	87mm / 3 hrs	3.09m	54mm / 9 hrs	2.57m
1st November 2017	26mm / 2 hrs	1.35m	16m / 2 hrs	1.99m	0.53m	14m / 1 hr	0.93m	24mm / 1 hr	1.20m
2nd November 2017	46mm / 8 hrs	1.84m	59mm / 10 hrs	2.54m	0.58m	39mm / 11 hrs	1.24m	47mm / 11 hrs	1.36m

Table A2 - Selection of Historical Flood Events along Merri Creek, Edgars Creek and Darebin Creek

Dam Spilling / Failure

No dams, either in or upstream of the City of Darebin are expected to affect the Municipality from flooding. See Dam Failure in Section 3 of this plan for more information.

Service Reservoirs located within the Municipality are listed below.

Melbourne Water Service Reservoir	Location	Owner	Material	Reservoir Capacity	Melway Reference
Preston Res- Earthen Basin No. 1	883 High Street Reservoir	Melbourne Water	Bluestone	61.4Ml	18G7
Preston Res- Earthen Basin No. 2	832-838 High Street, Reservoir	Melbourne Water	Concrete	122Ml	18 H7
Preston Res- Earthen Basin No. 3	832-838 High Street, Reservoir	Melbourne Water	Concrete	125Ml	18H7

Table A3 – Melbourne Water Service Reservoirs in the City of Darebin

APPENDIX B - TYPICAL FLOOD PEAK TRAVEL TIMES

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

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

Where negative values are shown in the table below this indicates that a flood peak may be expected at the gauge downstream before a separate flood peak is experienced at the upstream gauge. This phenomenon may be due to the location of the thunderstorm passing through the catchment between the two gauges, or because of the urban environment found downstream causing floodwaters to enter the waterway quicker than those in a more rural setting upstream. Lastly this may be because of the existence of a retarding basin between the two gauges.

Typical Travel Times

Location From (gauge)	Location To (gauge)	Typical Travel Time	Flood Class	Comments
MERRI CREEK				
Somerton	Northcote	Between 1 minute to 4 hours	Minor Flood at Northcote	
Coburg East	Northcote	Between 1 minute to 1 hour		
Somerton	Northcote	Between 1 minute to 4 hours	Moderate Flood at Northcote	
Coburg East	Northcote	Between 1 minute to 2 hours		
DAREBIN CREEK				
Epping	Ivanhoe	Between 1 minute to 3 hours		
Bundoora	Ivanhoe	Between 1 minute to 3 hours		
EDGARS CREEK				
Reservoir	Coburg East	Between 1 minute to 3 hours		Inflows from Merri Creek Upper likely to impact on travel time to Coburg East

Table B1 – Typical Flood Travel Times between gauges on the Merri, Darebin and Edgars Creeks around City of Darebin

Historical Travel Times

Flood Event	Location From (gauge)	Location To (gauge)	Flood Peak Travel Time	Flood Class at
MERRI CREEK				**NORTHCOTE**
25th October 1975	Somerton	Northcote	5 hours	Minor
7th April 1977	Somerton	Northcote	3 hours	Moderate
19th June 1977	Somerton	Northcote	2 hours	Minor
8th August 1978	Somerton	Northcote	4 hours	Minor
19th November 1978	Somerton	Northcote	Less than 1 hour	Minor
16th October 1983	Somerton	Northcote	Less than 1 hour	Minor
	Coburg East	Northcote	Less than 1 hour	
30th July 1987	Somerton	Northcote	4 hours	Moderate
	Coburg East	Northcote	2 hours	
11th June 1989	Somerton	Northcote	2 hours	Moderate

Flood Event	Location From (gauge)	Location To (gauge)	Flood Peak Travel Time	Flood Class at
	Coburg East	Northcote	1 hour	
18th July 1990	Somerton	Northcote	3 hours	Minor
	Coburg East	Northcote	Less than 1 hour	
MERRI CREEK				**NORTHCOTE**
27th December 1993	Somerton	Northcote	Less than 1 hour	Minor
	Coburg East	Northcote	1 hour	
3rd December 2003	Somerton	Northcote	1 hour	Moderate
	Coburg East	Northcote	Less than 1 hour	
3rd February 2005	Somerton	Northcote	Less than 1 hour	Moderate
	Coburg East	Northcote	Less than 1 hour	
25th December 2011	Coburg East	Northcote	1 hour	Minor
1st June 2013	Somerton	Northcote	3 hours	Moderate
	Coburg East	Northcote	Less than 1 hour	
29th December 2016	Somerton	Northcote	2 hours	Moderate
	Coburg East	Northcote	1 hour	
DAREBIN CREEK				**N/A**
27th December 1999	Bundoora	Ivanhoe	Less than 1 hour	
3rd December 2003	Epping	Ivanhoe	1 hour	
	Bundoora	Ivanhoe	Less than 1 hour	
3rd February 2005	Epping	Ivanhoe	Less than 1 hour	
	Bundoora	Ivanhoe	Less than 1 hour	
5th February 2011	Epping	Ivanhoe	1 hour	
	Bundoora	Ivanhoe	1 hour	
25th December 2011	Epping	Ivanhoe	3 hours	
	Bundoora	Ivanhoe	3 hours	
1st June 2013	Epping	Ivanhoe	2 hours	
	Bundoora	Ivanhoe	2 hours	
29th December 2016	Epping	Ivanhoe	2 hours	
	Bundoora	Ivanhoe	2 hours	
EDGARS CREEK				**N/A**
14th December 1989	Reservoir	Coburg East	Less than 1 hour	
27th December 1999	Reservoir	Coburg East	1 hour	
3rd February 2005	Reservoir	Coburg East	2 hours	
5th February 2011	Reservoir	Coburg East	1 hour	
1st June 2013	Reservoir	Coburg East	3 hours	
29th December 2016	Reservoir	Coburg East	3 hours	

Table B2 – Historical Flood Travel Times between gauges on the Merri, Darebin and Edgars Creeks

APPENDIX C1 - THREAT OF FLOODING ALONG DAREBIN CREEK

Overview of Flooding Consequences

This Summary table is generated from Victorian Government data. The State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons access this information should make appropriate enquiries to assess the currency of the data.

Summary of Consequences in a 1% AEP (100yr ARI) flood along Darebin Creek in Darebin					
Property					
Properties	**20**				
Residential	15				
Commercial	0				
Industrial	5				
Public Land	0				
Rural	0				
Community Infrastructure					
Essential Infrastructure					
Tourism / Recreation					
Recreation Facilities	3	Darebin Creek Park; Darebin Creek Reserve; K.P. Hardiman Reserve			
Government Boundaries					
Local Gov't Areas	1	Darebin	CMA	1	Port Phillip & Westernport
Adjacent LGAs	3	Whittlesea, Banyule & Yarra	CFA District	0	
SES Unit Area	1	Heidelberg	FRV District	1	Northern

Table C1.1 – Consequence Summary of 1% AEP flood along Darebin Creek in the City of Darebin

Darebin Creek is a tributary to the Yarra River and acts as one of the two main stormwater outfalls for the City of Darebin.

Preston, Thornbury and Alphington lay on fairly flat terrain, which sees overland flow paths spread out over a wide area. Water will generally be slow moving as it spreads and may sit for a number of days before dissipating, whereas terrain around Reservoir is undulating, causing moderate water movement in short duration, high intensity rainfall events.

High intensity, short duration rainfall events can cause flash flooding in and around these suburbs, while prolonged rainfall events may cause Darebin Creek to flood.

Gauges and Warnings

Whilst there are hydrographic/telemetry stations (river gauges) within the municipality, Melbourne Water does not provide any flood warning service at this point, due to the generally short warning times available.

Melbourne Water Gauge	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Reference
Darebin Creek at Epping	229613A	West bank of the creek, north side of Rufus Street, Epping	✓	✓	182D11
Darebin Creek at Bundoora	229612A	South bank of Creek in Norris Bank Reserve, northern side of Settlement Road	✓	✓	9 G12
Darebin Creek at Bell Street, Ivanhoe	229403B	West bank of creek, northern side of Bell Street Bridge, Preston	✓	✓	31 D2
Preston Rain Gauge	586011	Preston Reservoirs, 881 High Street, Reservoir		✓	18 G7

Table C1.2 – Gauges within the Darebin Creek catchment

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx. The Bureau of Meteorology's website also links a number of these gauges at: http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDV60201.html. It is advised that residents monitor the Bureau of Meteorology's website http://www.bom.gov.au/vic/warnings/index.shtml?ref=hdr and the VicEmergency website https:/emergency.vic.gov.au/ for any thunderstorm, flood or severe weather warnings present for their area.

Areas of Flood Risk

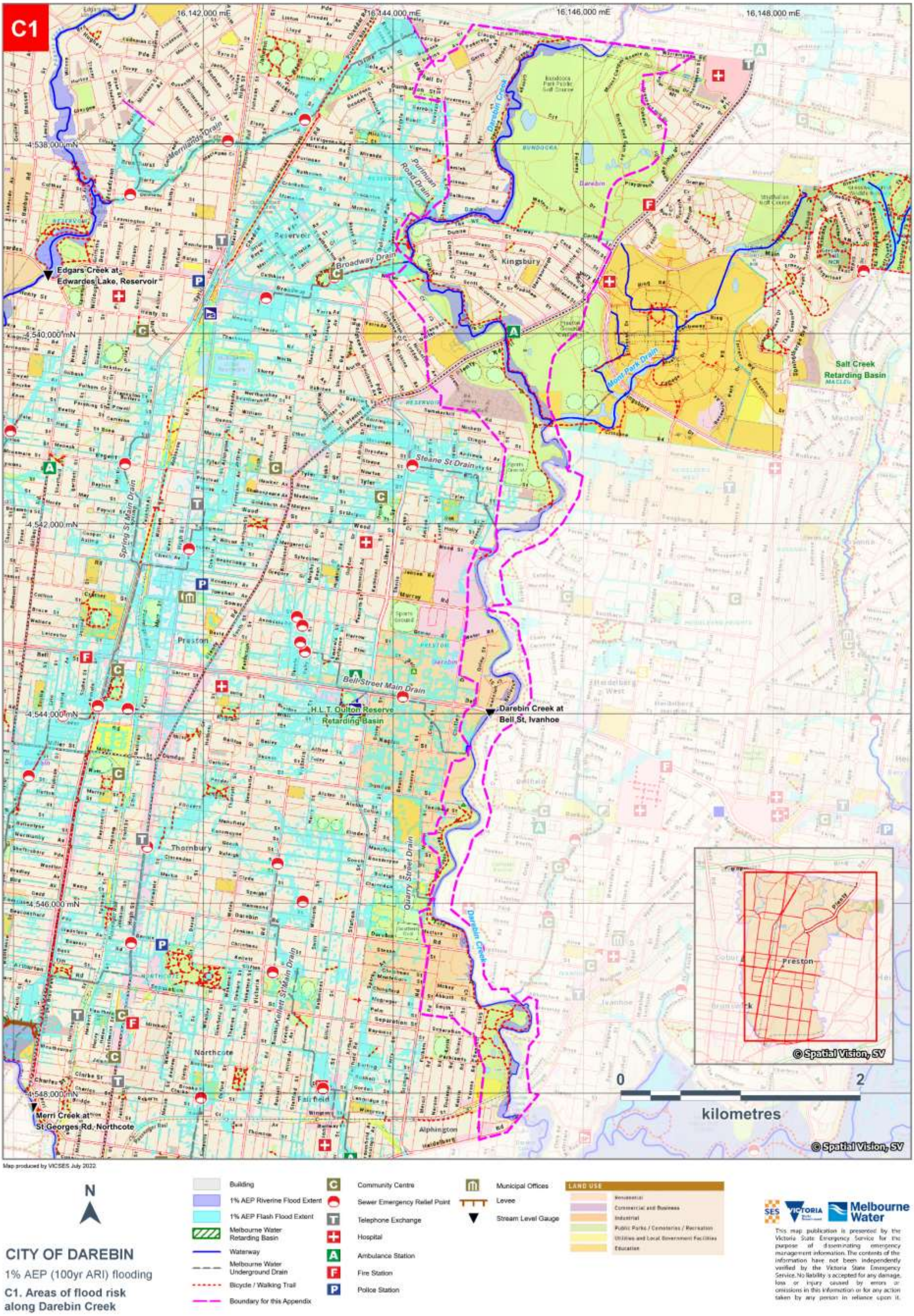

Figure A1 – Areas of flood risk around Darebin Creek in the City of Darebin and area covered by this appendix

Properties at Flood Risk

Properties listed in the table below are at risk from flooding along Darebin Creek in the City of Darebin. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Darebin Creek (Melbourne Water, October 2008) flood mapping and risk assessment programs.

This Property Flood Risk Table is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victoria State Emergency Service. No liability is accepted for any damage, loss or injury caused by errors or omissions in this information or for any action taken by any person in reliance upon it.

Properties at risk from Flooding along Darebin Creek during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
3/4	Chenies Street	Reservoir	Darebin Creek	Flash
357-359	Darebin Road	Thornbury	Darebin Creek	Flash
8	Ford Crescent	Thornbury	Darebin Creek	Flash
12	Ford Crescent	Thornbury	Darebin Creek	Flash
16	Ford Crescent	Thornbury	Darebin Creek	Flash
20	Ford Crescent	Thornbury	Darebin Creek	Flash
4	Purinuan Road	Reservoir	Darebin Creek	Flash
6	Purinuan Road	Reservoir	Darebin Creek	Flash
8	Purinuan Road	Reservoir	Darebin Creek	Flash
11	Rathcown Road	Reservoir	Darebin Creek	Flash
1/13	Rathcown Road	Reservoir	Darebin Creek	Flash
2/13	Rathcown Road	Reservoir	Darebin Creek	Flash
15	Rathcown Road	Reservoir	Darebin Creek	Flash
17	Rathcown Road	Reservoir	Darebin Creek	Flash
1/19	Rathcown Road	Reservoir	Darebin Creek	Flash
2/19	Rathcown Road	Reservoir	Darebin Creek	Flash
2/21	Rathcown Road	Reservoir	Darebin Creek	Flash
10/47-49	Rathcown Road	Reservoir	Darebin Creek	Flash
11/47-49	Rathcown Road	Reservoir	Darebin Creek	Flash
8	Weideman Court	Reservoir	Darebin Creek	Flash
3/4	Chenies Street	Reservoir	Darebin Creek	Flash

Total
20

Table C1.3 – Properties at risk of flooding along Darebin Creek in the City of Darebin

Isolation

No major isolation risks exist for areas around Darebin Creek during a 1% AEP (100yr ARI) event. Some localised short-duration isolation may occur due to flash flooding.

Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. http://ptv.vic.gov.au/live-travel-updates/. A map of Public Transport routes within the City

of Darebin is available via the website at: https://www.ptv.vic.gov.au/assets/PTV-default-site/more/maps/Local-area-maps/Metropolitan/12_Darebin_LAM_July-2022-NN.pdf

Apart from the roads outlined below, all other essential infrastructure and services areas around Darebin Creek are expected to remain unaffected by flooding during a 1% AEP (100yr ARI) event.

Road Closures

The following roads are subject to closure during flooding around Darebin Creek. Check the VicRoads website for more details: http://alerts.vicroads.vic.gov.au/

Darebin City Council Roads flooded in a 1% AEP (100yr ARI) event
• **RESERVOIR**
• Beenak Street
• Laurie Street

Table C1.4 – Darebin City Council Possible Road Closures during a flooding event

Flood Mitigation – Darebin Creek

Retarding Basins

A number of reserves and parklands along Darebin Creek may hold a large amount of stormwater during an event. These include:

Reserve / Park	On Drain / Waterway	Location	Melway Reference
Darebin Creek Reserve	Purinuan Road Drain	Rathcown Road, Reservoir	19 B4
K.P. Hardiman Reserve	Darebin Creek	Campbell Street, Kingsbury	19 C6
Darebin Creek Park	Darebin Creek	Tyler Street, Preston	19 D10
Darebin Parklands	Darebin Creek	McDonald Avenue, Alphington	31, D8-9

Table C1.5 – Parks and Reserves along Darebin Creek in the City of Darebin

No formal Retarding Basins, Pumping Stations or Levees exist around Darebin Creek in Reservoir, Preston, Thornbury, Fairfield and Alphington.

Sewerage Infrastructure

There is no sewerage Infrastructure expected to be within the vicinity of floodwaters during severe flood events around Reservoir, Preston, Thornbury, Fairfield and Alphington.

Control, Command and Coordination

VICSES will assume overall control of the response to flood incidents. Control and coordination of a flood incident shall be carried out at the lowest effective level and in accordance with the SEMP. During significant events, VICSES will conduct incident management using multi-agency resources.

Flood Impacts & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along Darebin Creek at various creek heights within the City of Darebin. These tables are to be used only as a guide as no two floods at a location will have identical impacts.

Intelligence Cards have been included for the following locations:

- Darebin Creek at Bundoora
- Darebin Creek at Ivanhoe

FLOOD INTELLIGENCE CARD – BUNDOORA GAUGE, DAREBIN CREEK

Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.

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LOCATION:	**Norris Bank Reserve on Settlement Road, Bundoora**
CURRENT LEVEL:	**https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/229612A**
STREAM:	**Darebin Creek**
GAUGE NUMBER:	**229612A**
GAUGE ZERO:	**80.21m AHD**
GAUGE TYPE:	**Stream Level & Rain**

MELWAY REFERENCE:	**9 G12**
MINOR:	**Not Established**
MODERATE:	**Not Established**
MAJOR:	**Not Established**
LEVEE HEIGHT:	**N/A**
HIGHEST RECORDED FLOOD:	**4.82m (May 1974)**

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
3.69m	1% AEP (100yr ARI) Flood Level	**Properties at Flood Risk** **15 Properties in Total** **Darebin Creek** • 3/4 Chenies Street, Reservoir • 4, 6 & 8 Purinuan Road, Reservoir • 11, 1/13, 2/13, 15, 17, 1/19, 2/19, 2/21, 10/47-49 & 11/47-49 Rathcown Road, Reservoir • 8 Weideman Court, Reservoir **Community Infrastructure Likely Flooded** • Darebin Creek Reserve, Rathcown Road, Reservoir • K.P. Hardiman Reserve, Campbell Street Kingsbury • Darebin Creek Trail at various locations **Water Over Road** **Perinuan Road Drain** • Beenak Street, Reservoir	VicSES State and Region to provide warnings to the community and other agencies. VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The North West Metro Regional Duty Officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident. VicSES to respond as per request-by-request basis. Council to provide road closure signage if required.

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• Laurie Street, Reservoir	
3.89m	July 1963 Flood Level Peak		

Table C1.6 – Breakdown of likely consequences at various Bundoora gauge level heights along Darebin Creek with operational considerations

FLOOD INTELLIGENCE CARD – IVANHOE GAUGE, DAREBIN CREEK

Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.

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LOCATION:	**Forest Park, Bell Street, Ivanhoe**
CURRENT LEVEL:	**https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/229403A**
STREAM:	**Darebin Creek**
GAUGE NUMBER:	**229403A**
GAUGE ZERO:	**44.64m AHD**
GAUGE TYPE:	**Stream Level & Rain**

MELWAY REFERENCE:	**31 C2**
MINOR:	**Not Established**
MODERATE:	**Not Established**
MAJOR:	**Not Established**
LEVEE HEIGHT:	**N/A**
HIGHEST RECORDED FLOOD:	**3.21m (1st June 2013)**

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
2.60m	3rd February 2005 Flood Level Peak		
2.71m	25th December 2011 Flood Level Peak		
4.51m	1% AEP (100yr ARI) Flood Level	**Properties at Flood Risk** **5 Properties in Total** **Darebin Creek** • 357-359 Darebin Road, Thornbury • 8, 12, 16 & 20 Ford Crescent, Thornbury **Community Infrastructure Flooded** • Darebin Creek Trail at various locations • Pedestrian Crossing at Olympic Park, Heidelberg West • Darebin Creek Park, Tyler Street, Preston • Darebin Parklands, McDonald Avenue, Alphington	VicSES State and Region to provide warnings to the community and other agencies. VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The North West Metro Regional Duty Officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident. VicSES to respond as per request-by-request basis. Council to provide road closure signage if required.

Table C12 – Breakdown of likely consequences at various Ivanhoe gauge level heights along Darebin Creek with operational considerations

APPENDIX C2 - THREAT OF FLOODING ALONG MERRI CREEK

Overview of Flooding Consequences

This Summary table is generated from Victorian Government data. The State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons access this information should make appropriate enquiries to assess the currency of the data.

Summary of Consequences in a 1% AEP (100yr ARI) flood along Merri Creek in Darebin					
Property					
Properties	**28**				
Residential	24				
Commercial	0				
Industrial	0				
Public Land	4				
Rural	0				
Community Infrastructure					
Schools / Colleges	1	Northcote High School Sports Grounds			
Essential Infrastructure					
Sewerage Facilities	2	Emergency Relief Points			
Drainage Facilities	1	Merri Creek R.B.			
Tourism / Recreation					
Sports Facilities	1	Northcote Public Golf Course			
Recreation Facilities	3	A.H. Capp Reserve; Merri Creek Trail; Merri Park			
Government Boundaries					
Local Gov't Areas	1	Darebin	CMA	1	Port Phillip & Westernport
Adjacent LGAs	4	Hume, Whittlesea, Moreland & Yarra	CFA District	0	
SES Unit Area	1	Heidelberg	FRV District	1	Northern

Table C2.1 – Consequence Summary of 1% AEP flood along Merri Creek

Levees have been constructed on the eastern side of two sections of Merri Creek at Normanby Avenue and Sumner Estate and are expected to protect to a 1% AEP (100yr ARI) event level. Areas adjacent to the Creek may still experience flooding, either from stormwater backup from surrounding drains or due to topography

At the junction of Merri Creek and Sumner Avenue Main Drain is Merri Creek Retarding Basin, which allows for surcharge from the local drainage system to discharge into Merri Creek. If the Retarding Basin has reached capacity, or the surrounding levee was to fail, floodwaters will flow overland across Sumner Avenue and Winifred Street into residential area.

Gauges and Warnings

There is currently one Melbourne Water flood warning gauge on Merri Creek within Darebin that could be used to assist with public safety. This is at St Georges Road, Northcote. Outside the Municipality,

stream flow gauges with assigned flood class levels exist on Merri Creek at Coburg East in the City of Moreland and Yarra River at Fairfield in the City of Yarra. Those gauges with flood class levels established are outlined in the table below.

Flood Warning Gauge	River / Creek Flood Class Level		
	Minor	Moderate	Major
Merri Creek at Cooper Street, Somerton	**3.4m**	**3.7m**	**4.4m**
Merri Creek at Bell Street, Coburg East	**2.9m**	**3.4m**	**4.8m**
Merri Creek at St Georges Road, Northcote	**3.2m**	**3.8m**	**5.0m**

Table A9 – Hydrographic Monitoring Stations with established Flood Class Levels for the City of Darebin

At these sites on the Merri Creek, the Bureau of Meteorology (the Bureau) in consultation with Melbourne Water will issue flood warnings if levels reach those classified above. This warning will be placed on the Bureau's website (**http://www.bom.gov.au/vic/warnings/index.shtml**) and the VicEmergency website https:/emergency.vic.gov.au/. While the City of Darebin monitors these warnings in times of high rainfall, there are no specific guidelines to advise how these situations should be responded to.

For other stream gauges within the Municipality, Melbourne Water does not provide any flood warning service at this point, due to the generally short warning times available. Gauges relevant to waterways within the City of Darebin are listed below.

Gauge	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Reference
Merri Creek at Craigieburn North	229627A	West side of the creek 200m south of Summerhill Rd, Craigieburn	✓	✓	387H3
Merri Creek at Craigieburn East	229257A	East side of the creek at Craigieburn Rd bridge, Wollert	✓		387E10
Merri Creek at Somerton	229603B	West side of the creek, 200m north of Cooper Street, Somerton	✓	✓	180J10
Merri Creek at Bell Street, Coburg East	229645A	West side of the Creek at the Bell St Bridge, Coburg	✓	✓	18 A12
Merri Creek at St Georges Road Northcote	229149A	East side of the creek in Green Reserve at end of Union St, Northcote	✓	✓	30 D10
Edwardes Creek at Edwardes Lake, Reservoir	229610A	Edwardes Lake at Edwardes Street, Reservoir	✓		18 D5
Preston Rain Gauge	586011	Preston Reservoirs, 881 High Street, Reservoir		✓	18 G7

Table C2.2 – Gauges within the Merri Creek catchment

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx. The Bureau of Meteorology's website also links a number of these gauges at: http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDV60201.html. It is advised that residents monitor the Bureau of Meteorology's website http://www.bom.gov.au/vic/warnings/index.shtml?ref=hdr and the VicEmergency website https:/emergency.vic.gov.au/ for any thunderstorm, flood or severe weather warnings present for their area.

Areas of Flood Risk

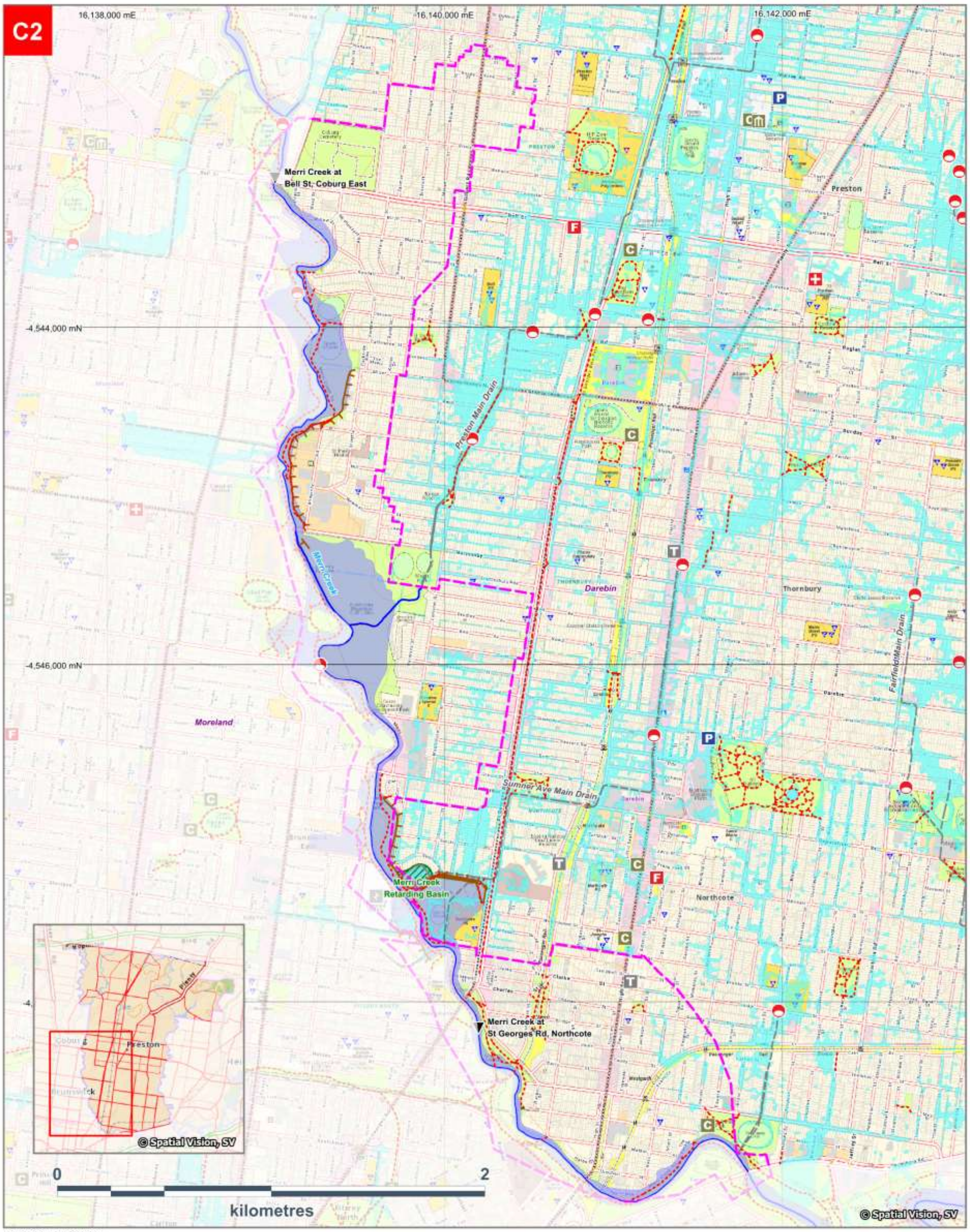

Figure A2 – Areas of flood risk around Merri Creek in the City of Darebin and area covered by this appendix

Properties at Flood Risk

Properties listed in the table below are at risk from flooding along Merri Creek in the City of Darebin. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Merri Creek (Lower) (Melbourne Water) and Merri Creek (Middle) (Melbourne Water) flood mapping and risk assessment programs.

This Property Flood Risk Table is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victoria State Emergency Service. No liability is accepted for any damage, loss or injury caused by errors or omissions in this information or for any action taken by any person in reliance upon it.

Properties at risk from Flooding along Merri Creek during a 1% AEP event

Residential | **Commercial** | **Industrial** | **Rural** | **Public Use**

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
1D	Creek Parade	Northcote	Merri Creek	Riverine
1	Creek Parade	Northcote	Merri Creek	Riverine
1E	Creek Parade	Northcote	Merri Creek	Riverine
2A	Creek Parade	Northcote	Merri Creek	Riverine
2B	Creek Parade	Northcote	Merri Creek	Riverine
2	Creek Parade	Northcote	Merri Creek	Riverine
3	Creek Parade	Northcote	Merri Creek	Riverine
5	Creek Parade	Northcote	Merri Creek	Riverine
6	Creek Parade	Northcote	Merri Creek	Riverine
7	Creek Parade	Northcote	Merri Creek	Riverine
8	Creek Parade	Northcote	Merri Creek	Riverine
9	Creek Parade	Northcote	Merri Creek	Riverine
2B	Elizabeth Street	Northcote	Merri Creek	Riverine
8A	Eunson Avenue	Northcote	Merri Creek	Riverine
30	Halwyn Crescent	Preston	Merri Creek	Riverine
214	Miller Street	Preston	Merri Creek	Riverine
143	Normanby Avenue	Thornbury	Merri Creek	Riverine
2	Ross Street	Northcote	Merri Creek	Riverine
4/8	Ross Street	Northcote	Merri Creek	Riverine
20	Ross Street	Northcote	Merri Creek	Riverine
19-25	St Georges Road	Northcote	Merri Creek	Riverine
54	Walker Street	Northcote	Merri Creek	Riverine
13	Willow Street	Preston	Merri Creek	Riverine
15	Willow Street	Preston	Merri Creek	Riverine
21	Willow Street	Preston	Merri Creek	Riverine
23	Willow Street	Preston	Merri Creek	Riverine
25	Willow Street	Preston	Merri Creek	Riverine
38	Willow Street	Preston	Merri Creek	Riverine

Total
28

Table C2.3 – Properties at risk of flooding along Merri Creek in the City of Darebin

Isolation

No major isolation risks exist for areas around Reservoir, Preston, Thornbury and Northcote during a 1% AEP (100yr ARI) event. Some localised short-duration isolation may occur due to flash flooding.

Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. http://ptv.vic.gov.au/live-travel-updates/. A map of Public Transport routes within the City of Darebin is available via the website at: https://www.ptv.vic.gov.au/assets/PTV-default-site/more/maps/Local-area-maps/Metropolitan/12_Darebin_LAM_July-2022-NN.pdf

Apart from two Sewer Emergency Relief Points and the roads outlined below, all other essential infrastructure and services areas around Reservoir, Preston, Thornbury and Northcote are expected to remain unaffected by flooding during a 1% AEP (100yr ARI) event.

Road Closures

The following roads are subject to closure during flooding around Merri Creek. Check the VicRoads website for more details: http://alerts.vicroads.vic.gov.au/

Department of Transport (VicRoads) Roads likely flooded in a 1% AEP (100yr ARI) event
• Nil

Table C2.4 – Department of Transport (VicRoads) Possible Road Closures during a flooding event

Darebin City Council Roads likely flooded in a 1% AEP (100yr ARI) event
NORTHCOTE
• The Parade

Table C2.5 – Darebin City Council Possible Road Closures due to flash flooding during a flooding event

Flood Mitigation – Merri Creek

Retarding Basins

Melbourne Water Retarding Basin	On Drain/ Waterway	Area	Storage Capacity	Spillway Crest Level	Full Supply Level	Embankment Crest Level	ANCOLD Hazard Rating	Houses In Flow Path (dam breach)	Melway Reference
Merri Creek Retarding Basin	Sumner Avenue Main Drain	14,400m^2	50Ml	N/A	Unavailable	2m (32.9m AHD)	Very low	0	30 C8

Table C2.6 – Melbourne Water Retarding Basins within the Merri Creek catchment in the City of Darebin

A number of reserves and parklands along Merri Creek may hold a large amount of stormwater during an event. These include:

Reserve / Park	On Drain / Waterway	Location	Melway Reference
W H Robinson Reserve	Merri Creek	Preston	30 B2
Strettle Wetlands	Merri Creek	Strettle Street, Thornbury	30 B3
A H Capp Reserve	Merri Creek	Calbourne St, Preston	30 B3

Table C2.7 – Parks and Reserves along Merri Creek in the City of Darebin

Levees

Melbourne Water Levee	Reach	Side	Levee Height	Levee Length	Expected Level of Protection	ANCOLD Hazard Rating	Houses at risk behind Levee	Melway Reference
Merri Creek (East)	Anderson Road and Normanby Avenue downstream	East	1.2m	55m	1% AEP Level (freeboard unavailable)	Very Low	0	30 B5
Merri Creek (East)	Miller Street to Fyffe Street	East	2.3m	472m	1% AEP Level (freeboard unavailable)	High C	34	30 A4
Merri Creek (East)	Fyffe street to Normanby Avenue	East	2.3	454m	1% AEP Level (freeboard unavailable)	Significant	19	30 A4
Merri Creek (East)	Sumner Estate- along Retarding Basin upstream To St Georges Road downstream	East	2m upstream to 1m downstream	478m	1% AEP Level (no effective freeboard)	High A	67	30 C8- 30 C9
Merri Creek (East)	Sumner Estate- Retarding Basin to Arthurton Road	East	2m	364m	1% AEP Level (no effective freeboard)	High A	78	30 C8

Table C2.8 – Melbourne Water Levees along Merri Creek in the City of Darebin

No formal Pumping Stations exist along Merri Creek in Reservoir, Preston, Thornbury and Northcote.

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located around Merri Creek is contained within the following table.

Sewer Emergency Relief Points

On Drain / Waterway	Location	Melway Reference
Merri Creek	North end of Tate Reserve, near Grant Street, Coburg	30 B2
Merri Creek	East side De Chene Reserve, Coburg, downstream of Elizabeth Street MD junction	18 A12

Table C2.9 – Sewer Emergency Relief Points along Merri Creek within or adjacent to the City of Darebin

Control, Command and Coordination

VICSES will assume overall control of the response to flood incidents. Control and coordination of a flood incident shall be carried out at the lowest effective level and in accordance with the SEMP. During significant events, VICSES will conduct incident management using multi-agency resources.

Flood Impacts & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along Merri Creek at various creek heights within the City of Darebin. These tables are to be used only as a guide as no two floods at a location will have identical impacts.

Intelligence Cards have been included for the following locations:

- Merri Creek at Coburg East
- Merri Creek at Northcote

FLOOD INTELLIGENCE CARD – COBURG GAUGE, MERRI CREEK

Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.

