

City of Melbourne

Storm and Flood Emergency Plan

A Sub-Plan of the Municipal Emergency Management Plan

For City of Melbourne

And

VICSES Units Footscray and Port Phillip

Version 5.2, November 2021



This page is Intentionally Blank

Table of Contents

TABLE OF CONTENTS	III
DISTRIBUTION LIST	VIII
DOCUMENT TRANSMITTAL FORM / AMENDMENT CERTIFICATE	IX
LIST OF ABBREVIATIONS & ACRONYMS	X
GLOSSARY	XI
PART 1. INTRODUCTION	1
1.1 APPROVAL AND ENDORSEMENT	1
1.2 PURPOSE AND SCOPE OF THIS STORM AND FLOOD EMERGENCY PLAN	2
1.3 MUNICIPAL EMERGENCY MANAGEMENT PLANNING COMMITTEE (MEMPC)	2
1.4 RESPONSIBILITY FOR PLANNING, REVIEW AND MAINTENANCE OF THIS PLAN	2
PART 2. BEFORE: PREVENTION / PREPAREDNESS ARRANGEMENTS	3
2.1 COMMUNITY AWARENESS FOR ALL TYPES OF STORM AND FLOODING	3
2.2 STRUCTURAL FLOOD MITIGATION MEASURES	3
2.3 NON-STRUCTURAL FLOOD MITIGATION MEASURES	3
2.3.1 <i>Exercising the Plan</i>	3
2.3.2 <i>Storm and Flood Warning</i>	3
2.3.1 <i>Local Knowledge</i>	3
PART 3. DURING: RESPONSE ARRANGEMENTS	4
3.1 INTRODUCTION	4
3.1.1 <i>Activation of Response</i>	4
3.1.2 <i>Responsibilities</i>	4
3.1.3 <i>Council Emergency Operation Centre (CEOC)</i>	4
3.1.4 <i>Escalation</i>	4
3.2 STATE EMERGENCY MANAGEMENT PRIORITIES	5
3.3 THE SIX C'S	5
3.3.1 <i>Control</i>	6
3.3.2 <i>Incident Controller (IC)</i>	6
3.3.3 <i>Incident Control Centre (ICC)</i>	6

3.3.4	<i>Divisions and Sectors</i>	6
3.3.5	<i>Incident Management Team (IMT)</i>	7
3.3.6	<i>Incident Emergency Management Team (IEMT)</i>	7
3.3.7	<i>On Receipt of a Flood Watch / Severe Weather Warning</i>	7
3.3.8	<i>On Receipt of the First and Subsequent Storm and Flood Warnings</i>	8
3.4	COMMUNITY INFORMATION AND WARNINGS.....	8
3.5	MEDIA COMMUNICATION	9
3.6	IMPACT ASSESSMENTS (IA)	10
3.7	PRELIMINARY DEPLOYMENTS.....	10
3.8	RESPONSE TO FLASH AND RIVERINE FLOODING	10
3.9	EVACUATION	11
3.10	FLOOD RESCUE	11
3.11	AIRCRAFT MANAGEMENT	12
3.12	RESUPPLY	12
3.13	ESSENTIAL INFRASTRUCTURE AND PROPERTY PROTECTION	12
3.14	DISRUPTION TO SERVICES.....	13
3.15	LEVEES.....	13
3.16	WASTE WATER RELATED PUBLIC HEALTH ISSUES AND CRITICAL SEWERAGE ASSETS.....	13
3.17	ROAD CLOSURES	14
3.18	DAM SPILLING / FAILURE	14
3.19	ACCESS TO TECHNICAL SPECIALISTS	14
3.20	AFTER ACTION REVIEW	14
PART 4.	AFTER: EMERGENCY RELIEF AND RECOVERY ARRANGEMENTS.....	15
4.1	GENERAL	15
4.2	EMERGENCY RELIEF.....	15
4.3	ANIMAL WELFARE	15
4.4	TRANSITION FROM RESPONSE TO RECOVERY.....	15
APPENDIX A -	FLOOD THREATS FOR CITY OF MELBOURNE	16
	GENERAL.....	16
	RIVERINE FLOODING.....	16
	FLASH FLOODING AND OVERLAND FLOWS.....	16
	TIDAL FLOODING AND STORM SURGES.....	17
	DESCRIPTION OF MAJOR WATERWAYS AND DRAINS	18

HISTORIC STORMS AND FLOODS	19
DAM SPILLING / FAILURE	22
APPENDIX B - TYPICAL FLOOD PEAK TRAVEL TIMES	23
TYPICAL TRAVEL TIMES	23
HISTORICAL TRAVEL TIMES	24
APPENDIX C1 – YARRA RIVER, SOUTHBANK, ELIZABETH STREET & EAST MELBOURNE FLOOD EMERGENCY PLAN	26
OVERVIEW OF FLOODING CONSEQUENCES	26
GAUGES AND WARNINGS	28
AREA MAP OF FLOOD RISK ALONG THE YARRA RIVER AND ITS STORMWATER DRAINS	30
PROPERTIES AT FLOOD RISK	34
ISOLATION	47
ESSENTIAL INFRASTRUCTURE	48
ROAD CLOSURES	48
FLOOD MITIGATION	50
<i>Retarding Basins</i>	50
<i>Pumping Stations</i>	50
SEWERAGE INFRASTRUCTURE	50
<i>Sewer Pumping Stations</i>	50
<i>Sewer Emergency Relief Points</i>	51
COMMAND, CONTROL AND COORDINATION	52
FLOOD IMPACTS AND OPERATIONAL CONSIDERATIONS (INTELLIGENCE CARDS)	52
APPENDIX C2 – MARIBYRNONG FLOOD EMERGENCY PLAN	65
OVERVIEW OF FLOODING CONSEQUENCES	65
GAUGES AND WARNINGS	66
AREA MAP OF FLOOD RISK ALONG THE MARIBYRNONG RIVER	67
PROPERTIES AT FLOOD RISK	70
ISOLATION	71
ESSENTIAL INFRASTRUCTURE	71
ROAD CLOSURES	72
FLOOD MITIGATION	73
<i>Retarding Basins</i>	73
<i>Levees</i>	73

SEWERAGE INFRASTRUCTURE	74
<i>Sewer Emergency Relief Points</i>	74
FLOOD IMPACTS AND OPERATIONAL CONSIDERATIONS (INTELLIGENCE CARDS).....	74
APPENDIX C3 – MOONEE PONDS CREEK FLOOD EMERGENCY PLAN.....	77
OVERVIEW OF FLOODING CONSEQUENCES	77
GAUGES AND WARNINGS.....	78
AREA MAP OF FLOOD RISK WITHIN THE MOONEE PONDS CREEK CATCHMENT	79
PROPERTIES AT FLOOD RISK	82
ISOLATION.....	91
ESSENTIAL INFRASTRUCTURE	91
ROAD CLOSURES	91
FLOOD MITIGATION	93
<i>Retarding Basins</i>	93
<i>Pumping Stations</i>	93
<i>Levees</i> 94	
SEWERAGE INFRASTRUCTURE	94
<i>Sewer Emergency Relief Points</i>	94
COMMAND, CONTROL AND COORDINATION.....	95
FLOOD IMPACTS AND OPERATIONAL CONSIDERATIONS (INTELLIGENCE CARDS).....	95
APPENDIX D - FLOOD EVACUATION ARRANGEMENTS.....	101
<i>Animal Shelter</i>	103
APPENDIX E - FLOOD WARNING SYSTEMS	104
FLOOD AND STORM WARNING	104
FLOOD BULLETINS.....	104
LOCAL FLOOD WARNING SYSTEM ARRANGEMENTS	104
APPENDIX F – MAPS & SCHEMATICS	105
OVERVIEW	105
CATCHMENT SCHEMATICS	116
SEVERE WEATHER VICSES REQUESTS FOR ASSISTANCE MAPS.....	119
APPENDIX H – SEVERE WEATHER (STORM) EVENTS	121
OVERVIEW	121
LARGE STORM EVENTS	121

VICSES REQUESTS FOR ASSISTANCE 121

Distribution List

Copy No.	Issue To:		Date
	Position	Organisation	
Original	MEMP Committee Executive Officer	Melbourne City Council	
1	MEMP Committee Chairperson	Melbourne City Council	
2	MEMO	Melbourne City Council	
3	Deputy MEMO	Melbourne City Council	
4	MRM	Melbourne City Council	
5	Deputy MRM	Melbourne City Council	
6	MERC	Vic Police	
7	Deputy MERC	Vic Police	
8	RERC	Vic Police	
9	North West REMI	Vic Police	
10	Operations Officer Emergency Management	VICSES North West Metro	
11	Controller	VICSES Footscray Unit	
12	Controller	VICSES Port Phillip Unit	
13	Group Manager	Ambulance Victoria	
14	Emergency Management Coordinator	Department of Families, Fairness and Housing	
15	Regional Emergency Management Officer	Department of Transport: Burwood office	
16	FRV Commander	Western Zone	
17	Emergency Management Officer	St John Ambulance	
18	Emergency Management Coordinator	City Water	
19	Coordinator Management Systems	Western Water	
20	Team Leader Hydrology & Flood Warnings	Melbourne Water	
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			

Document Transmittal Form / Amendment Certificate

This Municipal Storm and Flood Emergency Plan (MSFEP) will be amended, maintained and distributed as required by the Victoria State Emergency Service (VICSES) in consultation with the City of Melbourne.

Suggestions for amendments to this Plan should be forwarded to:

VICSES North West Metro Region
Operations Officer – Emergency Management
239 Proximity Drive,
Sunshine West VIC 3020

Amendments listed below have been included in this Plan and promulgated to all registered copyholders.

Amendment Number	Date of Amendment	Amendment Entered By	Summary of Amendment
1	1/3/2012	Alison Tuxworth	Population of template
2	21/5/2012	Alison Tuxworth	Amended references to ensure currency
3	5/9/2012	Anna Brooke	Final Version revised and endorsed by MEMPC
4	11/05/2015	Ross Butler	Updated Appendix A, B, C & F. Addition of Appendix G
4.1	7/1/2016	Gerabeth Abbott and Alison Tuxworth	Amended references to ensure currency, inclusion of distribution list
5	11/1/2016	Gerabeth Abbott	Update to storm and flood emergency plan
5.1	26/6/2016	Gerabeth Abbott and MSFMP subcommittee	Inclusion of operational considerations to Flood Intelligence Cards
5.2	16 /11/2021 22/08/2022	Peter Duncombe Marisha Patton	Updated to new template and terminology Administrative changes

This Plan will be maintained on the VICSES website (ses.vic.gov.au/plan-and-stay-safe/flood-guides/melbourne-city-council) and City of Melbourne websites.

List of Abbreviations & Acronyms

The following abbreviations and acronyms are used in the Plan:

The following abbreviations and acronyms are used in the Plan			
AAR	After Action Review	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	Council Emergency Operation 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
DJSIR	Department of Jobs, Skills, Industry 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
EMT	Emergency Management Team	SHERP	State Health Emergency Response Plan
EO	Executive Officer	SOP	Standard Operating Procedure
FO	Floodway Overlay	VicPol	Victoria Police
FRV	Fire Rescue Victoria	VICSES	Victoria State Emergency Service
FWS	Flood Warning System		
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, floodway's, waterway improvements, water sensitive urban design, integrated water management systems and environment protection measures. All drainage under 60 ha is maintained and operated by Mornington Peninsula Shire 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 Approval and Endorsement

This Municipal Storm and Flood Emergency Plan (MSFEP) has been prepared by City of Melbourne Municipal Emergency Management Planning Committee (MEMPC) pursuant to Section 20 of the *Emergency Management Act 1986* (as amended).

This MSFEP is a sub plan to the City of Melbourne Municipal Emergency Management Plan (MEMP). It is consistent with the State Emergency Management Plan (SEMP), State Flood Emergency Plan and State Storm Emergency Plan (sub-plans of the now superseded State Emergency Response Plan and transitioned to be sub-plans of the SEMP).

It is also consistent with the Victoria State Emergency Service (VICSES) North West Metro Region Storm and Flood Emergency Plans and the Victorian Flood Management Strategy, and takes into account the outcomes of the Community Emergency Risk Assessment (CERA) process undertaken by the City of Melbourne MEMPC.

This MSFEP is a result of the cooperative efforts of the City of Melbourne MEMPC and its member agencies.

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

This Plan is endorsement by the City of Melbourne MEMPC as a sub-plan to the MEMP.

1.2 Purpose and Scope of this Storm and Flood Emergency Plan

The purpose of this MSFEP is to detail arrangements agreed for the planning, preparedness/prevention, response and recovery from storm and/or flood incidents within the City of Melbourne

As such, the scope of the Plan is to:

- Identify the Storm and Flood Risk to the City of Melbourne.
- Support the implementation of measures to minimise the causes and impacts of storm and flood incidents within the City of Melbourne.
- 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/or flood.

1.3 Municipal Emergency Management Planning Committee (MEMPC)

Membership of the City of Melbourne MEMPC is comprised of representatives from various agencies and organisations. Contact lists for the MEMPC membership are available in the City of Melbourne MEMP.

1.4 Responsibility for Planning, Review and Maintenance of this Plan

This MSFEP must be maintained and kept up to date in order to remain effective. This Plan must be assured, approved and published every three years, or more frequently if required.

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

The MEMPC may delegate to a subcommittee or working group to meet at least once per year to review the Plan and provide advice back to the MEMPC accordingly.

The MSFEPC will meet as least once per year or as required.

The plan should be reviewed and where necessary, arrangements and information contained in it 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 and/or flood event within the Municipality.

Part 2. BEFORE: PREVENTION / PREPAREDNESS ARRANGEMENTS

2.1 Community Awareness for all Types of Storm and Flooding

Details of this MSFEP will be released to the community through the local media, VICSES community education programs, websites (VICSES and the Municipality) upon formal endorsement by the Melbourne City Council MEMPC.

VICSES with the support of City of Melbourne and Melbourne Water will coordinate community education programs for storm and flooding within the council area (e.g. Local Flood Guides and public events). Engagement will include raising awareness about the projected impacts on the frequency and intensity of flood and storm events and what actions can be taken to minimise these impacts.

2.2 Structural Flood Mitigation Measures

Structural flood mitigation measures existing within the City of Melbourne area are contained in **Appendix C**.

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, 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 storm and 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 the City of Melbourne municipality 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

Storm and Flood response arrangements may be activated by the VICSES Regional Duty Officer (RDO), Regional Agency Commander (RAC) or Incident Controller (IC).

The VICSES RDO, RAC or IC will activate agencies as required and documented in the VICSES North West Metro Region Flood and Storm Emergency Plans, the State Flood Emergency Plan and the State Storm Emergency Plan (see ses.vic.gov.au/em-sector/vicses-emergency-plans).

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 and/or flood within the City of Melbourne. 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 Melbourne MEMP, the SEMP ([Roles and Responsibilities](#)), State Flood and Storm Emergency Plans and VICSES North West Metro Region Flood and Storm Emergency Plans. (See ses.vic.gov.au/em-sector/vicses-emergency-plans).

3.1.3 Council Emergency Operation Centre (CEOC)

The function, location, establishment and operation of the CEOC will be as detailed in the City of Melbourne MEMP

Liaison with the CEOC will be through the VICSES RDO/IC or established ICC. In the event that the CEOC is not operating, the City of Melbourne Municipal Emergency Management Officer (MEMO) will be contacted.

3.1.4 Escalation

Most storm and/or flood incidents are of local concern and an appropriate response can usually be coordinated using local resources. However, when these resources are exhausted, the Regional arrangements provide for further resources to be made available, firstly from neighbouring Municipalities on a Regional basis and then on a State-wide basis.

Resourcing and event escalation arrangements are described in the SEMP.

3.2 State Emergency Management Priorities

To provide guidance to the Incident Management Team (IMT) and Incident Emergency Management Team (IEMT), the following State Emergency Management Priorities, shall form the basis of incident action planning processes:

1. Protection and preservation of life is paramount. This includes:
 - a) Safety of emergency response personnel; and
 - b) Safety of community members including vulnerable community members and visitors/tourists.
2. Issuing of community information and community warnings detailing incident information that is timely, relevant and tailored to assist community members make informed decisions about their safety.
3. Protection of critical infrastructure and community assets that supports community resilience.
4. Protection of residential property as a place of primary residence.
5. Protection of assets supporting individual livelihoods and economic production that supports individual and community financial sustainability.
6. Protection of environmental and conservation assets that considers the cultural, biodiversity, and social values of the environment.

Circumstances may arise where the IC is required to vary these priorities, with the exception being that the protection of life should remain the highest. This shall be done in consultation with the State Response Controller and relevant stakeholders based on sound incident predictions and risk assessments.

3.3 The Six C's

Arrangements in this MSFEP must be consistent with the Six C's detailed in State and Regional Flood and Storm Emergency Plans. For further information, refer to the SEMP.

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

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

3.3.1 Control

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

Table 9 of the SEMP ([Roles and Responsibilities](#)), identifies VICSES as the Control Agency for storm and flood. It identifies the Department of Environment, Land, Water and Planning DEECA as the Control Agency responsible for dam safety, water and sewerage asset related incidents and other emergencies.

All storm and flood response activities within the City of Melbourne, 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 his / her delegated representative.

3.3.2 Incident Controller (IC)

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

3.3.3 Incident Control Centre (ICC)

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

Pre-determined Incident Control Centre locations are

- Sunshine ICC
- Ferntree Gully ICC
- Dandenong ICC

3.3.4 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.

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

Pre-determined Division Command locations are:

- VICSES Essendon Unit LHQ, 9 Rutherford Street, Aberfeldie.
- VICSES Sunbury LHQ, 21 McDougall road, Sunbury
- VICSES Wyndham West 418 Ballan Road, Wyndham Vale

Sector Command locations are to be allocated on an as needs basis

3.3.5 Incident Management Team (IMT)

The IC will form an IMT in line with Australasian Inter-service Incident Management System (AIIMS) principles.

Refer to the SEMP for guidance on IMTs

3.3.6 Incident Emergency Management Team (IEMT)

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 Melbourne City Council 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 further guidance on IEMTs.

3.3.7 On Receipt of a Flood Watch / Severe Weather Warning

The VICSES RDO (until an IC is appointed) will undertake actions as defined within the Flood Intelligence Cards (**Appendix C**). General considerations by the Incident Controller/VICSES RDO will be as follows:

- Review storm and flood intelligence to assess likely storm and flood consequences, including:
 - Melbourne Water rainfall and river monitoring - [melbournewater.com.au/water-data-and-education/rainfall-and-river-levels - /](http://melbournewater.com.au/water-data-and-education/rainfall-and-river-levels/)).
- Monitor weather and flood information – 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 the Regional Control Centre (RCC) (if established), State Control Centre (SCC) (if established), City of Melbourne, and other emergency services through the IEMT.
- Assess ICC readiness (including staffing of IMT and IEMT) 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.

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

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

- Develop an appreciation of current flood levels and predicted levels: determine if floodwaters are rising, peaking or falling.
- Review storm and 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.
 - What areas may be at risk of building damage.
- Determine what the at-risk community need to know and do as the storm and/or flood develops.
- Warn the at-risk community by ensuring that an appropriate warning and community information strategy. This includes:
 - The current storm and/or flood situation.
 - Storm and/or Flood predictions.
 - What the consequences of predicted storm activity or flood 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 – (bom.gov.au/vic/flood/).
- Continue to conduct reconnaissance of low-lying areas.

3.4 Community Information and Warnings

Guidelines for the distribution of community information and warnings are contained in the VICSES North West Metro Region Storm and Flood Emergency Plans, and the State Flood and Storm Emergency Plans.

Community information and warnings communication methods available locally include:

- Emergency Alert.
- Phone messages (including SMS).
- Radio and Television.

- Two-way radio.
- Mobile and fixed public address systems.
- Sirens.
- Verbal Messages (i.e. Doorknocking).
- Agency Websites, including the VicEmergency website.
- VicEmergency Hotline.
- Variable Message Signs (i.e. road signs).
- Community meetings.
- Newspapers.
- Email.
- Newsletters.
- Letter drops.
- Social media and/or social networking sites (i.e. Twitter and/or Facebook).

Refer to **Appendix C and 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.

Responsibility for public information, including media briefings, rest with VICSES as the Control Agency. City of Melbourne will assist VICSES to warn individuals within the community including activation of flood warning systems, where they exist.

Other agencies such as the Country Fire Authority (CFA), DEECA and Victoria Police (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 landslide is likely or flooding necessitating evacuation of communities is predicted, the IC may consider the use of the Emergency Alert System and Standard Emergency Warning System (SEWS).

The Department of Health (DH) will coordinate information regarding public health and safety precautions.

3.5 Media Communication

The IC through the Public Information Cell established at the ICC will manage Media communication. If the ICC is not established, the VICSES RDO will manage all media communication.

City of Melbourne will work with the IC/VICSES RDO to assist with the dissemination of public messaging and/or warnings to ensure that consistent and timely messaging occurs.

3.6 Impact Assessments (IA)

Impact assessments 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 DFFH, City of Melbourne and 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 if IAs are outlined in the State Flood Emergency Plan and State Storm Emergency Plan. All IAs should be conducted in accordance with current State impact assessment doctrine and SOPs.

3.7 Preliminary Deployments

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

3.8 Response to Flash and Riverine Flooding

Emergency management response to flash/riverine flooding should be consistent with the guideline for the emergency management of flash/riverine flooding contained within the VICSES North West Metro Region Storm and Flood Emergency Plans and State Storm and Flood Emergency Plans.

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

1. Determine if there are barriers to evacuation by considering warning time, safe routes and resources available.
2. If evacuation is possible, then evacuation should be the adopted strategy and it must be supported by a public information capability and a rescue contingency plan.
3. Where it is likely people will become trapped by floodwaters due to limited evacuation options, safety advice needs to be provided to people at risk advising them 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. This advice needs to be provided even when evacuation may be possible, due the likelihood that not all community members will evacuate.
4. For buildings known to be structurally un-suitable an earlier evacuation trigger will need to be established (return to step 1 of this cycle).
5. If an earlier evacuation is not possible then specific preparations must be made to rescue occupants trapped in structurally unsuitable buildings either pre-emptively or as those people call for help.