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LOCATION:	**West side of the Creek at the Bell St Bridge, Coburg**
CURRENT LEVEL:	**https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/229645A**
STREAM:	**Merri Creek**
GAUGE NUMBER:	**229645A**
GAUGE ZERO:	**33.73m AHD**
GAUGE TYPE:	**Stream Level & Rain**

MINOR:	**2.9m**
MODERATE:	**3.4m**
MAJOR:	**4.8m**
LEVEE HEIGHT:	**5.51m**
MELWAY REFERENCE:	**30 A1**
HIGHEST RECORDED FLOOD:	**4.85m (December 1934)**

Creek Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
2.9m	**MINOR FLOOD LEVEL**	• Bank Full Level at Fyffe Street	
3.1m		• Bank Full at Anderson Road, Thornbury	
3.4m	**MODERATE FLOOD LEVEL**		
4.13m	3rd December 2003 Flood Level Peak	**Event Summary** • Creek overtopped banks at Coburg at 1am, and overtopped at St Georges Rd, Northcote • Minor flooding to parkland and bicycle path near Coburg • Property flooding at Northcote and Coburg • Footbridges flooded along Merri Creek Trail • Water levels receded below minor flood levels within the day	
4.28m	3rd February 2005 Flood Level Peak	**Event Summary** • Creek overtopped banks near at Bell Street, Coburg and St Georges Rd, Northcote gauges	

Creek Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• Approximately 50yr ARI flows caused damage to creek bed • Loss of a footbridge and surrounding bank damage	
4.8m	**MAJOR FLOOD LEVEL**		
5.51m	1% AEP (100yr ARI) Flood Level (Major)	**Properties at Flood Risk** **8 Properties in Total** • 30 Halwyn Crescent, Preston • 214 Miller Street, Preston • 13, 15, 21, 23, 25 & 38 Willow Street, Preston **Community Infrastructure Flooded** • Merri Creek Trail • Merri Creek Trail footbridge near Hare Street, Reservoir • Merri Creek Trail footbridge near Edwardes Street, Reservoir • A.H. Capp Reserve, Preston **Essential Infrastructure** • Normanby Rd to Miller Street Levees Crest Level reached **Water Over Road (above 300mm depth)** • Normanby Road	VicSES State and Region to provide warnings to the community and other agencies. VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The North West Metro Regional Duty Officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident. VicSES to respond as per request-by-request basis. Council to provide road closure signage if required.

Table C2.10 – Breakdown of likely consequences at various Coburg East gauge level heights along Merri Creek with operational considerations

FLOOD INTELLIGENCE CARD – NORTHCOTE GAUGE, MERRI CREEK

Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.

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LOCATION	**East side of the creek in Green Reserve at end of Union St, Northcote**
MELWAY REFERENCE:	**30 D10**
STREAM:	**Merri Creek**
GAUGE NUMBER:	**229149A**
GAUGE ZERO:	**23.97m AHD**
GAUGE TYPE	**Stream Level & Rain**

MINOR:	**3.2**
MODERATE:	**3.8**
MAJOR	**5.0**
LEVEE HEIGHT:	**5.83m**
TELEMETRIC/MANUAL	**Telemetric**
HIGHEST RECORDED FLOOD:	**4.81m (April 1977)**

Creek Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
3.2m	**MINOR FLOOD LEVEL**	• Bank Full Level	
3.8m	**MODERATE FLOOD LEVEL**		
4.35m	February 2005 Flood Level Peak	**Event Summary** • Creek overtopped banks at Coburg at 1am, and overtopped at St Georges Rd, Northcote • Minor flooding to parkland and bicycle path near Coburg • Property flooding at Northcote and Coburg • Footbridges flooded along Merri Creek Trail • Water levels receded below minor flood levels within the day	
4.64m	December 2003 Flood Level Peak	**Event Summary** • Creek overtopped banks near at Bell Street, Coburg and St Georges Rd, Northcote gauges • Approximately 50yr ARI flows caused damage to creek bed • Loss of a footbridge and surrounding bank damage	

Creek Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
4.81m	April 1977 Flood Level Peak		
5.0m	**MAJOR FLOOD LEVEL**		
5.83m	1% AEP (100yr ARI) Flood Level (Major)	**Properties at Flood Risk** **20 Properties in Total** • 1, 1D, 1E, 2, 2A, 2B, 3, 5, 6, 7, 8 & 9 Creek Parade, Northcote • 2B Elizabeth Street, Northcote • 8A Eunson Avenue, Northcote • 143 Normanby Avenue, Thornbury • 2, 4/8 & 20 Ross Street Northcote • 19-25 St Georges Road, Northcote • 54 Walker Street, Northcote **Community Infrastructure Flooded** • Northcote Public Golf Course, Northcote • Merri Park, Northcote • Northcote High School (courts and grass areas) • Merri Creek Trail • Merri Creek Trail footbridge near Creek Parade, Northcote • Merri Creek Trail footbridge near East Street, Northcote **Essential Infrastructure** • Sumner Estate Levees Crest Level reached **Water Over Road (above 300mm depth)** • The Parade, Northcote	VicSES to respond as per request-by-request basis. Council to provide road closure signage if required.

Table C2.11 – Breakdown of likely consequences at various Northcote gauge level heights along Merri Creek with operational considerations

APPENDIX C3 - THREAT OF FLOODING ALONG EDGARS & CENTRAL CREEKS

Overview of Flooding Consequences

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Summary of Consequences in a 1% AEP (100yr ARI) flood along Edgars & Central Creeks in Darebin					
Property					
Properties	**1**				
Residential	1	St Joseph the Worker Primary School, 75 Wilson Boulevard, Reservoir			
Commercial	0				
Industrial	0				
Public Land	0				
Rural	0				
Community Infrastructure					
Places of Worship	1	Catholic Church			
Schools / Colleges	1	St Joseph the Worker Primary School			
Essential Infrastructure					
Bus Routes	2	553 & 558			
Levees	1	Reservoir Wall			
Drainage Facilities	1	Edwardes Lake			
Tourism / Recreation					
Recreation Facilities	2	Edgars Creek Trail; Edwardes Lake Park			
Government Boundaries					
Local Gov't Areas	1	Darebin	CMA	1	Port Phillip & Westernport
Adjacent LGAs	2	Whittlesea & Moreland	CFA District	0	
SES Unit Area	1	Heidelberg	FRV District	1	Northern

Table C3.1 – Consequence Summary of 1% AEP flood along Edgars & Central Creeks in City of Darebin

Edgars Creek and Central Creek are tributaries of Merri Creek, beginning in the City of Whittlesea at Wollert and flowing south through Epping, Lalor and Thomastown before entering the City of Darebin at Mahoneys Road. Edgars Creek continues through Reservoir, including Edgars Creek Wetland and Edwardes Lake Park, and then crosses into the City of Moreland at Jenkin Street before discharging into Merri Creek north of Murray Road, Coburg. Edgars Creek is fed by Chauvel Street Drain and Merrilands Drain which enter the system upstream of Edgars Creek Wetlands.

High Intensity, short duration rainfall events can cause flash flooding in and around Reservoir, while prolonged rainfall events may cause the Merri, Darebin or Edgars Creeks to flood. The topography of Reservoir sees gently rolling terrain, leading to moderate water movement during a flooding event.

Gauges and Warnings

Whilst there are hydrographic/telemetry stations (river gauges) within the municipality, Melbourne Water does not provide any flood warning service at this point, as the lack of upstream gauges and short stream length generally mean only limited warning times are available.

Guage	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Reference
Edgars Creek at Edwardes Lake	229610A	Edwardes Lake at Edwardes Street, Reservoir	✓		18 D5
Preston Rain Gauge	586011	Preston Reservoirs, 881 High Street, Reservoir		✓	18 G7

Table C3.2 – Gauges within the Edgars Creek catchment

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx. The Bureau of Meteorology's website also links a number of these gauges at: http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDV60201.html. It is advised that residents monitor the Bureau of Meteorology's website http://www.bom.gov.au/vic/warnings/index.shtml?ref=hdr and the VicEmergency website https:/emergency.vic.gov.au/ for any thunderstorm, flood or severe weather warnings present for their area.

Areas of Flood Risk

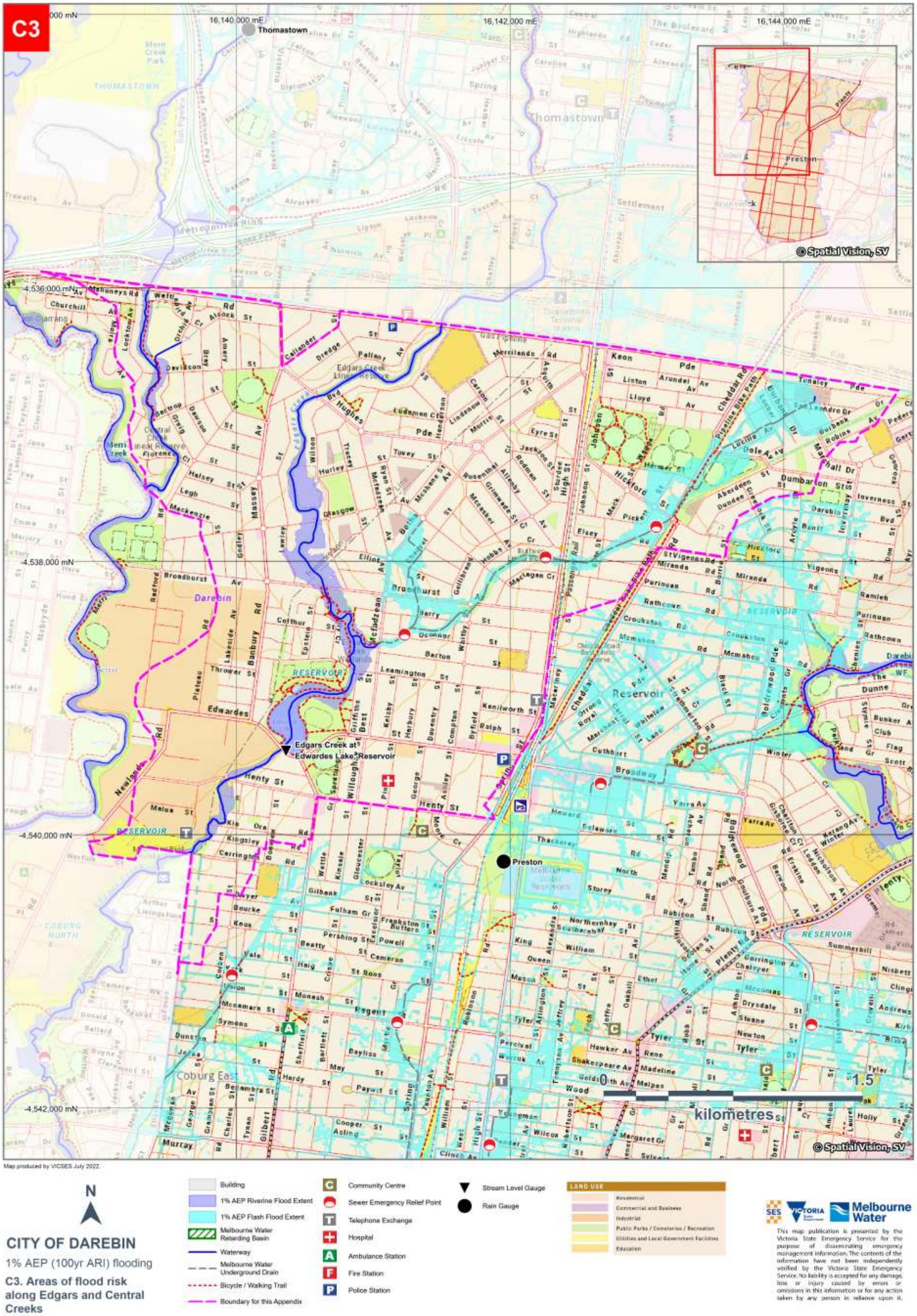

Figure A3 – Areas of flood risk around the Edgars and Central Creeks in the City of Darebin and area covered by this appendix

Properties at Flood Risk

Properties listed in the table below are at risk from flooding along the Central and Edgars Creeks and Merrilands and Chauvel St Drains. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Edgars & Central Creek Catchments (AECOM, July 2014) and the Merrilands Drain (Melbourne Water, February 2010) flood mapping and risk assessment programs.

This Property Flood Risk Table is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victoria State Emergency Service. No liability is accepted for any damage, loss or injury caused by errors or omissions in this information or for any action taken by any person in reliance upon it.

Properties at risk from Flooding within the Central and Edgars Creeks catchments in Darebin

Residential	Commercial	Industrial	Rural	Public Use

Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	86 Barry Street	Reservoir	Chauvel St Drain	Flash
		✓	1/88 Barry Street	Reservoir	Chauvel St Drain	Flash
	✓	✓	45 Broadhurst Avenue	Reservoir	Merrilands Drain	Flash
		✓	47 Broadhurst Avenue	Reservoir	Merrilands Drain	Flash
		✓	49 Broadhurst Avenue	Reservoir	Merrilands Drain	Flash
		✓	4 Burbank Drive	Reservoir	Merrilands Drain	Flash
		✓	6 Burbank Drive	Reservoir	Merrilands Drain	Flash
		✓	7 Burbank Drive	Reservoir	Merrilands Drain	Flash
		✓	9 Burbank Drive	Reservoir	Merrilands Drain	Flash
		✓	12 Burbank Drive	Reservoir	Merrilands Drain	Flash
		✓	13 Burbank Drive	Reservoir	Merrilands Drain	Flash
		✓	15 Burbank Drive	Reservoir	Merrilands Drain	Flash
		✓	19 Burbank Drive	Reservoir	Merrilands Drain	Flash
		✓	21 Burbank Drive	Reservoir	Merrilands Drain	Flash
	✓	✓	8 Chauvel Street	Reservoir	Chauvel St Drain	Flash
		✓	21 Chauvel Street	Reservoir	Chauvel St Drain	Flash
		✓	20 Daleglen Street	Reservoir	Merrilands Drain	Flash
	✓	✓	1/16 Elsey Road	Reservoir	Merrilands Drain	Flash
		✓	37 Locher Avenue	Reservoir	Merrilands Drain	Flash
		✓	42 Locher Avenue	Reservoir	Merrilands Drain	Flash
	✓	✓	1 Market Court	Reservoir	Merrilands Drain	Flash
	✓	✓	2 Market Court	Reservoir	Merrilands Drain	Flash
	✓	✓	3 Market Court	Reservoir	Merrilands Drain	Flash
	✓	✓	4 Market Court	Reservoir	Merrilands Drain	Flash
	✓	✓	5 Market Court	Reservoir	Merrilands Drain	Flash
	✓	✓	6 Market Court	Reservoir	Merrilands Drain	Flash
	✓	✓	7 Market Court	Reservoir	Merrilands Drain	Flash
	✓	✓	8 Market Court	Reservoir	Merrilands Drain	Flash
	✓	✓	9-10 Market Court	Reservoir	Merrilands Drain	Flash
	✓	✓	2/1 Mccrae Street	Reservoir	Merrilands Drain	Flash
	✓	✓	4 Mccrae Street	Reservoir	Merrilands Drain	Flash

Properties at risk from Flooding within the Central and Edgars Creeks catchments in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	8 Mccrae Street	Reservoir	Merrilands Drain	Flash
	✓	✓	2A Mcfadzean Avenue	Reservoir	Merrilands Drain	Flash
	✓	✓	78 Oconnor Street	Reservoir	Merrilands Drain	Flash
		✓	6-8 Pickett Street	Reservoir	Merrilands Drain	Flash
	✓	✓	33 Pickett Street	Reservoir	Merrilands Drain	Flash
	✓	✓	4 St Johns Court	Reservoir	Merrilands Drain	Flash
	✓	✓	5 St Johns Court	Reservoir	Merrilands Drain	Flash
		✓	75 Wilson Boulevard	Reservoir	Edgars Creek	Flash
		✓	86 Barry Street	Reservoir	Chauvel St Drain	Flash
		✓	1/88 Barry Street	Reservoir	Chauvel St Drain	Flash
	✓	✓	45 Broadhurst Avenue	Reservoir	Merrilands Drain	Flash
Totals						
0	19	39				

Table C3.3 – Properties at risk of flooding within the Central and Edgars Creeks catchments in the City of Darebin

Isolation

No major isolation risks exist for areas around Reservoir during a 1% AEP (100yr ARI) event. Some localised short-duration isolation may occur due to flash flooding.

Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. http://ptv.vic.gov.au/live-travel-updates/. A map of Public Transport routes within the City of Darebin is available via the website at: https://www.ptv.vic.gov.au/assets/PTV-default-site/more/maps/Local-area-maps/Metropolitan/12_Darebin_LAM_July-2022-NN.pdf

Apart from the roads outlined below, all other essential infrastructure and services areas around Reservoir is expected to remain unaffected by flooding during a 1% AEP (100yr ARI) event.

Road Closures

The following roads are subject to closure during flooding around Reservoir. Check the VicRoads website for more details: http://alerts.vicroads.vic.gov.au/

Darebin City Council Roads flooded above 300mm in a 1% AEP (100yr ARI) event			
RESERVOIR	• Daleglen Street	• Harmer Street	• McFadzean Avenue
• Ameily Crescent	• Dole Avenue	• Hickford Street	• O'Connor Street
• Anne Street	• Elinda Place	• Kia Ora Road	• Pickett Street
• Barry Street	• Elizabeth Court	• Lawley Street	• San Leandro Drive
• Botha Avenue	• Elliot Street	• Leamington Street	• St Johns Court
• Broadhurst Avenue	• Elsey Road	• Locher Avenue	• Tunaley Parade
• Burbank Drive	• Fyfe Street	• Lucille Avenue	
• Chauvel Street	• Glasgow Avenue	• Market Court	
• Cheddar Road	• Griffiths Street	• McCrae Street	

Table C3.4 – Darebin City Council Possible flooded roads due to flash flooding

Flood Mitigation – Edgars Creek

Retarding Basins

A number of reserves and parklands along Edgars Creek and Merrilands Drain may hold a large amount of stormwater during an event. These include:

Reserve / Park	On Drain / Waterway	Location	Melway Reference
Central Creek Grasslands	Central Creek	Davidson Street, Reservoir	8 B12
Edwardes Lake Park	Edgars Creek	Edwardes Street, Reservoir	18 D5
Edgars Creek Wetlands	Edgars Creek	Leamington Street, Reservoir	18 E4
I.W. Dole Reserve	Merrilands Drain	Dole Avenue, Reservoir	18 K1

Table C3.5 – Melbourne Water Retarding Basins within the Edgars Creek catchment in the City of Darebin

No formal Retarding Basins, Pumping Stations or Levees exist around Reservoir in the City of Darebin.

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located around Edgars & Central Creeks are contained within the following tables.

Sewer Emergency Relief Points

On Drain / Waterway	Owner	Location	Melway Reference
Merrilands Drain	Yarra Valley Water	78C O'Connor Street, Reservoir	18 F4
Merrilands Drain	Yarra Valley Water	14 Cheddar Road, Reservoir	18 K2
Merrilands Drain	Yarra Valley Water	32B Broadhurst Avenue, Reservoir	18 H2

Table C3.6 – Sewer Emergency Relief Points within the Edgars & Central Creeks catchment

Sewer Pumping Stations

On Drain / Waterway	Owner	Location	Melway Reference
Fairfield Main Drain	Yarra Valley Water	Gillies Street, Fairfield	30 K10
Edgars Creek	Yarra Valley Water	2-4 Dromana Avenue, Reservoir	18 C6

Table C3.7 – Sewer Pumping Stations within or close to the City of Darebin

Control, Command and Coordination

VICSES will assume overall control of the response to flood incidents. Control and coordination of a flood incident shall be carried out at the lowest effective level and in accordance with the SEMP. During significant events, VICSES will conduct incident management using multi-agency resources.

Flood Impacts & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along Edgars Creek at various creek heights or rain totals within Darebin. These tables are to be used only as a guide as no two floods at a location will have identical impacts.

Intelligence Cards have been included for the following locations:

- Edgars Creek at Edwards Lake, Reservoir
- Merrilands and Chauvel Street Drains

FLOOD INTELLIGENCE CARD – RESERVOIR GAUGE, EDGARS CREEK

Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.

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LOCATION:	**Edwardes Lake Park, Edwardes Road, Reservoir**
CURRENT LEVEL:	**https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/229610A**
STREAM:	**Edgars Creek**
GAUGE NUMBER:	**229610A**
GAUGE ZERO:	**69.16m AHD**
GAUGE TYPE:	**Stream Level**

MELWAY REFERENCE:	**18 D5**
MINOR:	**N/A**
MODERATE:	**N/A**
MAJOR:	**N/A**
EMBANKMENT HEIGHT:	**1.38m**
HIGHEST RECORDED FLOOD:	**1.19m (3rd February 2005)**

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
1.26m	20% AEP (5yr ARI) Flood Level	**Community Infrastructure Likely Flooded** • St Joseph the Worker Primary School, 75 Wilson Boulevard, Reservoir • Edgars Creek Wetland Walking Trail, Edwardes Street to Glasgow Avenue • Edwardes Lake Park, walking track and footbridge **Water Over Road (Moderate to High Flood Hazard rating)** **Edgars Creek** • Glasgow Avenue, Reservoir • Griffiths Street, Reservoir • Kia Ora Road, Reservoir • Lawley Street, Reservoir • Leamington Street, Reservoir	VicSES State and Region to provide warnings to the community and other agencies. VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The North West Metro RegionalOfficer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident. Council to provide road closure signage if required.
1.38m		• Top of Reservoir Wall	
1.83m	1% AEP (100yr ARI) Flood Level	**Properties at Flood Risk (over-floor)** **1 Property in Total**	VicSES to respond to RFA's as requested on a case-by-case basis.

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• 75 Wilson Boulevard, Reservoir **Community Infrastructure Likely Flooded** • St Joseph the Worker Primary School, 75 Wilson Boulevard, Reservoir • Edgars Creek Wetland Walking Trail, Edwardes Street to Glasgow Avenue • Edwardes Lake Park, walking track and footbridge • Catholic Church and carpark, Wilson Boulevard, Reservoir **Water Over Road (Moderate to High Flood Hazard rating)** **Edgars Creek** • Ameily Crescent, Reservoir • Broadhurst Avenue, Reservoir • Glasgow Avenue, Reservoir • Griffiths Street, Reservoir • Kia Ora Road, Reservoir • Lawley Street, Reservoir • Leamington Street, Reservoir	Primary school to invoke emergency evacuation plans if required. Council to provide road and path closure signage as required.

Table C3.8 – Breakdown of likely consequences at various Reservoir gauge level heights along Edgars Creek with operational considerations

FLOOD INTELLIGENCE CARD – EDGARS CREEK'S STORMWATER TRIBUTARIES (UNGAUGED)

Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.

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CLOSEST RAIN GAUGE	**Preston Rain Gauge**
LOCATION:	**Preston Reservoirs, 881 High Street, Reservoir**
RECENT RAINFALL:	**https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/586011**

GAUGE NUMBER	**586011**
GAUGE TYPE	**Rain**
MELWAY REFERENCE:	**18 G7**

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
11mm in 10 mins; 18mm in 30 mins; 23mm in 1 hour; 29mm in 2 hours; 33mm in 3 hours or 42mm in 6 hours; Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	20% AEP (5-year ARI)	**Water Over Road (Moderate to High Flood Hazard rating)** **Edgars Creek** • Glasgow Avenue, Reservoir • Griffiths Street, Reservoir • Kia Ora Road, Reservoir • Lawley Street, Reservoir • Leamington Street, Reservoir	Council to provide road closure signage as required.
17mm in 10 mins; 27mm in 30 mins; 34mm in 1 hour;	5% AEP (20-year ARI)	**Properties at Flood Risk above floor level** **19 Properties in Total** **Chauvel St Drain** • 8 Chauvel Street, Reservoir	VicSES to respond to RFA's as requested on a case-by-case basis.

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
42mm in 2 hours; 48mm in 3 hours; or 60mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.		**Merrilands Drain** • 45 Broadhurst Avenue, Reservoir • 1/16 Elsey Road, Reservoir • 1, 2, 3, 4, 5, 6, 7, 8 & 9-10 Market Court, Reservoir • 2/1 & 4 Mccrae Street, Reservoir • 2A Mcfadzean Avenue, Reservoir • 78 Oconnor Street, Reservoir • 33 Pickett Street, Reservoir • 4 & 5 St Johns Court, Reservoir **Community Infrastructure Flooded** • St Margaret's Community Retirement Village, Tunaley Parade, Reservoir **Water Over Road (Moderate to High Flood Hazard rating)** **Edgars Creek** • Glasgow Avenue, Reservoir • Griffiths Street, Reservoir • Kia Ora Road, Reservoir • Lawley Street, Reservoir • Leamington Street, Reservoir **Chauvel Street Drain** • Barry Street, Reservoir • Botha Avenue, Reservoir • Broadhurst Avenue, Reservoir • Chauvel Street, Reservoir **Merrilands Drain** • Barry Street, Reservoir • Burbank Drive, Reservoir • Cheddar Road West, Reservoir • Daleglen Street, Reservoir • Elinda Place, Reservoir • Elizabeth Court, Reservoir • Elsey Road, Reservoir • Fyfe Street, Reservoir • Market Court, Reservoir • McCrae Street, Reservoir • McFadzean Avenue, Reservoir • O'Connor Street, Reservoir • Pickett Street, Reservoir • San Leandro Drive, Reservoir • St Johns Court, Reservoir • Tunaley Parade, Reservoir	Retirement village to invoke emergency evacuation plans if required. Council to provide road and path closure signage as required.
25mm in 10 mins; 41mm in 30 mins;	1% AEP (100-year ARI)	**Properties at Flood Risk** **38 Properties in Total** **Chauvel St Drain**	

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
51mm in 1 hour; 62mm in 2 hours; 70mm in 3 hours; or 87mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.		• 86 & 1/88 Barry Street, Reservoir • 8 & 21 Chauvel Street, Reservoir **Merrilands Drain** • 45, 47 & 49 Broadhurst Avenue, Reservoir • 4, 6, 7, 9, 12, 13, 15, 19 & 21 Burbank Drive, Reservoir • 20 Daleglen Street, Reservoir • 1/16 Elsey Road, Reservoir • 37 & 42 Locher Avenue, Reservoir • 1, 2, 3, 4, 5, 6, 7, 8 & 9-10 Market Court, Reservoir • 2/1, 4 & 8 Mccrae Street, Reservoir • 2A Mcfadzean Avenue, Reservoir • 78 Oconnor Street, Reservoir • 6-8 & 33 Pickett Street, Reservoir • 4 & 5 St Johns Court, Reservoir **Community Infrastructure Flooded** • I.W. Dole Reserve, Dole Avenue, Reservoir • St Margaret's Community Retirement Village, Tunaley Parade, Reservoir • St Margaret's Primary School, Tunaley Parade, Reservoir • JC Donath Reserve, Harmers Street, Reservoir • Yan Yean Pipe Track walking track, Cheddar Road West, Reservoir **Water Over Road (Moderate to High Flood Hazard rating)** **Edgars Creek** • Ameily Crescent, Reservoir • Broadhurst Avenue, Reservoir • Glasgow Avenue, Reservoir • Griffiths Street, Reservoir • Kia Ora Road, Reservoir • Lawley Street, Reservoir • Leamington Street, Reservoir **Chauvel Street Drain** • Barry Street, Reservoir • Botha Avenue, Reservoir • Broadhurst Avenue, Reservoir • Chauvel Street, Reservoir • Elliot Street, Reservoir **Merrilands Drain** • Anne Street, Reservoir • Barry Street, Reservoir • Burbank Drive, Reservoir • Cheddar Road West, Reservoir • Daleglen Street, Reservoir • Dole Avenue, Reservoir	VicSES to respond to RFA's as requested on a case-by-case basis. Retirement village and Primary school to invoke emergency evacuation plans if required. Council to provide road and path closure signage as required.

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• Elinda Place, Reservoir • Elizabeth Court, Reservoir • Elsey Road, Reservoir • Fyfe Street, Reservoir • Glasgow Avenue, Reservoir • Harmer Street, Reservoir • Hickford Street, Reservoir • Locher Avenue, Reservoir • Lucille Avenue, Reservoir • Market Court, Reservoir • McCrae Street, Reservoir • McFadzean Avenue, Reservoir • O'Connor Street, Reservoir • Pickett Street, Reservoir • San Leandro Drive, Reservoir • St Johns Court, Reservoir • Tunaley Parade, Reservoir	

Table C3.9 – Breakdown of possible consequences at various rainfall intensities around Reservoir with operational considerations

APPENDIX C4 - THREAT OF FLOODING ALONG MERRI CREEK'S STORMWATER TRIBUTARIES

Overview of Flooding Consequences

This Summary table is generated from Victorian Government data. The State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons access this information should make appropriate enquiries to assess the currency of the data.

Summary of Consequences in a 1% AEP (100yr ARI) flood along Merri Creek's stormwater Tributaries					
Property					
Properties	**654**				
Residential	477				
Commercial	139	High Street in Northcote & Thornbury and Bell Street in Preston			
Industrial	24				
Public Land	14				
Rural	0				
Community Infrastructure					
Health Facilities	1	Northern Health rear access			
Child Care / Kindergartens	2	Time-Out Child Care; Westgarth Kindergarten			
Schools / Colleges	2	Westgarth Primary St Johns Greek Orthodox College; School			
Essential Infrastructure					
Major Roads	5	Bell St; Heidelberg Rd; Normanby Ave; St Georges Rd; & Westgarth St			
Major Rail	2	Bell Station carpark; Preston Station carpark			
Bus Routes	6	510; 513; 526; 553; 903; & 955			
Sewerage Facilities	14	Emergency Relief Points			
Levees	2	In Northcote			
Drainage Facilities	1	Retarding Basin			
Tourism / Recreation					
Recreation Facilities	1	Preston City Oval			
Government Boundaries					
Local Gov't Areas	1	Darebin	CMA	1	Port Phillip & Westernport
Adjacent LGAs	2	Moreland & Yarra	CFA District	0	
SES Unit Area	1	Heidelberg	FRV District	1	Northern

Table C4.1 – Consequence Summary of 1% AEP flood along Merri Creek's stormwater Tributaries

Elizabeth Street Main Drain, Preston Main Drain, Sumner Avenue Main Drain and Green Street Main Drain carry water from residential areas in Reservoir, Preston, Thornbury and Northcote in a southerly direction into Merri Creek

Merri Creek Retarding Basin is located in Northcote along Sumner Avenue Main Drain at the junction with Merri Creek and is designed to allow surcharge in the local drainage system during a storm event prior to discharge to Merri Creek, so failure of the embankment during a storm event would have very little impact on the downstream levels in the creek.

Levees have been constructed on both sides of Merri Creek in Northcote and the eastern Levee system reaches from Arthurton Road to the north to St Georges Road to the east, including the embankment of Merri Creek Retarding Basin. The Levee system is expected to protect to the 1% (100yr ARI) event level.

Most stormwater drains in the area were originally designed to meet the 20% AEP (5-year ARI) standard and many of the Municipality's drainage lines lack a continuous and unobstructed overland flow path to cater for flows in excess of capacity of the piped system. Buildings and other infrastructure are at risk of being damaged by flooding.

Gauges and Warnings

Whilst there are hydrographic/telemetry stations (river gauges) within the municipality, Melbourne Water does not provide any flood warning service at this point, due to the small catchment size and short warning times available.

Gauge	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Reference
Preston Rain Gauge	586011	Preston Reservoirs, 881 High Street, Reservoir		✓	18 G7
Merri Creek at St Georges Road, Northcote	229149A	East side of the creek in Green Reserve at end of Union St, Northcote	✓	✓	30 D10
Merri Creek at Bell Street, Coburg	229645A	West side of the Creek at the Bell St Bridge, Coburg	✓	✓	30 A1

Table A4.2 – Gauges around Merri Creek's stormwater tributaries

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx. The Bureau of Meteorology's website also links a number of these gauges at: http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDV60201.html. It is advised that residents monitor the Bureau of Meteorology's website http://www.bom.gov.au/vic/warnings/index.shtml?ref=hdr and the VicEmergency website https:/emergency.vic.gov.au/ for any thunderstorm, flood or severe weather warnings present for their area.

Areas of Flood Risk

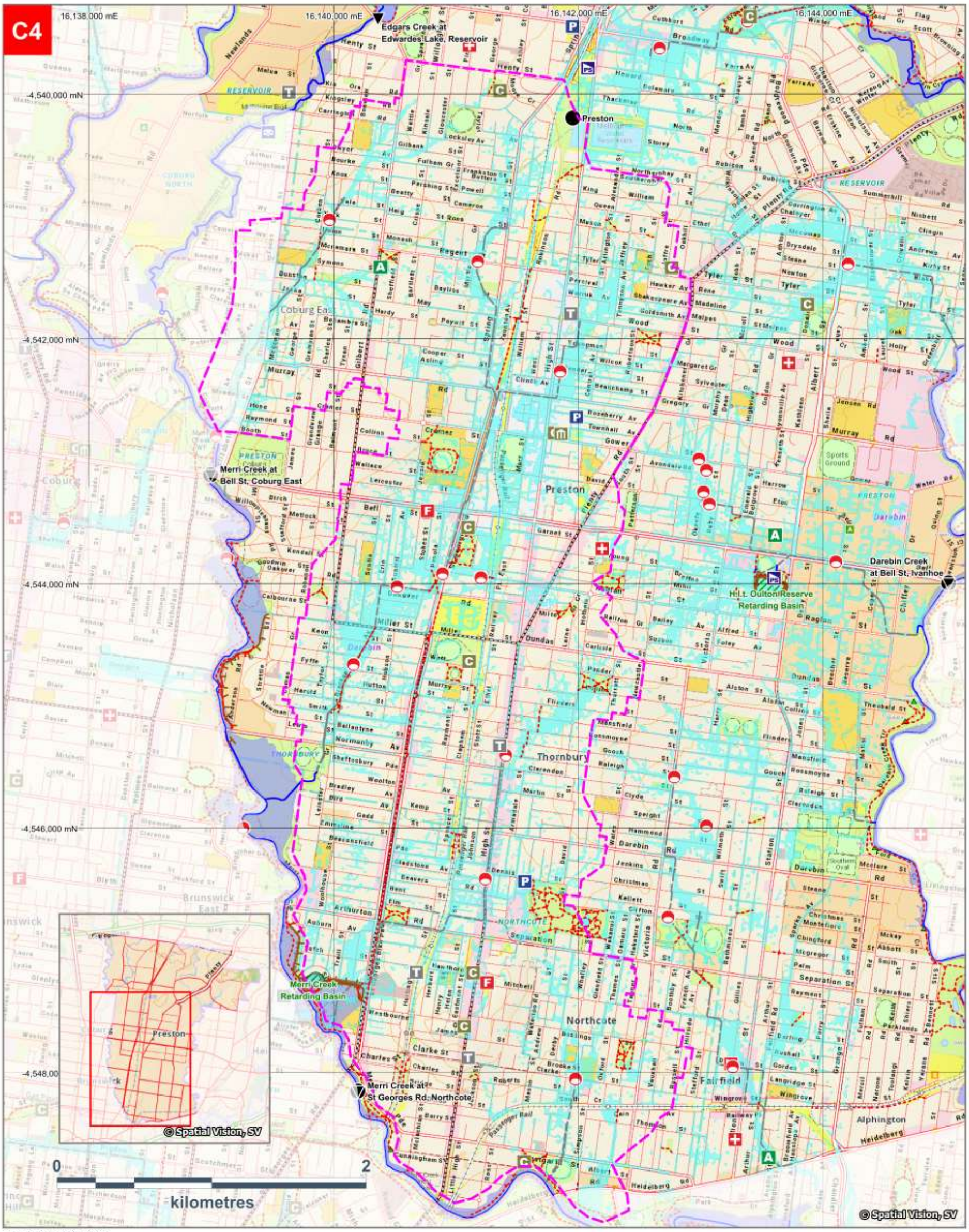

Figure A4 – Areas of flood risk around Preston, Reservoir, Thornbury and Northcote in the City of Darebin and area covered by this appendix

Properties at Flood Risk

Properties listed in the table below are at risk from flooding over-floor along Merri Creek's stormwater tributaries in the City of Darebin. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Preston Main Drain, Green St Main Drain and Elizabeth St Drain (Cardno, January 2013), the Sumner Ave Main Drain (Cardno, April 2012) flood mapping and risk assessment programs.