6. Contact the Municipal Emergency Response Coordinator (MERC) and City of Melbourne MEMO and Municipal Recovery Manager (MRM) at the earliest opportunity to allow relief preparation to commence.

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

Response arrangements for flash and riverine flood events may be contained in **Appendix C**. Refer to the VicTraffic website for road closures. (alerts.vicroads.vic.gov.au).

3.9 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 IEMT.

It is the choice of individuals as to how they respond to this 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 City of Melbourne MEMP and the CBD Safety Plan for detailed evacuation arrangements for flood emergencies for the City of Melbourne. If evacuation is determined as appropriate, City of Melbourne MEMO and MRM should be notified as soon as possible.

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

3.10 Flood Rescue

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

In order to activate water rescue services, VICSES as the 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.

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

3.11 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 Policy 01-Air Operations. The IC may request aircraft support through the State Aircraft Desk located at the SCC. The SCC will establish priorities.

Suitable airbase facilities are located at:

- Essendon
- Moorabbin

3.12 Resupply

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

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

Resupply operations are to be included as part of the emergency relief arrangements as outlined in the City of Melbourne MEMP.

3.13 Essential Infrastructure and Property Protection

Essential Infrastructure and Property (e.g. residences, roads, utilities, telecommunications, power supply 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 and up to date on the storm/flood situation. Essential Infrastructure providers must keep the IC informed of their status and ongoing ability to provide services.

The IC will determine the priorities related the use of sandbags, which will be consistent with the State Emergency Management Priorities.

The City of Melbourne does not maintain a stock of sandbags with back up supplies available via the VICSES Regional Headquarters.

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 historic buildings. If time permits, requests for supplementary supply should be carried out in line with the City of Melbourne MEMP.

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 Melbourne Water, City of Melbourne and VicPol and within appropriate approval frameworks.

Refer to **Appendix C** for further specific details of essential infrastructure requiring protection. Sandbag collection points will be established as needed.

3.14 Disruption to Services

Disruption to services other than essential infrastructure and property can occur in storm/flood events. Refer to **Appendix C** for specific details of likely disruption to services and proposed arrangements to respond to service disruptions in the City of Melbourne.

3.15 Levees

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 State 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.

3.16 Waste Water related Public Health Issues and Critical Sewerage Assets

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

- Advise VICSES and the Melbourne City Council 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 VICSES RDO/IC or established ICC in the event of inundation of critical sewerage assets.

It is the responsibility of the City of Melbourne Environmental Health Officer to inspect and report to the MEMO and the ICC on any water quality issues relating to flooding.

General public health information and messages are provided by City of Melbourne, DFFH and DH and may contain information that is relevant prior to, during and following an incident. Information may also be provided in sub plans to the MEMP, specific health notifications and, after discussions within the IEMT, may be included in Flood Bulletins.

3.17 Road Closures

Melbourne 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 on designated local and regional roads, bridges, walking and bike trails.

VicPol may liaise with and advise City of Melbourne and DoT about the need to erect warning signs and / or closed roads and bridges. DoT are responsible for designated main roads and highways and Councils are responsible for the designated local and regional road network.

DoT, VicPol, and City of Melbourne will communicate community information regarding road closures as outlined in the City of Melbourne MEMP.

3.18 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.

Whilst there are no dams within the Municipality, major dams with potential to cause structural and community damage (in the event of a failure) within the Municipality are contained in **Appendix A**.

3.19 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.

3.20 After Action Review

As the lead agency, VICSES will coordinate the After-Action Review (AAR) arrangements for storm/flood operations as soon as practical following an event.

All agencies involved in the storm/ flood incident should be represented at the AAR.

Part 4. AFTER: EMERGENCY RELIEF AND RECOVERY ARRANGEMENTS

4.1 General

Arrangements for relief and recovery from a storm/flood incident within the City of Melbourne are detailed in the City of Melbourne MEMP.

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 City of Melbourne 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/flood event will be dependent upon the size, impact, and scale of the event. Refer to the SEMP for further information.

Suitable emergency relief/recovery facilities identified for use during storms and/or floods are detailed in the City of Melbourne MEMP. The MRM will facilitate access to emergency relief facilities as required. The MEMO will facilitate access to staging areas as required.

4.3 Animal Welfare

There is nil agricultural activity in the municipality however large events such as horse racing carnivals and agricultural shows may bring large numbers of livestock into the municipality.

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

Matters relating to companion animals will be shared between City of Melbourne 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 City of Melbourne.

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 the emergency management teams (including the IEMT and the MRM). Further information about transition is provided in the SEMP and the City of Melbourne MEMP.

APPENDIX A - FLOOD THREATS FOR CITY OF MELBOURNE

General

The City of Melbourne municipality encompasses an area of 37.6 square kilometres and is surrounded by the Cities of Hobsons Bay and Maribyrnong to the east, Cities of Moonee Valley and Moreland to the north, cities of Yarra and Stonnington to the west, and the City of Port Phillip to the south¹.

The City of Melbourne municipality includes the Melbourne Central Business District (CBD) as well as a number of inner-city suburbs: Port Melbourne; Fishermans Bend; West Melbourne; Flemington; Kensington; North Melbourne; Parkville; Carlton North; Carlton; East Melbourne; Jolimont; South Yarra (part); Southbank; South Wharf; and Docklands¹.

The City of Melbourne municipality contains a wide range of business and industrial areas including¹:

- The Melbourne CBD with retail, financial, legal, recreational, tourist and entertainment facilities;
- The West Melbourne industrial area with the Dynon rail hub, Coode Island petrochemical facility, Swanson, Victoria and Appleton Docks and parts of the Port of Melbourne; and
- Parkville with major hospital, research and institutional facilities including the Royal Melbourne Hospital and the University of Melbourne.

The City of Melbourne municipality is at the hub of a radial road, rail and tram transport network that services the wider Melbourne region.

If flooding occurs along one of the three major waterways; or from flash flooding or storm surges, the infrastructure mentioned may be at risk of disruption from flooding or restricted access.

Riverine Flooding

Large severe floods within the Municipality generally occur as a result of a moist warm airflow from northern Australia bringing moderate to heavy rainfall over a period of 12 hours or more following a prolonged period of general rainfall. The period of general rainfall “wets up” the catchments and (partially) fills both the on-stream dams and the natural floodplain storage. These combine to increase the runoff generated during the subsequent period of heavy rainfall.

Large but less severe floods result from sequences of cold fronts during winter and spring that progressively wet up the catchments and fill the on-stream dams and the natural floodplain storage. Prolonged moderate to heavy rain leads to major flooding.

Flash Flooding and Overland Flows

Short Duration, high intensity rainfall (usually associated with thunderstorms) can also cause localised flooding within the municipality along overland flow paths when the local urban drainage system surcharges. Such events, which are mainly confined to the summer months, do not generally create

¹ Melbourne Water (2018): City of Melbourne Flood Management Plan

widespread flooding since they only last for a short time and affect limited areas. Flooding from these storms occurs with little warning and localised damage can be severe.

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

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

Flooding within City of Melbourne catchments is generally caused by short duration thunderstorm events because these produce the highest rates of runoff in hard-lined drainage systems serving relatively small and highly impervious catchments. Planning Scheme delineations within the Municipality for Flash Flooding events include Special Building Overlays 1 & 2 (SBO1 & SBO2). Contact Melbourne City Council for information on these planning scheme overlays.

Tidal Flooding and Storm Surges

Moderate to heavy rainfall, coupled with a high or incoming tide from Port Phillip Bay can exacerbate flooding within the municipality or create areas of flooding in and around the drainage network. Due to the proximity of the Municipality to Port Phillip Bay and its flat terrain, tidal flows from Port Phillip Bay may reduce the capacity of the stormwater drains to discharge runoff back into the bay, while extreme storm events can cause backflow to the point where water surcharges back above ground around the drainage pits and channels.

Description of Major Waterways and Drains

The City of Melbourne municipality is located at the bottom of the Port Phillip Bay catchment where waterways are saline, groundwater is shallow, and pollution occurs from upstream sources². The City of Melbourne municipality contains three major waterways: the Yarra River; the Maribyrnong River; and Moonee Ponds Creek. See Mapping in **Appendix F**.

The Yarra River begins its journey in the Yarra Ranges to the east of Melbourne and runs through the Yarra Valley and Melbourne’s eastern suburbs before dissecting the City of Melbourne municipality, and discharging into Port Phillip Bay. The Yarra River drains much of eastern and northern Melbourne with the City of Melbourne municipality constituting less than one per cent of its entire catchment area. See Yarra River Catchment Schematic in **Appendix F**.

The Maribyrnong River catchment covers 1,430 square kilometres; it rises to the north-west of Melbourne and drains into the Yarra River. The Maribyrnong River is the western border of the City of Melbourne municipality. See Maribyrnong River Catchment Schematic in **Appendix F**.

The Moonee Ponds Creek catchment covers a total area of 145 square kilometres and flows through Melbourne’s northern suburbs before entering the City of Melbourne municipality². The Moonee Ponds Creek flows into the Yarra River upstream of Appleton Dock through a realigned channel beside the Bolte Bridge. See Moonee Ponds Creek Catchment Schematic in **Appendix F**.

Other waterways or drainage systems within the City of Melbourne municipality include Royal Park Wetland, the Dynon Road Tidal Canal, and Hanna Street Main Drain².

Melbourne Water Drains & Waterways	Suburb/s	Melbourne Water Drains & Waterways	Suburb/s
Arden Street Main Drain	Parkville & North Melbourne	Johnson Street Main Drain	Docklands
Cowderoy Street Main Drain	Melbourne	Maribyrnong River	Flemington, Kensington & West Melbourne
Dynon Road Tidal Canal	West Melbourne	Moonee Ponds Creek	Parkville, North Melbourne, Kensington, West Melbourne & Docklands
Elizabeth Street Main Drain	Melbourne	Royal Park Main Drain	Parkville
Gittus Street Main Drain	Docklands	Yarra Park Main Drain	Melbourne
Hanna Street Main Drain	Melbourne & Southbank	Yarra River	Melbourne, Southbank, South Wharf, Docklands, West Melbourne & Port Melbourne

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

² Melbourne Water (2018): City of Melbourne Flood Management Plan

Historic Storms and Floods

Examples of past flooding in the City of Melbourne municipality include (Melbourne Water, 2007)³:

- The Great Flood of 1891 when the Yarra River rose 14 metres above its normal level in some areas, flooding the riverside suburbs of Collingwood, Richmond and Prahran and leaving approximately 3,000 people homeless.
- In 1934, 350mm of rain fell in 48 hours over the Yarra catchment, with 140mm falling over metropolitan areas. Riverine flooding was widespread with 6,000 left homeless and 18 deaths.
- Major floods also inundated the floodplains of the lower Maribyrnong River in September 1906, September 1916 and May 1974.

Throughout history, alterations have been made to the flow of watercourses in the Municipality to help manage flooding and improve access for ships. These include the creation of the Coode Channel and Coode Island in 1886 and creation of Herring Island in 1929.

The City of Melbourne municipality has been especially affected by overland flows, such as on Elizabeth and Flinders Streets. For example, on 17 February 1972, 78.5mm of rain fell in one hour over the Melbourne CBD, causing significant disruption to transport and businesses and extreme flooding on Elizabeth Street (Melbourne Water, 2007).