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Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin

Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	16 Albert Street	Northcote	Green Street Main Drain	Flash
✓	✓	✓	18 Albert Street	Northcote	Green Street Main Drain	Flash
		✓	19 Albert Street	Northcote	Green Street Main Drain	Flash
		✓	19A Albert Street	Northcote	Green Street Main Drain	Flash
		✓	21 Albert Street	Northcote	Green Street Main Drain	Flash
		✓	23 Albert Street	Northcote	Green Street Main Drain	Flash
		✓	24 Albert Street	Northcote	Green Street Main Drain	Flash
		✓	25 Albert Street	Northcote	Green Street Main Drain	Flash
		✓	27 Albert Street	Northcote	Green Street Main Drain	Flash
		✓	29 Albert Street	Northcote	Green Street Main Drain	Flash
✓	✓	✓	4 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	8 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	16-18 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	38 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	39 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	41 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	41A Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	54A Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	54 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	71 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	73 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	75 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	77 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	79 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	81 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	85 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	89 Arthurton Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	4 Auburn Avenue	Northcote	Sumner Avenue Main Drain	Flash
		✓	8 Bayliss Street	Preston	Preston Main Drain	Flash
		✓	11 Beaconsfield Parade	Northcote	Sumner Avenue Main Drain	Flash
		✓	85 Beauchamp Street	Preston	Preston Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	86A Beauchamp Street	Preston	Preston Main Drain	Flash
	✓	✓	86 Beauchamp Street	Preston	Preston Main Drain	Flash
		✓	87 Beauchamp Street	Preston	Preston Main Drain	Flash
		✓	88 Beauchamp Street	Preston	Preston Main Drain	Flash
		✓	1/90 Beauchamp Street	Preston	Preston Main Drain	Flash
✓	✓	✓	1/94 Beauchamp Street	Preston	Preston Main Drain	Flash
✓	✓	✓	2/94 Beauchamp Street	Preston	Preston Main Drain	Flash
✓	✓	✓	3/94 Beauchamp Street	Preston	Preston Main Drain	Flash
✓	✓	✓	4/94 Beauchamp Street	Preston	Preston Main Drain	Flash
✓	✓	✓	5/94 Beauchamp Street	Preston	Preston Main Drain	Flash
✓	✓	✓	6/94 Beauchamp Street	Preston	Preston Main Drain	Flash
		✓	32 Beavers Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	34A Beavers Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	34 Beavers Road	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	1/346 Bell Street	Preston	Preston Main Drain	Flash
	✓	✓	2/346 Bell Street	Preston	Preston Main Drain	Flash
		✓	348-350 Bell Street	Preston	Preston Main Drain	Flash
	✓	✓	363A Bell Street	Preston	Preston Main Drain	Flash
	✓	✓	363B Bell Street	Preston	Preston Main Drain	Flash
	✓	✓	363 Bell Street	Preston	Preston Main Drain	Flash
	✓	✓	376 Bell Street	Preston	Preston Main Drain	Flash
		✓	382-384 Bell Street	Preston	Preston Main Drain	Flash
✓	✓	✓	430 Bell Street	Preston	Preston Main Drain	Flash
	✓	✓	434 Bell Street	Preston	Preston Main Drain	Flash
✓	✓	✓	438 Bell Street	Preston	Preston Main Drain	Flash
✓	✓	✓	440 Bell Street	Preston	Preston Main Drain	Flash
✓	✓	✓	450 Bell Street	Preston	Preston Main Drain	Flash
		✓	23 Bent Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	2 Blanch Street	Preston	Preston Main Drain	Flash
		✓	6-8 Bruce Street	Preston	Preston Main Drain	Flash
✓	✓	✓	1 Cook Street	Preston	Preston Main Drain	Flash
✓	✓	✓	2 Cook Street	Preston	Preston Main Drain	Flash
✓	✓	✓	4 Cook Street	Preston	Preston Main Drain	Flash
✓	✓	✓	6 Cook Street	Preston	Preston Main Drain	Flash
✓	✓	✓	8 Cook Street	Preston	Preston Main Drain	Flash
✓	✓	✓	10 Cook Street	Preston	Preston Main Drain	Flash
		✓	1 Cramer Street	Preston	Preston Main Drain	Flash
		✓	2A Cramer Street	Preston	Preston Main Drain	Flash
		✓	1/2 Cramer Street	Preston	Preston Main Drain	Flash
		✓	2/2 Cramer Street	Preston	Preston Main Drain	Flash
		✓	3/2 Cramer Street	Preston	Preston Main Drain	Flash
		✓	4/2 Cramer Street	Preston	Preston Main Drain	Flash
		✓	5/2 Cramer Street	Preston	Preston Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	6/2 Cramer Street	Preston	Preston Main Drain	Flash
		✓	4 Cramer Street	Preston	Preston Main Drain	Flash
		✓	6 Cramer Street	Preston	Preston Main Drain	Flash
		✓	8A Cramer Street	Preston	Preston Main Drain	Flash
		✓	10 Cramer Street	Preston	Preston Main Drain	Flash
		✓	1/12 Cramer Street	Preston	Preston Main Drain	Flash
		✓	2/12 Cramer Street	Preston	Preston Main Drain	Flash
		✓	3/12 Cramer Street	Preston	Preston Main Drain	Flash
		✓	19 Davies Street	Preston	Preston Main Drain	Flash
		✓	21 Davies Street	Preston	Preston Main Drain	Flash
		✓	1 Donovan Street	Preston	Preston Main Drain	Flash
		✓	88 Elizabeth Street	Coburg North	Elizabeth Street Main Drain	Flash
		✓	90 Elizabeth Street	Coburg North	Elizabeth Street Main Drain	Flash
✓	✓	✓	2A Elm Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	2B Elm Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	42 Elm Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	8 Emery Street	Preston	Preston Main Drain	Flash
		✓	1/10 Emery Street	Preston	Preston Main Drain	Flash
		✓	2/10 Emery Street	Preston	Preston Main Drain	Flash
		✓	3/10 Emery Street	Preston	Preston Main Drain	Flash
		✓	11 Emery Street	Preston	Preston Main Drain	Flash
	✓	✓	24 Esther Street	Preston	Preston Main Drain	Flash
		✓	60 Fyffe Street	Thornbury	Preston Main Drain	Flash
		✓	64 Fyffe Street	Thornbury	Preston Main Drain	Flash
		✓	47 Garnet Street	Preston	Preston Main Drain	Flash
✓	✓	✓	61 George Street	Preston	Elizabeth Street Main Drain	Flash
	✓	✓	63 George Street	Preston	Elizabeth Street Main Drain	Flash
		✓	22 Gertrude Street	Preston	Preston Main Drain	Flash
	✓	✓	24 Gertrude Street	Preston	Preston Main Drain	Flash
	✓	✓	267-269 Gower Street	Preston	Preston Main Drain	Flash
	✓	✓	271 Gower Street	Preston	Preston Main Drain	Flash
	✓	✓	273 Gower Street	Preston	Preston Main Drain	Flash
	✓	✓	1/275 Gower Street	Preston	Preston Main Drain	Flash
	✓	✓	3/275 Gower Street	Preston	Preston Main Drain	Flash
	✓	✓	4/275 Gower Street	Preston	Preston Main Drain	Flash
	✓	✓	6/275 Gower Street	Preston	Preston Main Drain	Flash
	✓	✓	8/275 Gower Street	Preston	Preston Main Drain	Flash
	✓	✓	9/275 Gower Street	Preston	Preston Main Drain	Flash
	✓	✓	10/275 Gower Street	Preston	Preston Main Drain	Flash
	✓	✓	11/275 Gower Street	Preston	Preston Main Drain	Flash
		✓	8A Hartington Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	8B Hartington Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	39 Hawthorn Road	Northcote	Sumner Avenue Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
✓	✓	✓	27 Hayes Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	157 Heidelberg Road	Northcote	Green Street Main Drain	Flash
		✓	159 Heidelberg Road	Northcote	Green Street Main Drain	Flash
		✓	161 Heidelberg Road	Northcote	Green Street Main Drain	Flash
		✓	161A Heidelberg Road	Northcote	Green Street Main Drain	Flash
		✓	163 Heidelberg Road	Northcote	Green Street Main Drain	Flash
		✓	165 Heidelberg Road	Northcote	Green Street Main Drain	Flash
		✓	167-179 Heidelberg Road	Northcote	Green Street Main Drain	Flash
✓	✓	✓	181 Heidelberg Road	Northcote	Green Street Main Drain	Flash
✓	✓	✓	183 Heidelberg Road	Northcote	Green Street Main Drain	Flash
✓	✓	✓	187 Heidelberg Road	Northcote	Green Street Main Drain	Flash
	✓	✓	191A Heidelberg Road	Northcote	Green Street Main Drain	Flash
✓	✓	✓	7 Herbert Street	Preston	Preston Main Drain	Flash
		✓	8 Herbert Street	Preston	Preston Main Drain	Flash
		✓	9 Herbert Street	Preston	Preston Main Drain	Flash
		✓	16 Herbert Street	Preston	Preston Main Drain	Flash
		✓	18 Herbert Street	Preston	Preston Main Drain	Flash
		✓	20 Herbert Street	Preston	Preston Main Drain	Flash
		✓	53 Herbert Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	65 Herbert Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	96 Herbert Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	100 Herbert Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	268-272 High Street	Preston	Preston Main Drain	Flash
	✓	✓	274 High Street	Preston	Preston Main Drain	Flash
		✓	276 High Street	Preston	Preston Main Drain	Flash
		✓	280 High Street	Preston	Preston Main Drain	Flash
		✓	282 High Street	Preston	Preston Main Drain	Flash
		✓	294 High Street	Preston	Preston Main Drain	Flash
		✓	1/294-296 High Street	Preston	Preston Main Drain	Flash
		✓	2/294-296 High Street	Preston	Preston Main Drain	Flash
		✓	3-4/294-296 High Street	Preston	Preston Main Drain	Flash
		✓	3-5/294-296 High Street	Preston	Preston Main Drain	Flash
		✓	5/294-296 High Street	Preston	Preston Main Drain	Flash
		✓	6/294-296 High Street	Preston	Preston Main Drain	Flash
		✓	7/294-296 High Street	Preston	Preston Main Drain	Flash
		✓	8/294-296 High Street	Preston	Preston Main Drain	Flash
		✓	296 High Street	Preston	Preston Main Drain	Flash
	✓	✓	306 High Street	Preston	Preston Main Drain	Flash
		✓	308 High Street	Preston	Preston Main Drain	Flash
		✓	311 High Street	Preston	Preston Main Drain	Flash
	✓	✓	312A-314 High Street	Preston	Preston Main Drain	Flash
	✓	✓	316 High Street	Preston	Preston Main Drain	Flash
		✓	318 High Street	Preston	Preston Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	319 High Street	Preston	Preston Main Drain	Flash
		✓	320 High Street	Preston	Preston Main Drain	Flash
	✓	✓	321 High Street	Preston	Preston Main Drain	Flash
	✓	✓	322 High Street	Preston	Preston Main Drain	Flash
	✓	✓	323 High Street	Preston	Preston Main Drain	Flash
	✓	✓	325 High Street	Preston	Preston Main Drain	Flash
	✓	✓	326 High Street	Preston	Preston Main Drain	Flash
	✓	✓	327-329 High Street	Preston	Preston Main Drain	Flash
	✓	✓	328 High Street	Preston	Preston Main Drain	Flash
	✓	✓	330 High Street	Preston	Preston Main Drain	Flash
	✓	✓	335 High Street	Preston	Preston Main Drain	Flash
	✓	✓	336 High Street	Preston	Preston Main Drain	Flash
	✓	✓	337 High Street	Preston	Preston Main Drain	Flash
	✓	✓	338 High Street	Preston	Preston Main Drain	Flash
	✓	✓	339 High Street	Preston	Preston Main Drain	Flash
	✓	✓	340 High Street	Preston	Preston Main Drain	Flash
	✓	✓	341 High Street	Preston	Preston Main Drain	Flash
	✓	✓	342 High Street	Preston	Preston Main Drain	Flash
		✓	343 High Street	Preston	Preston Main Drain	Flash
	✓	✓	344 High Street	Preston	Preston Main Drain	Flash
		✓	1/345 High Street	Preston	Preston Main Drain	Flash
		✓	2/345 High Street	Preston	Preston Main Drain	Flash
		✓	3/345 High Street	Preston	Preston Main Drain	Flash
		✓	4/345 High Street	Preston	Preston Main Drain	Flash
		✓	5/345 High Street	Preston	Preston Main Drain	Flash
		✓	6/345 High Street	Preston	Preston Main Drain	Flash
		✓	7/345 High Street	Preston	Preston Main Drain	Flash
		✓	8/345 High Street	Preston	Preston Main Drain	Flash
		✓	9/345 High Street	Preston	Preston Main Drain	Flash
		✓	10/345 High Street	Preston	Preston Main Drain	Flash
		✓	11/345 High Street	Preston	Preston Main Drain	Flash
		✓	12/345 High Street	Preston	Preston Main Drain	Flash
		✓	13/345 High Street	Preston	Preston Main Drain	Flash
		✓	14/345 High Street	Preston	Preston Main Drain	Flash
		✓	15/345 High Street	Preston	Preston Main Drain	Flash
		✓	16/345 High Street	Preston	Preston Main Drain	Flash
		✓	17/345 High Street	Preston	Preston Main Drain	Flash
		✓	18/345 High Street	Preston	Preston Main Drain	Flash
		✓	19/345 High Street	Preston	Preston Main Drain	Flash
		✓	20/345 High Street	Preston	Preston Main Drain	Flash
		✓	21/345 High Street	Preston	Preston Main Drain	Flash
	✓	✓	346 High Street	Preston	Preston Main Drain	Flash
		✓	347 High Street	Preston	Preston Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	348 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	350A High Street	Preston	Preston Main Drain	Flash
	✓	✓	351 High Street	Preston	Preston Main Drain	Flash
	✓	✓	352 High Street	Preston	Preston Main Drain	Flash
		✓	353 High Street	Preston	Preston Main Drain	Flash
		✓	356 High Street	Preston	Preston Main Drain	Flash
		✓	358 High Street	Preston	Preston Main Drain	Flash
	✓	✓	359-361 High Street	Preston	Preston Main Drain	Flash
		✓	360 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	362 High Street	Preston	Preston Main Drain	Flash
	✓	✓	363 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	364 High Street	Preston	Preston Main Drain	Flash
		✓	365 High Street	Preston	Preston Main Drain	Flash
	✓	✓	366 High Street	Preston	Preston Main Drain	Flash
		✓	367 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	368 High Street	Preston	Preston Main Drain	Flash
		✓	369 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	370 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	371 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	372 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	374-376 High Street	Preston	Preston Main Drain	Flash
	✓	✓	375 High Street	Preston	Preston Main Drain	Flash
	✓	✓	377 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	378 High Street	Preston	Preston Main Drain	Flash
	✓	✓	379 High Street	Preston	Preston Main Drain	Flash
		✓	381 High Street	Preston	Preston Main Drain	Flash
	✓	✓	383 High Street	Preston	Preston Main Drain	Flash
	✓	✓	385 High Street	Preston	Preston Main Drain	Flash
		✓	389 High Street	Preston	Preston Main Drain	Flash
	✓	✓	391 High Street	Preston	Preston Main Drain	Flash
		✓	393 High Street	Preston	Preston Main Drain	Flash
		✓	395 High Street	Preston	Preston Main Drain	Flash
		✓	397 High Street	Preston	Preston Main Drain	Flash
		✓	399 High Street	Preston	Preston Main Drain	Flash
		✓	400 High Street	Preston	Preston Main Drain	Flash
		✓	401 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	402 High Street	Preston	Preston Main Drain	Flash
	✓	✓	403 High Street	Preston	Preston Main Drain	Flash
	✓	✓	405 High Street	Preston	Preston Main Drain	Flash
	✓	✓	407 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	411 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	1/411 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	2/411 High Street	Northcote	Sumner Avenue Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
✓	✓	✓	3/411 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	413A High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	413 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	414 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	415 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	416 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	417-419 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	1/418 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	2/418 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	3/418 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	4/418 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	5/418 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	420 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	421 High Street	Preston	Preston Main Drain	Flash
		✓	421 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	422 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	422 High Street	Preston	Preston Main Drain	Flash
	✓	✓	423 High Street	Preston	Preston Main Drain	Flash
	✓	✓	423 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	424 High Street	Preston	Preston Main Drain	Flash
	✓	✓	425 High Street	Preston	Preston Main Drain	Flash
	✓	✓	427 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	428 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	1/428 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	2/428 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	3/428 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	430 High Street	Preston	Preston Main Drain	Flash
	✓	✓	431-433 High Street	Preston	Preston Main Drain	Flash
		✓	432-440 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	432-434 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	435 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	436-438 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	437 High Street	Preston	Preston Main Drain	Flash
	✓	✓	2/437 High Street	Preston	Preston Main Drain	Flash
		✓	439 High Street	Preston	Preston Main Drain	Flash
		✓	441 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	441 High Street	Preston	Preston Main Drain	Flash
		✓	442 High Street	Preston	Preston Main Drain	Flash
✓	✓	✓	1/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	2/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	3/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	4/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	5/442 High Street	Northcote	Sumner Avenue Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
✓	✓	✓	6/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	7/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	8/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	9/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	10/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	11/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	12/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	13/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	14/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	15/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	16/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	17/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	18/442 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	443 High Street	Preston	Preston Main Drain	Flash
		✓	443 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	444 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	444 High Street	Preston	Preston Main Drain	Flash
		✓	445 High Street	Preston	Preston Main Drain	Flash
		✓	445 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	446 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	446 High Street	Preston	Preston Main Drain	Flash
		✓	447 High Street	Preston	Preston Main Drain	Flash
		✓	447 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	449 High Street	Preston	Preston Main Drain	Flash
		✓	451 High Street	Preston	Preston Main Drain	Flash
		✓	453 High Street	Preston	Preston Main Drain	Flash
		✓	453 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	454 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	455 High Street	Preston	Preston Main Drain	Flash
		✓	456 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	458 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	459 High Street	Preston	Preston Main Drain	Flash
	✓	✓	461 High Street	Preston	Preston Main Drain	Flash
	✓	✓	463 High Street	Preston	Preston Main Drain	Flash
		✓	463-467 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	465-467 High Street	Preston	Preston Main Drain	Flash
		✓	466 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	469 High Street	Preston	Preston Main Drain	Flash
		✓	470-480 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	470 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	471 High Street	Preston	Preston Main Drain	Flash
		✓	472 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	473 High Street	Preston	Preston Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	473A High Street	Preston	Preston Main Drain	Flash
	✓	✓	473B High Street	Preston	Preston Main Drain	Flash
		✓	474 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	475-479 High Street	Preston	Preston Main Drain	Flash
		✓	476 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	478 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	480 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	481 High Street	Preston	Preston Main Drain	Flash
		✓	482 High Street	Preston	Preston Main Drain	Flash
	✓	✓	483 High Street	Preston	Preston Main Drain	Flash
	✓	✓	485 High Street	Preston	Preston Main Drain	Flash
		✓	487 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	487 High Street	Preston	Preston Main Drain	Flash
	✓	✓	489 High Street	Preston	Preston Main Drain	Flash
		✓	491 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	491 High Street	Preston	Preston Main Drain	Flash
	✓	✓	493 High Street	Preston	Preston Main Drain	Flash
		✓	493 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	494 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	495 High Street	Preston	Preston Main Drain	Flash
		✓	497 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	497 High Street	Preston	Preston Main Drain	Flash
		✓	499 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	501A High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	503 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	507 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	509 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	511 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	513 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	517 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	518-530 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	519 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	521 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	523 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	532 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	1/532 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	2/532 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	3/532 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	4/532 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	5/532 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	6/532 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	7/532 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	8/532 High Street	Northcote	Sumner Avenue Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
✓	✓	✓	9/532 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	10/532 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	11/532 High Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	538 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	547 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	550 High Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	556 High Street	Thornbury	Sumner Avenue Main Drain	Flash
	✓	✓	558 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	559 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	561 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	565 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	567-569 High Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	582-586 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	590 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	594-596 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	598-604 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	608 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	610-612 High Street	Thornbury	Sumner Avenue Main Drain	Flash
	✓	✓	626-628 High Street	Thornbury	Sumner Avenue Main Drain	Flash
	✓	✓	630-642 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	646 High Street	Thornbury	Sumner Avenue Main Drain	Flash
	✓	✓	648 High Street	Thornbury	Sumner Avenue Main Drain	Flash
	✓	✓	650-654 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	656 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	658 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	660 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	664 High Street	Thornbury	Sumner Avenue Main Drain	Flash
	✓	✓	678 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	679-685 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	687 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	687A High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	689 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	703 High Street	Thornbury	Sumner Avenue Main Drain	Flash
	✓	✓	707 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	715 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	721A High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	721 High Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	112 Hutton Street	Thornbury	Preston Main Drain	Flash
		✓	1/42 Jacka Street	Preston	Elizabeth Street Main Drain	Flash
		✓	1/42B Jacka Street	Preston	Elizabeth Street Main Drain	Flash
		✓	1/42A Jacka Street	Preston	Elizabeth Street Main Drain	Flash
		✓	2/42A Jacka Street	Preston	Elizabeth Street Main Drain	Flash
		✓	2/42B Jacka Street	Preston	Elizabeth Street Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	3/42A Jacka Street	Preston	Elizabeth Street Main Drain	Flash
		✓	3/42B Jacka Street	Preston	Elizabeth Street Main Drain	Flash
		✓	4/42B Jacka Street	Preston	Elizabeth Street Main Drain	Flash
		✓	4/42A Jacka Street	Preston	Elizabeth Street Main Drain	Flash
		✓	50 Johnson Street	Thornbury	Sumner Avenue Main Drain	Flash
		✓	56 Keon Street	Thornbury	Preston Main Drain	Flash
		✓	62 Keon Street	Thornbury	Preston Main Drain	Flash
		✓	66 Keon Street	Thornbury	Preston Main Drain	Flash
		✓	76 Keon Street	Thornbury	Preston Main Drain	Flash
	✓	✓	8 Leicester Street	Preston	Preston Main Drain	Flash
	✓	✓	9 Leicester Street	Preston	Preston Main Drain	Flash
	✓	✓	13 Leicester Street	Preston	Preston Main Drain	Flash
	✓	✓	1 Lucas Street	Reservoir	Elizabeth Street Main Drain	Flash
		✓	14 Malcolm Street	Preston	Elizabeth Street Main Drain	Flash
✓	✓	✓	1/16 Malcolm Street	Preston	Elizabeth Street Main Drain	Flash
✓	✓	✓	2/16 Malcolm Street	Preston	Elizabeth Street Main Drain	Flash
	✓	✓	1D Mary Street	Preston	Preston Main Drain	Flash
		✓	7 Mary Street	Preston	Preston Main Drain	Flash
		✓	11 Mary Street	Preston	Preston Main Drain	Flash
		✓	18B Mary Street	Preston	Preston Main Drain	Flash
		✓	18A Mary Street	Preston	Preston Main Drain	Flash
✓	✓	✓	23 Mary Street	Preston	Preston Main Drain	Flash
✓	✓	✓	25 Mary Street	Preston	Preston Main Drain	Flash
✓	✓	✓	27 Mary Street	Preston	Preston Main Drain	Flash
✓	✓	✓	27-29 Mary Street	Preston	Preston Main Drain	Flash
✓	✓	✓	29 Mary Street	Preston	Preston Main Drain	Flash
		✓	44 Mary Street	Preston	Preston Main Drain	Flash
		✓	1/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	2/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	3/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	4/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	5/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	6/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	7/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	8/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	9/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	10/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	11/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	12/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	13/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	14/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	15/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	16/46 Mary Street	Preston	Preston Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	17/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	18/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	19/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	20/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	21/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	22/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	23/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	24/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	25/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	26/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	27/46 Mary Street	Preston	Preston Main Drain	Flash
		✓	28/46 Mary Street	Preston	Preston Main Drain	Flash
	✓	✓	10 Mcpherson Street	Reservoir	Spring Street Main Drain	Flash
✓	✓	✓	12 Mcpherson Street	Reservoir	Spring Street Main Drain	Flash
		✓	76 Miller Street	Preston	Preston Main Drain	Flash
		✓	81 Miller Street	Thornbury	Preston Main Drain	Flash
	✓	✓	115A Miller Street	Thornbury	Preston Main Drain	Flash
	✓	✓	119 Miller Street	Thornbury	Preston Main Drain	Flash
		✓	2-26 Murphy Street	Preston	Elizabeth Street Main Drain	Flash
✓	✓	✓	241 Murray Road	Preston	Preston Main Drain	Flash
	✓	✓	241A Murray Road	Preston	Preston Main Drain	Flash
✓	✓	✓	245 Murray Road	Preston	Preston Main Drain	Flash
✓	✓	✓	247 Murray Road	Preston	Preston Main Drain	Flash
✓	✓	✓	249A Murray Road	Preston	Preston Main Drain	Flash
✓	✓	✓	249 Murray Road	Preston	Preston Main Drain	Flash
✓	✓	✓	251 Murray Road	Preston	Preston Main Drain	Flash
✓	✓	✓	260A Murray Road	Preston	Preston Main Drain	Flash
✓	✓	✓	260 Murray Road	Preston	Preston Main Drain	Flash
	✓	✓	265 Murray Road	Preston	Preston Main Drain	Flash
		✓	266A Murray Road	Preston	Preston Main Drain	Flash
		✓	266 Murray Road	Preston	Preston Main Drain	Flash
	✓	✓	305 Murray Road	Preston	Preston Main Drain	Flash
	✓	✓	307 Murray Road	Preston	Preston Main Drain	Flash
	✓	✓	330-336 Murray Road	Preston	Preston Main Drain	Flash
		✓	350 Murray Road	Preston	Preston Main Drain	Flash
		✓	1/350 Murray Road	Preston	Preston Main Drain	Flash
		✓	2/350 Murray Road	Preston	Preston Main Drain	Flash
		✓	356 Murray Road	Preston	Spring Street Main Drain	Flash
		✓	358 Murray Road	Preston	Spring Street Main Drain	Flash
		✓	14 Myrtle Grove	Preston	Spring Street Main Drain	Flash
		✓	1/14A Myrtle Grove	Preston	Spring Street Main Drain	Flash
		✓	2/14A Myrtle Grove	Preston	Spring Street Main Drain	Flash
		✓	3/14A Myrtle Grove	Preston	Spring Street Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	4/14A Myrtle Grove	Preston	Spring Street Main Drain	Flash
		✓	16 Myrtle Grove	Reservoir	Spring Street Main Drain	Flash
		✓	18 Myrtle Grove	Reservoir	Spring Street Main Drain	Flash
		✓	20 Myrtle Grove	Reservoir	Spring Street Main Drain	Flash
	✓	✓	1 Newman Street	Preston	Preston Main Drain	Flash
		✓	3 Newman Street	Preston	Preston Main Drain	Flash
		✓	17 Oakover Road	Preston	Preston Main Drain	Flash
		✓	19 Oakover Road	Preston	Preston Main Drain	Flash
✓	✓	✓	2/32-34 Oakover Road	Preston	Preston Main Drain	Flash
✓	✓	✓	3/32-34 Oakover Road	Preston	Preston Main Drain	Flash
	✓	✓	40 Oakover Road	Preston	Preston Main Drain	Flash
	✓	✓	42 Oakover Road	Preston	Preston Main Drain	Flash
	✓	✓	44 Oakover Road	Preston	Preston Main Drain	Flash
		✓	56 Oakover Road	Preston	Preston Main Drain	Flash
		✓	58 Oakover Road	Preston	Preston Main Drain	Flash
		✓	1/62 Oakover Road	Preston	Preston Main Drain	Flash
		✓	2/62 Oakover Road	Preston	Preston Main Drain	Flash
		✓	3/64 Oakover Road	Preston	Preston Main Drain	Flash
		✓	6/64 Oakover Road	Preston	Preston Main Drain	Flash
		✓	8/64 Oakover Road	Preston	Preston Main Drain	Flash
		✓	9/64 Oakover Road	Preston	Preston Main Drain	Flash
		✓	10/64 Oakover Road	Preston	Preston Main Drain	Flash
		✓	66-68 Oakover Road	Preston	Preston Main Drain	Flash
	✓	✓	70B Oakover Road	Preston	Preston Main Drain	Flash
		✓	82 Pender Street	Preston	Preston Main Drain	Flash
		✓	89 Pender Street	Preston	Preston Main Drain	Flash
✓	✓	✓	91 Pender Street	Preston	Preston Main Drain	Flash
		✓	93 Pender Street	Preston	Preston Main Drain	Flash
		✓	95 Pender Street	Preston	Preston Main Drain	Flash
		✓	97 Pender Street	Preston	Preston Main Drain	Flash
		✓	20 Penola Street	Preston	Preston Main Drain	Flash
		✓	36 Penola Street	Preston	Preston Main Drain	Flash
	✓	✓	25 Preston Street	Preston	Preston Main Drain	Flash
		✓	21-27 Railway Place	Preston	Preston Main Drain	Flash
	✓	✓	1/61 Regent Street	Preston	Spring Street Main Drain	Flash
	✓	✓	2/61 Regent Street	Preston	Spring Street Main Drain	Flash
	✓	✓	3/61 Regent Street	Preston	Spring Street Main Drain	Flash
	✓	✓	4/61 Regent Street	Preston	Spring Street Main Drain	Flash
	✓	✓	5/61 Regent Street	Preston	Spring Street Main Drain	Flash
	✓	✓	6/61 Regent Street	Preston	Spring Street Main Drain	Flash
	✓	✓	7/61 Regent Street	Preston	Spring Street Main Drain	Flash
	✓	✓	8/61 Regent Street	Preston	Spring Street Main Drain	Flash
		✓	40A Rennie Street	Thornbury	Preston Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	44 Rennie Street	Thornbury	Preston Main Drain	Flash
		✓	52 Rennie Street	Thornbury	Preston Main Drain	Flash
		✓	5 Rona Street	Reservoir	Spring Street Main Drain	Flash
		✓	8 Rona Street	Reservoir	Spring Street Main Drain	Flash
		✓	1 Ryan Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	2 Ryan Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	3 Ryan Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	11 Ryan Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	24 Ryan Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	34 Ryan Street	Northcote	Sumner Avenue Main Drain	Flash
✓	✓	✓	36 Ryan Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	46 Ryan Street	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	48 Ryan Street	Northcote	Sumner Avenue Main Drain	Flash
		✓	3/22 Showers Street	Preston	Preston Main Drain	Flash
		✓	38 Showers Street	Preston	Preston Main Drain	Flash
		✓	40 Showers Street	Preston	Preston Main Drain	Flash
		✓	1/44 Showers Street	Preston	Preston Main Drain	Flash
		✓	2/44 Showers Street	Preston	Preston Main Drain	Flash
		✓	1/46 Showers Street	Preston	Preston Main Drain	Flash
		✓	2/46 Showers Street	Preston	Preston Main Drain	Flash
		✓	52 Showers Street	Preston	Preston Main Drain	Flash
		✓	54 Showers Street	Preston	Preston Main Drain	Flash
		✓	57 Showers Street	Preston	Preston Main Drain	Flash
		✓	60 Showers Street	Preston	Preston Main Drain	Flash
		✓	55 Simpson Street	Northcote	Green Street Main Drain	Flash
		✓	57 Simpson Street	Northcote	Green Street Main Drain	Flash
		✓	59 Simpson Street	Northcote	Green Street Main Drain	Flash
		✓	61 Simpson Street	Northcote	Green Street Main Drain	Flash
		✓	61B Simpson Street	Northcote	Green Street Main Drain	Flash
		✓	61C Simpson Street	Northcote	Green Street Main Drain	Flash
		✓	63 Simpson Street	Northcote	Green Street Main Drain	Flash
		✓	63B Simpson Street	Northcote	Green Street Main Drain	Flash
		✓	65 Simpson Street	Northcote	Green Street Main Drain	Flash
		✓	67 Simpson Street	Northcote	Green Street Main Drain	Flash
	✓	✓	1/4 Spring Street	Preston	Spring Street Main Drain	Flash
	✓	✓	2/4 Spring Street	Preston	Spring Street Main Drain	Flash
	✓	✓	3/4 Spring Street	Preston	Spring Street Main Drain	Flash
	✓	✓	4/4 Spring Street	Preston	Spring Street Main Drain	Flash
	✓	✓	5/4 Spring Street	Preston	Spring Street Main Drain	Flash
	✓	✓	6/4 Spring Street	Preston	Spring Street Main Drain	Flash
	✓	✓	7/4 Spring Street	Preston	Spring Street Main Drain	Flash
	✓	✓	8/4 Spring Street	Preston	Spring Street Main Drain	Flash
	✓	✓	9/4 Spring Street	Preston	Spring Street Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	10/4 Spring Street	Preston	Spring Street Main Drain	Flash
	✓	✓	11/4 Spring Street	Preston	Spring Street Main Drain	Flash
	✓	✓	12/4 Spring Street	Preston	Spring Street Main Drain	Flash
		✓	68 Spring Street	Preston	Spring Street Main Drain	Flash
	✓	✓	19-25 St Georges Road	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	29 St Georges Road	Northcote	Sumner Avenue Main Drain	Flash
	✓	✓	30 St Georges Road	Preston	Preston Main Drain	Flash
	✓	✓	32 St Georges Road	Preston	Preston Main Drain	Flash
		✓	43 St Georges Road	Preston	Preston Main Drain	Flash
✓	✓	✓	77 St Georges Road	Preston	Preston Main Drain	Flash
	✓	✓	102 St Georges Road	Preston	Preston Main Drain	Flash
		✓	119 St Georges Road	Northcote	Sumner Avenue Main Drain	Flash
		✓	3 Stanworth Court	Preston	Spring Street Main Drain	Flash
		✓	17 Stephen Street	Preston	Preston Main Drain	Flash
		✓	22 Stephen Street	Preston	Preston Main Drain	Flash
	✓	✓	1 Stokes Street	Preston	Preston Main Drain	Flash
	✓	✓	2 Stokes Street	Preston	Preston Main Drain	Flash
	✓	✓	3 Stokes Street	Preston	Preston Main Drain	Flash
	✓	✓	4 Stokes Street	Preston	Preston Main Drain	Flash
		✓	8 Stokes Street	Preston	Preston Main Drain	Flash
		✓	2A Stott Street	Preston	Preston Main Drain	Flash
		✓	2 Stott Street	Preston	Preston Main Drain	Flash
		✓	2B Stott Street	Preston	Preston Main Drain	Flash
		✓	2C Stott Street	Preston	Preston Main Drain	Flash
		✓	4 Stott Street	Preston	Preston Main Drain	Flash
		✓	6 Stott Street	Preston	Preston Main Drain	Flash
		✓	10 Stott Street	Preston	Preston Main Drain	Flash
✓	✓	✓	28 The Centreway	Preston	Preston Main Drain	Flash
✓	✓	✓	30B The Centreway	Preston	Preston Main Drain	Flash
		✓	32 The Centreway	Preston	Preston Main Drain	Flash
		✓	1 The Strand	Preston	Preston Main Drain	Flash
✓	✓	✓	8 The Strand	Preston	Preston Main Drain	Flash
✓	✓	✓	10 The Strand	Preston	Preston Main Drain	Flash
✓	✓	✓	12 The Strand	Preston	Preston Main Drain	Flash
	✓	✓	3B Westfield Street	Northcote	Green Street Main Drain	Flash
✓	✓	✓	1/4 Westfield Street	Northcote	Green Street Main Drain	Flash
✓	✓	✓	2/4 Westfield Street	Northcote	Green Street Main Drain	Flash
✓	✓	✓	3/4 Westfield Street	Northcote	Green Street Main Drain	Flash
✓	✓	✓	5 Westfield Street	Northcote	Green Street Main Drain	Flash
✓	✓	✓	1/6 Westfield Street	Northcote	Green Street Main Drain	Flash
✓	✓	✓	2/6 Westfield Street	Northcote	Green Street Main Drain	Flash
✓	✓	✓	3/6 Westfield Street	Northcote	Green Street Main Drain	Flash
		✓	7 Westfield Street	Northcote	Green Street Main Drain	Flash

Properties at risk from Flooding over-floor along Merri Creek's stormwater tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	9 Westfield Street	Northcote	Green Street Main Drain	Flash
		✓	11 Westfield Street	Northcote	Green Street Main Drain	Flash
✓	✓	✓	12 Westfield Street	Northcote	Green Street Main Drain	Flash
	✓	✓	134 Westgarth Street	Northcote	Green Street Main Drain	Flash
		✓	171 Westgarth Street	Northcote	Green Street Main Drain	Flash
		✓	79 Wilcox Street	Preston	Preston Main Drain	Flash
		✓	84 Wilcox Street	Preston	Preston Main Drain	Flash
✓	✓	✓	86 Wilcox Street	Preston	Preston Main Drain	Flash
		✓	88 Wilcox Street	Preston	Preston Main Drain	Flash
	✓	✓	92 Wilcox Street	Preston	Preston Main Drain	Flash
✓	✓	✓	94 Wilcox Street	Preston	Preston Main Drain	Flash
		✓	257 Wood Street	Preston	Preston Main Drain	Flash
		✓	259 Wood Street	Preston	Preston Main Drain	Flash
		✓	261 Wood Street	Preston	Preston Main Drain	Flash
		✓	39 York Street	Reservoir	Elizabeth Street Main Drain	Flash
		✓	18 Youngman Street	Preston	Preston Main Drain	Flash
	✓	✓	26 Youngman Street	Preston	Preston Main Drain	Flash
		✓	81 Youngman Street	Preston	Preston Main Drain	Flash
	✓	✓	85 Youngman Street	Preston	Preston Main Drain	Flash
	✓	✓	87 Youngman Street	Preston	Preston Main Drain	Flash
	✓	✓	89 Youngman Street	Preston	Preston Main Drain	Flash
Totals						
135	305	654				

Table C4.3 – Properties at risk of flooding along Merri Creek's stormwater tributaries in the City of Darebin

Isolation

No major isolation risks exist for areas around Elizabeth Street, Preston, Sumner Avenue and Green Street Main Drains in Preston, Reservoir, Thornbury and Northcote during a 1% AEP (100yr ARI) event. Some localised short-duration isolation may occur due to flash flooding.

Essential Infrastructure

A Sewer Emergency Relief Point located at the junction of Elizabeth Street Main Drain and Merri Creek is within floodwater during a 1% AEP (100 year ARI event). The structure itself it located in the City of Moreland but may affect, or be affected by flows through the City of Darebin.

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. http://ptv.vic.gov.au/live-travel-updates/. A map of Public Transport routes within the City of Darebin is available via the website at: https://www.ptv.vic.gov.au/assets/PTV-default-site/more/maps/Local-area-maps/Metropolitan/12_Darebin_LAM_July-2022-NN.pdf

Apart from the roads outlined below, all other essential infrastructure and services areas around Preston, Reservoir, Thornbury and Northcote are expected to remain unaffected by flooding during a 1% AEP (100yr ARI) event.

Road Closures

The following roads are subject to closure during flooding around Elizabeth Street, Preston, Sumner Avenue and Green Street Main Drains in Preston, Reservoir, Thornbury and Northcote. Check the VicRoads website for more details: http://alerts.vicroads.vic.gov.au/

Department of Transport (VicRoads) Roads likely flooded in a 1% AEP (100yr ARI) event
• Bell Street, Preston, eastbound between Penola Street and Mary Street
• Heidelberg Road, Northcote, eastbound between Fairfield Park Drive and Panther Place
• Normanby Avenue, Thornbury at Leinster Grove
• St Georges Road, Preston, southbound between Murray Road and Bruce Street
• St Georges Road, Preston, southbound between Leicester Street and Showers Street
• St Georges Road, Northcote, southbound at Arthurton Road intersection
• St Georges Road, Northcote between Sumner Avenue and Westbourne Grove
• Westgarth Street, Northcote, westbound at Westfield Street

Table C4.4 – Department of Transport (VicRoads) Possible Road Closures during a flooding event

Darebin City Council Roads flooded in a 1% AEP (100yr ARI) event			
NORTHCOTE	• Sumner Avenue	• Elizabeth Street	• Penola Street
• Albert Street	• Westfield Street	• Emery Street	• Spring Street
• Arthurton Road	• Westgarth Street	• Garnet Street	• Stokes Street
• Auburn Avenue	**PRESTON**	• Gertrude Street	• Union Street
• Bower Street	• Bayliss Street	• Herbert Street	• Walter Street
• Clarke Street	• Beauchamp Street	• High Street	• Wilcox Street
• Derby Street	• Bruce Street	• Hubert Street	**RESERVOIR**
• Farnan Street	• Carthew Grove	• Jacka Street	• Coleman Crescent
• Herbert Street	• Cook Street	• Malcom Street	• McPherson Street
• Jessie Street	• Davies Street	• Mary Street	**THORNBURY**
• Little Newmarket Street	• Devon Street	• McNamara Street	• Keon Street
• Pinkney Street	• Donovan Street	• Miller Street	• Normanby Avenue
• Roberts Street	• Dunstan Street	• Murphy Street	
• Ryan Street	• East Street	• Newman Street	
• South Crescent	• Edith Street	• Pender Street	

Table C4.5 – Darebin City Council Possible flooded roads due to flash flooding

Flood Mitigation – Merri Creek's Stormwater Tributaries

Retarding Basins

Melbourne Water Retarding Basin	On Drain/ Waterway	Area	Storage Capacity	Spillway Crest Level	Full Supply Level	Embankment Crest Level	ANCOLD Hazard Rating	Houses In Flow Path (dam breach)	Melway Reference
Merri Creek RB	Sumner Avenue Main Drain/ Merri Creek	14,400m^2	50ML	NA	Unavailable	2m (32.9m AHD)	Very Low	0	30 C8

Table C4.6 – Melbourne Water Retarding Basins within Merri Creek's stormwater Drains catchment in the City of Darebin

A number of reserves and parklands along Preston Main Drain and Sumner Avenue Main Drain may hold a large amount of stormwater during an event. These include:

Reserve / Park	On Drain / Waterway	Location	Melway Reference
Ray Bramham Gardens	Preston Main Drain	St Georges Road Preston	30 E2
Cramer Park	Preston Main Drain	Cramer Street, Preston	18 F12
All Nations Park, Northcote	Sumner Avenue Main Drain	Brickworks Lane, Northcote	**30 G8**

Table C4.7 – Parks and Reserves along Merri Creek's stormwater Tributaries in the City of Darebin

Levees

Melbourne Water Levee	Reach	Side	Levee Height	Levee Length	Expected Level of Protection	ANCOLD Hazard Rating	Houses at risk behind Levee	Melway Reference
Merri Creek (East)	Sumner Estate- along Retarding Basin upstream To St Georges Road downstream	East	2m upstream to 1m downstream	478m	1% AEP Level (no effective freeboard)	High A	67	30 C8- 30 C9
Merri Creek (East)	Sumner Estate- Retarding Basin to Arthurton Road	East	2m	364m	1% AEP Level (no effective freeboard)	High A	78	30 C8

Table C4.8 – Melbourne Water Levees in the Merri Creek Stormwater Tributaries Catchment in the City of Darebin

No formal Pumping Stations exist around Elizabeth Street, Preston, Sumner Avenue and Green Street Main Drains in Preston, Reservoir, Thornbury and Northcote.

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located around Elizabeth Street, Preston, Sumner Avenue and Green Street Main Drains are contained within the following table.

Sewer Emergency Relief Points

On Drain / Waterway	Owner	Location	Melway Reference
Elizabeth St Main Drain	Yarra Valley Water	York Street, Reservoir	18 C8
Green Street Main Drain	Yarra Valley Water	Clarke Street, Northcote	30 G10
Local Drainage	Yarra Valley Water	Gower Street, Preston	181 J2
Local Drainage	Yarra Valley Water	O'Keefe Street, Preston	18 J12
Merri Creek	Melbourne Water	Tate Reserve, Coburg, near Goodwin Street	30 B2
Merri Creek	Melbourne Water	De Chene Reserve, Coburg downstream of Merri Creek/ Elizabeth Street Main Drain junction	18 A12
Preston Main Drain	Yarra Valley Water	Newman Reserve, cnr Showers Street and St Georges Road, Preston	30 E2
Preston Main Drain	Yarra Valley Water	Harold Street, Thornbury	30 D3
Preston Main Drain	Yarra Valley Water	Showers Street, Preston	30 F2
Preston Main Drain	Yarra Valley Water	Oakover Road, Preston	30 D2
Preston Main Drain	Yarra Valley Water	Pender Street, Preston	18 G11
Spring Street Main Drain	Yarra Valley Water	Regent Street, Preston	18 F9
Sumner Ave Main Drain	Yarra Valley Water	Cnr High Street and Gladstone Avenue, Northcote	30 F7
Sumner Ave Main Drain	Yarra Valley Water	Cnr High Street and Raleigh Street, Thornbury	30 F5

Table C4.9 – Sewer Emergency Relief Points around Merri Creek's stormwater tributaries in the City of Darebin

Control, Command and Coordination

VICSES will assume overall control of the response to flood incidents. Control and coordination of a flood incident shall be carried out at the lowest effective level and in accordance with the SEMP. During significant events, VICSES will conduct incident management using multi-agency resources.

Flood Impacts & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along Merri Creek's stormwater tributaries at various rain totals within Darebin. These tables are to be used only as a guide as no two floods at a location will have identical impacts.

Intelligence Cards have been included for the following locations:

- Merri Creek's Stormwater Tributaries in Reservoir, Preston, Thornbury & Northcote

FLOOD INTELLIGENCE CARD – MERRI CREEK'S STORMWATER TRIBUTARIES (UNGAUGED)

Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.

This Flood Intelligence Card publication is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victoria State Emergency Service. No liability is accepted for any damage, loss or injury caused by errors or omissions in this information or for any action taken by any person in reliance upon it. ***Scan the QR code for the current levels for this gauge.***

CLOSEST RAIN GAUGE:	**Merri Creek at Bell Street, Coburg**
LOCATION:	**West side of the Creek at the Bell St Bridge, Coburg**
RECENT RAINFALL:	**https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/229645A**

GAUGE NUMBER:	**229645A**
GAUGE TYPE:	**Stream Level & Rain**
MELWAY REFERENCE:	**30 A1**

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	**Annual Exceedance Probability (% AEP)**	**Consequence / Impact**	**Operational Considerations**
11mm in 10 mins; 18mm in 30 mins; 23mm in 1 hour; 29mm in 2 hours; 33mm in 3 hours or 42mm in 6 hours; Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	20% AEP (5-year ARI)	**Properties at Flood Risk above floor level** **135 Properties in Total** **Elizabeth Street Main Drain** • 61 George Street, Preston • 1/16 & 2/16 Malcolm Street, Preston **Green Street Main Drain** • 18 Albert Street, Northcote • 181, 183 & 187 Heidelberg Road, Northcote • 1/4, 2/4, 3/4, 5, 1/6, 2/6, 3/6 & 12 Westfield Street, Northcote **Preston Main Drain** • 86A, 86 & Units 1-6/94 Beauchamp Street, Preston • 430, 438, 440 & 450 Bell Street, Preston • 1, 2, 4, 6, 8 & 10 Cook Street, Preston • 96 Herbert Street, Northcote • 7 Herbert Street, Preston • 411, Shops 1-3/411, 413A, 413, 414, 415, 416, Shops 1-5/418, 420, 422, 423, 432-434, 436-438, Shops 1-18/442, 444, 446, 454, 532, Shops 1-11/532 & 538 High Street, Northcote • 362, 364, 370, 371, 402, 424, Units 1-2/428 & 430 High Street, Preston	VicSES State and Region to provide warnings to the community and other agencies. VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The North West Metro Regional Duty Officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident. VicSES to respond to RFA's as requested on a case-by-case basis. Council to provide road and path closure signage as required.

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• 23, 25, 27, 27-29 & 29 Mary Street, Preston • 241, 245, 247, 249A, 249, 251, 260A & 260 Murray Road, Preston • 2/32-34 & 3/32-34 Oakover Road, Preston • 91 Pender Street, Preston • 77 St Georges Road, Preston • 28 & 30B The Centreway, Preston • 8, 10 & 12 The Strand , Preston • 86 & 94 Wilcox Street, Preston **Spring Street Main Drain** • 12 Mcpherson Street, Reservoir **Sumner Avenue Main Drain** • 4, 8 & 16-18 Arthurton Road, Northcote • 2A & 2B Elm Street, Northcote • 27 Hayes Street, Northcote • 350A, 368, 372, 374-376, 378, 422, 428, 3/428 & 441 High Street, Preston • 36 Ryan Street, Northcote **Water Over Road (above 300 mm depth)** **Green Street Main Drain** • Albert Street, Northcote • Farnan Street, Northcote • Westfield Street, Northcote **Preston Main Drain** • High Street, Preston • Hubert Street, Preston **Sumner Avenue Main Drain** • St Georges Road, Northcote	
17mm in 10 mins; 27mm in 30 mins; 34mm in 1 hour; 42mm in 2 hours; 48mm in 3 hours; or 60mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This	5% AEP (20-year ARI)	**Properties at Flood Risk above floor level** **305 Properties in Total** **Elizabeth Street Main Drain** • 61 & 63 George Street, Preston • 1 Lucas Street, Reservoir • 1/16 & 2/16 Malcolm Street, Preston **Green Street Main Drain** • 16 & 18 Albert Street, Northcote • 181, 183, 187 & 191A Heidelberg Road, Northcote • 3B, 1/4, 2/4, 3/4, 5, 1/6, 2/6, 3/6 & 12 Westfield Street, Northcote • 134 Westgarth Street, Northcote **Preston Main Drain** • 86A, 86 & Units 1-6/94 Beauchamp Street, Preston	VicSES to respond to RFA's as requested on a case-by-case basis. Council to provide road and path closure signage as required.

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
should be used as a guide only.		• 1/346, 2/346, 363A, 363B, 363, 376, 430, 434, 438, 440 & 450 Bell Street, Preston • 2 Blanch Street, Preston • 1, 2, 4, 6, 8 & 10 Cook Street, Preston • 24 Esther Street, Preston • 24 Gertrude Street, Preston • 267-269, 271, 273, 1/275, 3/275, 4/275, 6/275 & Units 8-11/275 Gower Street, Preston • 96 & 100 Herbert Street, Northcote • 7 Herbert Street, Preston • 411, Shops 1-3/411, 413A, 413, 414, 415, 416, Shops 1-5/418, 420, 422, 423, 432-434, 436-438, Shops 1-18/442, 444, 446, 454, 513, 518-530, 521, 532, Shops 1-11/532 & 538 High Street, Northcote • 274, 327-329, 328, 330, 335, 336, 337, 338, 339, 340, 341, 342, 344, 359-361, 362, 364, 366, 370, 371, 375, 379, 383, 402, 403, 407, 423, 424, 425, 427, Units 1-2/428, 430, 431-433 & 437 High Street, Preston • 8, 9 & 13 Leicester Street, Preston • 1D, 23, 25, 27, 27-29 & 29 Mary Street, Preston • 115A & 119 Miller Street, Thornbury • 241, 241A, 245, 247, 249A, 249, 251, 260A, 260, 265, 305, 307 & 330-336 Murray Road, Preston • 1 Newman Street, Preston • 2/32-34, 3/32-34, 40, 42 & 44 Oakover Road, Preston • 91 Pender Street, Preston • 25 Preston Street, Preston • 30, 32, 77 & 102 St Georges Road, Preston • 1, 2, 3 & 4 Stokes Street, Preston • 28 & 30B The Centreway , Preston • 8, 10 & 12 The Strand , Preston • 86, 92 & 94 Wilcox Street, Preston • 26, 85, 87 & 89 Youngman Street, Preston **Spring Street Main Drain** • 10 & 12 Mcpherson Street, Reservoir • 1/61, 2/61, 3/61, 4/61, 5/61, 6/61, 7/61 & 8/61 Regent Street, Preston • 1-12/4 Spring Street, Preston **Sumner Avenue Main Drain** • 4, 8, 16-18, 71, 73, 75, 79 & 85 Arthurton Road, Northcote • 2A & 2B Elm Street, Northcote • 27 Hayes Street, Northcote • 306, 312A-314A, 316, 319, 321, 322, 323, 325, 326, 328, 336, 346, 348, 350A, 351, 352, 363, 368, 372, 374-376, 377, 378, 385, 391, 405, 422, 428, 3/428, 435, 2/437, 441, 443, 444, 446, 459, 461, 463, 465-467, 469, 471, 473, 473A, 473B, 475-479, 481, 483, 485, 487, 489, 491, 493, 495 & 497 High Street, Preston • 556, 558, 626-628, 630-642, 648, 650-654, 678 & 707 High Street, Thornbury	

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• 2, 24, 36, 46 & 48 Ryan Street, Northcote • 19-25, 29 & 119 St Georges Road, Northcote **Community Infrastructure Flooded** **Preston Main Drain** • Preston City Oval (Cramer Park), Cramer Street Preston, oval flooded • Preston Market, Cramer St, Preston, carpark flooded **Water Over Road (above 300 mm depth)** **Elizabeth Street Main Drain** • Dunstan Street, Preston • Elizabeth Street, Preston • McNamara Street, Preston • Union Street Preston **Green Street Main Drain** • Albert Street, Northcote • Clarke Street, Northcote • Farnan Street, Northcote • Jessie Street, Northcote • Roberts Street, Northcote • Westfield Street, Northcote • Westgarth Street, Northcote **Preston Main Drain** • High Street, Preston • Hubert Street, Preston • Penola Street, Preston **Sumner Avenue Main Drain** • Herbert Street, Northcote • St Georges Road, Northcote	
25mm in 10 mins; 41mm in 30 mins; 51mm in 1 hour; 62mm in 2 hours; 70mm in 3 hours; or 87mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the	1% AEP (100-year ARI)	**Properties at Flood Risk above floor level** **654 Properties in Total** **Elizabeth Street Main Drain** • 88 & 90 Elizabeth Street, Coburg North • 61 & 63 George Street, Preston • 1/42, 1/42B, 1/42A, 2/42A, 2/42B, 3/42A, 3/42B, 4/42B & 4/42A Jacka Street, Preston • 1 Lucas Street, Reservoir • 14, 1/16 & 2/16 Malcolm Street, Preston • 2-26 Murphy Street, Preston • 39 York Street, Reservoir **Green Street Main Drain** • 16, 18, 19, 19A, 21, 23, 24, 25, 27 & 29 Albert Street, Northcote	VicSES to respond as per request-by-request basis.

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
ungagged nature of the catchment. This should be used as a guide only.		• 157, 159, 161, 161A, 163, 165, 167-179, 181, 183, 187 & 191A Heidelberg Road, Northcote • 55, 57, 59, 61, 61B, 61C, 63, 63B, 65 & 67 Simpson Street, Northcote • 3B, 1/4, 2/4, 3/4, 5, 1/6, 2/6, 3/6, 7, 9, 11 & 12 Westfield Street, Northcote • 134 & 171 Westgarth Street, Northcote **Preston Main Drain** • 8 Bayliss Street, Preston • 85, 86A, 86, 87, 88, 1/90 & Units 1-6/94 Beauchamp Street, Preston • 1/346, 2/346, 348-350, 363A, 363B, 363, 376, 382-384, 430, 434, 438, 440 & 450 Bell Street, Preston • 2 Blanch Street, Preston • 6-8 Bruce Street, Preston • 1, 2, 4, 6, 8 & 10 Cook Street, Preston • 1, 2A, 1/2, 2/2, 3/2, 4/2, 5/2, 6/2, 4, 6, 8A, 10 & Units 1-3/12 Cramer Street, Preston • 19 & 21 Davies Street, Preston • 1 Donovan Street, Preston • 8, 1/10, 2/10, 3/10 & 11 Emery Street, Preston • 24 Esther Street, Preston • 60 & 64 Fyffe Street, Thornbury • 47 Garnet Street, Preston • 22 & 24 Gertrude Street, Preston • 267-269, 271, 273, 1/275, 3/275, 4/275, 6/275 & Units 8-11/275 Gower Street, Preston • 53, 65, 96 & 100 Herbert Street, Northcote • 7, 8, 9, 16, 18 & 20 Herbert Street, Preston • 411, Shops 1-3/411, 413A, 413, 414, 415, 416, Shops 1-5/418, 420, 421, 422, 423, 432-434, 436-438, 441, Shopts 1-18/442, 443, 444, 445, 446, 447, 453, 454, 456, 458, 463-467, 466, 470-480, 470, 472, 474, 476, 478, 480, 487, 491, 493, 494, 497, 499, 501A, 503, 507, 509, 511, 513, 517, 518-530, 519, 521, 523, 532, Shops 1-11/532, 538, 547, 550, 559, 561, 565 & 567-569 High Street, Northcote • 268-272, 274, 276, 280, 282, 294, Units 1-5/294-296, 318, 327-329, 330, 335, 337, 338, 339, 340, 341, 342, 343, 344, Units 1-2/345, 359-361, 362, 364, 366, 367, 369, 370, 371, 375, 379, 381, 383, 389, 393, 399, 401, 402, 403, 407, 423, 424, 425, 427, Units 1-3/428, 430, 431-433, 437 & 439 High Street, Preston • 112 Hutton Street, Thornbury • 56, 62, 66 & 76 Keon Street, Thornbury • 8, 9 & 13 Leicester Street, Preston • 1D, 7, 11, 18B, 18A, 23, 25, 27, 27-29, 29, 44 & Units 1-28/46 Mary Street, Preston • 76 Miller Street, Preston • 81, 115A & 119 Miller Street, Thornbury • 241, 241A, 245, 247, 249A, 249, 251, 260A, 260, 265, 266, 266A, 305, 307, 330-336, 350, 1/350, 2/350, 356 & 358 Murray Road, Preston • 1 & 3 Newman Street, Preston	

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• 17, 19, 2/32-34, 3/32-34, 40, 42, 44, 56, 58, 1/62, 2/62, 3/64, 6/64, 8/64, 9/64, 10/64, 66-68 & 70B Oakover Road, Preston • 82, 89, 91, 93, 95 & 97 Pender Street, Preston • 20 & 36 Penola Street, Preston • 25 Preston Street, Preston • 21-27 Railway Place, Preston • 40A, 44 & 52 Rennie Street, Thornbury • 3/22, 38, 40, 1/44, 2/44, 1/46, 2/46, 52, 54, 57 & 60 Showers Street, Preston • 30, 32, 43, 77 & 102 St Georges Road, Preston • 17 & 22 Stephen Street, Preston • 1, 2, 3, 4 & 8 Stokes Street, Preston • 2A, 2, 2B, 2C, 4, 6 & 10 Stott Street, Preston • 28, 30B & 32 The Centreway , Preston • 1, 8, 10 & 12 The Strand , Preston • 79, 84, 86, 88, 92 & 94 Wilcox Street, Preston • 257, 259 & 261 Wood Street, Preston • 18, 26, 81, 85, 87 & 89 Youngman Street, Preston **Spring Street Main Drain** • 10 & 12 Mcpherson Street, Reservoir • 14, 1/14A, 2/14A, 3/14A & 4/14A Myrtle Grove, Preston • 16, 18 & 20 Myrtle Grove, Reservoir • 1/61, 2/61, 3/61, 4/61, 5/61, 6/61, 7/61 & 8/61 Regent Street, Preston • 5 & 8 Rona Street, Reservoir • 1-12/4 & 68 Spring Street, Preston • 3 Stanworth Court, Preston **Sumner Avenue Main Drain** • 4, 8, 16-18, 38, 39, 41, 41A, 54A, 54, 71, 73, 75, 77, 79, 81, 85 & 89 Arthurton Road, Northcote • 4 Auburn Avenue, Northcote • 11 Beaconsfield Parade, Northcote • 32, 34A & 34 Beavers Road, Northcote • 23 Bent Street, Northcote • 2A, 2B & 42 Elm Street, Northcote • 8A & 8B Hartington Street, Northcote • 39 Hawthorn Road, Northcote • 27 Hayes Street, Northcote • 296, 306, 308, 311, 312A-314, 316, 319, 320, 321, 322, 323, 325, 326, 328, 336, Units 3-21/345, 346, 347, 348, 350A, 351, 352, 353, 356, 358, 360, 363, 365, 368, 372, 374-376, 377, 378, 385, 391, 395, 397, 400, 405, 417-419, 421, 422, 428, Units 3/428, 432-440, 435, 2/437, 441, 442, 443, 444, 445, 446, 447, 449, 451, 453, 455, 459, 461, 463, 465-467, 469, 471, 473, 473A, 473B, 475-479, 481, 482, 483, 485, 487, 489, 491, 493, 495 & 497 High Street, Preston	Kindergarten and primary school to implement emergency evacuation plan if required

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• 556, 558, 582-586, 590, 594-596, 598-604, 608, 610-612, 626-628, 630-642, 646, 648, 650-654, 656, 658, 660, 664, 678, 679-685, 687, 687A, 689, 703, 707, 715, 721 & 721A High Street, Thornbury • 50 Johnson Street, Thornbury • 1, 2, 3, 11, 24, 34, 36, 46 & 48 Ryan Street, Northcote • 19-25, 29 & 119 St Georges Road, Northcote **Community Infrastructure Flooded** **Green Street Main Drain** • Westgarth Primary School, Clark Street, Northcote. Clark Street entrance flooded • Westgarth Kindergarten, Clark Street, Northcote. Clark Street entrance flooded **Preston Main Drain** • St Johns Greek Orthodox College, Railway Place West, Preston, oval and concreted surface flooded • Bell Railway Station, Garnet Street Preston, carpark flooded • Preston Railway Station overflow carpark, St Georges Road Preston, carpark flooded • Preston City Oval (Cramer Park), Cramer Street Preston, oval flooded • Preston Market, Cramer St, Preston, carpark flooded • Northern Health, Bell Street Preston, rear access under 300mm floodwater **Sumner Avenue Main Drain** • Time-Out Child Care Centre, 38 Arthurton Road, Northcote access routes flooded **Essential Infrastructure** • Tram line (route 11 and 112) at Miller Street, Northcote under 300mm floodwater **Water Over Road (over 300mm depth)** **Elizabeth Street Main Drain** • Dunstan Street, Preston • Elizabeth Street, Preston • Jacka Street Preston • Malcom Street, Preston • McNamara Street, Preston • Murphy Street Preston • Union Street Preston **Green Street Main Drain** • Albert Street, Northcote • Bower Street, Northcote • Clarke Street, Northcote • Derby Street, Northcote • Farnan Street, Northcote • Heidelberg Road, Northcote • Jessie Street, Northcote	Learning centre to implement emergency evacuation plan if required VicSES to liaise with sewage management and EPA to monitor possible contamination of flood waters Council to provide road closure signage if required.

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• Little Newmarket Street, Northcote • Pinkney Street, Northcote • Roberts Street, Northcote • South, Crescent, Northcote • Westfield Street, Northcote • Westgarth Street, Northcote **Preston Main Drain** • Beauchamp Street, Preston • Bell Street, Preston • Bruce Street, Preston • Carthew Grove, Preston • Cook Street, Preston • Davies Street, Preston • Devon Street, Preston • Donovan Street, Preston • East Street, Preston • Edith Street, Preston • Emery Street, Preston • Garnet Street, Preston • Gertrude Street, Preston • Herbert Street, Preston • High Street, Preston • Hubert Street, Preston • Mary Street, Preston • Miller Street, Preston • Newman Street, Preston • Normanby Avenue, Thornbury • Penola Street, Preston • St Georges Road, Preston • Stokes Road, Preston • Walter Street, Preston • Wilcox Street, Preston • Keon Street, Thornbury • Normanby Avenue, Thornbury **Spring Street Main Drain** • Bayliss Street, Preston • Spring Street, Preston • Coleman Crescent, Reservoir	

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• McPherson Street, Reservoir **Sumner Avenue Main Drain** • Arthurton Road Northcote • Auburn Avenue, Northcote • Herbert Street, Northcote • Ryan Street, Northcote • St Georges Road, Northcote • Sumner Avenue, Northcote	

Table C4.10 – Breakdown of possible consequences at various rainfall intensities around Merri Creek's stormwater tributaries with operational considerations

APPENDIX C5 - THREAT OF FLOODING ALONG FAIRFIELD MAIN DRAIN

Overview of Flooding Consequences

This Summary table is generated from Victorian Government data. The State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons access this information should make appropriate enquiries to assess the currency of the data.

Summary of Consequences in a 1% AEP (100yr ARI) flood along the Fairfield Main Drain					
Property					
Properties	**108**				
Residential	55				
Commercial	53	Station Street, Fairfield			
Industrial	0				
Public Land	0				
Rural	0				
Community Infrastructure					
Child Care / Kindergartens	1	St Andrews Uniting Kindergarten			
Essential Infrastructure					
Major Roads	2	Darebin Road; & Station Street			
Major Rail	1	Fairfield Railway Station Underpass			
Bus Routes	5	250; 510; 567; 609; & 955			
Sewerage Facilities	4	Emergency Relief Points			
Tourism / Recreation					
Sports Facilities	0	Northcote Junior Football Club			
Government Boundaries					
Local Gov't Areas	1	Darebin	CMA	1	Port Phillip & Westernport
Adjacent LGAs	1	Yarra	CFA District	0	
SES Unit Area	1	Heidelberg	FRV District	1	Northern

Table C5.1 – Consequence Summary of 1% AEP flood along the Fairfield Main Drain

Kellett Street Main Drain starts near the corner of Kellett and Wilmoth Streets in Northcote and joins Fairfield Main Drain at McDonnell Park near Separation Street.

Fairfield Main Drain starts near the corner of Victoria Street and Gooch Street in Thornbury, passes south through Northcote, Fairfield and Alphington and exits Darebin at Heidelberg Road before discharging into the Yarra River near the end of Yarraford Avenue to the west of Chandler Highway in the City of Yarra. Land use in the catchment area is predominantly residential and localised commercial.

Most stormwater drains in the area were originally designed to meet the 20% AEP (5-year ARI) standard continuous and there are few unobstructed overland flow paths. Roads are used to carry excess flows to low points from where a combination of pipes and overland flow paths carry water to Merri Creek.). Newer Council drains are now designed to accommodate the 1% AEP event,

however, where Council drains link into Melbourne Water drains, upstream areas may still be limited by the downstream capacity of Melbourne Water's drains.

Thornbury, Northcote, Fairfield and Alphington lay on fairly flat terrain, so overland flow paths spread out over a wide area. Water will generally be slow moving as it spreads and may sit for a number of days before dissipating.

Gauges and Warnings

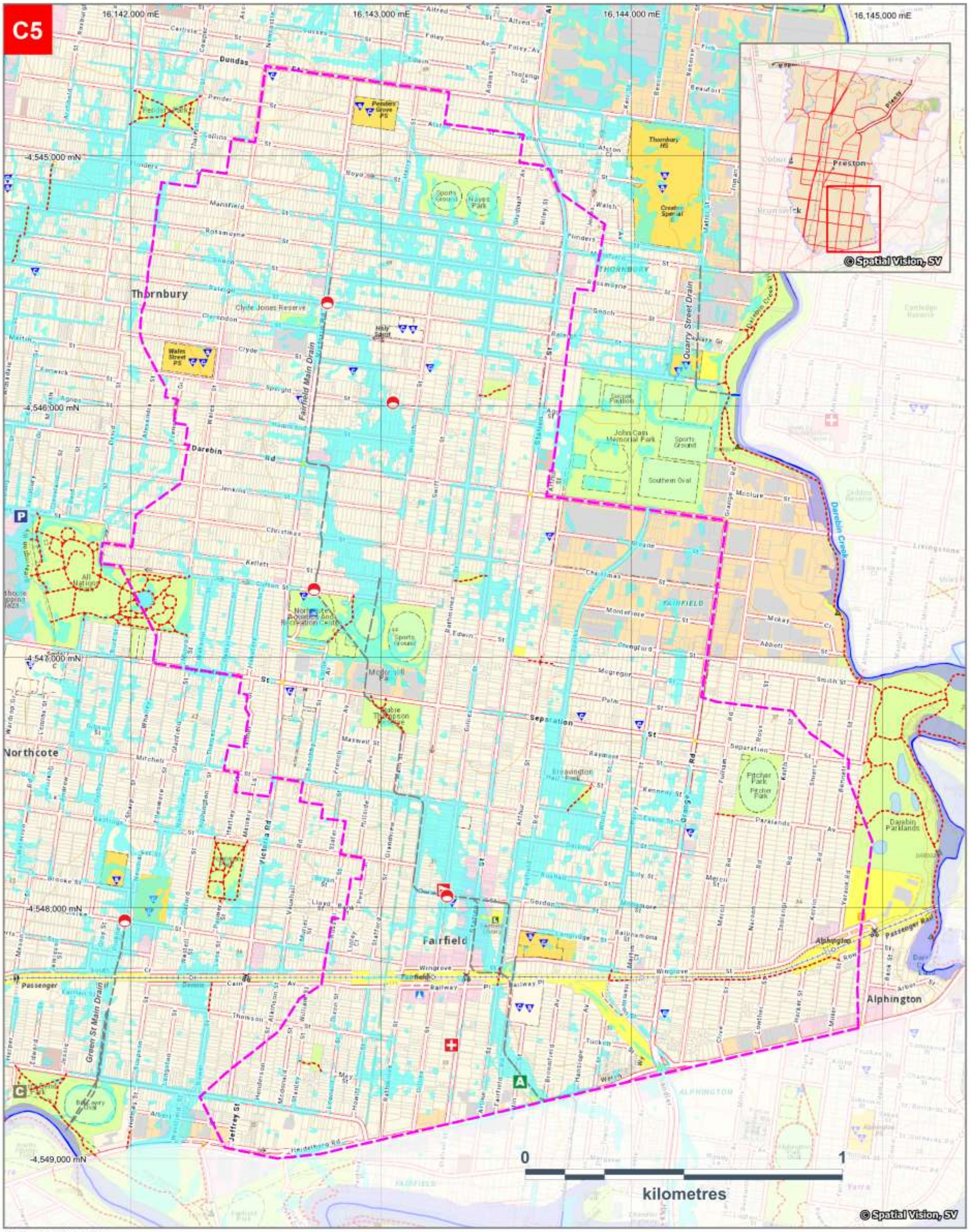
Whilst there are hydrographic/telemetry stations (river gauges) within the municipality, Melbourne Water does not provide any flood warning service at this point, due to the generally short warning times available.

Gauge	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Reference
Darebin Creek at Bell Street, Ivanhoe	229403B	West bank of creek, northern side of Bell Street Bridge, Preston	✓	✓	31 D2
Preston Rain Gauge	586011	Preston Reservoirs, 881 High Street, Reservoir		✓	18 G7
Yarra River at Rudder Grange, Alphington	229143A	North bank of the river, the end of Alphington Street	✓	✓	31 B12

Table A5.2 – Gauges around Fairfield

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx. The Bureau of Meteorology's website also links a number of these gauges at: http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDV60201.html. It is advised that residents monitor the Bureau of Meteorology's website http://www.bom.gov.au/vic/warnings/index.shtml?ref=hdr and the VicEmergency website https:/emergency.vic.gov.au/ for any thunderstorm, flood or severe weather warnings present for their area.

Areas of Flood Risk



Map produced by VICSES July 2022

N

CITY OF DAREBIN

1% AEP (100yr ARI) flooding

C5. Areas of flood risk around the Fairfield Main Drain

- Building
- 1% AEP Riverine Flood Extent
- 1% AEP Flash Flood Extent
- Waterway
- Melbourne Water Underground Drain
- Bicycle / Walking Trail
- Boundary for this Appendix
- Community Centre
- Sewer Emergency Relief Point
- Ambulance Station
- Police Station
- Sewer Pumping Station

LAND USE

- Residential
- Commercial and Business
- Industrial
- Public Parks / Cemeteries / Recreation
- Utilities and Local Government Facilities
- Education

SES VICTORIA Melbourne Water

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Figure A5 – Areas of flood risk around Fairfield in the City of Darebin

Properties at Flood Risk

Properties listed in the table below are at risk from flooding over-floor along the Fairfield Main Drain in Darebin. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Fairfield Main Drain (Cardno, January 2013) flood mapping and risk assessment program.

This Property Flood Risk Table is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victoria State Emergency Service. No liability is accepted for any damage, loss or injury caused by errors or omissions in this information or for any action taken by any person in reliance upon it.