Major riverine flooding occurred across the City of Melbourne municipality in February 2005, causing little property damage but significant widespread disruption to transport infrastructure. Flash flooding in the CBD in 2010 caused hundreds of thousands of dollars damage to property (Melbourne Water, 2010). The City of Melbourne drainage works program is planning for improvements to the Melbourne Water and local Council drainage network to help mitigate the consequences of flash flooding within the municipality.

³ Melbourne Water (2018): City of Melbourne Flood Management Plan

Significant floods (floods exceeding flood class levels) to have occurred within the City of Melbourne are as follows in the tables below. Table A10 details storm surge events or riverine flood events to have occurred along the Yarra River and surrounds whereas Table A11 highlights riverine flood events along the Maribyrnong River and Moonee Ponds Creek.

Flood Event (Southbank impacted by Storm Surge)	Yarra River Southbank (229663A)
	River Level
Normal Tide Level	0.3m to 0.9m
Minor	1.1m
Moderate	1.3m
Major	1.6m
13 th July 1891	2.24m
1 st December 1934	1.61m
29 th June 1980	1.15m
16 th October 1984	1.17m
25 th July 1988	1.18m
27 th June 1990	1.27m
15 th August 1991	1.14m
11 th September 1991	1.28m
28 th April 1994	1.10m
27 th May 1994	1.20m
6 th November 1994	1.24m
7 th November 1994	1.36m
10 th February 1996	1.10m
15 th May 1999	1.21m
28 th May 2000	1.11m
25 th July 2000	1.11m
11 th November 2001	1.22m
6 th June 2003	1.14m

Flood Event	Maribyrnong River Maribyrnong (230106A)	Docklands (586100)	Moonee Ponds Creek Flemington (229643A)	
	River Level	Rainfall at Gauge	Rainfall at Gauge	Creek Level
Normal Water Level	0.5m			0.2m
Minor	1.7m			-
Moderate	2.3m			-
Major	2.9m			-
13 th July 1891	3.32m	-	-	-
8 th September 1906	4.50m	-	-	-
22 nd September 1916	4.26m	-	-	-
25 th August 1924	2.98m	-	-	-
7 th November 1954	2.83m	-	-	-
11 th December 1954	2.98m	-	-	-
6 th November 1971	2.52m	-	-	-
14 th May 1974	4.20m	-	-	-
18 th September 1975	2.67m	-	-	-
21 st October 1975	1.75m	-	-	-
25 th October 1975	2.61m	-	-	-
8 th April 1977	2.74m	-	-	-
1 st July 1977	1.87m	-	-	-
8 th August 1978	2.94m	-	-	-
20 th November 1978	1.74m	-	-	-
16 th October 1983	3.37m	-	-	-
11 th December 1985	1.89m	-	-	-
30 th July 1987	3.16m	-	-	-

Flood Event (Southbank impacted by Storm Surge)	Yarra River Southbank (229663A)	Flood Event	Maribyrnong River Maribyrnong (230106A)	Docklands (586100)	Moonee Ponds Creek Flemington (229643A)	
	River Level		River Level	Rainfall at Gauge	Rainfall at Gauge	Creek Level
19 th June 2004	1.31m	11 th June 1989	2.25m	-	-	-
3 rd February 2005	1.37m	18 th July 1990	1.97m	-	-	-
2 nd July 2008	1.10m	15 th September 1993	3.83m	-	-	1.65m
25 th August 2009	1.14m	27 th December 1999	1.23m	50mm / 27 hrs	45mm / 25 hrs	2.27m
12 th August 2010	1.24m	23 th October 2000	1.90m	36mm / 18 hrs	40mm / 19 hrs	1.93m
5 th July 2011	1.22m	3 rd December 2003	0.85m	26mm / 3 hrs	38mm / 2 hrs	2.32m
23 rd March 2012	1.16m	3 rd February 2005	2.21m	136mm / 28 hrs	147mm / 28 hrs	2.61m
9 th April 2012	1.10m	6 th March 2010	0.49m	51mm / 3 hrs	33mm / 3 hrs	1.65m
5 th January 2014	1.17m	30 th October 2010	0.66m	40mm / 6 hrs	39mm / 7 hrs	1.77m
24 th June 2014	1.25m	14 th January 2011	2.21m	17mm / 4 hrs	21mm / 5 hrs	1.50m
1 st August 2014	1.16m	4 th & 5 th February 2011	0.72m	39mm / 1 hr and 28mm / 3 hrs	20mm / 1 hr and 26mm / 4 hrs	1.64m
23 rd June 2016	1.20m	1 st June 2013	0.89m	25mm / 5 hrs	26mm / 3 hrs	3.13m
13 th July 2016	1.14m	29 th December 2016	0.65m	21mm / 1 hr 30 mins	15mm / 2 hrs	1.90m
25 th July 2016	1.13m	1 st & 2 nd December 2017	0.62m	9mm / 1 hr and 20mm / 2 hrs	10mm / 30mins and 19mm / 2 hrs	1.73m
29 th October 2017	1.15m	19 th December 2017	0.82m	17mm / 30 mins	18mm / 20 mins	1.72m
		6 th November 2018	0.66m	33mm / 1 hr 30 mins	35mm / 2 hrs	2.16m
		14 th December 2018	0.54m	48mm / 30 mins	15mm / 1 hr	1.47m

Table A10 – Selection of historical flood and storm events along the Yarra River at Southbank, the Maribyrnong River at Maribyrnong and the Moonee Ponds Creek at Flemington

Dam Spilling / Failure

Flooding resulting from failure of the following dams is likely to cause significant structural and community damage within the City of Melbourne. See Dam Failure in Section 3 of this plan for more information. Note that if the storage capacity is reached and water flows over the spillway, this is not to be referred to as a flow release or a storage breach or failure.

Dam	Location	Owner	Dam Capacity	Full Supply Level	Melway Reference
Greenvale Reservoir	Greenvale	Melbourne Water	27,195 ML	167.12m AHD	179 D6
Rosslynne Dam	3km northwest of Gisborne	Southern Rural Water	25,400ML	450.9m AHD	VicMap Book 6443 F1
Sugarloaf Reservoir	Christmas Hills	Melbourne Water	93,411 ML	178.00m AHD	273 E6
Upper Yarra Reservoir	Reefton	Melbourne Water	200,051 ML	366.53m AHD	X912 U2

Table A12 – Large Dams around Greater Melbourne with flooding consequence risks within the City of Melbourne

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, because of the urban environment found downstream causing floodwaters to enter the waterway quicker than those in a more rural setting upstream, because of tidal influences, or lastly because of the existence of retarding basins upstream.

Typical Travel Times

Location From (gauge)	Location To (gauge)	Typical Travel Time	Flood Class	Comments
YARRA RIVER				
Burnley	Southbank	Between (-1) to 2 hours	Minor Flood at Southbank	Due to impacts of tidal flows upstream along the Yarra River, typical travel times can vary greatly
Burnley	Southbank	Between (-1) to 1 hour	Moderate Flood at Southbank	
Burnley	Southbank	Unknown	Major Flood at Southbank	
MARIBYRNONG RIVER				
Keilor	Maribyrnong	Between 1 to 6 hours	Minor Flood at Maribyrnong	Inflows from Jacksons Creek & Deep Creek upstream of Keilor North will likely impact on flood magnitude downstream at Maribyrnong.
Keilor	Maribyrnong	Between 3 to 5 hours	Moderate Flood at Maribyrnong	
Keilor	Maribyrnong	Between 2 to 4 hours	Major Flood at Maribyrnong	
MOONEE PONDS CREEK				
Jacana	Flemington	First Peak: Flemington to peak 15 hours to 5 hours before Jacana Second Peak: Flemington to peak 1 hour before Jacana, or 1 to 5 hours afterwards		Two flood peaks occur and are generally experienced downstream earlier than upstream because of the existence of the Retarding Basin at Jacana

Table B1 – Typical Flood Travel Times between gauges on the Yarra River, Maribyrnong River and Moonee Ponds Creek

Historical Travel Times

Flood Event	Location From (gauge)	Location To (gauge)	Flood Peak Travel Time	Flood Class at
YARRA RIVER				Southbank
29 th June 1980	Burnley	Southbank	Less than 1 hour	Minor
16 th October 1984	Burnley	Southbank	Less than 1 hour	Minor
25 th July 1988	Burnley	Southbank	1 hour	Minor
15 th August 1991	Burnley	Southbank	Less than 1 hour	Minor
11 th September 1991	Burnley	Southbank	Less than 1 hour	Minor
7 th November 1994	Burnley	Southbank	Less than 1 hour	Moderate
10 th February 1996	Burnley	Southbank	Southbank peaked 1 hour before Burnley	Minor
15 th May 1999	Burnley	Southbank	Less than 1 hour	Minor
28 th May 2000	Burnley	Southbank	Less than 1 hour	Minor
25 th July 2000	Burnley	Southbank	Less than 1 hour	Minor
6 th June 2003	Burnley	Southbank	Southbank peaked 1 hour before Burnley	Minor
19 th June 2004	Burnley	Southbank	1 hour	Moderate
3 rd February 2005	Burnley	Southbank	Southbank peaked 1 hour before Burnley	Moderate
2 nd July 2008	Burnley	Southbank	Southbank peaked 1 hour before Burnley	Minor
25 th August 2009	Burnley	Southbank	Southbank peaked 1 hour before Burnley	Minor
12 th August 2010	Burnley	Southbank	Less than 1 hour	Minor
5 th July 2011	Burnley	Southbank	Southbank peaked 1 hour before Burnley	Minor
23 rd March 2012	Burnley	Southbank	Less than 1 hour	Minor
9 th April 2012	Burnley	Southbank	Less than 1 hour	Minor
5 th January 2014	Burnley	Southbank	Southbank peaked 1 hour before Burnley	Minor
24 th June 2014	Burnley	Southbank	1 hour	Minor
1 st August 2014	Burnley	Southbank	2 hours	Minor
MARIBYRNONG RIVER				Maribyrnong
18 th September 1975	Keilor	Maribyrnong	3 hours	Moderate
21 st October 1975	Keilor	Maribyrnong	1 hour	Minor
25 th October 1975	Keilor	Maribyrnong	17 hours	Moderate
8 th April 1977	Keilor	Maribyrnong	5 hours	Moderate
1 st July 1977	Keilor	Maribyrnong	2 hours	Minor
8 th August 1978	Keilor	Maribyrnong	4 hours	Major
20 th November 1978	Keilor	Maribyrnong	5 hours	Minor
16 th October 1983	Keilor	Maribyrnong	4 hours	Major
11 th December 1985	Keilor	Maribyrnong	3 hours	Minor
30 th July 1987	Keilor	Maribyrnong	2 hours	Major
11 th June 1989	Keilor	Maribyrnong	1 hour	Minor
18 th July 1990	Keilor	Maribyrnong	1 hour	Minor
15 th September 1993	Keilor	Maribyrnong	3 hours	Major
23 rd October 2000	Keilor	Maribyrnong	6 hours	Minor
3 rd February 2005	Keilor	Maribyrnong	Keilor peaked 5 hours before Maribyrnong	Minor