Properties at risk from Flooding Over-Floor along the Fairfield Main Drain in Darebin

Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	53 Arthur Street	Fairfield	Fairfield Main Drain	Flash
	✓	✓	55 Arthur Street	Fairfield	Fairfield Main Drain	Flash
	✓	✓	57 Arthur Street	Fairfield	Fairfield Main Drain	Flash
		✓	67 Arthur Street	Fairfield	Fairfield Main Drain	Flash
		✓	69 Arthur Street	Fairfield	Fairfield Main Drain	Flash
		✓	31 Austin Street	Alphington	Fairfield Main Drain	Flash
		✓	32 Austin Street	Alphington	Fairfield Main Drain	Flash
		✓	33 Austin Street	Alphington	Fairfield Main Drain	Flash
		✓	2/36-38 Austin Street	Alphington	Fairfield Main Drain	Flash
		✓	3/36-38 Austin Street	Alphington	Fairfield Main Drain	Flash
		✓	4/36-38 Austin Street	Alphington	Fairfield Main Drain	Flash
		✓	38 Austin Street	Alphington	Fairfield Main Drain	Flash
		✓	79 Christmas Street	Northcote	Fairfield Main Drain	Flash
		✓	81 Christmas Street	Northcote	Fairfield Main Drain	Flash
	✓	✓	1/88 Christmas Street	Northcote	Fairfield Main Drain	Flash
	✓	✓	2/88 Christmas Street	Northcote	Fairfield Main Drain	Flash
	✓	✓	3/88 Christmas Street	Northcote	Fairfield Main Drain	Flash
		✓	4/88 Christmas Street	Northcote	Fairfield Main Drain	Flash
		✓	159 Darebin Road	Thornbury	Fairfield Main Drain	Flash
		✓	161 Darebin Road	Thornbury	Fairfield Main Drain	Flash
	✓	✓	6 Duncan Street	Fairfield	Fairfield Main Drain	Flash
	✓	✓	88 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	1/94 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	2/94 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	3/94 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	4/94 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	5/94 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	6/94 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	7/94 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	8/94 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	9/94 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	10/94 Gillies Street	Fairfield	Fairfield Main Drain	Flash

Properties at risk from Flooding Over-Floor along the Fairfield Main Drain in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	96 Gillies Street	Fairfield	Fairfield Main Drain	Flash
	✓	✓	98 Gillies Street	Fairfield	Fairfield Main Drain	Flash
	✓	✓	100 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	101 Gillies Street	Fairfield	Fairfield Main Drain	Flash
	✓	✓	102 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	1/115 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	2/115 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	3/115 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	4/115 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	5/115 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	6/115 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	7/115 Gillies Street	Fairfield	Fairfield Main Drain	Flash
		✓	68 Hammond Street	Thornbury	Fairfield Main Drain	Flash
		✓	70 Hammond Street	Thornbury	Fairfield Main Drain	Flash
	✓	✓	3/89 Kellett Street	Northcote	Fairfield Main Drain	Flash
		✓	93 Kellett Street	Northcote	Fairfield Main Drain	Flash
		✓	97 Kellett Street	Northcote	Fairfield Main Drain	Flash
	✓	✓	115A Rathmines Street	Fairfield	Fairfield Main Drain	Flash
	✓	✓	115B Rathmines Street	Fairfield	Fairfield Main Drain	Flash
	✓	✓	115C Rathmines Street	Fairfield	Fairfield Main Drain	Flash
		✓	128 Rathmines Street	Fairfield	Fairfield Main Drain	Flash
		✓	88 Speight Street	Thornbury	Fairfield Main Drain	Flash
		✓	88 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	90 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	92-96 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	98-100 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	99 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	99A Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	101 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	102 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	103 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	103A Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	104 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	105 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	106 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	107 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	108 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	109 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	109-111 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	110 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	111 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	111A Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	1/112 Station Street	Fairfield	Fairfield Main Drain	Flash

Properties at risk from Flooding Over-Floor along the Fairfield Main Drain in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	113 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	115 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	115A Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	116 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	117B Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	117A Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	118 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	119A Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	119B Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	119 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	120 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	122 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	122A Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	122B Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	123 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	125 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	126 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	127 Station Street	Fairfield	Fairfield Main Drain	Flash
	✓	✓	128 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	130 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	131 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	131A Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	132 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	134 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	134A Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	136A Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	136 Station Street	Fairfield	Fairfield Main Drain	Flash
	✓	✓	138 Station Street	Fairfield	Fairfield Main Drain	Flash
		✓	140-142 Station Street	Fairfield	Fairfield Main Drain	Flash
	✓	✓	17 Tower Avenue	Alphington	Fairfield Main Drain	Flash
		✓	19 Tower Avenue	Alphington	Fairfield Main Drain	Flash
		✓	220 Wingrove Street	Fairfield	Fairfield Main Drain	Flash
		✓	222 Wingrove Street	Fairfield	Fairfield Main Drain	Flash
Totals						
0	18	108				

Table C5.3 – Properties at risk of flooding over-floor along the Fairfield Main Drain in the City of Darebin

Isolation

No major isolation risks exist for areas around Darebin during a 1% AEP (100yr ARI) event. Some localised short-duration isolation may occur due to flash flooding.

Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. http://ptv.vic.gov.au/live-travel-updates/. A map of Public Transport routes within the City of Darebin is available via the website at: https://www.ptv.vic.gov.au/assets/PTV-default-site/more/maps/Local-area-maps/Metropolitan/12_Darebin_LAM_July-2022-NN.pdf

Apart from the roads outlined below, all other essential infrastructure and services areas around Darebin are expected to remain unaffected by flooding during a 1% AEP (100yr ARI) event.

Road Closures

The following roads are subject to closure during flooding around Darebin. Check the VicRoads website for more details: http://alerts.vicroads.vic.gov.au/

Department of Transport (VicRoads) Roads likely flooded in a 1% AEP (100yr ARI) event
• Darebin Road, Thornbury between Victoria Road and Wilmoth Street
• Station Street, Fairfield between Wingrove Street and Duncan Street

Table C5.4 – Department of Transport (VicRoads) Possible Road Closures during a flooding event

Darebin City Council Roads flooded in a 1% AEP (100yr ARI) event			
ALPHINGTON	• Wingrove Street	• Mitchell Street	• Rathmines Street
• Austin Street	**NORTHCOTE**	• Wilmoth Street	• Rossmoyne Street
• Fairfield Road	• Christmas Street	**THORNBURY**	• Wilmoth Street
FAIRFIELD	• Clifton Street	• Clyde Street	
• Duncan Street	• Jenkins Street	• Gooch Street	
• Gillies Street	• Kellett Street	• Hammond Street	

Table C5.5 – Darebin City Council Possible Road Closures during a flash flooding event

Flood Mitigation - Fairfield

No formal Retarding Basins, Pumping Stations or Levees exist around Fairfield Main Drain.

A number of reserves and parklands along waterways in the Municipality may hold a large amount of stormwater during an event. These include:

Reserve / Park	On Drain / Waterway	Location	Melway Reference
McDonnell Park	Kellett Street Main Drain/ Fairfield Main Drain	Clifton Street, Northcote	30 J8

Table C5.6 – Parks and Reserves along the Fairfield Main Drain in the City of Darebin

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located around the Fairfield Main Drain is contained within the following table.

Sewer Emergency Relief Points

On Drain / Waterway	Owner	Location	Melway Reference
Fairfield Main Drain	Yarra Valley Water	Cnr Duncan Street and Gillies Street, Fairfield	30 K10
Fairfield Main Drain	Yarra Valley Water	Speight Street, Thornbury	30 J6
Fairfield Main Drain	Yarra Valley Water	Cnr Victoria Road and Raleigh Street, Thornbury	30 J5
Fairfield Main Drain	Yarra Valley Water	Clifton Street, Northcote	30 J7

Table C5.6 – Sewer Emergency Relief Points around Merri Creek's stormwater tributaries in the City of Darebin

Control, Command and Coordination

VICSES will assume overall control of the response to flood incidents. Control and coordination of a flood incident shall be carried out at the lowest effective level and in accordance with the SEMP. During significant events, VICSES will conduct incident management using multi-agency resources.

Flood Impacts & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding around Fairfield at various rain totals within Darebin. These tables are to be used only as a guide as no two floods at a location will have identical impacts.

Intelligence Cards have been included for the following locations:

- Fairfield & Kellett St Main Drains, Fairfield

FLOOD INTELLIGENCE CARD – FAIRFIELD AND KELLETTS ST MAIN DRAINS (UNGAUGED)

Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.

This Flood Intelligence Card publication is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victoria State Emergency Service. No liability is accepted for any damage, loss or injury caused by errors or omissions in this information or for any action taken by any person in reliance upon it. ***Scan the QR code for the current levels for this gauge.***

CLOSEST RAIN GAUGE:	**Yarra River at Rudder Grange, Alphington**
LOCATION:	**Rudder Grange, end of Alphington Street, Alphington**
RECENT RAINFALL:	**https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/229143B**

GAUGE NUMBER:	**229143A**
GAUGE TYPE:	**Stream Level & Rain**
MELWAY REFERENCE:	**31 A12**

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	**Annual Exceedance Probability (% AEP)**	**Consequence / Impact**	**Operational Considerations**
11mm in 10 mins; 19mm in 30 mins; 24mm in 1 hour; 30mm in 2 hours; 33mm in 3 hours; or 42mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	20% AEP (5-year ARI)	• Nil expected in Darebin	VicSES State and Region to provide warnings to the community and other agencies. VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The North West Metro Regional Duty Officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident. VicSES to respond to RFA's as requested on a case-by-case basis.
17mm in 10 mins;	5% AEP (20-year ARI)	**Properties at Flood Risk (above floor level)** **18 Properties in Total**	

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
27mm in 30 mins; 34mm in 1 hour; 41mm in 2 hours; 46mm in 3 hours; or 57mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.		**Fairfield Main Drain** • 55 & 57 Arthur Street, Fairfield • 1/88, 2/88 & 3/88 Christmas Street, Northcote • 6 Duncan Street, Fairfield • 88, 96, 98, 100 & 102 Gillies Street, Fairfield • 3/89, 93 & 97 Kellett Street, Northcote • 115A, 115B & 115C Rathmines Street, Fairfield • 128 & 138 Station Street, Fairfield • 17 Tower Avenue, Alphington **Water Over Road (above 300mm depth)** **Fairfield Main Drain** • Christmas Street, Northcote • Hammond Street, Thornbury • Rathmines Street, Thornbury **Kellett Street Main Drain** • Clifton Street, Northcote • Kellett Street, Northcote • Wilmoth Street, Northcote	VicSES to respond to RFA's as requested on a case-by-case basis. Council to provide road and path closure signage as required.
25mm in 10 mins; 40mm in 30 mins; 49mm in 1 hour; 57mm in 2 hours; 65mm in 3 hours; or 80mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	1% AEP (100-year ARI)	**Properties at Flood Risk (above floor level)** **108 Properties in Total** **Fairfield Main Drain** • 53, 55, 57, 67 & 69 Arthur Street, Fairfield • 31, 32, 33, 2/36-38, 3/36-38, 4/36-38 & 38 Austin Street, Alphington • 79, 81, 1/88, 2/88, 3/88 & 4/88 Christmas Street, Northcote • 159 & 161 Darebin Road, Thornbury • 6 Duncan Street, Fairfield • 88, Units 1-10/94, 96, 98, 100, 101, 102 & Units 1-7/115 Gillies Street, Fairfield • 68 & 70 Hammond Street, Thornbury • 3/89, 93 & 97 Kellett Street, Northcote • 115A, 115B, 115C & 128 Rathmines Street, Fairfield • 88 Speight Street, Thornbury • 88, 90, 92-96, 98-100, 99, 99A, 101, 102, 103, 103A, 104, 105, 106, 107, 108, 109, 110, 111, 111A, 1/112, 113, 115, 115A, 116, 117A, 117B, 118, 119A, 119B, 120, 122, 122A, 122B, 123, 125, 126, 127, 128, 130, 131, 131A, 132, 134, 134A, 136, 136A, 138 & 140-142 Station Street, Fairfield • 17 & 19 Tower Avenue, Alphington • 220 & 222 Wingrove Street, Fairfield **Community Infrastructure Flooded** **Fairfield Main Drain**	VicSES to respond to RFA's as requested on a case-by-case basis. Kindergarten to implement emergency evacuation plan as required

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• St Andrews Uniting Kindergarten, Duncan Street, Fairfield, access from Duncan Street flooded • St Andrews Uniting Church, Gillies Street, Fairfield, access from Duncan Street flooded • Railway underpass east of Fairfield Railway Station flooded **Kellett Street Main Drain** • Northcote Junior Football Club, McDonnell Park, Clifton Street Northcote **Water Over Road (above 300mm depth)** **Fairfield Main Drain** • Austin Street, Alphington • Christmas Street, Northcote • Clyde Street, Thornbury • Darebin Road, Thornbury • Duncan Street, Fairfield • Fairfield Road, Alphington • Gooch Street, Thornbury • Hammond Street, Thornbury • Jenkins Street, Northcote • Mitchell Street, Northcote • Rathmines Street, Thornbury • Rossmoyne Street, Thornbury • Speight Street, Thornbury • Station Street, Thornbury • Wilmoth Street, Thornbury • Wingrove Street, Fairfield **Kellett Street Main Drain** • Clifton Street, Northcote • Gillies Street, Fairfield • Kellett Street, Northcote • Wilmoth Street, Northcote	Rail to contact their maintenance crew to pump out underpass Council to provide road and path closure signage as required

Table C5.7 – Breakdown of possible consequences at various rainfall intensities around Fairfield with operational considerations

APPENDIX C6 - THREAT OF FLOODING AROUND DAREBIN CREEK'S STORMWATER TRIBUTARIES

Overview of Flooding Consequences

This Summary table is generated from Victorian Government data. The State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons access this information should make appropriate enquiries to assess the currency of the data.

Summary of Consequences in a 1% AEP (100yr ARI) flood along Merri Creek's stormwater tributaries in Darebin					
Property					
Properties	**139**				
Residential	109				
Commercial	0				
Industrial	27				
Public Land	3				
Rural	0				
Community Infrastructure					
Health Facilities	1	Blake Street Community Health Service			
Child Care / Kindergartens	1	Blake Street Kindergarten			
Schools / Colleges	3	Preston North East Primary School; Northern School-Autism; & Victorian School of Languages & Distance Education			
Essential Infrastructure					
Major Roads	3	Albert Street; Bell Street; & Broadway			
Bus Routes	7	301; 382; 552; 555; 556; 561; 567			
Drainage Facilities	1	H.L.T. Oulton Reserve R.B.			
Sewerage Facilities	6	Emergency Relief Points			
Tourism / Recreation					
Sports Facilities	1	Kingsbury Bowls Club			
Recreation Facilities	1	Reservoir Leisure Centre			
Government Boundaries					
Local Gov't Areas	1	Darebin	CMA	1	Port Phillip & Westernport
Adjacent LGAs	1	Banyule	CFA District	0	
SES Unit Area	1	Heidelberg	FRV District	1	Northern

Table C6.1 – Consequence Summary of 1% AEP flood along Darebin Creek's stormwater tributaries in Darebin

Fairfield, Alphington and the eastern sides of Reservoir, Preston and Thornbury are located approximately 6-10km north of Melbourne in an established urban environment. Darebin Creek forms the eastern boundary to these suburbs with water flowing south from the City of Whittlesea before joining up with the Yarra River in Alphington. Drains in the City of Darebin that feed into Darebin Creek include Broadway Drain, Steane Street Drain, Bell Street Main Drain and Quarry Street Drain.

The H.L.T. Oulton Retarding Basin is located on Power Street in Preston. Constructed in 2007 to reduce flooding impacts in the area, it is expected to protect to the 1% AEP level.

High intensity, short duration rainfall events can cause flash flooding in and around this region, while prolonged rainfall events may cause Darebin Creek to flood. The terrain around Reservoir is undulating, causing moderate water movement in short duration, high intensity rainfall events. Preston, Thornbury, Fairfield and Alphington lay on fairly flat terrain, which sees overland flow paths spread out over a wide area. Water will generally be slow moving as it spreads and may sit for a number of days before dissipating.

Most stormwater drains in the area were originally designed to meet the 20% AEP (5-year ARI) standard and many of the Municipality's drainage lines lack a continuous and unobstructed overland flow path to cater for flows in excess of capacity of the piped system.

Gauges and Warnings

Whilst there are gauges within the municipality, Melbourne Water does not provide any flood warning service at this point, due to the generally short warning times available.

Gauge	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Reference
Darebin Creek at Bundoora	229612A	South bank of Creek in Norris Bank Reserve, northern side of Settlement Road	✓	✓	9 G12
Darebin Creek at Bell Street, Ivanhoe	229403B	West bank of creek, northern side of Bell Street Bridge, Preston	✓	✓	31 D2
Preston Rain Gauge	586011	Preston Reservoirs, 881 High Street, Reservoir		✓	18 G7

Table C6.2 – Gauges around Darebin Creek's stormwater Tributaries in Darebin

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx. The Bureau of Meteorology's website also links a number of these gauges at: http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDV60201.html. It is advised that residents monitor the Bureau of Meteorology's website http://www.bom.gov.au/vic/warnings/index.shtml?ref=hdr and the VicEmergency website https:/emergency.vic.gov.au/ for any thunderstorm, flood or severe weather warnings present for their area.

Areas of Flood Risk

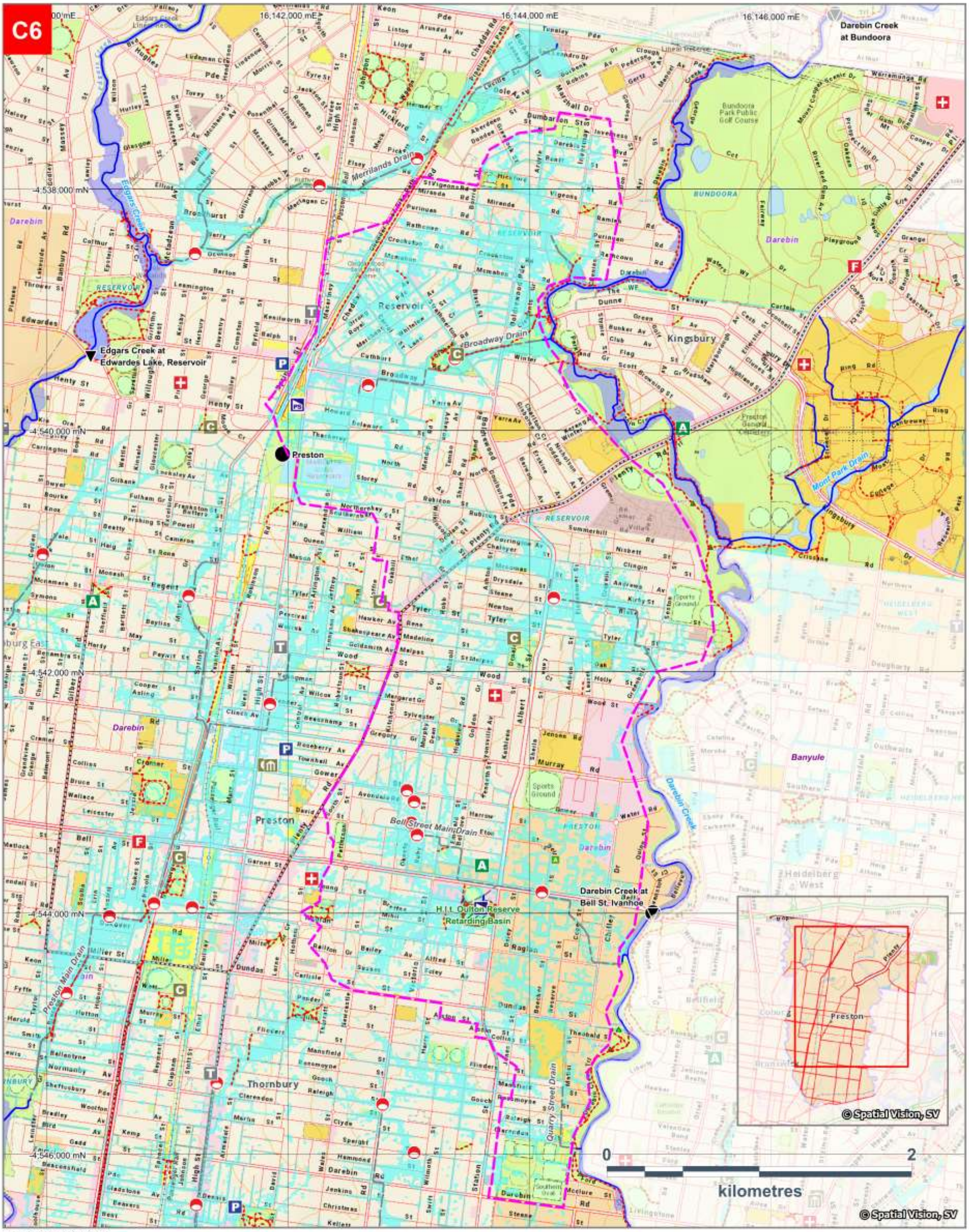


Figure A6 – Areas of flood risk around Reservoir, Preston, Thornbury and Alphington in the City of Darebin and area covered by this appendix

Properties at Flood Risk

Properties listed in the table below are at risk from flooding over-floor along Darebin Creek's stormwater tributaries. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Broadway Drain, Steane Street Drain and Quarry Street Drain (Melbourne Water and Cardno, January 2013) and the Bell Street Main Drain (CLT, December 2008) flood mapping and risk assessment programs.

This Property Flood Risk Table is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victoria State Emergency Service. No liability is accepted for any damage, loss or injury caused by errors or omissions in this information or for any action taken by any person in reliance upon it.

Properties at risk from Flooding over-floor along Darebin Creek's stormwater Tributaries in Darebin

Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	1/204 Albert Street	Reservoir	Steane Street Drain	Flash
		✓	2/204 Albert Street	Reservoir	Steane Street Drain	Flash
		✓	3/204 Albert Street	Reservoir	Steane Street Drain	Flash
✓	✓	✓	61 Andrews Avenue	Reservoir	Steane Street Drain	Flash
✓	✓	✓	61A Andrews Avenue	Reservoir	Steane Street Drain	Flash
✓	✓	✓	1/63 Andrews Avenue	Reservoir	Steane Street Drain	Flash
✓	✓	✓	2/63 Andrews Avenue	Reservoir	Steane Street Drain	Flash
✓	✓	✓	3/63 Andrews Avenue	Reservoir	Steane Street Drain	Flash
✓	✓	✓	4/63 Andrews Avenue	Reservoir	Steane Street Drain	Flash
✓	✓	✓	5/63 Andrews Avenue	Reservoir	Steane Street Drain	Flash
✓	✓	✓	6/63 Andrews Avenue	Reservoir	Steane Street Drain	Flash
		✓	64 Andrews Avenue	Reservoir	Steane Street Drain	Flash
✓	✓	✓	19 Bell Street	Preston	Bell Street Main Drain	Flash
✓	✓	✓	1/23 Bell Street	Preston	Bell Street Main Drain	Flash
✓	✓	✓	2/23 Bell Street	Preston	Bell Street Main Drain	Flash
✓	✓	✓	3/23 Bell Street	Preston	Bell Street Main Drain	Flash
✓	✓	✓	4/23 Bell Street	Preston	Bell Street Main Drain	Flash
✓	✓	✓	5/23 Bell Street	Preston	Bell Street Main Drain	Flash
✓	✓	✓	5A/23 Bell Street	Preston	Bell Street Main Drain	Flash
✓	✓	✓	6/23 Bell Street	Preston	Bell Street Main Drain	Flash
✓	✓	✓	29 Bell Street	Preston	Bell Street Main Drain	Flash
✓	✓	✓	110 Bell Street	Preston	Bell Street Main Drain	Flash
		✓	128 Bell Street	Preston	Bell Street Main Drain	Flash
		✓	134 Bell Street	Preston	Bell Street Main Drain	Flash
		✓	138 Bell Street	Preston	Bell Street Main Drain	Flash
		✓	142 Bell Street	Preston	Bell Street Main Drain	Flash
		✓	144 Bell Street	Preston	Bell Street Main Drain	Flash
		✓	146 Bell Street	Preston	Bell Street Main Drain	Flash
		✓	148 Bell Street	Preston	Bell Street Main Drain	Flash
		✓	194-202 Bell Street	Preston	Bell Street Main Drain	Flash
		✓	204 Bell Street	Preston	Bell Street Main Drain	Flash

Properties at risk from Flooding over-floor along Darebin Creek's stormwater Tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	206 Bell Street	Preston	Bell Street Main Drain	Flash
		✓	208 Bell Street	Preston	Bell Street Main Drain	Flash
		✓	68A Blake Street	Reservoir	Steane Street Drain	Flash
		✓	76 Blake Street	Reservoir	Steane Street Drain	Flash
		✓	1/92-94 Blake Street	Reservoir	Steane Street Drain	Flash
		✓	2/92-94 Blake Street	Reservoir	Steane Street Drain	Flash
		✓	3/92-94 Blake Street	Reservoir	Steane Street Drain	Flash
		✓	4/92-94 Blake Street	Reservoir	Steane Street Drain	Flash
		✓	5/92-94 Blake Street	Reservoir	Steane Street Drain	Flash
		✓	6/92-94 Blake Street	Reservoir	Steane Street Drain	Flash
	✓	✓	125 Blake Street	Reservoir	Steane Street Drain	Flash
	✓	✓	112 Boldrewood Parade	Kingsbury	Broadway Drain	Flash
		✓	154 Broadway	Reservoir	Broadway Drain	Flash
		✓	156 Broadway	Reservoir	Broadway Drain	Flash
		✓	179 Broadway	Reservoir	Broadway Drain	Flash
		✓	1/2 Burkitt Court	Preston	Steane Street Drain	Flash
		✓	2/3 Burkitt Court	Preston	Steane Street Drain	Flash
		✓	19/13 Chaleyer Street	Reservoir	Steane Street Drain	Flash
		✓	20/13 Chaleyer Street	Reservoir	Steane Street Drain	Flash
		✓	21/13 Chaleyer Street	Reservoir	Steane Street Drain	Flash
		✓	22/13 Chaleyer Street	Reservoir	Steane Street Drain	Flash
		✓	25/13 Chaleyer Street	Reservoir	Steane Street Drain	Flash
	✓	✓	2 Cope Street	Preston	Bell Street Main Drain	Flash
✓	✓	✓	5 Cope Street	Preston	Bell Street Main Drain	Flash
		✓	1/19-23 Crevelli Street	Reservoir	Steane Street Drain	Flash
		✓	2/19-23 Crevelli Street	Reservoir	Steane Street Drain	Flash
		✓	3/19-23 Crevelli Street	Reservoir	Steane Street Drain	Flash
		✓	4/19-23 Crevelli Street	Reservoir	Steane Street Drain	Flash
		✓	5/19-23 Crevelli Street	Reservoir	Steane Street Drain	Flash
		✓	6/19-23 Crevelli Street	Reservoir	Steane Street Drain	Flash
✓	✓	✓	1/25-31 Crevelli Street	Reservoir	Steane Street Drain	Flash
✓	✓	✓	2/25-31 Crevelli Street	Reservoir	Steane Street Drain	Flash
✓	✓	✓	3/25-31 Crevelli Street	Reservoir	Steane Street Drain	Flash
✓	✓	✓	4/25-31 Crevelli Street	Reservoir	Steane Street Drain	Flash
✓	✓	✓	5/25-31 Crevelli Street	Reservoir	Steane Street Drain	Flash
✓	✓	✓	6/25-31 Crevelli Street	Reservoir	Steane Street Drain	Flash
		✓	45 Cuthbert Road	Reservoir	Broadway Drain	Flash
		✓	51 Cuthbert Road	Reservoir	Broadway Drain	Flash
		✓	8 Dennis Street	Reservoir	Broadway Drain	Flash
	✓	✓	11 Dennis Street	Reservoir	Broadway Drain	Flash
		✓	1/6 Drysdale Street	Reservoir	Steane Street Drain	Flash
		✓	2/6 Drysdale Street	Reservoir	Steane Street Drain	Flash
	✓	✓	181 Dunne Street	Kingsbury	Broadway Drain	Flash

Properties at risk from Flooding over-floor along Darebin Creek's stormwater Tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	4/5 Dunolly Crescent	Reservoir	Broadway Drain	Flash
		✓	4 Eisenhower Street	Reservoir	Steane Street Drain	Flash
	✓	✓	30 Eisenhower Street	Reservoir	Steane Street Drain	Flash
		✓	1/36-38 Eisenhower Street	Reservoir	Steane Street Drain	Flash
		✓	2/36-38 Eisenhower Street	Reservoir	Steane Street Drain	Flash
✓	✓	✓	5/36-38 Eisenhower Street	Reservoir	Steane Street Drain	Flash
	✓	✓	13/36-38 Eisenhower Street	Reservoir	Steane Street Drain	Flash
	✓	✓	14/36-38 Eisenhower Street	Reservoir	Steane Street Drain	Flash
		✓	1/9-11 Elm Street	Preston	Steane Street Drain	Flash
		✓	2/9-11 Elm Street	Preston	Steane Street Drain	Flash
		✓	3/9-11 Elm Street	Preston	Steane Street Drain	Flash
		✓	4/9-11 Elm Street	Preston	Steane Street Drain	Flash
		✓	5/9-11 Elm Street	Preston	Steane Street Drain	Flash
		✓	6/9-11 Elm Street	Preston	Steane Street Drain	Flash
		✓	1/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	2/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	3/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	4/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	5/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	6/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	7/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	8/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	9/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	10/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	11/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	12/19-27 Elm Street	Preston	Steane Street Drain	Flash
		✓	2/12 Evans Crescent	Reservoir	Broadway Drain	Flash
		✓	3/12 Evans Crescent	Reservoir	Broadway Drain	Flash
		✓	1B Fordham Road	Reservoir	Broadway Drain	Flash
✓	✓	✓	1A Fordham Road	Reservoir	Broadway Drain	Flash
✓	✓	✓	305 Gooch Street	Thornbury	Quarry Street Drain	Flash
	✓	✓	17 Greenbelt Avenue	Preston	Steane Street Drain	Flash
		✓	41 Kirby Street	Reservoir	Steane Street Drain	Flash
✓	✓	✓	62A Kirby Street	Reservoir	Steane Street Drain	Flash
✓	✓	✓	62B Kirby Street	Reservoir	Steane Street Drain	Flash
		✓	63B Kirby Street	Reservoir	Steane Street Drain	Flash
		✓	63A Kirby Street	Reservoir	Steane Street Drain	Flash
		✓	1/65 Kirby Street	Reservoir	Steane Street Drain	Flash
		✓	2/65 Kirby Street	Reservoir	Steane Street Drain	Flash
		✓	1/69-71 Kirby Street	Reservoir	Steane Street Drain	Flash
		✓	2/72 Kirby Street	Reservoir	Steane Street Drain	Flash
		✓	8/72 Kirby Street	Reservoir	Steane Street Drain	Flash
		✓	9/72 Kirby Street	Reservoir	Steane Street Drain	Flash

Properties at risk from Flooding over-floor along Darebin Creek's stormwater Tributaries in Darebin						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	10/72 Kirby Street	Reservoir	Steane Street Drain	Flash
		✓	11/72 Kirby Street	Reservoir	Steane Street Drain	Flash
	✓	✓	13/72 Kirby Street	Reservoir	Steane Street Drain	Flash
		✓	1/73 Kirby Street	Reservoir	Steane Street Drain	Flash
		✓	1/75 Kirby Street	Reservoir	Steane Street Drain	Flash
	✓	✓	4/75 Kirby Street	Reservoir	Steane Street Drain	Flash
✓	✓	✓	6/75 Kirby Street	Reservoir	Steane Street Drain	Flash
	✓	✓	8/75 Kirby Street	Reservoir	Steane Street Drain	Flash
	✓	✓	7 Newton Street	Reservoir	Steane Street Drain	Flash
		✓	13 Newton Street	Reservoir	Steane Street Drain	Flash
		✓	6-11 Nunan Place	Reservoir	Steane Street Drain	Flash
✓	✓	✓	6-12 Raglan Street	Preston	Bell Street Main Drain	Flash
		✓	363-367 Rossmoyne Street	Thornbury	Quarry Street Drain	Flash
		✓	369-371 Rossmoyne Street	Thornbury	Quarry Street Drain	Flash
	✓	✓	2 Steane Street	Reservoir	Steane Street Drain	Flash
		✓	61 Tyler Street	Preston	Steane Street Drain	Flash
		✓	63 Tyler Street	Preston	Steane Street Drain	Flash
		✓	1/65-67 Tyler Street	Preston	Steane Street Drain	Flash
		✓	2/75 Tyler Street	Preston	Steane Street Drain	Flash
	✓	✓	80 Tyler Street	Reservoir	Steane Street Drain	Flash
	✓	✓	93 Tyler Street	Preston	Steane Street Drain	Flash
		✓	12/100 Tyler Street	Preston	Steane Street Drain	Flash
Totals						
32	48	139				

Table C6.3 – Properties at risk of flooding over-floor along Darebin Creek's stormwater tributaries in Darebin

Isolation

No major isolation risks exist for areas around Reservoir, Preston, Thornbury and Alphington during a 1% AEP (100yr ARI) event. Some localised short-duration isolation may occur due to flash flooding.

Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. http://ptv.vic.gov.au/live-travel-updates/. A map of Public Transport routes within the City of Darebin is available via the website at: https://www.ptv.vic.gov.au/assets/PTV-default-site/more/maps/Local-area-maps/Metropolitan/12_Darebin_LAM_July-2022-NN.pdf

Apart from the roads outlined below, all other essential infrastructure and services areas around Reservoir, Preston, Thornbury and Alphington are expected to remain unaffected by flooding during a 1% AEP (100yr ARI) event.

Road Closures

The following roads are subject to closure during flooding around Reservoir, Preston, Thornbury and Alphington. Check the VicRoads website for more details: http://alerts.vicroads.vic.gov.au/

Department of Transport (VicRoads) Roads likely flooded in a 1% AEP (100yr ARI) event
• Broadway, Reservoir westbound between O'Dowd Street and Lindsay Street
• Albert Street, Reservoir between Newton Street and Chaleyer Street
• Bell Street, Preston between O'Keefe and Cope Street
• Albert Street, Preston between Bell Street and Ovando Street

Table C6.4 – Department of Transport (VicRoads) Possible Road Closures during a flooding event

Darebin City Council Roads flooded in a 1% AEP (100yr ARI) event			
PRESTON	• Lahinch Street	• Tyler Street	• Eisenhower Street
• Beecher Street	• Laurel Street	**RESERVIOR**	• Fordham Road
• Belgrove Street	• Neale Street	• Boldrewood Parade	• Kirby Street
• Daley Street	• Nichol Street	• Centre Street	• McComas Street
• David Street	• O'Keefe Street	• Clarke Street	• Newton Street
• Donald Street	• Ovando Street	• Clements Grove	**THORNBURY**
• Elm Street	• Raglan Street	• Cuthbert Road	• Clarendon Street
• Fink Street	• Rene Street	• Dennis Street	• Mansfield Street
• Greenbelt Avenue	• Rennick Street	• Drysdale Street	• Raleigh Street
• Kerr Street	• Ruby Street	• Dunne Street	• Sparks Avenue

Table C6.5 – Darebin City Council Possible Road Closures during a flash flooding event

Flood Mitigation – Darebin's Stormwater Tributaries

Retarding Basins

Melbourne Water Retarding Basin	On Drain/ Waterway	Area	Storage Capacity	Spillway Crest Level	Full Supply Level	Embankment Crest Level	ANCOLD Hazard Rating	Houses In Flow Path (dam breach)	Melway Reference
H.L.T Oulton Reserve RB	Power Street Drain	27,537m^2	25Ml	N/A	Unavailable	In cut	Very Low	0	30 K2

Table C6.6 – Melbourne Water Retarding Basins around Darebin Creek's stormwater tributaries in the City of Darebin

Darebin City Council Retarding Basin	Location	Area	Melway Reference
H.L.T Oulton Reserve	SE corner H.L.T Oulton Reserve	700m^2	31 A2

Table C6.7 – Darebin City Council Retarding Basins around Darebin Creek's stormwater tributaries

A reserve along Broadway Main Drain may hold a large amount of stormwater during an event.

Reserve / Park	On Drain / Waterway	Location	Melway Reference
TW Andrews Park	Broadway Main Drain	Cuthbert Road, Reservoir	18 K5
John Cain Memorial Park	Quarry Street Drain	Clarendon Street Thornbury	31 A6

Table C6.8 – Parks and Reserves along Darebin Creek's stormwater tributaries in the City of Darebin

No formal Pumping Stations or Levees exist around Broadway, Steane Street, Bell Street and Quarry Street Main Drains in Darebin.

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located around Darebin Creek's stormwater tributaries is contained within the following table. To view their locations, view mapping in **Appendix F**.

Sewer Emergency Relief Points

On Drain / Waterway	Owner	Location	Melway Reference
Bell Street Main Drain	Yarra Valley Water	92 Bell Street, Preston	31 B2
Bell Street Main Drain	Yarra Valley Water	Little Ruby Street, Preston	30 K1
Bell Street Main Drain	Yarra Valley Water	29C O'Keefe Street, Preston	30 J1
Broadway Drain	Yarra Valley Water	Dennis Street, Reservoir	18 J6
Broadway Drain	Yarra Valley Water	Reserve at 2 Cuthbert Road, Reservoir	18 K5
Steane Street Drain	Yarra Valley Water	208 Albert Street, Reservoir	19 B9

Table C6.9 – Sewer Emergency Relief Points around Darebin Creek's stormwater tributaries

Control, Command and Coordination

VICSES will assume overall control of the response to flood incidents. Control and coordination of a flood incident shall be carried out at the lowest effective level and in accordance with the SEMP. During significant events, VICSES will conduct incident management using multi-agency resources.

Flood Impacts & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along Darebin Creek's stormwater tributaries at various rain totals within Darebin. These tables are to be used only as a guide as no two floods at a location will have identical impacts.

Intelligence Cards have been included for the following locations:

- Darebin Creek's Stormwater Tributaries

FLOOD INTELLIGENCE CARD – DAREBIN CREEK'S STORMWATER TRIBUTARIES (UNGAUGED)

Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.

This Flood Intelligence Card publication is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victoria State Emergency Service. No liability is accepted for any damage, loss or injury caused by errors or omissions in this information or for any action taken by any person in reliance upon it. ***Scan the QR code for the current levels for this gauge.***

CLOSEST RAIN GAUGE:	**Darebin Creek at Bell Street, Ivanhoe**
LOCATION:	**West bank of creek, northern side of Bell Street Bridge, Preston**
RECENT RAINFALL:	**https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/229403A**

GAUGE NUMBER	**229403B**
GAUGE TYPE	**Stream Level & Rain**
MELWAY REFERENCE:	**31 D2**

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	**Annual Exceedance Probability (% AEP)**	**Consequence / Impact**	**Operational Considerations**
11mm in 10 mins; 19mm in 30 mins; 24mm in 1 hour; 30mm in 2 hours; 33mm in 3 hours; or 42mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	20% AEP (5-year ARI)	**Properties at Flood Risk (over-floor)** **32 Properties in Total** **Bell Street Main Drain** • 19, 1/23, 2/23, 3/23, 4/23, 5/23, 5A/23, 6/23, 29 & 110 Bell Street, Preston • 5 Cope Street, Preston • 6-12 Raglan Street, Preston **Broadway Drain** • 1A Fordham Road, Reservoir **Quarry Street Drain** • 305 Gooch Street, Thornbury **Steane Street Drain** • 61, 61A, 1/63, 2/63, 3/63, 4/63, 5/63 & 6/63 Andrews Avenue, Reservoir • Units 1-6/25-31 Crevelli Street, Reservoir • 5/36-38 Eisenhower Street, Reservoir • 62A, 62B & 6/75 Kirby Street, Reservoir **Community Infrastructure Likely Flooded** **Broadway Drain**	VicSES State and Region to provide warnings to the community and other agencies. VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The North West Metro Regional Duty Officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident. VicSES to respond to RFA's as requested on a case-by-case basis. VicSES to respond to RFA's as requested on a case-by-case basis.

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• Reservoir Leisure Centre, Cuthbert Road, Reservoir, car park flooded	
17mm in 10 mins; 27mm in 30 mins; 34mm in 1 hour; 41mm in 2 hours; 46mm in 3 hours; or 57mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	5% AEP (20-year ARI)	**Properties at Flood Risk (over-floor)** **48 Properties in Total** **Bell Street Main Drain** • 19, 1/23, 2/23, 3/23, 4/23, 5/23, 5A/23, 6/23, 29 & 110 Bell Street, Preston • 2 & 5 Cope Street, Preston • 6-12 Raglan Street, Preston **Broadway Drain** • 112 Boldrewood Parade, Kingsbury • 11 Dennis Street, Reservoir • 181 Dunne Street, Kingsbury • 1A Fordham Road, Reservoir **Quarry Street Drain** • 305 Gooch Street, Thornbury **Steane Street Drain** • 61, 61A, 1/63, 2/63, 3/63, 4/63, 5/63 & 6/63 Andrews Avenue, Reservoir • 125 Blake Street, Reservoir • Units 1-6/25-31 Crevelli Street, Reservoir • 30, 5/36-38, 13/36-38 & 14/36-38 Eisenhower Street, Reservoir • 17 Greenbelt Avenue, Preston • 62A, 62B, 13/72, 4/75, 6/75 & 8/75 Kirby Street, Reservoir • 7 Newton Street, Reservoir • 2 Steane Street, Reservoir • 80 & 93 Tyler Street, Preston **Community Infrastructure Likely Flooded** **Steane Street Drain** • Preston North East Primary School, Tyler Street, Preston • Northern School- Autism, Tyler Street Reservoir • City of Darebin Blake Street Kindergarten, Blake Street, Reservoir • City of Darebin Community Health Service, Blake Street, Reservoir • Senior Citizens Centre, Donald Street, Preston may have access restricted with flooding along Donald Street **Broadway Drain** • Reservoir Leisure Centre, Cuthbert Road, Reservoir carpark flooded • Kingsbury Bowls Club, Dunne Street, Kingsbury **Water Over Road (Moderate to High Flood Hazard rating)**	VicSES to respond to RFA's as requested on a case-by-case basis. Primary school to implement evacuation plan if required. Council to provide road and path closure signage as required.

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		Broadway Drain • Broadway, Reservoir • Cuthbert Road, Reservoir **Steane Street Drain** • Albert Street, Reservoir • Donald Street, Preston • Drysdale Street, Reservoir • Eisenhower Street, Reservoir **Bell Street Main Drain** • Nichol Street, Preston **Quarry Street Drain** • Clarendon Street, Thornbury	
25mm in 10 mins; 40mm in 30 mins; 49mm in 1 hour; 57mm in 2 hours; 65mm in 3 hours; or 80mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	1% AEP (100-year ARI)	**Properties at Flood Risk (over-floor)** **139 Properties in Total** **Bell Street Main Drain** • 19, 1/23, 2/23, 3/23, 4/23, 5/23, 5A/23, 6/23, 29, 110, 128, 134, 138, 142, 144, 146, 148, 194-202, 204, 206 & 208 Bell Street, Preston • 2 & 5 Cope Street, Preston • 6-12 Raglan Street, Preston **Broadway Drain** • 112 Boldrewood Parade, Kingsbury • 154, 156 & 179 Broadway, Reservoir • 45 & 51 Cuthbert Road, Reservoir • 8 & 11 Dennis Street, Reservoir • 181 Dunne Street, Kingsbury • 4/5 Dunolly Crescent, Reservoir • 2/12 & 3/12 Evans Crescent, Reservoir • 1B & 1A Fordham Road, Reservoir **Quarry Street Drain** • 305 Gooch Street, Thornbury • 363-367 & 369-371 Rossmoyne Street, Thornbury **Steane Street Drain** • 1/204, 2/204 & 3/204 Albert Street, Reservoir • 61, 61A, 1/63, 2/63, 3/63, 4/63, 5/63, 6/63 & 64 Andrews Avenue, Reservoir • 68A, 76, 1/92-94, 2/92-94, 3/92-94, 4/92-94, 5/92-94, 6/92-94 & 125 Blake Street, Reservoir • 1/2 & 2/3 Burkitt Court, Preston • 19/13, 20/13, 21/13, 22/13 & 25/13 Chaleyer Street, Reservoir	VicSES to respond to RFA's as requested on a case-by-case basis.

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• Units 1-6/19-23 & Units 1-6/25-31 Crevelli Street, Reservoir • 1/6 & 2/6 Drysdale Street, Reservoir • 4, 30, 1/36-38, 2/36-38, 5/36-38, 13/36-38 & 14/36-38 Eisenhower Street, Reservoir • Units 1-6/9-11 & Units 1-12/19-27 Elm Street, Preston • 17 Greenbelt Avenue, Preston • 41, 62A, 62B, 63B, 63A, Units 1-2/65, 1/69-71, 2/72, Units 8-11/72, 13/72, 1/73, 1/75, 4/75, 6/75 & 8/75 Kirby Street, Reservoir • 7 & 13 Newton Street, Reservoir • 6-11 Nunan Place, Reservoir • 2 Steane Street, Reservoir • 61, 63, 1/65-67, 2/75, 80, 93 & 12/100 Tyler Street, Preston **Community Infrastructure Likely Flooded** **Steane Street Drain** • Preston North East Primary School, Tyler Street, Preston • Northern School- Autism, Tyler Street Reservoir • City of Darebin Blake Street Kindergarten, Blake Street, Reservoir • City of Darebin Community Health Service, Blake Street, Reservoir **Broadway Drain** • Reservoir Leisure Centre, Cuthbert Road, Reservoir carpark flooded • Kingsbury Bowls Club, Dunne Street, Kingsbury **Quarry Street Drain** • Victorian School of Languages and Distance Education, Clarendon Street, Thornbury **Water Over Road (Moderate to High Flood Hazard rating)** **Broadway Drain** • Broadway, Reservoir • Boldrewood Parade, Reservoir • Clements Grove, Reservoir • Cuthbert Road, Reservoir • Fordham Road, Reservoir • Dunne Street, Reservoir • Dennis Street, Reservoir • Clarke Street, Reservoir • Centre Street, Reservoir **Steane Street Drain** • Albert Street, Reservoir • Eisenhower Street, Reservoir • Donald Street, Preston • Drysdale Street, Reservoir	Primary school to implement evacuation plan if required. Council to provide road and path closure signage as required.

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• Greenbelt Avenue, Preston • Laurel Street, Preston • McComas Street, Reservoir • Newton Street, Reservoir • Rene Street, Preston • Tyler Street, Preston **Bell Street Main Drain** • Albert Street, Preston • Bell Street, Preston • David Street, Preston • Neale Street, Preston • Nichol Street, Preston • O'Keefe Street, Preston • Ovando Street, Preston • Raglan Street, Preston **Quarry Street Drain** • Clarendon Street, Thornbury • Raleigh Street, Thornbury • Sparks Avenue, Thornbury	

Table C6.10 – Breakdown of possible consequences at various rainfall intensities around Darebin Creek's stormwater Tributaries with operational considerations

APPENDIX D - FLOOD EVACUATION ARRANGEMENTS

Phase 1 - Decision to Evacuate

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

- Properties are likely to become inundated;
- Properties are likely to become isolated and occupants are not suitable for isolated conditions;
- Public health is at threat as a consequence of flooding and evacuation is considered the most effective risk treatment. This is the role of the Health Commander of the incident to assess and manage. Refer to the State Health Emergency Response Plan (SHERP) for details);
- Essential services have been damaged and are not available to a community and evacuation is considered the most effective risk treatment.
- The following should be considered when planning for evacuation:
- Anticipated flood consequences and their timing and reliability of predictions;
- Size and location of the community to be evacuated;
- Likely duration of evacuation;
- Forecast weather;
- Flood Models;
- Predicted timing of flood consequences;
- Time required to conduct the evacuation;
- Time 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;
- Resources required to conduct the evacuation;
- Resources available to conduct the evacuation;
- Shelter including Emergency Relief Centres, Assembly Areas etc.;
- Vulnerable people and facilities;
- Transportation;
- Registration
- People of CALD background and transient populations;
- Safety of emergency service personnel;
- Different stages of an evacuation process.

The 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).

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

Sector	Gauge	Trigger
Darebin Creek (Preston/ Thornbury/ Fairfield/ Alphington)	Settlement Rd, Bundoora (Mel Ref 9G12)	When flow rate reaches 81 m^3/s
	Bell St, Ivanhoe (Mel Ref 31D2)	When river height reaches 2.0 m and/or flow rate reached 126 m^3/s
Merri Creek (Preston/ Thornbury/ Northcote)	Bell St, Coburgh	When river height reaches 3.4 m and if rain continues
	St Georges Rd, Northcote	When river height reaches 3.8 m and if rain continues
Reservoir	Edgars Creek at Edwardes Lake, Reservoir (Mel Ref 18D5)	When flow rate reaches 80 m^3/s

The table below details time required to evacuate established areas.

Sector	Likely time required for evacuation (Including resource assumptions)
Darebin Creek (Preston/ Thornbury/ Fairfield/ Alphington)	3 – 6 hours
Merri Creek (Preston/ Thornbury/ Northcote)	5 – 10 hours

Phase 2 – Warning

Warnings may include a warning to prepare to evacuate and a warning to evacuate immediately. Once the decision to evacuate has been made, the at-risk community will be warned to evacuate. Evacuation warnings can be disseminated via methods listed in part 3 of this plan.

Evacuation warning messages will be developed and issued by VICSES in consultation with the MEMO, MERC, DHHS and other key agencies and expert advice (CMA's and Flood Intelligence specialists).

Phase 3 – Withdrawal

Withdrawal will be controlled by VicPol. VICSES will provide advice regarding most appropriate evacuation routes and locations for at-risk communities to evacuate to, etc.

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

VicPol will control security of evacuated areas.

Evacuees will be encouraged to move using their own transport where possible. Transport for those without vehicles or other means will be arranged by the Municipal Technical Resources Manager. Municipal resources shall be used in the first instance, prior to engaging private contractors.

The best possible evacuation routes to be determined based on the severity of the situation, availability of safe routes and means of transportation.

Landing zones for helicopters are located at:

- DISC/John Cain Memorial Park
- Northcote Park
- T.W Andrews Reserve
- I.W. Dole Reserve
- C.T. Barling Reserve.

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

Phase 4 – Shelter

Relief Centres and/or assembly areas which cater for people's basic needs for floods may be established to meet the immediate needs of people affected by flooding.

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

Potential flood relief centres and/or Assembly Area locations will be determined dependant on the location and size of the event in conjunction with the Council.

The following areas have been identified as temporary, short term staging areas for police and emergency services vehicles and personnel to access the site of the event. Council recognises that a control agency may request that a staging area will be established and that Council will support such a request as appropriate to the circumstances. Possible locations dependent on conditions are:

- DISC/John Cain Memorial Park
- Northcote Park
- T.W Andrews Reserve
- I.W. Dole Reserve
- C.T. Barling Reserve.

Animal Shelter

Animal shelter compounds will be established for domestic pets and companion animals at relief centres which are opened as required.

Phase 5 – Return

Return will be consistent with the Strategic Plan for the Return of Community

The IC 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, water treatment plant affecting potable water supplies etc.

Service	Impact	Trigger Point for Action	Strategy/Temporary Measures
Transport	Access to schools, community centres, business, etc	Road closure / Damage to Roads	Direct to use alternative routes as appropriate with proper signage
Transport	Supply of essential goods	Road closure / Damage to Roads	Resupply through transport of essential items to isolated community
Essential services (power, water, gas and liquid fuels)	Disruption to essential services	When predictions/intelligence indicates a likelihood of disruption to essential services	Providers of essential services are responsible for emergency plan and communication process. However, they should inform VICSES on updates during major flood events.

Essential Infrastructure and Property Protection

Essential Infrastructure and properties that may require protection are:

Facility	Impact	Trigger Point for action	Strategy/Temporary Measures
Preston Town Hall / Shire Hall, 274 Gower Street, Preston	Disruption to emergency management activities	When predictions/intelligence indicates a likelihood of inundation	Sandbagging Construction of temporary levees within appropriate approval framework
Operation Centre at 10, Carawa Dr, Reservoir	Disruption to emergency management activities	When predictions/intelligence indicates a likelihood of inundation	Sandbagging Construction of temporary levees within appropriate approval framework
Darebin Arts and Entertainment Centre, Cnr Bell & St Georges Road, Preston.	Disruption to emergency management activities	When predictions/intelligence indicates a likelihood of inundation	Sandbagging Construction of temporary levees within appropriate approval framework
Northcote Town Hall, 189 High Street, Northcote.	Disruption to emergency management activities	When predictions/intelligence indicates a likelihood of inundation	Sandbagging Construction of temporary levees within appropriate approval framework
Reservoir Community and Learning Centre – 23 Edwardes Street, Reservoir.	Disruption to emergency management activities	When predictions/intelligence indicates a likelihood of inundation	Sandbagging Construction of temporary levees within appropriate approval framework
Community Centres	Disruption to emergency management activities	When predictions/intelligence indicates a likelihood of inundation	Sandbagging Construction of temporary levees within appropriate approval framework
Preston Fire Station	Disruption to emergency management activities	When predictions/intelligence	Sandbagging

		indicates a likelihood of inundation	Construction of temporary levees within appropriate approval framework
Merri Creek Bridge, Heidelberg Rd, Northcote	Disruption to transport	When predictions/intelligence indicates a likelihood of inundation	Sandbagging Construction of temporary levees within appropriate approval framework
Northcote (Merri Creek) Bridge, High Street, Northcote	Disruption to transport	When predictions/intelligence indicates a likelihood of inundation	Sandbagging Construction of temporary levees within appropriate approval framework

Heritage sites within the City of Darebin may also need to be protected against flood where possible, due to its historical values.

City of Darebin will establish a sandbag collection point at the Operations Centre at 10, Carawa Dr, Reservoir in order to protect essential community infrastructure and property (not for residences and private business).

APPENDIX E - FLOOD WARNING SYSTEMS

Public Information and Warnings

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

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

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

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

VICSES at the state tier (or SCC Public Information Section) lead the issuing of warnings for severe weather and storm when pre-determined triggers are met and plays an important role in sharing riverine and flash flood information via state-based standard communication channels.

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

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

Local Flood Warning System Arrangements

There are no local flood warning systems or arrangements in place.

Upon receipt of a warning, VICSES has the responsibility to disseminate notifications and advice to the emergency services, affected communities, key support organisations and regional and/or area of operations and local levels.

VICSES shall provide the flood bulletins to the community through media and VICSES web site. Flood bulletins shall also be distributed to other Emergency Services Organisations.

VicRoads shall coordinate information regarding the closure of roads and will communicate this to VICSES and community.

Department of Health & Human Services shall coordinate information regarding public health and safety precautions.

APPENDIX F – MAPS

Overview

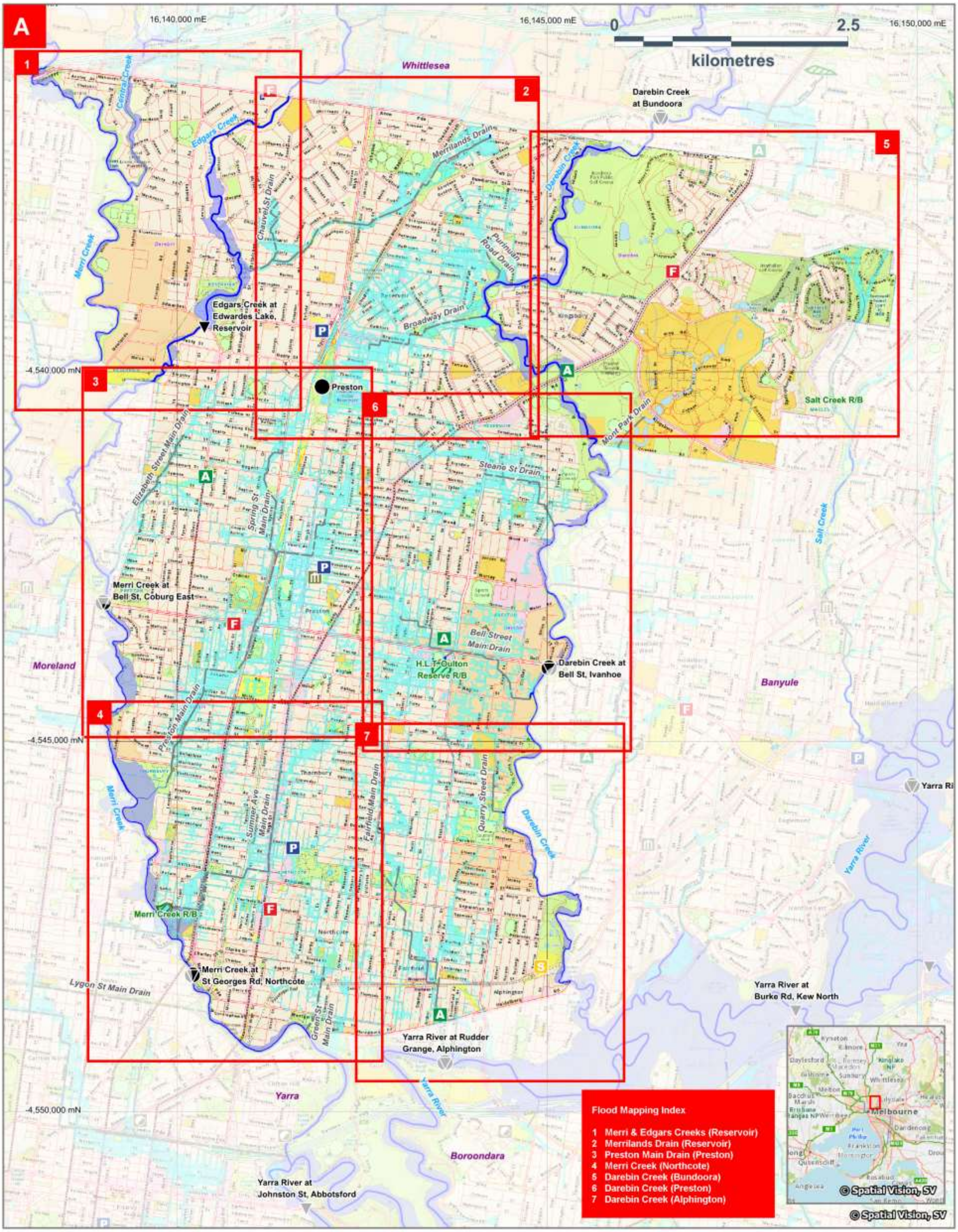
Maps considered useful to flood response are included in this Appendix. They include:

- A map outlining a series of flooding hot spot maps within the City of Darebin.
- A map showing the Municipal boundary together with the open waterways and underground stormwater drainage pipe network within the City of Darebin and the 1% AEP (100-year ARI) flood extents (sourced from Melbourne Water GIS).
- A set of 7 maps showing flooding risks within the City of Darebin together with the 1% AEP (100-year ARI) flood extents (sourced from the Melbourne Water GIS).
- Schematics detailing the drainage catchments relevant for this municipality.
    - Each Schematic outlines the drainage system comprising of rivers, creeks or storm-water drains contained within one of the major catchments in the Port Phillip and Westernport Region.
    - Within each Schematic, there are details useful to flood response, such as those relating to gauges, towns, rivers, creeks, drains and reservoirs. Historical facts and figures may also be shown.
    - The schematics also detail the response boundaries for VICSES units and local government, and provide a reference link to the corresponding MSFEP.
    - Details within these Catchment Schematics reflect those contained within either other sections of this MSFEP, or refer to other plans. These details have been filtered to contain only key facts. For more information on a gauge, drainage system or town consult the corresponding MSFEP.

Note that:

- The mapping/data provided in this Appendix has been developed from Melbourne Water and other sources and taken from historical records and flood modelling. It may not include more recent data or local anecdotal information. It is planned that the mapping/data be updated as further studies or modelling is completed and other Information obtained.
- Maps showing the Special Building Overlay and Land Subject to Inundation Overlay are included in the Darebin Planning Scheme can be used as a guide to areas that may flood during an event. The maps can be found in hard copy form at the Council's main office or online at the Department of Planning and Community Development website http://planningschemes.dpcd.vic.gov.au/.
- Maps showing 1 in 100-year ARI (1% AEP) flood extents and floodways (together with volume, height and water quality data) are shown at DEECA's mapshare website http://mapshare.maps.vic.gov.au/MapShareVic/index.html?viewer=MapShareVic.PublicSite&locale=en-AU

City of Darebin Municipal Maps (sourced Melbourne Water GIS)



Map Produced by VICSES June 2022

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CITY OF DAREBIN

Version 4: June 2022

A - Flood Mapping Index

- 1% AEP Flash Flood Extent
- 1% AEP Riverine Flood Extent
- Melbourne Water Retarding Basin
- Melbourne Water Stormwater Drain
- Waterway
- Flood Mapping Border
- Stream Level Gauge
- Rain Gauge
- State Emergency Service
- Municipal Office
- Police Station
- Fire Station
- Ambulance Station

LAND USE

- Residential
- Commercial and Business
- Industrial
- Public Parks / Cemeteries / Recreation
- Utilities and Local Government Facilities
- Education

SES VICTORIA Melbourne Water

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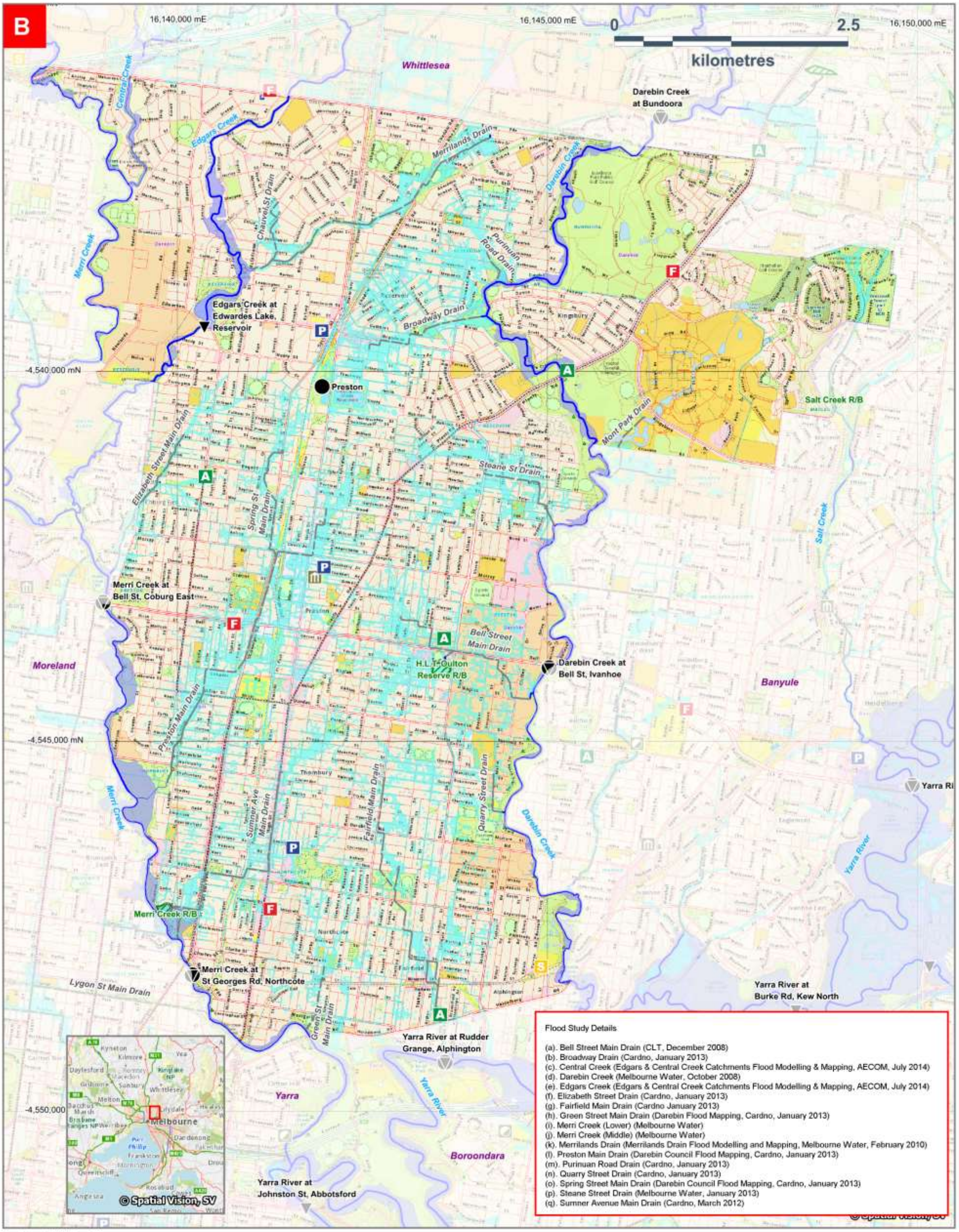

Map Produced by VICSES June 2022

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CITY OF DAREBIN

Version 4: June 2022

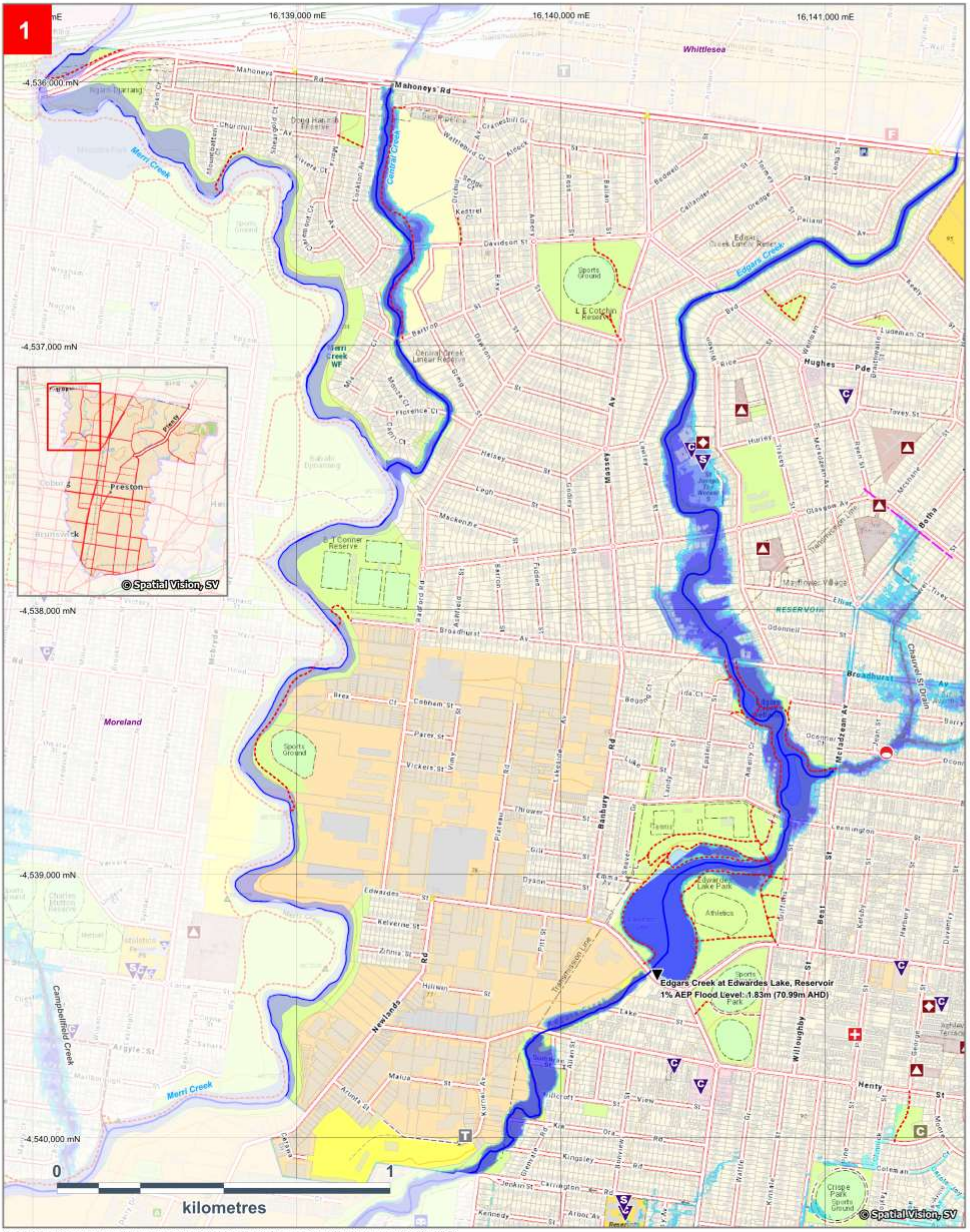
B. 1% AEP (100yr ARI) Flood Mapping

- 1% AEP Flash Flood Extent
- 1% AEP Riverine Flood Extent
- Melbourne Water Retarding Basin
- Melbourne Water Stormwater Drain
- Waterway
- Stream Level Gauge
- Rain Gauge
- State Emergency Service
- Municipal Office
- Police Station
- Fire Station
- Ambulance Station

LAND USE

- Residential
- Commercial and Business
- Industrial
- Public Parks / Cemeteries / Recreation
- Utilities and Local Government Facilities
- Education

Flood Extent Maps (sourced Melbourne Water GIS)



Merri Creek flood modelling completed by Melbourne Water. Edgars Creek flood modelling completed by AECOM, July 2014. Map produced by VICSES June 2022.

N

CITY OF DAREBIN

1% AEP (100yr ARI) Flooding

1. Merri Creek & Edgars Creek (Reservoir)

- Building
- 1% AEP Riverine Flood Extent (Depth Unavailable)

1% AEP Flood Depth

- Greater than 60cm
- Between 30cm and 60cm
- Between 5cm and 30cm
- Waterway
- Melbourne Water Underground Drain
- Bicycle / Walking Trail
- Community Centre
- Child Care / Kindergarten
- School / College
- Sewer Emergency Relief Point
- Telephone Exchange
- Hospital
- Aged Care Facility
- Place Of Worship
- Caravan Park
- Fire Station
- Stream Level Gauge & 1% AEP Flood Level
- Flood Model Limit

LAND USE

- Residential
- Commercial and Business
- Industrial
- Public Parks / Cemeteries / Recreation
- Utilities and Local Government Facilities
- Education

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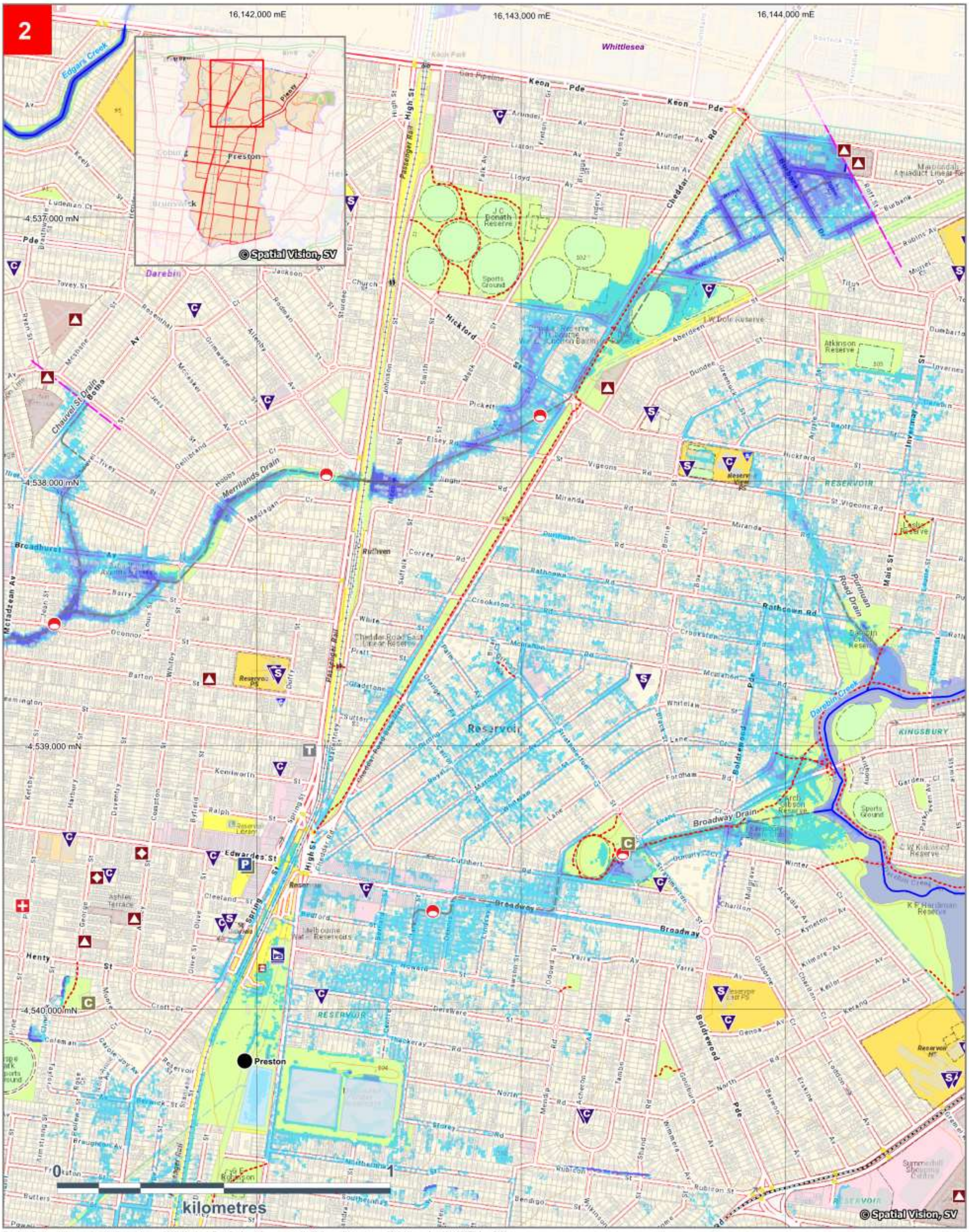

Broadway flood modelling completed by Cardno, January 2013. Merrilands Drain flood modelling completed by Melbourne Water, January 2010. Map produced by VICSES June 2022.