Flood Event	Location From (gauge)	Location To (gauge)	Flood Peak Travel Time	Flood Class at
14 th January 2011	Keilor	Maribyrnong	3 hours	Moderate
MOONEE PONDS CREEK				N/A
27 th December 1999	Jacana	Flemington	Less than 1 hour	
22 nd March 2001	Jacana	Flemington	Flemington peaked 5 hours before Jacana	
3 rd December 2003	Jacana	Flemington	First Peak: Flemington peaked 10 hours before Jacana; Second Peak: Both gauges peaked within an hour of each other	
3 rd February 2005	Jacana	Flemington	First Peak: Flemington peaked 5 hours before Jacana; Second Peak: 1 hour	
14 th January 2011	Jacana	Flemington	Less than 1 hour	
1 st June 2013	Jacana	Flemington	3 hours	

Table B2 – Historical Flood Travel Times between gauges on the Yarra River, Maribyrnong River and Moonee Ponds Creek

APPENDIX C1 – YARRA RIVER, SOUTHBANK, ELIZABETH STREET & EAST MELBOURNE FLOOD EMERGENCY PLAN

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 Yarra River in the City of Melbourne					
Property					
Properties	177				
Residential	0				
Commercial	40				
Industrial	0				
Public Land	5				
Capital City Zone	132				
Community Infrastructure					
Community Venues	1	Boyd Community Hub on City Road, Southbank			
Schools / Colleges	1	Victorian College of the Arts Secondary School on Miles Street, Southbank			
Essential Infrastructure					
Major Roads	7	Batman Avenue, City Road, Citylink on and off ramps, Clarendon Street, Flinders Street, Kings Way, and Punt Road			
Bus & Tram Routes	5	Tram Routes 1, 12, 55, 96 & 109			
Emergency Services	1	Southbank FRV Station isolation risk			
Helipads	2	Helipad Pontoons at Batman Park and Seafarers Bridge			
Drainage & Water Facilities	1	Pumping Station at Crown Casino, Southbank			
Sewerage Facilities	3	Pumping Station at Crown Casino, Southbank; and two Emergency Relief Points in South Yarra and Spotswood			
Tourism / Recreation					
Reserves & Parks	2	Alexandra Gardens on Alexandra Avenue; and Batman Park on Flinders Street			
Trails & Footbridges	4	Flinders Walk Trail; Main Yarra Trail; South Wharf Promenade including under the Charles Grimes Bridge; Yarra Promenade			
Economic					
Business of Interest	2	Melbourne Aquarium on King Street; and Ponyfish Café under Evan Walker Bridge			
Government Boundaries					
Local Gov't Areas	1	Melbourne	CMA	1	Port Phillip & Westernport
Adjacent LGAs	3	Port Phillip, Stonnington and Yarra	CFA District	0	
SES Unit Area	2	Footscray and Port Phillip	FRV District	1	North West & Southern Metro

Table C1.1 – Consequence Summary of 1% AEP flood along the Yarra River in the City of Melbourne

The lowest section of the Yarra River runs through the City of Melbourne where it discharges into Port Phillip Bay at Port Melbourne / Fishermans Bend. Open waterways such as the Maribyrnong River

and Moonee Ponds Creek; and underground drains including Elizabeth Street and Hanna Street all connect to the Yarra River at various locations in the Municipality.

This section of the Yarra River is influenced by tide levels. As such, high tides can impact on the ability of storm water to enter the River from the waterways listed above, contributing to flooding along those waterways/drains.

Areas of concern from flooding along the Yarra River are the promenade along Southbank including Ponyfish Island as well Queens Bridge Street. However, most impacts occur when flash flooding is seen along the Elizabeth Street Drain in the CBD and Hanna Street Drain in Southbank. Many roads will be flooded during various storm events including Elizabeth Street and Flinders Street in the CBD and City Road, Clarendon Street and Kings Way in Southbank. Along these roads and surrounding areas, many ground floors of shops/businesses & residential buildings are expected to be flooded over-floor. Trams and traffic along these routes are expected to be affected with these roads likely impassable for a period. Drainage improvement works have commenced on Elizabeth Street Drain. Refer to Flood Intelligence cards for further information.

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 flash flooding around the CBD, Southbank, Fishermans Bend and East Melbourne

Property					
Properties	365				
Residential	55				
Docklands Zone	98				
Industrial	3				
Capital City Zone	188				
Public Land	7				
Commercial	14				
Community Infrastructure					
Community Venues	2	Boyd Community Hub; and Bourke Street Mall			
Schools / Colleges	1	Victorian College of the Arts Secondary College			
Essential Infrastructure					
Major Roads	6	City Road, Citylink on and off ramps at Kings Way, Clarendon Street, Kings Way, Hoddle Street and Victoria Parade			
Railway	2	Flinders Street Station (Elizabeth Street and Degraeves Street pedestrian subways); and Melbourne Central Station (Elizabeth Street entrance)			
Bus & Tram Routes	10	Tram Routes: 1, 12, 19, 55, 57, 59, 70, 75, 96 & 109			
Emergency Services	1	Southbank FRV Station (Isolation risk)			
Sewerage Facilities	1	Pumping Station in Port Melbourne			
Government Boundaries					
Local Gov't Areas	1	Melbourne	CMA	1	Port Phillip and Westernport
Adjacent LGAs	3	Port Phillip, Stonnington and Yarra	CFA District	0	
SES Unit Area	2	Footscray and Port Phillip	FRV District	1	North West & Southern Metro

Table C1.2 – Consequence Summary of 1% AEP flash flooding in the CBD, Southbank, Fishermans Bend, Melbourne and East Melbourne

Gauges and Warnings

Warnings are available for flooding expected along the Yarra River at Southbank see Table C1.3 for details. Warning times of between 12-54 hours may be given depending on where the flooding originates from along the catchment. These warning times are for predictions of the arrival of the flood peak; noting that flooding will begin to occur earlier.

No formal warning times have been established for flooding along the Yarra River resulting from Tidal Surges or Port Phillip Bay flooding. This may have implications for the populations sleeping rough who often choose to shelter under bridges; only the levels at which bridge tops have been identified.

For other 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	Rain Gauge	Tide Level Gauge	Melway Reference
Melbourne Olympic Park	86338	Olympic Park, Melbourne		✓		2G B9
North Wharf	586100	Between Siddeley Street and Seafarers Bridge, Docklands		✓		2E K8
St Kilda Marina at St Kilda	229670A	St Kilda Marina, Marine Pde, St Kilda		✓	✓	2P A12
Yarra River at Burnley	229621A	North side of River and Freeway at SP AusNet Richmond Terminal Station, Richmond	✓	✓	✓	2M C1
Yarra River at Hawthorn	229687A	North side of Channel at Glenferrie Road bridge under the Monash Fwy, Hawthorn	✓*			45 A11
Yarra River at Johnston Street, Abbotsford	229622A	West side of the river at Johnston St bridge, Abbotsford	✓*			2D C8
Yarra River at Spencer Street, Southbank	229663A	Yarra Promenade at Crown Entertainment Complex, Southbank	✓		✓	2F B8

Table C1.3 – Gauges within the Yarra River catchment monitoring flood levels for the City of Melbourne

* Gauge may be influenced by tidal currents up the Yarra River to Dights Falls, Abbotsford.

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.

There are currently two Melbourne Water flood warning gauges on the Yarra River that could be used to assist with public safety through the issue of flood warnings. These are at Abbotsford and Southbank. Those gauges with flood class levels established are outlined in the table below.

Gauge	River / Creek Flood Class Level		
	Minor	Moderate	Major

Yarra River at Johnston Street, Abbotsford	2.7m	6.7m	8.9m
Yarra River at Spencer Street, Southbank	1.1m	1.3m	1.6m

Table C1.4 – Gauges with established flood class levels used for Flood Warning within the City of Melbourne for the Yarra River

At these sites, 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>). While the City of Melbourne monitors these warnings in times of high rainfall, there are no specific guidelines to advise how these situations should be responded to.

Area Map of Flood Risk along the Yarra River and its stormwater drains

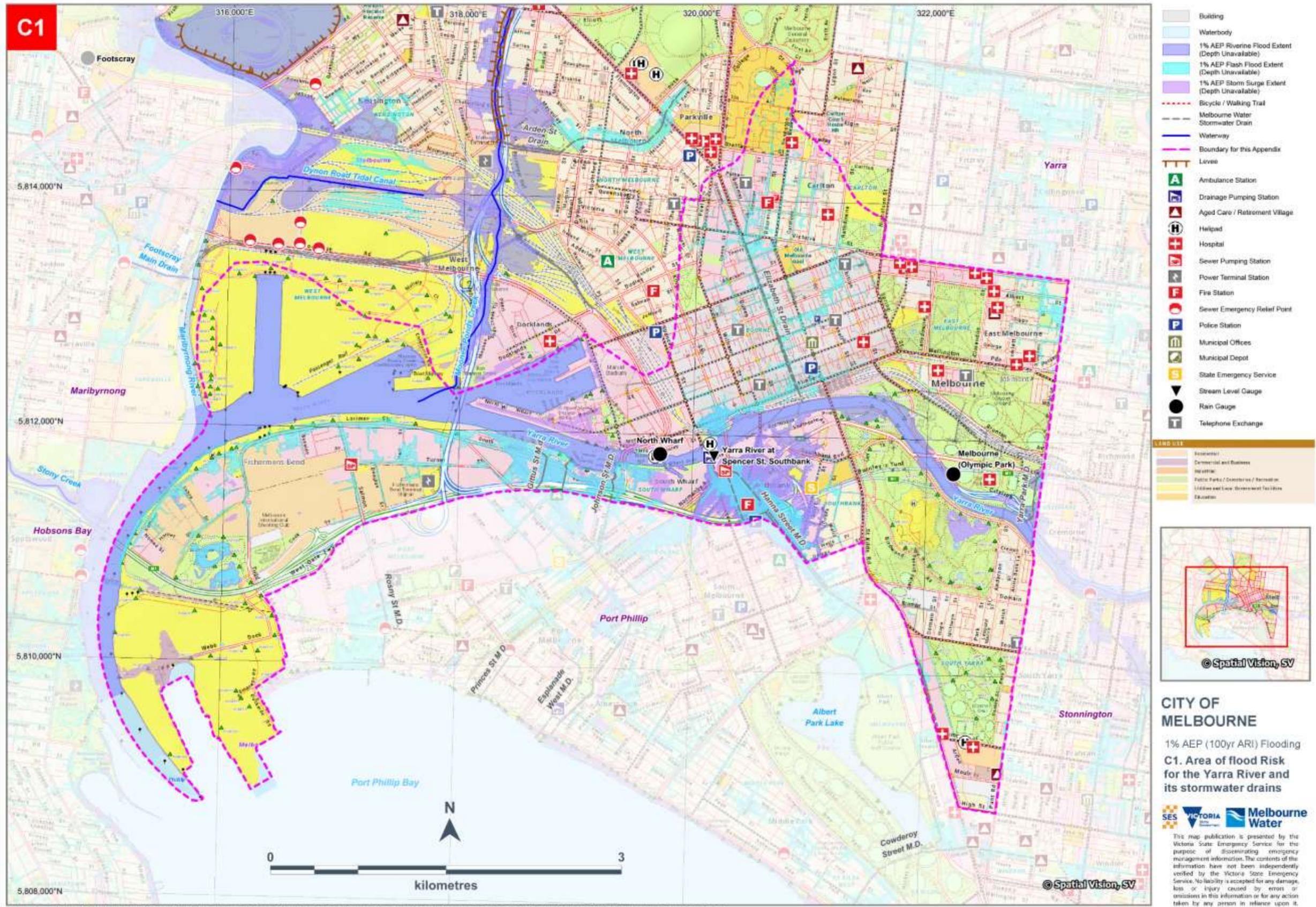


Figure C1.1 – Areas of flood risk along the Yarra River and its stormwater drains in the City of Melbourne

Areas of the CBD, Southbank, Fishermans Bend and Melbourne that may be affected by flooding during high rainfall events are highlighted in Figure C1.2 & C1.3. Hot Spots identified are detailed in table C1.5:

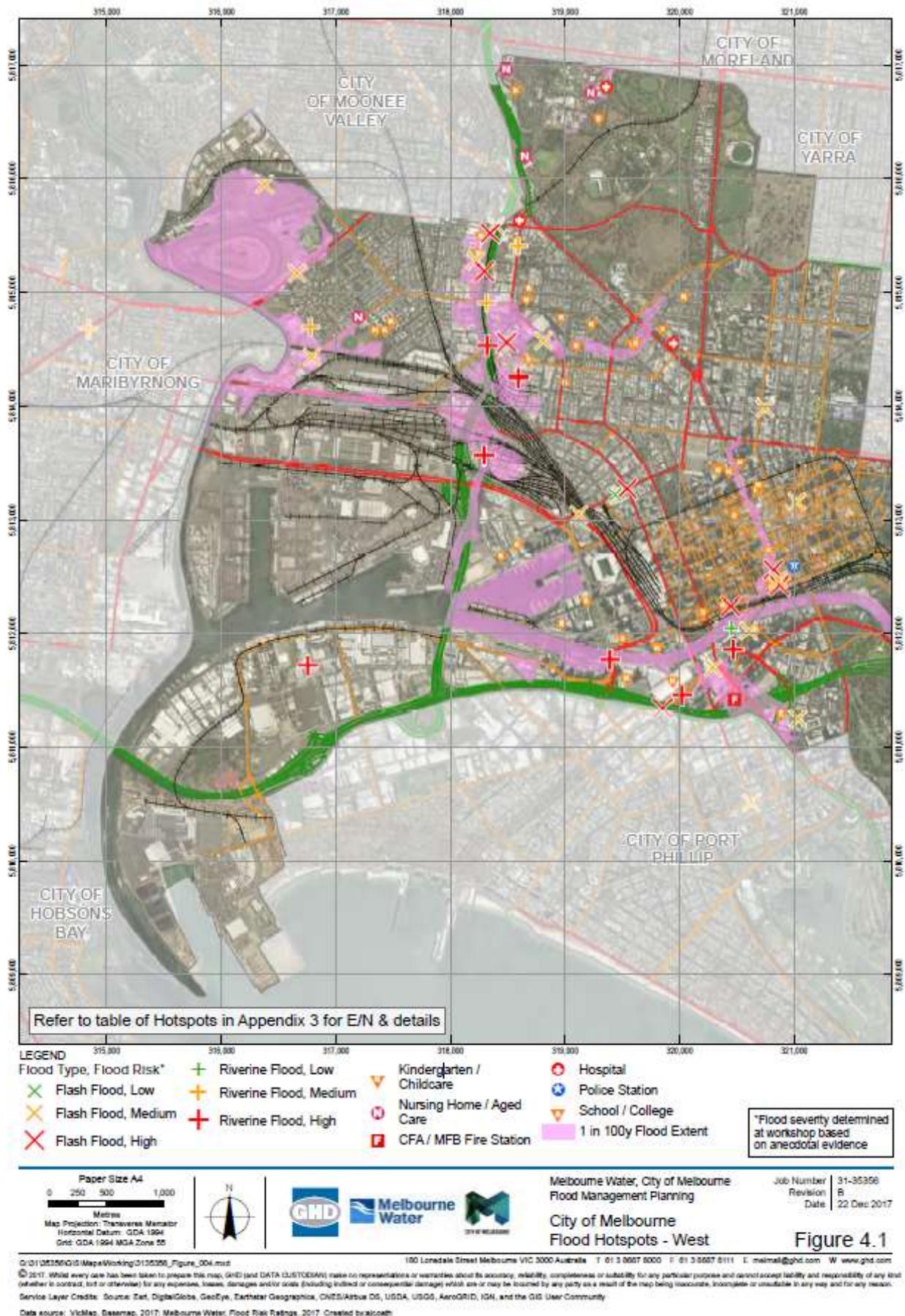


Figure C1.2 – Melbourne City Council Identified Hot Spots (West) (City of Melbourne Flood Management Plan 2018)

Suburb	Flood Type	Street/s	Flooding Description	Melbourne City Council Flood Severity
CBD	Flash	Dudley Street	Dudley St road subject to total inundation at low poin	High
Southbank	Flash	Clarendon Street	Crown Casino Pump Station PS02 – Clarendon Street, Southbank	High
Southbank	Riverine	Whiteman Street	Whiteman Street, Southbank (west of Clarendon Street), low lying area prone to flooding under high river tail waters	High
CBD	Flash	Elizabeth Street	Elizabeth Street at Flinders Street	High
Fishermans Bend	Riverine		Fisherman's Bend precinct. Low lying precinct subject to river flooding.	High
Southbank	Riverine	Charles Grimes Bridge	Charles Grimes Bridge home to rough sleepers. High risk of death – sleeping in river bed.	High
Southbank	Riverine	Crown & Yarra Promenade	Crown and Southbank, rough sleeping along lower levels	High
CBD	Flash	Flinders Street	Flinders Street as an extension of Elizabeth Street flooding	High
South Yarra	Riverine	Hoddle Bridge	Rough sleepers. High risk of death due to sleepers in river bed.	High
South Melbourne	Flash	Park Street	Under light rail line, localised flooding	Medium
Southbank	Flash	Wells Street	flooding due to limited pipe capacity	Medium
CBD	Riverine	Queensbridge Street	Low lying and prone to flooding when river level is high	Medium
South Yarra	Riverine	Swan Street underpass	Bike path under Swan Street bridge south of river subject to river inundation	Medium
CBD	Flash	Lonsdale Street at Russell Stret	Ponding noted at intersection during high intensity rainfall	Medium
Southbank	Flash	Clarendon Street	Flooding of road affecting traffic and trams	Medium
CBD	Flash	Flinders Street Station	Elizabeth Street and Degraves Street pedestrian subways	Medium
CBD	Flash	Enterprise Park	Flinders Street Viaduct. Rough sleepers. Not low lying so lower risk	Low

Table C1.5 – Flood Risks and Hotspots identified in Melbourne Water and City of Melbourne workshop as part of the Flood Management Plan 2018 development

Properties at Flood Risk

Properties listed in the table below are at risk from flooding along the Yarra River. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Yarra River (Lower) (GHD, September 2020) flood mapping and risk assessment program. Note that any multi-lot properties situated above ground floor likely impacted by isolation only with flooding on ground floor impacting access to common areas and/or carpark and storage facilities. Information on above ground-floor properties is not available in this list.

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 the Yarra River						
Residential			Commercial	Industrial	Capital City Zone	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	1-13 Balston Street	Southbank	Yarra River	Riverine
		✓	Boathouse Drive	Melbourne	Yarra River	Riverine
		✓	10-24 Cecil Street	Southbank	Yarra River	Riverine
		✓	9 Chessell Street	Southbank	Yarra River	Riverine
		✓	15 Chessell Street	Southbank	Yarra River	Riverine
		✓	18-28 Chessell Street	Southbank	Yarra River	Riverine
		✓	21-23 Chessell Street	Southbank	Yarra River	Riverine
		✓	25-29 Chessell Street	Southbank	Yarra River	Riverine
		✓	16-60 City Road	Southbank	Yarra River	Riverine
		✓	63 City Road	Southbank	Yarra River	Riverine
		✓	67-69 City Road	Southbank	Yarra River	Riverine
		✓	71 City Road	Southbank	Yarra River	Riverine
		✓	77-79 City Road	Southbank	Yarra River	Riverine
		✓	81 City Road	Southbank	Yarra River	Riverine
		✓	85-87 City Road	Southbank	Yarra River	Riverine
		✓	89-91 City Road	Southbank	Yarra River	Riverine
		✓	135 City Road	Southbank	Yarra River	Riverine
		✓	151 City Road	Southbank	Yarra River	Riverine
		✓	163 City Road	Southbank	Yarra River	Riverine
		✓	167-169 City Road	Southbank	Yarra River	Riverine
		✓	171-193 City Road	Southbank	Yarra River	Riverine
		✓	180 City Road	Southbank	Yarra River	Riverine
		✓	190-198 City Road	Southbank	Yarra River	Riverine
		✓	207 City Road	Southbank	Yarra River	Riverine
		✓	235-239 City Road	Southbank	Yarra River	Riverine
		✓	241 City Road	Southbank	Yarra River	Riverine
		✓	245-261 City Road	Southbank	Yarra River	Riverine
		✓	252 City Road	Southbank	Yarra River	Riverine
		✓	256-258 City Road	Southbank	Yarra River	Riverine
		✓	260-266 City Road	Southbank	Yarra River	Riverine
		✓	268-270 City Road	Southbank	Yarra River	Riverine

Properties at risk from Flooding along the Yarra River						
Residential			Commercial	Industrial	Capital City Zone	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	272 City Road	Southbank	Yarra River	Riverine
		✓	274 City Road	Southbank	Yarra River	Riverine
		✓	276 City Road	Southbank	Yarra River	Riverine
		✓	278 City Road	Southbank	Yarra River	Riverine
		✓	280 City Road	Southbank	Yarra River	Riverine
		✓	282 City Road	Southbank	Yarra River	Riverine
		✓	283 City Road	Southbank	Yarra River	Riverine
		✓	284-290 City Road	Southbank	Yarra River	Riverine
		✓	285 City Road	Southbank	Yarra River	Riverine
		✓	292-294 City Road	Southbank	Yarra River	Riverine
		✓	300 City Road	Southbank	Yarra River	Riverine
		✓	308-310 City Road	Southbank	Yarra River	Riverine
		✓	312-320 City Road	Southbank	Yarra River	Riverine
		✓	28 Clarendon Street	Southbank	Yarra River	Riverine
		✓	50-54 Clarendon Street	Southbank	Yarra River	Riverine
		✓	56-58 Clarendon Street	Southbank	Yarra River	Riverine
		✓	57-91 Clarendon Street	Southbank	Yarra River	Riverine
		✓	60-62 Clarendon Street	Southbank	Yarra River	Riverine
		✓	64-68 Clarendon Street	Southbank	Yarra River	Riverine
		✓	93-103 Clarendon Street	Southbank	Yarra River	Riverine
		✓	25-29 Clarke Street	Southbank	Yarra River	Riverine
		✓	43-47 Clarke Street	Southbank	Yarra River	Riverine
		✓	51-65 Clarke Street	Southbank	Yarra River	Riverine
		✓	54 Clarke Street	Southbank	Yarra River	Riverine
		✓	56 Clarke Street	Southbank	Yarra River	Riverine
		✓	58 Clarke Street	Southbank	Yarra River	Riverine
		✓	60-66 Clarke Street	Southbank	Yarra River	Riverine
		✓	67-69 Clarke Street	Southbank	Yarra River	Riverine
		✓	162-170 Coventry Street	South Melbourne	Yarra River	Riverine
		✓	172-174 Coventry Street	South Melbourne	Yarra River	Riverine
		✓	100 Dorcas Street	Southbank	Yarra River	Riverine
		✓	127 Dorcas Street	South Melbourne	Yarra River	Riverine
✓	✓	✓	Pony Fish Café under Evan Walker Bridge	Southbank	Yarra River	Riverine
		✓	79 Fawkner Street	Southbank	Yarra River	Riverine
		✓	490 Flinders Street	Melbourne	Yarra River	Riverine
		✓	492-500 Flinders Street	Melbourne	Yarra River	Riverine
		✓	502-504 Flinders Street	Melbourne	Yarra River	Riverine
		✓	508-514 Flinders Street	Melbourne	Yarra River	Riverine
		✓	516-518 Flinders Street	Melbourne	Yarra River	Riverine
		✓	520-522 Flinders Street	Melbourne	Yarra River	Riverine
		✓	524 Flinders Street	Melbourne	Yarra River	Riverine
		✓	525 Flinders Street	Melbourne	Yarra River	Riverine
		✓	539-545 Flinders Lane	Melbourne	Yarra River	Riverine