N

CITY OF DAREBIN

1% AEP (100yr ARI) Flooding

2. Merrilands Drain & Broadway Drain (Reservoir)

- Building
- 1% AEP Riverine Flood Extent (Depth Unavailable)

1% AEP Flood Depth

- Greater than 60cm
- Between 30cm and 60cm
- Between 5cm and 30cm
- Waterway
- Melbourne Water Underground Drain
- Bicycle / Walking Trail
- Community Centre
- Child Care / Kindergarten
- School / College
- Sewer Emergency Relief Point
- Telephone Exchange
- Hospital
- Aged Care Facility
- Place Of Worship
- Drainage Pumping Station
- Fire Station
- Police Station
- Rain Gauge
- Flood Model Limit

LAND USE

- Residential
- Commercial and Business
- Industrial
- Public Parks / Cemeteries / Recreation
- Utilities and Local Government Facilities
- Education

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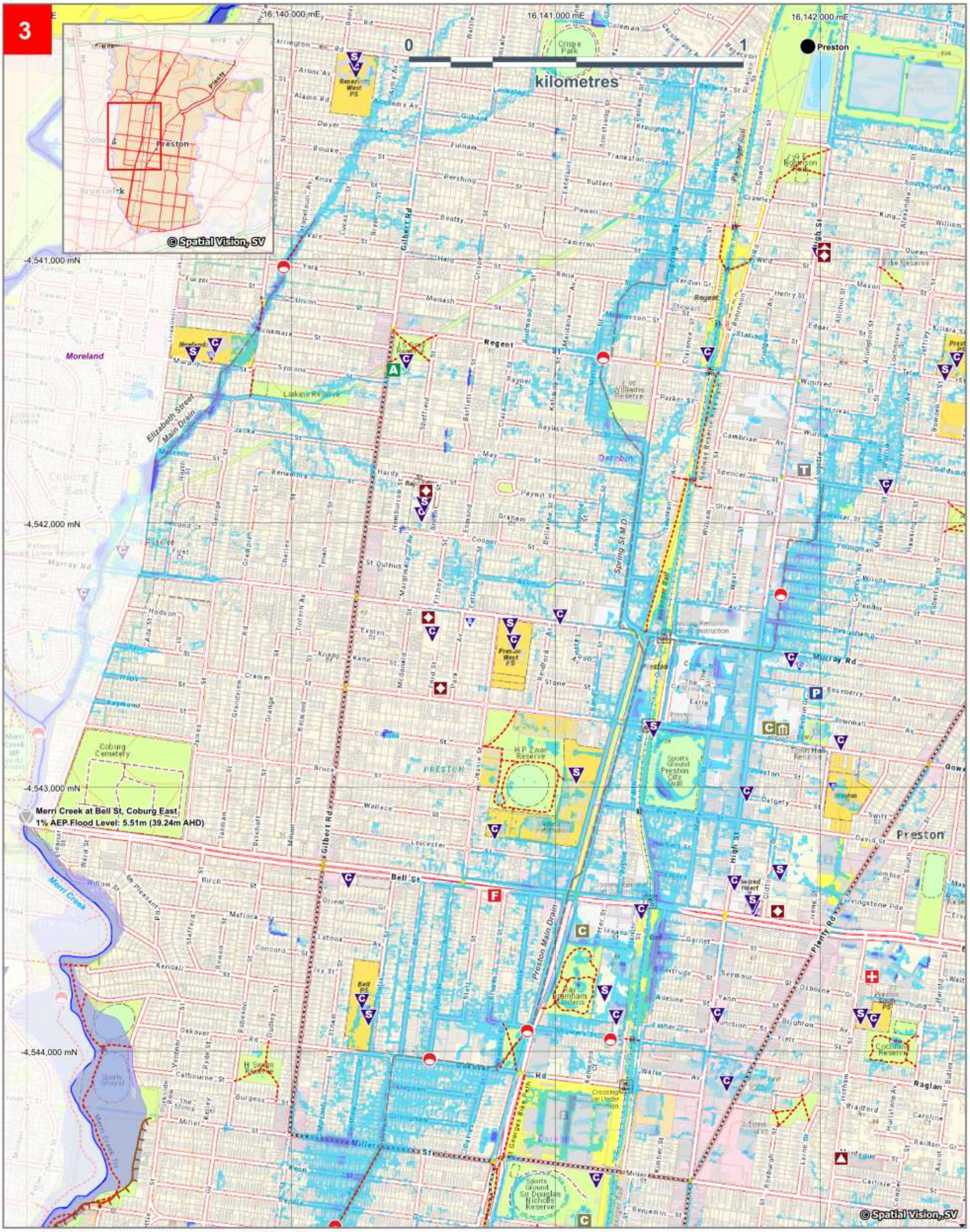
3



Preston Main Drain flood modelling completed by Cardno, January 2013. Map produced by VICSES June 2022.

N

CITY OF DAREBIN

1% AEP (100yr ARI) Flooding

3. Preston Main Drain (Preston)

- Building
- 1% AEP Riverine Flood Extent (Depth Unavailable)

1% AEP Flood Depth

- Greater than 60cm
- Between 30cm and 60cm
- Between 5cm and 30cm
- Waterway
- Melbourne Water Underground Drain
- Bicycle / Walking Trail
- Community Centre
- Child Care / Kindergarten
- School / College
- Sewer Emergency Relief Point
- Telephone Exchange
- Hospital
- Aged Care Facility
- Place Of Worship
- Ambulance Station
- Fire Station
- Police Station
- Municipal Offices
- Rain Gauge
- Levee

LAND USE

- Residential
- Commercial and Business
- Industrial
- Public Parks / Cemeteries / Recreation
- Utilities and Local Government Facilities
- Education

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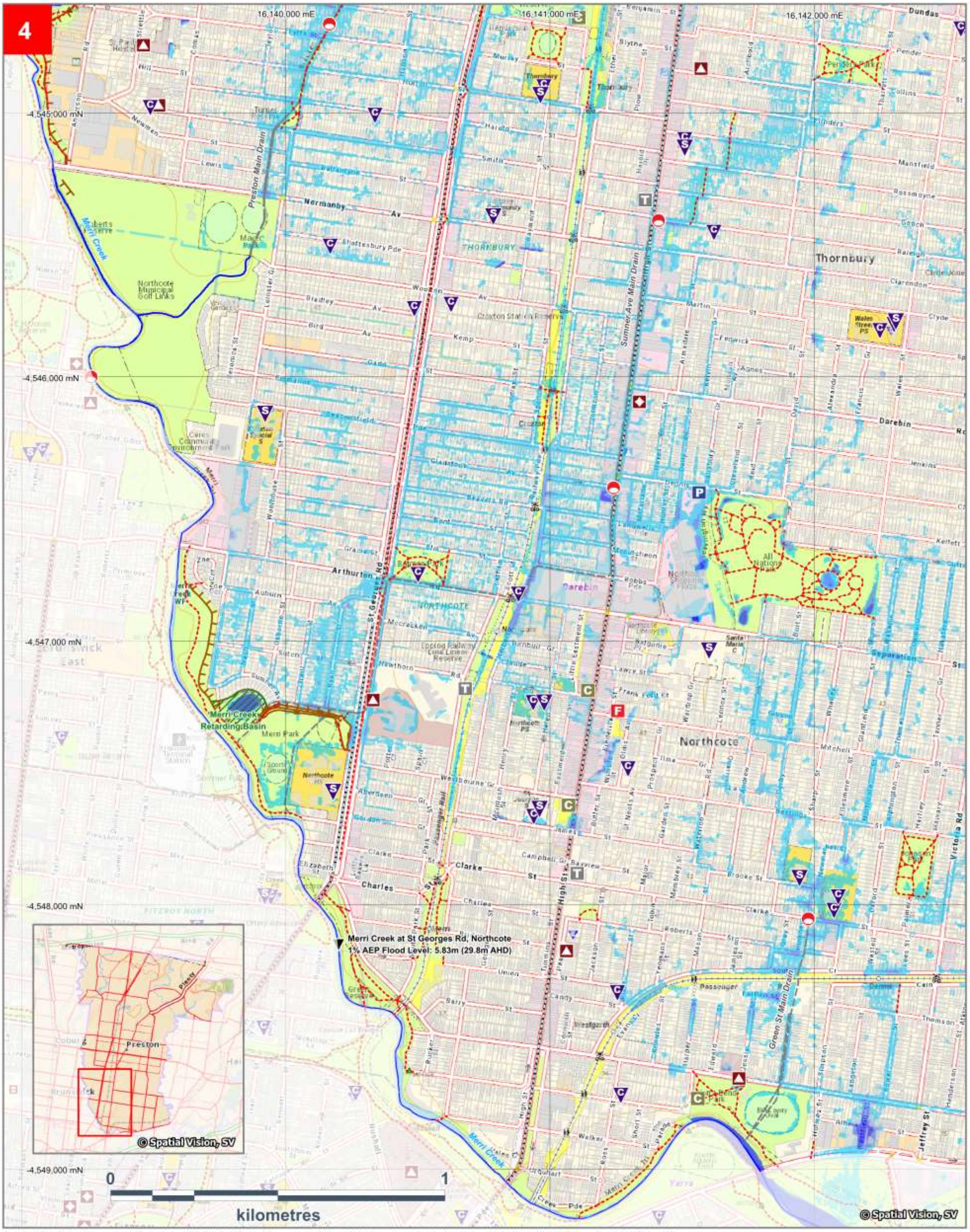
4



Green Street Drain flood modelling completed by Cardno, January 2013. Merri Creek flood modelling completed by Melbourne Water. Sumner Avenue Drain flood modelling completed by Cardno, March 2012. Map produced by VICSES June 2022.

N

CITY OF DAREBIN

1% AEP (100yr ARI) Flooding

4. Merri Creek (Northcote)

- Building
- 1% AEP Riverine Flood Extent (Depth Unavailable)

1% AEP Flood Depth

- Greater than 60cm
- Between 30cm and 60cm
- Between 5cm and 30cm
- Waterway
- Melbourne Water Underground Drain
- Bicycle / Walking Trail
- Community Centre
- Child Care / Kindergarten
- School / College
- Sewer Emergency Relief Point
- Telephone Exchange
- Hospital
- Aged Care Facility
- Place Of Worship
- Ambulance Station
- Fire Station
- Police Station
- Municipal Offices
- Rain Gauge
- Levee

LAND USE

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- Education

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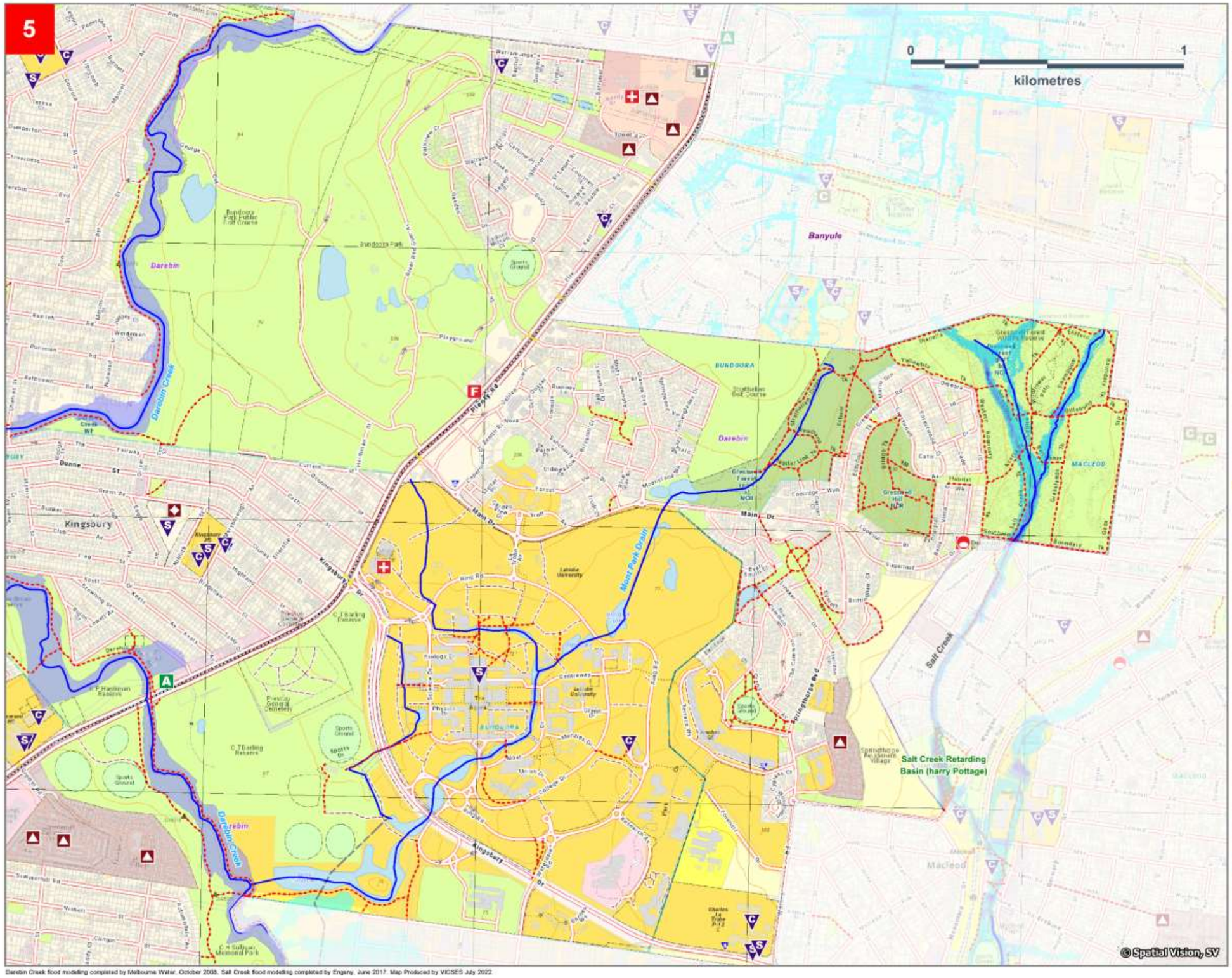
5



CITY OF DAREBIN

1% AEP (100yr ARI) Flooding

5. Darebin Creek (Bundoora)

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Darebin Creek flood modelling completed by Melbourne Water, October 2008. Salt Creek flood modelling completed by Engeny, June 2017. Map Produced by VICSES July 2022.

6

Darebin Creek at Bell St, Ivanhoe
1% AEP Flood Level: 4.51m (49.15m AHD)

0 1 kilometres

© Spatial Vision, SV

Darebin Creek flood modelling completed by Melbourne Water, October 2008. Steane St M.D. flood modelling completed by Melbourne Water, Jan 2013. Map produced by VICSES July 2022.

N

CITY OF DAREBIN

1% AEP (100yr ARI) Flooding

6. Darebin Creek (Preston)

Building
1% AEP Riverine Flood Extent (Depth Unavailable)
1% AEP Flood Depth
Greater than 60cm
Between 30cm and 60cm
Between 5cm and 30cm
Waterway
Melbourne Water Underground Drain
Bicycle / Walking Trail

Community Centre
Child Care / Kindergarten
School / College
Sewer Emergency Relief Point
Drainage Pumping Station
Hospital
Aged Care Facility
Place Of Worship

Ambulance Station
Stream Level Gauge & 1% AEP Flood Level

LAND USE
Residential
Commercial and Business
Industrial
Public Parks / Cemeteries / Recreation
Utilities and Local Government Facilities
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7

16,143,000 mE
16,144,000 mE
16,145,000 mE
-4,546,000 mN
-4,547,000 mN
-4,548,000 mN
-4,549,000 mN

Preston
Banyule
Darebin
Fairfield
Alphington
Yarra
Yarra River
Darebin Creek
Quarry Street Drain
Fairfield Main Drain
Darebin Parklands
John Cain Memorial Park
Pitcher Park
Victoria Rd
Darebin Rd
Separation St
Alphington Passenger Rail

© Spatial Vision, SV

0 1 kilometres

Yarra River at Chandler Highway, Fairfield
1% AEP Flood Level: 12.79m (17.54m AHD)

Darebin Creek flood modelling completed by Melbourne Water, October 2008. Fairfield M.O. flood modelling completed by Cardno, January 2013. Map produced by VICSES July 2022.

N

CITY OF DAREBIN

1% AEP (100yr ARI) Flooding

7. Darebin Creek (Alphington)

- Building
- 1% AEP Riverine Flood Extent (Depth Unavailable)

1% AEP Flood Depth

- Greater than 60cm
- Between 30cm and 60cm
- Between 5cm and 30cm
- Waterway
- Melbourne Water Underground Drain
- Bicycle / Walking Trail

- Community Centre
- Child Care / Kindergarten
- School / College
- Sewer Emergency Relief Point
- Ambulance Station
- Hospital
- Aged Care Facility
- Place Of Worship

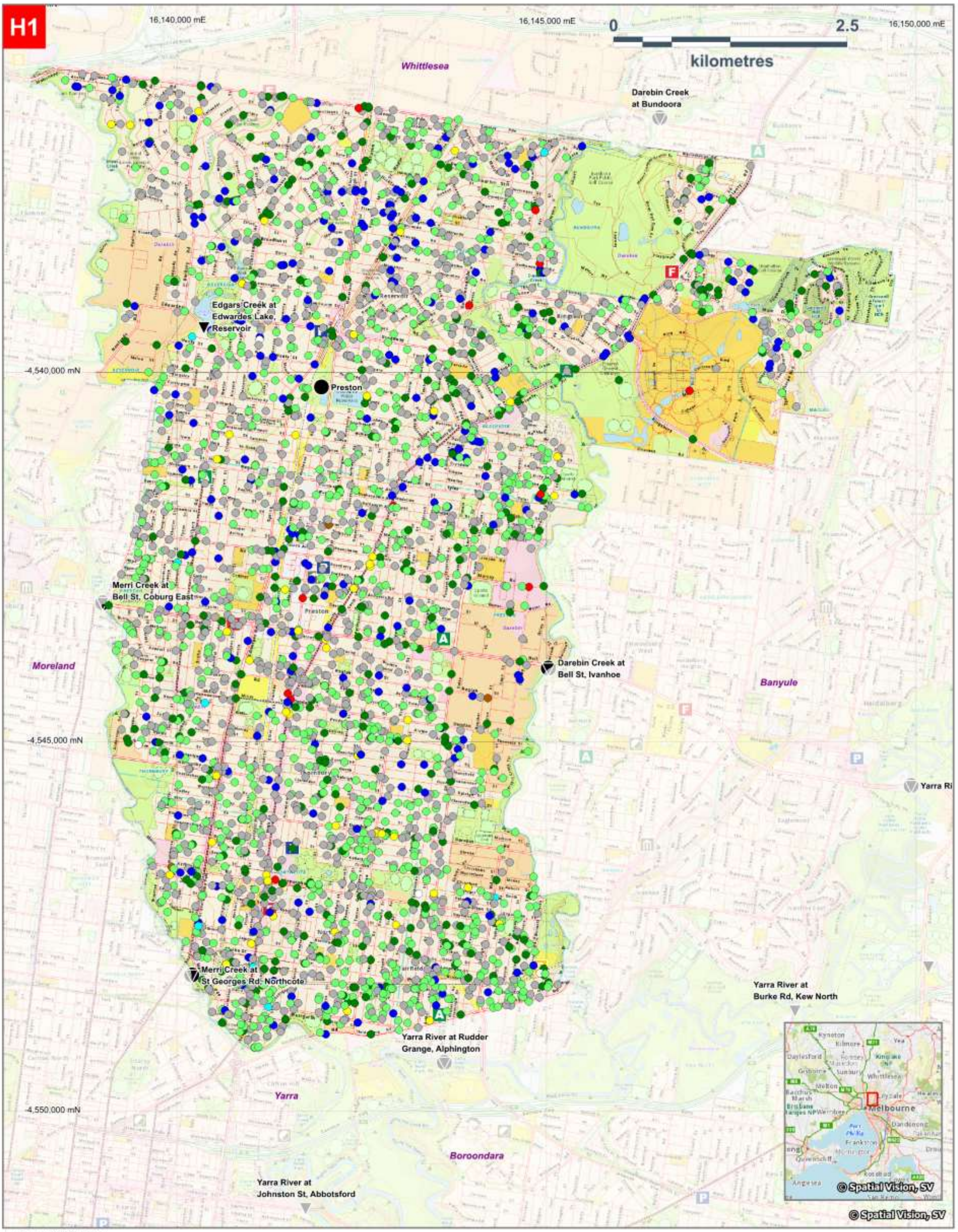
- Stream Level Gauge & 1% AEP Flood Level

LAND USE

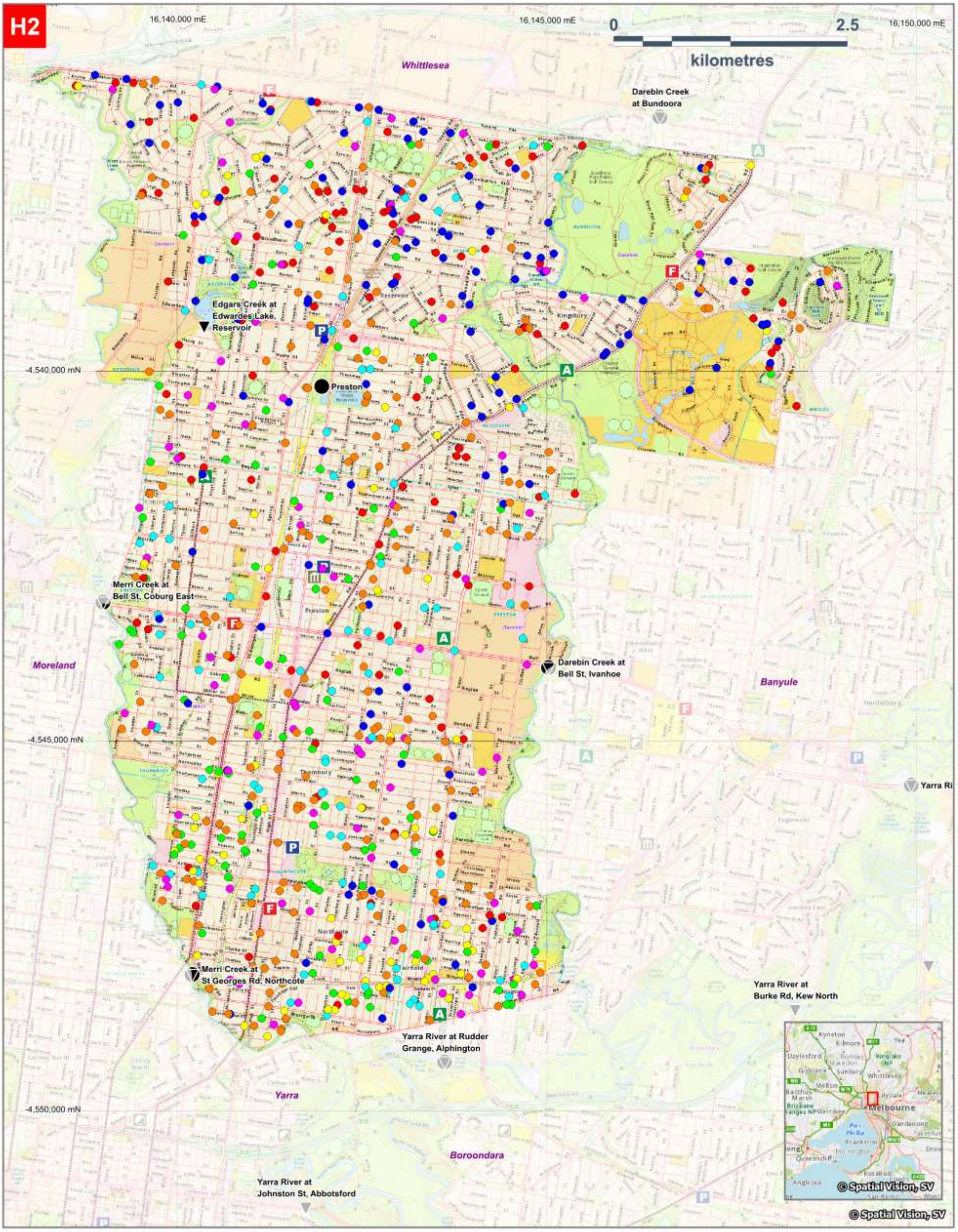
- Residential
- Commercial and Business
- Industrial
- Public Parks / Cemeteries / Recreation
- Utilities and Local Government Facilities
- Education

SES VICTORIA Melbourne Water

Severe Weather VICSES Requests for Assistance Maps



H2



Map Produced by VICSES June 2022

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CITY OF DAREBIN

Version 4: June 2022

H2 - Severe Weather Requests for Assistance (RFA) Recevied by Significant Event (June 2009 - March 2022)

Severe Weather RFAs (Storm or Flood)
Greater than 80 Requests Received per event

- December 2011 (146)
- August 2013 (82)
- October 2013 (99)
- October 2016 (90)
- December 2016 (140)
- December 2017 (95)
- October 2021 (155)
- November 2021 (95)

- Stream Level Gauge
- Rain Gauge
- State Emergency Service
- Municipal Office
- Police Station
- Fire Station
- Ambulance Station

LAND USE

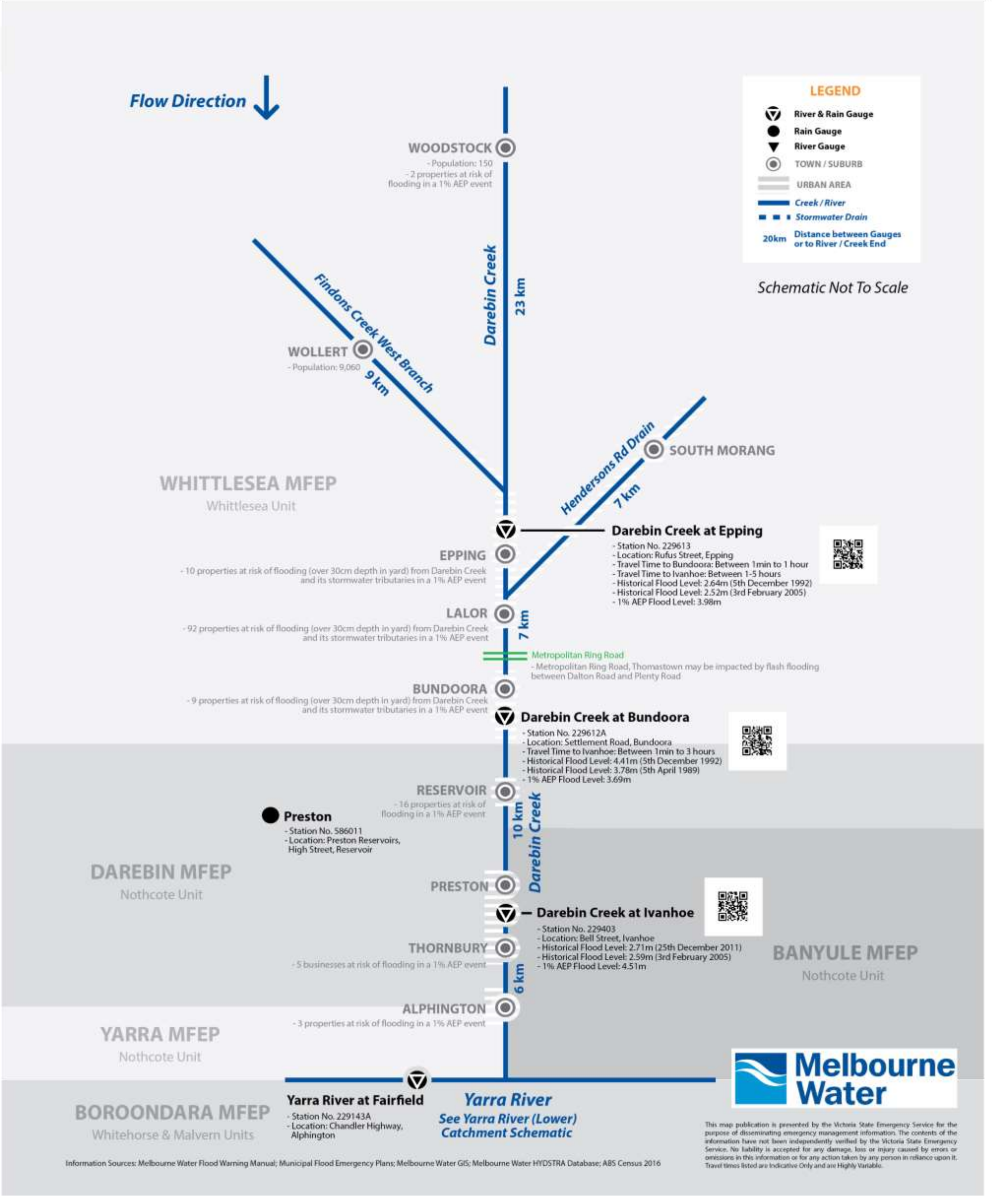
- Residential
- Commercial and Business
- Industrial
- Public Parks / Cemeteries / Recreation
- Utilities and Local Government Facilities
- Education

SES VICTORIA Melbourne Water

Catchment Schematics

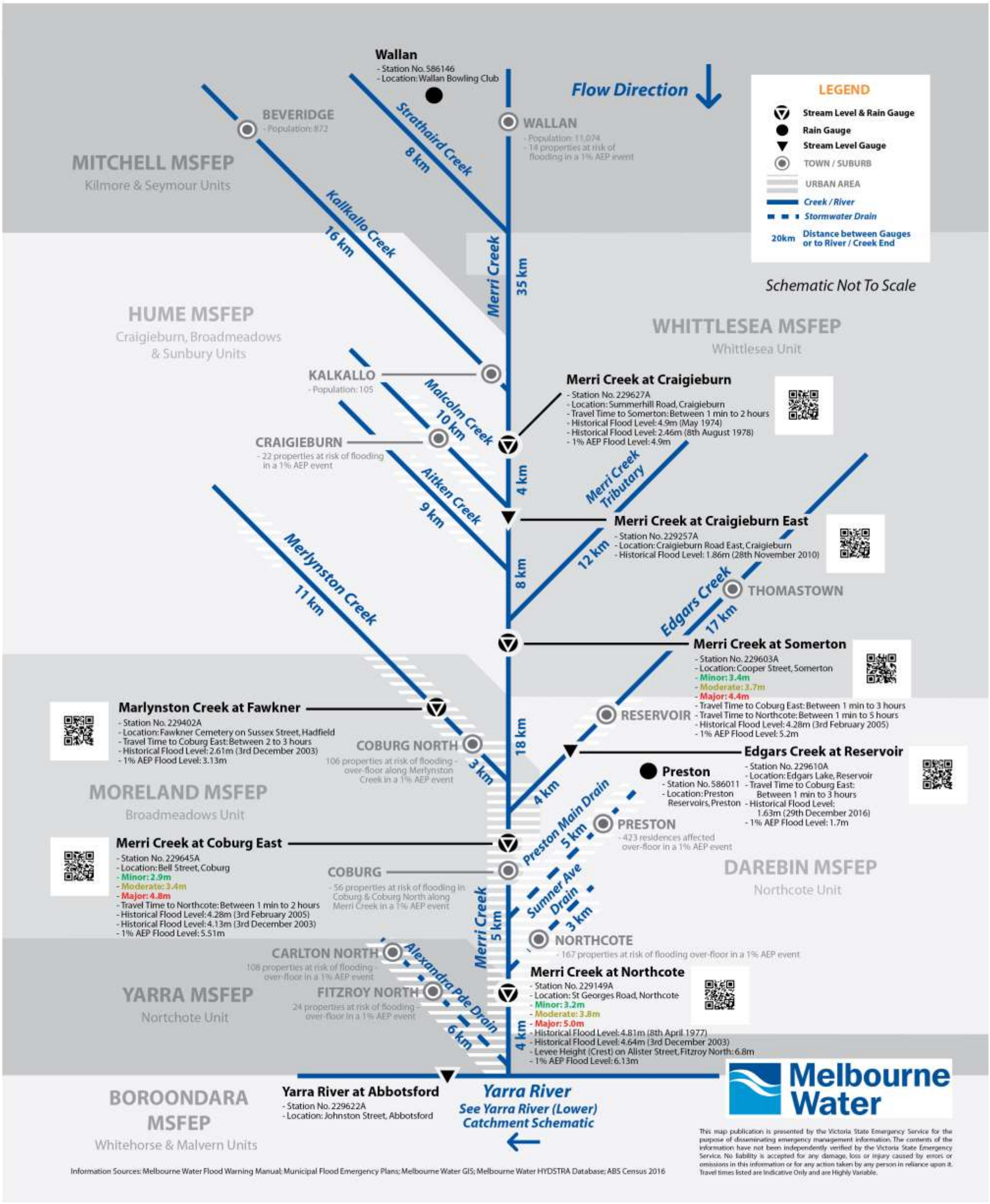
Darebin Creek Catchment Schematic

Version 5 - January 2021



Merri Creek Catchment Schematic

Version 6 - February 2020



APPENDIX G – SANDBAG ARRANGEMENTS

General

Appropriately placed sandbags can help reduce the impact of flooding to residences, businesses and infrastructure. While sandbags will not completely stop all floodwater, they may reduce the amount of water entering properties.

The IC will determine the priorities related to the use of sandbags, which will be consistent with the strategic priorities and the VICSES Sandbag policy.

If VICSES sandbags are becoming limited in supply, then priority will be given to protection of Essential Infrastructure. If time permits, requests for supplementary supply should be carried out in line with the City of Darebin

MEMP

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

Darebin Council MEMO will liaise with the VICSES North West Metro RDO/ IC (as appropriate) to ensure effective coordination of listed resources.

Sandbags will be filled in accordance with the VICSES Sandbag Quick Reference Guide and the VICSES Statewide Guideline- Sandbags. A short video depicting the filling and use of sandbags is available at

https://www.youtube.com/watch?v=-_T--I3b-34&list=PL428FCA686837ADED

(Sandbagging demonstration- vicsesTV on YouTube).

Sand may be obtained from the suppliers/locations noted below and as stated in the VICSES MOU: Sand Supply.

Operational

Sandbag Storage Locations

Sandbags may be obtained from any of the locations as noted below.

Organisation	Location	Number of Sandbags	Estimated Response Time	Contact
City of Darebin Council Depot	Depot address 10, Carawa Dr, Reservoir	0		Via A/H
Heidelberg VICSES Unit	Unit LHQ	2000	1Hr	Via Pager
Fawkner VICSES Unit	Unit LHQ	8000	2Hr	Via Pager
VICSES North West Metro		As Required	4Hr	Via Pager
Other				

Table G1- Sandbag storage locations within the City of Darebin and adjoining locations

Sand Suppliers

In large events, or when local supplies have been exhausted, supply will be in accordance with *VICSES- Supplier MOU: Sand Supply*. VICSES F.O.G document suggests washed river sand as the preferred material, with soil and clay also potential options for use.

A heavy bodied or sandy soil is most desirable for filling sandbags, but any usable material at or near the site has definite advantages. Gravelly or rocky soils are generally poor choices because of their permeability. Filled bags of earth material will deteriorate quickly. Sand/ fill material should be free of salt and contaminants where possible.

Organisation	Location	Delivery Capability	Restrictions	Contact
Darebin City Council Depot	Depot address	Up to 5m3 only		
Evetts Garden Supply	55 Victoria Road Northcote, Vic, 3070		Not open Sat afternoon or Sunday	03 9482 5858
Haddens Garden Supplies	343 Darebin Rd, Thornbury		Not open Sunday	
Pascoe Vale Garden Supplies	151 - 153 Bakers Road Coburg 3058		Unavailable Sunday after 1800hrs	03 9354 9676

Table G2- Sand Suppliers and locations within the City of Darebin and adjoining locations

Sandbag Collection Points

Sandbag collection points may be established at the IC's discretion and as conditions permit. Potential locations are noted below. Note that locations documented below are potential sites only and will not be appropriate for use in all events.

Location	Address	Sector	Operational Restrictions	Contact
Darebin City Council Depot	10, Carawa Dr, Reservoir			Via A/H

Table G3- Darebin City Council potential Sandbag Collection Points

Residents may purchase sandbags or similar from hardware or garden supply stores for protection of residential property or businesses if a sandbag collection point is not available to the public. Some locations may include:

- Bunnings, Local Hardware stores etc

Machinery Supply

Appliances documented below will be required when undertaking sandbagging operations

Organisation	Asset	Location	Estimated deployment time	Contact
Darebin City Council	Front End Loader Specification requirements:– Min lift height 2.5m Min Forward reach 60cm Max bucket width 2.5m	Council Depot		
	Small tipper (3 tonnes)			
	Vehicle/ trailer for sandbag transport			
VICSES North West Metro Region	Sandbag Fill Machine	Pakenham	3Hr	CTDO

Table G4- Machinery/ Vehicles required for Sand Supply in Darebin

Additional resources from Council that could be utilised to aid response include:

- Backhoe
- Rough Terrain Forklift
- Dozer D8

Post Operational

Clean up and Disposal

Residents, businesses and essential infrastructure owners will be encouraged to contact Council to determine the safest method for disposal of sandbags. Following a flood event within the Municipality, Darebin Council will facilitate the disposal of sandbags. VICSES will work in conjunction with Darebin City Council to ensure the disposal of used sandbags is dealt with under the Community Recovery arrangements as outlined in the EMMV.

APPENDIX H – SEVERE WEATHER (STORM) EVENTS

Overview

The City of Darebin is susceptible to Severe Weather Events because of the relatively flat terrain with a dense population and buildings that range in age. This appendix details areas of risk from severe weather events by requests for assistance to the Victoria State Emergency Service (VICSES).

Large Storm Events

Typically, VICSES Heidelberg Unit would expect to be impacted by a large storm event on average once a year (more than 50 RFAs per event) for incidents within the City of Darebin, with a number of months resulting in 100+ RFAs during periods of La Nina weather patterns.

Since 2009, the following larger storm events have occurred in the City of Darebin:

- December 2011 - an intense storm with large hail on Christmas Day that moved across the north-west metropolitan suburbs causing significant building damage and some flooding issues with **146** Requests for assistance recorded with VICSES.
- October 2013 – Windstorm event that saw **99** requests received for trees down and building damage.
- October 2016 – Severe weather event with fierce winds led to many RFAs for building damage and tree down related issues, which led to secondary traffic issues and road closures as a result of trees across roads.
- December 2016 – Flash flood event that saw a number of flooding issues across the municipality and a total of **140** RFAs
- October / November 2021 – Severe Storm resulting in **250** RFAs for building damage and trees down as well as disruption to power and other services.

VICSES Requests for Assistance

The Victoria State Emergency Service records Requests for Assistance made by the public during severe weather events. Table 1 below is a breakdown of requests by suburb and damage type during the period July 2009 and March 2022 for those associated with severe weather events.

Suburb	VICSES Request for Assistance (July 2009 – March 2022)				
	Building Damage	Tree Down	Tree Down Traffic Hazard	Flooding	*Other
Alphington	39	53	16	8	7
Bundoora	27	24	26	14	1
Fairfield	53	54	18	12	4
Kingsbury	29	18	9	9	0
Macleod	26	13	10	11	0
Northcote	234	211	86	30	19
Preston	336	227	92	60	24
Reservoir	441	306	118	175	25
Thornbury	160	132	47	32	11

Table H1 – Breakdown of severe weather RFAs received by VICSES Heidelberg Unit by suburb

* Assist Fire Service, Fence Down, Incident Other, Loose Debris / Objects, Rescue Persons Trapped, Rescue Structure Collapse

Table G2 is a breakdown of requests for assistance by Date (Month) and damage type for severe weather events.

Date	VICSES Request for Assistance (July 2009 – March 2022)				
	Building Damage	Tree Down	Tree Down Traffic Hazard	Flooding	*Other
July 2009	5	1	0	0	0
August 2009	24	25	6	0	0
September 2009	9	7	2	0	0
October 2009	1	0	0	0	0
November 2009	12	4	0	1	0
December 2009	4	5	3	0	0
January 2010	1	2	5	0	0
February 2010	7	3	0	2	0
March 2010	18	6	3	2	0
April 2010	1	4	0	0	0
May 2010	1	1	0	0	0
June 2010	7	15	7	0	0
July 2010	3	3	2	0	0
August 2010	6	5	0	0	0
September 2010	7	12	3	0	0
October 2010	13	1	1	7	0
November 2010	11	1	4	2	0
December 2010	3	9	2	2	0
January 2011	6	5	3	9	0
February 2011	10	6	2	14	0
March 2011	4	1	0	6	0
April 2011	8	0	0	4	0
May 2011	8	0	0	1	0
June 2011	3	7	3	1	0
July 2011	0	0	0	0	0
August 2011	1	0	1	0	0
September 2011	9	5	5	0	0
October 2011	4	0	3	1	0
November 2011	4	5	3	3	0
December 2011	55	5	1	83	2
January 2012	11	8	4	0	0
February 2012	29	27	2	0	0
March 2012	8	7	1	0	0
April 2012	4	4	3	1	0
May 2012	9	4	1	0	0
June 2012	8	3	1	1	0
July 2012	2	1	0	0	0
August 2012	4	2	2	0	0
September 2012	18	14	4	0	0
October 2012	0	2	1	0	0
November 2012	1	2	3	0	0
December 2012	5	10	6	0	0
January 2013	1	2	2	0	0
February 2013	8	2	1	0	0
March 2013	11	11	4	0	0
April 3013	2	0	0	0	0
May 2013	14	2	0	8	0
June 2013	22	1	0	8	0
July 2013	7	5	3	0	0
August 2013	21	43	17	1	0
September 2013	24	29	6	0	0
October 2013	34	49	16	0	0
November 2013	3	1	1	0	0
December 2013	6	3	1	0	0

Date	VICSES Request for Assistance (July 2009 – March 2022)				
	Building Damage	Tree Down	Tree Down Traffic Hazard	Flooding	*Other
January 2014	8	12	4	0	0
February 2014	1	2	5	0	0
March 2014	5	2	0	0	0
April 2014	2	3	1	1	0
May 2014	1	1	0	0	0
June 2014	26	24	8	0	0
July 2014	6	3	1	0	0
August 2014	5	1	1	0	0
September 2014	18	19	6	2	0
October 2014	7	6	2	1	0
November 2014	7	3	1	1	0
December 2014	12	13	0	0	0
January 2015	9	2	4	0	0
February 2015	7	5	6	0	0
March 2015	12	11	1	0	0
April 2015	1	0	1	0	0
May 2015	5	0	0	0	0
June 2015	2	1	2	0	0
July 2015	9	2	1	0	0
August 2015	2	1	0	0	0
September 2015	3	0	0	0	0
October 2015	5	2	3	0	0
November 2015	14	7	5	0	0
December 2015	7	9	5	0	0
January 2016	36	4	4	21	0
February 2016	3	3	0	0	0
March 2016	3	1	1	1	0
April 2016	2	0	0	1	0
May 2016	9	7	3	0	0
June 2016	0	1	0	0	0
July 2016	4	5	3	0	0
August 2016	2	1	2	1	0
September 2016	3	1	1	0	0
October 2016	32	39	19	0	0
November 2016	1	6	2	0	0
December 2016	72	7	2	56	3
January 2017	3	6	6	0	0
February 2017	2	1	4	4	0
March 2017	5	2	2	0	0
April 2017	12	4	2	4	0
May 2017	1	1	0	0	0
June 2017	1	0	1	0	0
July 2017	3	9	7	2	0
August 2017	8	3	2	0	0
September 2017	3	0	1	0	0
October 2017	3	0	1	0	0
November 2017	6	0	0	1	0
December 2017	61	5	4	24	1
January 2018	7	0	3	0	0
February 2018	7	9	2	0	0
March 2018	4	17	1	0	0
April 2018	8	6	2	2	0
May 2018	5	12	3	1	0
June 2018	4	1	0	2	0
July 2018	12	9	2	1	0
August 2018	5	1	1	0	0
September 2018	1	3	0	0	0
October 2018	1	2	1	0	0

Date	VICSES Request for Assistance (July 2009 – March 2022)				
	Building Damage	Tree Down	Tree Down Traffic Hazard	Flooding	*Other
November 2018	25	7	6	6	0
December 2018	4	1	2	2	0
January 2019	4	4	4	2	1
February 2019	18	4	2	6	1
March 2019	4	3	2	1	2
April 2019	2	2	1	2	0
May 2019	4	1	1	0	0
June 2019	3	3	0	1	0
July 2019	4	7	4	1	0
August 2019	7	9	1	3	0
September 2019	4	0	0	1	2
October 2019	7	6	2	0	3
November 2019	14	21	12	3	5
December 2019	7	8	4	2	0
January 2020	10	11	1	8	3
February 2020	6	7	3	0	1
March 2020	8	4	1	0	2
April 2020	8	9	5	1	0
May 2020	5	1	1	1	1
June 2020	6	1	0	0	0
July 2020	2	1	0	0	0
August 2020	9	34	13	1	5
September 2020	3	8	1	1	0
October 2020	5	5	1	2	0
November 2020	1	14	6	1	3
December 2020	14	16	6	1	1
January 2021	12	5	2	4	2
February 2021	1	3	1	0	1
March 2021	3	3	1	0	0
April 2021	8	1	0	3	1
May 2021	7	2	2	1	0
June 2021	13	12	11	3	11
July 2021	6	6	1	0	0
August 2021	4	4	1	1	5
September 2021	16	4	3	1	3
October 2021	32	78	32	1	12
November 2021	41	42	7	3	2
December 2021	11	16	10	12	0
January 2022	3	6	3	2	0
February 2022	5	2	2	4	3
March 2022	5	3	1	1	0

Table H2 – Breakdown of severe weather RFAs received by VICSES Heidelberg Unit by date

* Assist Fire Service, Fence Down, Incident Other, Loose Debris / Objects, Rescue Persons Trapped, Rescue Structure Collapse

Activation Triggers

Triggers for activation in flood and storm have been identified as follows:

VICSES Flood Readiness and Activation Levels - V5.0 - August 2023

Readiness Level	RL 1 - Agency Business as Usual	RL 2 - Moderate		RL 3 - High	RL 4 - Extreme	RL 5 - Catastrophic
Activation Considerations	**Severe Weather Intelligence Briefing (SWIB), issued Monday, Wednesday, and Friday. Warnings issued by the BoM ad hoc.**					
Severe Weather Intelligence Briefing (SWIB) *Issued Monday, Wednesday, and Friday.*	No colour: - Catchments able to absorb predicted rain for consecutive days.	No colour: - Forecast rain. - Catchments able to absorb predicted rain for consecutive days with minor flooding occurring.	No colour: - Forecast rain. - Catchments able to absorb predicted rain for consecutive days with minor/moderate flooding occurring.	Coloured yellow for riverine flood: - Forecast heavy rain. - Catchments are saturated and unable to absorb continued rain.	Coloured orange for riverine flood: - Forecast heavy/intense rain. - Catchments are saturated and unable to absorb continued rain.	Coloured red for riverine flood: - Forecast heavy/intense rain. - Catchments are saturated and unable to absorb continued rain.
				Discussion to be held with the BoM and Hydro at the SWIB meeting to determine final RL based on expected impacts of flooding.		
Riverine flood warning(s) *Issued up to 24hrs before forecast flooding.* **Flood Scenario Product** *Issued ahead of forecast RL2 or higher in consultation with the Flood Team*	No active warnings.	Flood watch issued and/or flood warning issued.	Flood warning (minor, moderate) with low consequence.	Flood warning (minor, lower end of moderate) with expected impacts. Flood warning (major) with low or nil consequence.	Flood warning (multiple upper end moderate, major) with expected impacts.	Flood warning (multiple moderate and/or multiple major) with significant consequence.
Expected impacts	Nil impacts or consequences expected.	Low lying areas next to water courses are inundated.	Areas of inundation are more substantial in size but consequence is low.	Areas of inundation are more substantial with increased consequence.	Extensive rural areas and/or urban areas are inundated.	Extensive rural areas and/or urban areas are inundated
		No expected residential flooding impacts.	No expected above floor flooding.	Properties may be isolated and a small number affected above the floor level.	Many properties affected above floor level.	Significant number of properties affected above floor level.
		No isolation of communities.	No isolation of communities.	No isolation of communities.	One to two communities isolated.	Three or more communities isolated.
		No impact to transport routes.	Small number of minor transport routes may be affected.	Small number of transport routes may be affected.	Number of transport routes may be affected, some closed.	Major transport routes closed.
		No evacuation required.	Evacuation not expected to be required.	Planning for possible evacuation.	Evacuation of flood affected areas likely.	Evacuation of large number of people/communities required.
		No impact to utility services.	No impact to utility services.	No impact to utility services.	Utility services may be impacted.	Utility services will be impacted.
		No expected dam failure.	No expected dam failure.	No expected dam failure.	Dam failure possible.	Dam failure considered very likely.
		No relocation of stock and/or equipment.	Possible relocation of stock and/or equipment.	Low number of relocation of stock and/or equipment.	Medium number of relocation of stock and/or equipment.	Large number of relocation of stock and/or equipment.

Readiness	VICSES - Business As Usual - Operations			Multi Agency Operations under JSOP 2.03		
State Command SAC, SDO, SOCC	SDO/SAC rostered. Standard VICSES on call arrangements.	SDO/SAC rostered. Standard VICSES on call arrangements.	SDO/SAC rostered. Standard VICSES on call arrangements.	SCC SAC - in place. SDO - in place. Night shift on standby or remote. ESTA SOCC - on standby.	SCC SAC - in place. SDO - in place. Night shift on standby. ESTA SOCC - in place. Night shift on standby.	SCC SAC - in place for day and night shifts. SDO - in place for day and night shifts. ESTA SOCC - in place for day and night shifts.
Regional Command RDO, RAC	RDO/RAC rostered. Standard VICSES on call arrangements.	RDO/RAC rostered. Standard VICSES on call arrangements. Consider rostering of additional warnings support for the RDO, dependent on number of active flood warnings.	RDO/RAC rostered. Standard VICSES on call arrangements. Consider rostering of additional warnings support for the RDO, dependent on number of active flood warnings.	RCC RAC - in place. Night shift on standby or remote. ROCC RDO - in place. Resources - in place (if required). Logistics - in place (if required). Night shift RDO on standby or remote.	RCC RAC - in place. Night shift on standby or remote. ROCC RDO - in place. Resources - in place. Logistics - in place. Night shift RDO on standby or remote.	RCC RAC - in place for day and night shifts. ROCC RDO - in place. Resources - in place. Logistics - in place. Night shift RDO on standby or remote. Consider additional management support member if RDO activated for night shift alone.
Unit Command UDO, ICP, SCP, DCP	UDO rostered.	UDO rostered.	UDO rostered.	ICP/SCP/DCP activated as per advised command structure.	ICP/SCP/DCP activated as per advised command structure.	ICP/SCP/DCP activated as per advised command structure.
Incident Control Centre(s)	N/A	N/A	N/A	Activated as per JSOP2.03 *Where an ICC is not active, consider roles in place at a ROCC to support critical functions such as warnings and public info.*	Activated as per JSOP2.03	Activated as per JSOP2.03

Effect	Potential Consequences		
People	Some minor inconvenience around local roads.	Increased number of roads being impacted. Traffic management plan should be considered.	Significant number of roads impacted. Traffic management plan is required. Some major roads closed with isolation or evacuation possible.
Remote Communities	Inconvenience only.	Some minor isolation and loss of utilities of individual properties or remote communities is likely.	Community isolation likely with resupply requirements as well as evacuation considerations needed.
Health	Little impact expected. Some local issues might be encountered, but managed locally within own facility plans.	Consideration for review and familiarisation with facility plans. VICPOL and DHHS to review Vulnerable persons list.	Highly likely some hospitals and vulnerable people will become isolated and require evacuation.
Critical Infrastructure	Nil impact.	May require some preparatory work and discussion with owner of infrastructure.	Significant work likely to be required to protect critical infrastructure. Contingency plans put in place if loss of the infrastructure occurs.
Public Infrastructure **Essential Community Infrastructure**	Limited impact.	Some disruption to access to parks and low lying community areas and infrastructure. Some minor damage to community infrastructure built on floodplains.	Significant damage to road infrastructure and community facilities. Long term closure of key community facilities likely.
Power	Possible power disruptions.	Likely short term power disruptions.	Power disruptions likely, with some substations impacted and potential long term outages.
Water Utilities	Little impact expected some local issues might be encountered but managed locally.	Increased potential but still managed locally. May be minor sewerage overflow issues in isolated areas.	Highly likely that some infrastructure will be impacted. Water authorities should develop or initiate their plans to address issues. Significant potential for pollutants including sewerage in water.
Telecommunications	Nil impact.	Minimal impact to individual premises only.	Significant impact with loss of landlines and mobile powers which will affect people's capacity to receive warnings and information.
Gas	Little impact expected Some local issues might be encountered but managed locally.	Increased potential for infrastructure damage and disruption but still managed locally.	Likely that some infrastructure will be impacted, supply authorities should develop or initiate their plans to address issues.
Road Network	Unlikely to impact.	Some minor roads may be impacted with possible disruption to critical needs supplies such as milk.	Highly likely for roads to be cut and egress and access impacted. Major roads potentially cut in some locations, traffic diversions in place. Potential rescue of trapped persons in vehicles. Expected impact on rail routes. Economic impact likely with loss of commercial transport routes.
Public Transport	Limited impact on public transport routes.	Impact to public transport routes may occur but likely to be minimal with diversions possible.	Public transport impacts will occur with roads and rail lines cut and no alternative route available. Significant disruption to people movement likely.
Education	Unlikely impact.	Some impact expected. Traffic management plan for school buses should be considered.	Some school and preschools may be inundated. School bus routes closures.
Public Events	Maybe cancelled due to weather conditions only.	Some public events may need to be cancelled or rescheduled due to safety of patrons either whilst at event or travelling to/from the event.	Likely cancellation of major events due to risk, and potential flooding impact on venue or ability to attend or leave event.
Tourism	Unlikely that event(s) will be impacted but consideration must be given to any event occurring to ensure it is safe to continue.	Potential impact on tourist locations if area not safe to visit or isolated due to road closures.	May impact on high value tourist locations and facilities with long term impacts in the social and economic environment of communities.
Agriculture **Animal welfare**	No impact likely with landowners managing any localised issues.	Potential impact with losses to live stock, fencing and crops including high intensive farming of produce and tree farms.	Substantial impact to live stock, fencing (widespread), farm machinery and crops. Short and long term impacts to high intensive produce farming due to loss of soil and erosion. Highly likely need for stock movement support and fodder resupply for isolated stock.
Environmental	Minimal impact, some minor watercourse erosion.	Stream erosion and loss of vegetation around watercourses.	Significant disturbance to soil and vegetation.
Cultural Heritage	Minimal impact likely.	Some disturbance along watercourses may occur but likely to be minimal.	Potential for significant disturbance especially of flood of significance in area and flood of record height.
Relief and Recovery	Relief and recovery activity unlikely, may be some local issues.	Increased potential for relief and recovery activity but likely to be managed locally by LGA with support of DHHS.	Formal arrangements put in place for relief and recovery activity. Regional Recovery Commander appointed. Health Commander in place. Demands on relief and recovery to be substantial and potentially long term.

Regional Agency Commander (VICSES) provides advice to the Regional Controller - State Agency Commander (VICSES) provides advice to State Response Controller re: forecast, impacts, and consideration for varying the actual number, distribution and level of IMT required.

VICSES Severe Weather Readiness and Activation Levels - V5.0 - August 2023

Readiness Level	RL 1 - Agency Business as Usual		RL 2 - Moderate	RL 3 - High	RL 4 - Extreme	RL 5 - Catastrophic
Activation Considerations	Severe Weather Intelligence Briefing (SWIB), issued Monday, Wednesday, and Friday. Thunderstorm Forecast Chart (TFC), issued daily. Warnings issued by the BoM ad hoc.					
Severe Weather Intelligence Briefing (SWIB)	No colour.	No colour.	No colour.	*Discussion to be held with the BoM at the SWIB meeting to determine final RL.* *Consider: time of day, location, extent of forecast impact area for EM Region, previous impacts.* Coloured yellow for winds and/or rainfall.	Coloured orange for winds and/or rainfall.	Coloured red for winds and/or rainfall.
Thunderstorm Forecast Chart (TFC), issued daily.	No thunderstorms.	Thunderstorms possible.	Severe thunderstorms likely for 4 or more weather districts. Consider: - Extent of district - Central district may have increased consequences. Detail from BoM discussion and/or issued severe thunderstorm warning to determine readiness level.	*Advice to be sought from the BoM to determine RL based on the TFC.* *Consider: time of day, location, extent of forecast impact area for EM Region, previous impacts.* Severe thunderstorms likely for majority of state. Consider: - Extent of district - Central weather district may have increased consequences. Detail from BoM discussion and/or issued severe thunderstorm warning to determine readiness level.	Severe thunderstorms likely for majority/whole of state. Consider: - Extent of district - Central weather district may have increased consequences. Key words to consider in forecast: - Supercells. - Organised storm cells. - Tornadoes / microbursts. Detail from BoM discussion and/or issued severe thunderstorm warning to determine readiness level.	
Severe Weather or Severe Thunderstorm Warning	*Consider: time of day, location, extent of forecast impact area for EM Region, previous impacts, AEP.* *Add 10km/hr to Alpine areas.* No severe weather or severe thunderstorm warning.	Possible for: - Average Winds (up to 60 km/hr) - Wind gusts (up to 90 km/hr) - Rainfall - Hail (<2cm)	Possible for: - Average winds (up to 60 km/hr) - Wind gusts (90 to 100 km/hr) - Heavy rainfall - Hail (<3cm) - Flash flooding	Possible for: - Average winds (60 - 80 km/hr) - Wind gusts (101-115 km/hr) - Heavy rainfall - Hail (3-5cm) - Flash flooding	Likely for: - Average winds (60 - 80 km/hr) - Wind gusts (101-115 km/hr) - Heavy rainfall - Hail (3-5cm) - Flash flooding Possible for: - Average winds (80+ km/hr) - Wind gusts (115+ km/hr) - Intense rainfall - Giant hail (5cm+) - Flash flooding - Tornado - Microburst	Likely for: - Average winds (80+ km/hr) - Wind gusts (115+ km/hr) - Intense rainfall - Giant hail (5cm+) - Flash flooding - Tornado - Microburst
Response Activity	*Consider: Increase level based on consequences of RFAs (e.g. power outages, significant roof/building damage to multiple properties).* Local level Unit response Impacts / consequences of RFAs warrant activation OR Active RFAs per Unit: Rural 1 - 10 Urban/Metro 1 - 20	Local level Unit response Impacts / consequences of RFAs warrant activation OR Active RFAs per Unit: Rural 11 - 40 Urban/Metro 21 - 60	Local level Unit response with additional local agency support Impacts / consequences of RFAs warrant activation OR Active RFAs per Unit Rural 41 and above Urban/Metro 61 and above Active RFAs per EM Region Rural 60 - 100 Urban/Metro 100 - 250	Multi-unit response with increasing multi-agency response Impacts / consequences of RFAs warrant activation OR Active RFAs per EM Region Rural 100 - 250 Urban/Metro 250 - 400 ESTA - Critical Incident Response Plan (CIRP) Level 1 activated.	Multi-unit response with multi-agency support and high level of multi-agency resources utilised. Impacts / consequences of RFAs warrant activation OR Active RFAs per EM Region: Rural 250 - 500 Urban/Metro 400 - 1,000 ESTA - Critical Incident Response Plan (CIRP) Level 2 activated. Event creation has increased to 2-4 per minute. <15 calls waiting.	Multi-unit response and high level of multi-agency response activity with significant impacts across municipalities. Impacts / consequences of RFAs warrant activation OR Active RFAs per EM Region: Rural 500+ Urban/Metro 1,000+ ESTA - Critical Incident Response Plan (CIRP) Level 3 activated. Event creation has increased to 4+ per minute. 15+ calls waiting.
Readiness	VICSES - Business As Usual - Operations			Multi Agency Operations under JSOP 2.03		
State Command SAC, SDO, SOCC	SDO/SAC rostered. Standard VICSES on call arrangements.	SDO/SAC rostered. Standard VICSES on call arrangements.	SCC SAC - consider in place based on forecast areas and timings of impact. SDO - consider in place based on forecast areas and timings of impact.	SCC SAC - in place. SDO - in place. Replacement shift on standby / remote. ESTA SOCC - in place. Replacement shift on standby. VicPol RCC Consider State Water Rescue Commander in place based on risk/impact of flash flood.	SCC SAC - in place. SDO - in place. Replacement shift on standby / in place dependent on timings of impact. ESTA SOCC - in place. Replacement shift on standby / in place dependent on timings of impact. VicPol RCC Consider State Water Rescue Commander in place based on risk/impact of flash flood. Replacement shift on standby / in place dependent on timings of impact.	SCC SAC - in place. SDO - in place. Replacement shift in place where SCC is active day/night. ESTA SOCC - in place. Replacement shift in place dependent on timings of impact. VicPol RCC Consider State Water Rescue Commander in place based on risk/impact of flash flood. Replacement shift in place dependent on timings of impact.
Regional Command RDO, RAC	RDO/RAC rostered. Standard VICSES on call arrangements.	RDO/RAC rostered. Standard VICSES on call arrangements.	ROCC RAC & RDO - consider in in place based on risk/impact to forecast areas and timings of impact. Warnings - consider member in place/standby/remote based on risks/impacts of flash flood in EM Region. Media Liaison - consider member in place/standby/remote to manage media enquiries.	RCC RAC - in place. Replacement shift on standby / remote. ROCC RDO - in place. Replacement shift RDO on standby / remote. Resources - in place (if required). Logistics - in place (if required). *Where, based on RC discretion, an ICC is not active, consider Warnings and Media roles in place/standby/remote.*	RCC RAC - in place. Replacement shift on standby / remote. ROCC RDO - in place. Replacement shift RDO on standby / remote. Resources - in place (if required). Logistics - in place (if required).	RCC RAC - in place. Replacement shift in place where RCC is active day/night. ROCC RDO - in place. Replacement shift RDO on standby / remote. Consider additional support member if RDO activated for night shift alone. Resources - in place. Logistics - in place.
Unit Command UDO, ICP, SCP, DCP	UDO rostered.	UDO rostered.	UDO rostered. Consider plan for activation of ICP if required.	ICP/SCP/DCP activated as per advised command structure.	ICP/SCP/DCP activated as per advised command structure.	ICP/SCP/DCP activated as per advised command structure.
Incident Control Centre(s)	N/A	N/A	N/A	Activated as per JSOP2.03	Activated as per JSOP2.03	Activated as per JSOP2.03
Unplanned Activation	VICSES - Business As Usual - Operations			Multi Agency Operations under JSOP 2.03		
State Command SAC, SDO, SOCC	Standard VICSES on call arrangements.	SDO & SAC aware.	SCC SAC & SDO - consider activation to SCC based on impacts / consequences of RFAs. OR 2 or more EM Regions with impacts activate a ROC.	SCC SAC - activated to SCC. SDO - activated to SCC. Replacement shift on standby / remote. ESTA SOCC - on standby.	SCC SAC - activated to SCC. SDO - activated to SCC. Consideration of replacement shifts to be sourced to manage fatigue. ESTA SOCC - activated to ESTA. Consideration of replacement shifts to be sourced to manage fatigue.	SCC SAC - activated to SCC. SDO - activated to SCC. Consideration of replacement shifts to be sourced to manage fatigue. ESTA SOCC - activated to ESTA. Consideration of replacement shifts to be sourced to manage fatigue.
Regional Command RDO, RAC	Standard VICSES on call arrangements.	RDO actively monitoring as required. RAC monitoring.	ROC RAC & RDO - activated to ROC if EM Region meets identified RFA triggers above. OR Impacts / consequences of RFAs warrant activation. Warnings - consider warnings member activated to based on risks/impacts of flash flood in EM Region.	RCC RAC - activated to RCC. Consideration of replacement shifts to be sourced to manage fatigue. ROC RDO - activated to ROC. Consider additional management support member if RDO activated to ROC alone. Consideration of replacement shifts to be sourced to manage fatigue.	RCC RAC - activated to RCC. Consideration of replacement shifts to be sourced to manage fatigue. ROC RDO - activated to ROC. Consider additional management support member if RDO activated to ROC alone. Consideration of replacement shifts to be sourced to manage fatigue.	RCC RAC - activated to RCC. Consideration of replacement shifts to be sourced to manage fatigue. ROC RDO - activated to ROC. Consider additional management support member if RDO activated to ROC alone. Consideration of replacement shifts to be sourced to manage fatigue.
Unit Command UDO, ICP, SCP, DCP	Consider activation of ICP dependent on consequences / impacts.	Consideration for ICP to be activated if an individual Unit meets identified RFA triggers above. OR Impacts / consequences of RFAs warrant activation.	ICP to be activated if an individual Unit meets identified RFA triggers above. OR Impacts / consequences of RFAs warrant activation.	ICP/SCP/DCP activated as per advised command structure.	ICP/SCP/DCP activated as per advised command structure.	ICP/SCP/DCP activated as per advised command structure.
Incident Control Centre(s)	N/A	N/A	N/A	Activated as per JSOP2.03	Activated as per JSOP2.03	Activated as per JSOP2.03

Effect	Potential Consequences		
People	Some minor inconvenience around local roads.	Increased number of roads being impacted. Traffic management plan should be considered.	Significant number of roads impacted. Traffic management plan is required. Some major roads closed with tree blockages or flash flooding impacts.
Remote Communities	Inconvenience only.	Some minor isolation and loss of utilities of individual properties or remote communities is likely.	Community isolation and loss of food/supplies potential with resupply requirements dependant on time of power or access outages.
Health	Little impact expected. Some local issues might be encountered, but managed locally within own facility plans.	Consideration for review and familiarisation with facility plans. VICPOL and DHHS to review Vulnerable persons list.	Highly likely vulnerable people impacted by power outage will require relocation. Communities without power for days needing support.
Critical Infrastructure	Nil impact.	May require some preparatory work and discussion with owner of infrastructure.	Significant work likely to be required to protect critical infrastructure. Contingency plans put in place if loss of the infrastructure occurs.
Public Infrastructure Essential Community Infrastructure	Limited impact.	Some disruption to access to parks and vegetated community areas and infrastructure. Some minor damage to community infrastructure.	Significant damage to community infrastructure and community facilities. Long term closure of key community facilities likely.
Power	Possible power disruptions.	Likely short term power disruptions.	Power disruptions almost guaranteed, with potential long term outages.
Water Utilities	Little impact expected some local issues might be encountered but managed locally.	Increased potential but still managed locally. May be minor sewerage overflow issues in isolated areas.	Highly likely that some infrastructure will be impacted, water authorities should develop or initiate their plans to address issues. Significant potential for pollutants including sewerage in water and loss of power will exasperate the impacts.
Telecommunications	Unlikely impacts.	Minimal impact to individual premises only.	Significant impact with loss of landlines and mobile powers which will affect peoples capacity to receive warnings and information. Commercial Business impacts with loss of phone services.
Gas	Little impact expected. Some local issues might be encountered but managed locally.	Increased potential for infrastructure damage and disruption but still managed locally.	Likely that some infrastructure will be impacted, supply authorities should develop or initiate their plans to address issues.
Road Network	Unlikely impacts.	Some minor roads may be impacted with possible disruption to critical needs supplies such as milk.	Highly likely for roads to be cut and egress and access impacted. Major roads potentially cut in some locations traffic diversions in place. Potential rescue of trapped persons in vehicles highly likely. Expected impact on rail routes. Economic impact likely with loss of power and utilities supply for lengthy period.
Public Transport	Limited impact on public transport routes.	Impact to public transport routes may occur but likely to be minimal with diversions possible.	Public transport impacts will occur with roads and rail lines cut and no alterative route available. Significant disruption to people movement likely.
Education	Unlikely impacts.	Some impact expected. Traffic management plan for school buses should be considered.	Some school and preschools may be impacted by utilities loss and damage to infrastructure. School bus routes closed for period of time.
Public Events	May be cancelled due to weather conditions only.	Some public events may need to be cancelled or rescheduled due to safety of patrons either whilst at event or travelling to/from the event.	Public events impacted likely cancellation of major events due to wind impacts and risk, and potential flooding impact on venue or ability to attend or leave event.
Tourism	Unlikely that event(s) will be impacted but consideration must be given to any event occurring to ensure it is safe to continue.	Potential impact on tourist locations if area not safe to visit or isolated due to road closures.	May impact on high value tourist locations and facilities with long term impacts in the social and economic environment of communities.
Agriculture Animal welfare	No impact likely with landowners managing any localised issues.	Potential impact with losses to live stock, fencing and crops including high intensive farming of produce and tree farms.	Substantial impact to crops, including high intensive produce farming (vegetables and fruit) and tree farms with short and long term impacts due to loss of crops. Economic impact to area.
Environmental	Minimal impact.	Potential for stream erosion and loss of vegetation around watercourses. Minor tree damage.	Significant disturbance to vegetation with some areas heavily impacted.
Cultural Heritage	Minimal impact likely.	Some disturbance along watercourses may occur, but likely to be minimal.	Potential for impact on historical structures and features.
Relief and Recovery	Relief and recovery activity unlikely may be some local issues.	Increased potential for relief and recovery activity, but likely to be managed locally by LGA with support of DHHS.	Formal arrangements put in place for relief and recovery activity. Regional Recovery Commander appointed. Health Commander in place. Demands on relief and recovery to be substantial and potentially long term.

Regional Agency Commander (VICSES) provides advice to the Regional Controller - State Agency Commander (VICSES) provides advice to State Response Controller re: forecast, impacts, and consideration for varying the actual number, distribution and level of IMT required.