Properties at risk from Flooding along the Yarra River						
Residential		Commercial	Industrial	Capital City Zone	Public Use	
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	546 Flinders Street	Melbourne	Yarra River	Riverine
		✓	555 Flinders Street	Melbourne	Yarra River	Riverine
		✓	556-560 Flinders Street	Melbourne	Yarra River	Riverine
		✓	1-9 Freshwater Place	Southbank	Yarra River	Riverine
		✓	45 Haig Street	Southbank	Yarra River	Riverine
		✓	50 Haig Street	Southbank	Yarra River	Riverine
		✓	11-13 Hancock Street	Southbank	Yarra River	Riverine
		✓	15-17 Hancock Street	Southbank	Yarra River	Riverine
		✓	33 Hancock Street	Southbank	Yarra River	Riverine
		✓	35-37 Hancock Street	Southbank	Yarra River	Riverine
		✓	39-51 Hancock Street	Southbank	Yarra River	Riverine
		✓	1 Highlander Lane	Melbourne	Yarra River	Riverine
		✓	3 Highlander Lane	Melbourne	Yarra River	Riverine
		✓	5 Highlander Lane	Melbourne	Yarra River	Riverine
		✓	7 Highlander Lane	Melbourne	Yarra River	Riverine
		✓	7 Katherine Place	Melbourne	Yarra River	Riverine
		✓	14 Kavanagh Street	Southbank	Yarra River	Riverine
		✓	20-22 Kavanagh Street	Southbank	Yarra River	Riverine
		✓	34-52 Kavanagh Street	Southbank	Yarra River	Riverine
		✓	54-68 Kavanagh Street	Southbank	Yarra River	Riverine
		✓	88 Kavanagh Street	Southbank	Yarra River	Riverine
		✓	93-119 Kavanagh Street	Southbank	Yarra River	Riverine
		✓	100 Kavanagh Street	Southbank	Yarra River	Riverine
		✓	121-125 Kavanagh Street	Southbank	Yarra River	Riverine
	✓	✓	Melbourne Aquarium on King Street	Melbourne	Yarra River	Riverine
		✓	63-83 Kings Way	Southbank	Yarra River	Riverine
		✓	151-169 Kings Way	Southbank	Yarra River	Riverine
		✓	164 Kings Way	South Melbourne	Yarra River	Riverine
		✓	184A Kings Way	South Melbourne	Yarra River	Riverine
		✓	186A Kings Way	South Melbourne	Yarra River	Riverine
		✓	188-190 Kings Way	South Melbourne	Yarra River	Riverine
		✓	194-210 Kings Way	South Melbourne	Yarra River	Riverine
		✓	222 Kings Way	South Melbourne	Yarra River	Riverine
		✓	240-254 Kings Way	South Melbourne	Yarra River	Riverine
		✓	256-262 Kings Way	South Melbourne	Yarra River	Riverine
		✓	264-276 Kings Way	South Melbourne	Yarra River	Riverine
		✓	22-24 Market Street	Southbank	Yarra River	Riverine
		✓	26 Market Street	Southbank	Yarra River	Riverine
		✓	28 Market Street	Southbank	Yarra River	Riverine
		✓	30 Market Street	Southbank	Yarra River	Riverine
		✓	32 Market Street	Southbank	Yarra River	Riverine
		✓	55-65 Miles Street	Southbank	Yarra River	Riverine
		✓	7 Moray Street	Southbank	Yarra River	Riverine

Properties at risk from Flooding along the Yarra River						
Residential			Commercial	Industrial	Capital City Zone	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	13 Moray Street	Southbank	Yarra River	Riverine
		✓	18-24 Moray Street	Southbank	Yarra River	Riverine
		✓	26-40 Moray Street	Southbank	Yarra River	Riverine
		✓	42-48 Moray Street	Southbank	Yarra River	Riverine
		✓	65-79 Moray Street	Southbank	Yarra River	Riverine
		✓	66-76 Moray Street	Southbank	Yarra River	Riverine
		✓	78-82 Moray Street	Southbank	Yarra River	Riverine
		✓	81-87 Moray Street	South Melbourne	Yarra River	Riverine
		✓	84-86 Moray Street	Southbank	Yarra River	Riverine
		✓	90-94 Moray Street	Southbank	Yarra River	Riverine
		✓	113-115 Moray Street	South Melbourne	Yarra River	Riverine
		✓	1-7 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	9-15 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	25-29 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	31-49 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	40-56 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	58 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	83 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	84-90 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	87-89 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	91-93 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	95-105 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	107-127 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	129 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	133 Queens Bridge Street	Southbank	Yarra River	Riverine
		✓	1 Riverside Quay	Southbank	Yarra River	Riverine
		✓	2 Riverside Quay	Southbank	Yarra River	Riverine
		✓	7 Riverside Quay	Southbank	Yarra River	Riverine
		✓	12 Riverside Quay	Southbank	Yarra River	Riverine
		✓	1-9 Southbank Boulevard	Southbank	Yarra River	Riverine
		✓	55 Southbank Boulevard	Southbank	Yarra River	Riverine
		✓	65 Southbank Boulevard	Southbank	Yarra River	Riverine
		✓	120-130 Southbank Boulevard	Southbank	Yarra River	Riverine
		✓	12 Southgate Avenue	Southbank	Yarra River	Riverine
✓	✓	✓	1-5 Spencer Street	Docklands	Yarra River	Riverine
		✓	2A Spencer Street	Melbourne	Yarra River	Riverine
		✓	131-139 Sturt Street	Southbank	Yarra River	Riverine
		✓	141-151 Sturt Street	Southbank	Yarra River	Riverine
		✓	152 Sturt Street	Southbank	Yarra River	Riverine
		✓	153-159 Sturt Street	Southbank	Yarra River	Riverine
		✓	242-246 Sturt Street	Southbank	Yarra River	Riverine
		✓	248-250 Sturt Street	Southbank	Yarra River	Riverine
		✓	252-274 Sturt Street	Southbank	Yarra River	Riverine

Properties at risk from Flooding along the Yarra River						
Residential		Commercial	Industrial	Capital City Zone	Public Use	
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	276-280 Sturt Street	Southbank	Yarra River	Riverine
		✓	30-32 Tope Street	South Melbourne	Yarra River	Riverine
		✓	33-35 Tope Street	South Melbourne	Yarra River	Riverine
		✓	45-47 Tope Street	South Melbourne	Yarra River	Riverine
		✓	2-68 Whiteman Street	Southbank	Yarra River	Riverine
		✓	27-59 Whiteman Street	Southbank	Yarra River	Riverine
		✓	69-71 Whiteman Street	Southbank	Yarra River	Riverine
		✓	79 Whiteman Street	Southbank	Yarra River	Riverine
		✓	81-89 Whiteman Street	Southbank	Yarra River	Riverine
		✓	99 Whiteman Street	Southbank	Yarra River	Riverine
		✓	115-125 Whiteman Street	Southbank	Yarra River	Riverine
		✓	2-8 York Street	South Melbourne	Yarra River	Riverine
		✓	10-12 York Street	South Melbourne	Yarra River	Riverine
		✓	14 York Street	South Melbourne	Yarra River	Riverine
		✓	15 York Street	South Melbourne	Yarra River	Riverine
		✓	21-23 York Street	South Melbourne	Yarra River	Riverine
		✓	25-27 York Street	South Melbourne	Yarra River	Riverine
Totals						
2	3	177				

Table C1.6 – Properties at risk of flooding along the Yarra River in the City of Melbourne

Properties listed in the table below are at risk from flash flooding along the Yarra River's stormwater drains in the City of Melbourne. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Elizabeth Street Drain (Water Technology, August 2017), the Fishermans Bend (GHD, December 2019), the Palmer Street Main Drain (CoY) (Engeny, October 2019) and the Southbank (Water Modelling Solutions Pty Ltd, April 2020) flood mapping and risk assessment programs. Note that any multi-lot properties situated above ground floor likely impacted by isolation only with flooding on ground floor impacting access to common areas and/or carpark and storage facilities. Due to the number of multi-lot properties in the CBD and surrounds, common property address details have in many cases only been included in this list. Information on above ground-floor properties is not available in this list.

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 Flash Flooding along the Yarra River's stormwater drains during a 1% AEP event					
Residential	Docklands Zone	Industrial	Capital City Zone	Public Use	Commercial
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
1	Barring Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
2	Barring Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
3	Barring Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
4	Barring Mews	Docklands	Fishermans Bend	Flash or Storm Suge	

Properties at risk from Flash Flooding along the Yarra River's stormwater drains during a 1% AEP event

Residential	Docklands Zone	Industrial	Capital City Zone	Public Use	Commercial
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
5	Barring Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
6	Barring Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
16-24	Bond Street	Melbourne	Elizabeth Street D.S.	Flash	
213-215	Boundary Street	Port Melbourne	Fishermans Bend	Flash or Storm Suge	
223-235	Boundary Street	Port Melbourne	Fishermans Bend	Flash or Storm Suge	
194-200	Bourke Street	Melbourne	Elizabeth Street D.S.	Flash	
206-218	Bourke Street	Melbourne	Elizabeth Street D.S.	Flash	
222-244	Bourke Street	Melbourne	Elizabeth Street D.S.	Flash	
246-260	Bourke Street	Melbourne	Elizabeth Street D.S.	Flash	
314-336	Bourke Street	Melbourne	Elizabeth Street D.S.	Flash	
338-352	Bourke Street	Melbourne	Elizabeth Street D.S.	Flash	
351	Bourke Street	Melbourne	Elizabeth Street D.S.	Flash	
359-385	Bourke Street	Melbourne	Elizabeth Street D.S.	Flash	
67	Bouverie Street	Carlton	Elizabeth Street D.S.	Flash	
117-121	Bouverie Street	Carlton	Elizabeth Street D.S.	Flash	
123-127	Bouverie Street	Carlton	Elizabeth Street D.S.	Flash	
129-135	Bouverie Street	Carlton	Elizabeth Street D.S.	Flash	
1	Canal Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
3	Canal Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
5	Canal Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
8	Catherine Street	Southbank	Southbank	Flash or Storm Suge	
24	Centre Place	Melbourne	Elizabeth Street D.S.	Flash	
81	City Road	Southbank	Southbank	Flash or Storm Suge	
85-87	City Road	Southbank	Southbank	Flash or Storm Suge	
89-91	City Road	Southbank	Southbank	Flash or Storm Suge	
207	City Road	Southbank	Southbank	Flash or Storm Suge	
235-239	City Road	Southbank	Southbank	Flash or Storm Suge	
241	City Road	Southbank	Southbank	Flash or Storm Suge	
248	City Road	Southbank	Southbank	Flash or Storm Suge	
256-266	City Road	Southbank	Southbank	Flash or Storm Suge	
260-266	City Road	Southbank	Southbank	Flash or Storm Suge	
263	City Road	Southbank	Southbank	Flash or Storm Suge	
268-270	City Road	Southbank	Southbank	Flash or Storm Suge	
269-283	City Road	Southbank	Southbank	Flash or Storm Suge	
272	City Road	Southbank	Southbank	Flash or Storm Suge	
274	City Road	Southbank	Southbank	Flash or Storm Suge	
276	City Road	Southbank	Southbank	Flash or Storm Suge	
278	City Road	Southbank	Southbank	Flash or Storm Suge	
280	City Road	Southbank	Southbank	Flash or Storm Suge	
282	City Road	Southbank	Southbank	Flash or Storm Suge	
284-290	City Road	Southbank	Southbank	Flash or Storm Suge	
292-294	City Road	Southbank	Southbank	Flash or Storm Suge	
300	City Road	Southbank	Southbank	Flash or Storm Suge	
28	Clarendon Street	Southbank	Fishermans Bend	Flash or Storm Suge	

Properties at risk from Flash Flooding along the Yarra River's stormwater drains during a 1% AEP event

Residential	Docklands Zone	Industrial	Capital City Zone	Public Use	Commercial
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
50-54	Clarendon Street	Southbank	Fishermans Bend	Flash or Storm Suge	
56-58	Clarendon Street	Southbank	Fishermans Bend	Flash or Storm Suge	
57-91	Clarendon Street	Southbank	Southbank	Flash or Storm Suge	
60-62	Clarendon Street	Southbank	Fishermans Bend	Flash or Storm Suge	
64-68	Clarendon Street	Southbank	Fishermans Bend	Flash or Storm Suge	
25-29	Clarke Street	Southbank	Southbank	Flash or Storm Suge	
33	Clarke Street	Southbank	Southbank	Flash or Storm Suge	
39	Clarke Street	Southbank	Southbank	Flash or Storm Suge	
51-65	Clarke Street	Southbank	Southbank	Flash or Storm Suge	
54	Clarke Street	Southbank	Southbank	Flash or Storm Suge	
56	Clarke Street	Southbank	Southbank	Flash or Storm Suge	
67-69	Clarke Street	Southbank	Southbank	Flash or Storm Suge	
71-75	Clarke Street	Southbank	Southbank	Flash or Storm Suge	
271-285	Collins Street	Melbourne	Elizabeth Street D.S.	Flash	
294	Collins Street	Melbourne	Elizabeth Street D.S.	Flash	
298-304	Collins Street	Melbourne	Elizabeth Street D.S.	Flash	
308-336	Collins Street	Melbourne	Elizabeth Street D.S.	Flash	
360-374	Collins Street	Melbourne	Elizabeth Street D.S.	Flash	
20-30	Convention Centre Place	South Wharf	Fishermans Bend	Flash or Storm Suge	
16-20	Corrs Lane	Melbourne	Elizabeth Street D.S.	Flash	
22-26	Corrs Lane	Melbourne	Elizabeth Street D.S.	Flash	
111	Coventry Street	Southbank	Southbank	Flash or Storm Suge	
14-22	Darling Street	East Melbourne	East Melbourne	Flash	
24-26	Darling Street	East Melbourne	East Melbourne	Flash	
28-30	Darling Street	East Melbourne	East Melbourne	Flash	
32	Darling Street	East Melbourne	East Melbourne	Flash	
10	Degraves Street	Melbourne	Elizabeth Street D.S.	Flash	
1	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
7	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
11-15	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
17-19	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
21-23	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
25	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
29	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
35	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
84-86	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
118	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
126	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
128-132	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
134	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
140	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
142-146	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
316-360	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
422-440	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	

Properties at risk from Flash Flooding along the Yarra River's stormwater drains during a 1% AEP event

Residential	Docklands Zone	Industrial	Capital City Zone	Public Use	Commercial
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
478	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
480-488	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
490-494	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
496-504	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
506-516	Elizabeth Street	Melbourne	Elizabeth Street D.S.	Flash	
	Pony Fish Café under Evan Walker Bridge	Southbank	Southbank	Storm Surge	
265	Exhibition Street	Melbourne	Elizabeth Street D.S.	Flash	
313-329	Exhibition Street	Melbourne	Elizabeth Street D.S.	Flash	
8	Exploration Lane	Melbourne	Elizabeth Street D.S.	Flash	
238-242	Flinders Street	Melbourne	Elizabeth Street D.S.	Flash	
247-251	Flinders Lane	Melbourne	Elizabeth Street D.S.	Flash	
248	Flinders Street	Melbourne	Elizabeth Street D.S.	Flash	
258	Flinders Lane	Melbourne	Elizabeth Street D.S.	Flash	
276	Flinders Street	Melbourne	Elizabeth Street D.S.	Flash	
292-298	Flinders Street	Melbourne	Elizabeth Street D.S.	Flash	
300	Flinders Street	Melbourne	Elizabeth Street D.S.	Flash	
318-332	Flinders Street	Melbourne	Elizabeth Street D.S.	Flash	
335	Flinders Lane	Melbourne	Elizabeth Street D.S.	Flash	
340	Flinders Street	Melbourne	Elizabeth Street D.S.	Flash	
342	Flinders Street	Melbourne	Elizabeth Street D.S.	Flash	
363-397	Flinders Street	Melbourne	Elizabeth Street D.S.	Flash	
376-388	Flinders Street	Melbourne	Elizabeth Street D.S.	Flash	
390-398	Flinders Street	Melbourne	Elizabeth Street D.S.	Flash	
1	Foundry Way	Docklands	Fishermans Bend	Flash or Storm Suge	
2	Foundry Way	Docklands	Fishermans Bend	Flash or Storm Suge	
3	Foundry Way	Docklands	Fishermans Bend	Flash or Storm Suge	
4	Foundry Way	Docklands	Fishermans Bend	Flash or Storm Suge	
5	Foundry Way	Docklands	Fishermans Bend	Flash or Storm Suge	
6	Foundry Way	Docklands	Fishermans Bend	Flash or Storm Suge	
7	Foundry Way	Docklands	Fishermans Bend	Flash or Storm Suge	
8	Foundry Way	Docklands	Fishermans Bend	Flash or Storm Suge	
9	Foundry Way	Docklands	Fishermans Bend	Flash or Storm Suge	
10	Foundry Way	Docklands	Fishermans Bend	Flash or Storm Suge	
34-38	Franklin Street	Melbourne	Elizabeth Street D.S.	Flash	
50	Franklin Street	Melbourne	Elizabeth Street D.S.	Flash	
58	Franklin Street	Melbourne	Elizabeth Street D.S.	Flash	
87	Franklin Street	Melbourne	Elizabeth Street D.S.	Flash	
10-12	Gipps Street	East Melbourne	East Melbourne	Flash	
14	Gipps Street	East Melbourne	East Melbourne	Flash	
25-45	Grant Street	Southbank	Southbank	Flash or Storm Suge	
1-11	Grey Street	East Melbourne	East Melbourne	Flash	
2	Grey Street	East Melbourne	East Melbourne	Flash	
4	Grey Street	East Melbourne	East Melbourne	Flash	
6-8	Grey Street	East Melbourne	East Melbourne	Flash	

Properties at risk from Flash Flooding along the Yarra River's stormwater drains during a 1% AEP event

Residential	Docklands Zone	Industrial	Capital City Zone	Public Use	Commercial
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
10	Grey Street	East Melbourne	East Melbourne	Flash	
12-14	Grey Street	East Melbourne	East Melbourne	Flash	
15	Grey Street	East Melbourne	East Melbourne	Flash	
17	Grey Street	East Melbourne	East Melbourne	Flash	
18-30	Grey Street	East Melbourne	East Melbourne	Flash	
19	Grey Street	East Melbourne	East Melbourne	Flash	
21-23	Grey Street	East Melbourne	East Melbourne	Flash	
34	Grey Street	East Melbourne	East Melbourne	Flash	
36	Grey Street	East Melbourne	East Melbourne	Flash	
38	Grey Street	East Melbourne	East Melbourne	Flash	
40	Grey Street	East Melbourne	East Melbourne	Flash	
42	Grey Street	East Melbourne	East Melbourne	Flash	
56	Grey Street	East Melbourne	East Melbourne	Flash	
58	Grey Street	East Melbourne	East Melbourne	Flash	
60	Grey Street	East Melbourne	East Melbourne	Flash	
62	Grey Street	East Melbourne	East Melbourne	Flash	
64	Grey Street	East Melbourne	East Melbourne	Flash	
66	Grey Street	East Melbourne	East Melbourne	Flash	
68	Grey Street	East Melbourne	East Melbourne	Flash	
45	Haig Street	Southbank	Fishermans Bend	Flash or Storm Suge	
11-13	Hancock Street	Southbank	Southbank	Flash or Storm Suge	
9/15-17	Hancock Street	Southbank	Southbank	Flash or Storm Suge	
13-33	Hartley Street	Docklands	Fishermans Bend	Flash or Storm Suge	
1137	Hoddle Street	East Melbourne	East Melbourne	Flash	
1/1141	Hoddle Street	East Melbourne	East Melbourne	Flash	
2/1141	Hoddle Street	East Melbourne	East Melbourne	Flash	
3/1141	Hoddle Street	East Melbourne	East Melbourne	Flash	
4/1141	Hoddle Street	East Melbourne	East Melbourne	Flash	
1169	Hoddle Street	East Melbourne	East Melbourne	Flash	
1173-1177	Hoddle Street	East Melbourne	East Melbourne	Flash	
1181-1191	Hoddle Street	East Melbourne	East Melbourne	Flash	
1193	Hoddle Street	East Melbourne	East Melbourne	Flash	
1195	Hoddle Street	East Melbourne	East Melbourne	Flash	
1197	Hoddle Street	East Melbourne	East Melbourne	Flash	
1199	Hoddle Street	East Melbourne	East Melbourne	Flash	
1201	Hoddle Street	East Melbourne	East Melbourne	Flash	
1225	Hoddle Street	East Melbourne	East Melbourne	Flash	
1227	Hoddle Street	East Melbourne	East Melbourne	Flash	
1229	Hoddle Street	East Melbourne	East Melbourne	Flash	
1231	Hoddle Street	East Melbourne	East Melbourne	Flash	
1233	Hoddle Street	East Melbourne	East Melbourne	Flash	
2-4	Hotham Street	East Melbourne	East Melbourne	Flash	
6	Hotham Street	East Melbourne	East Melbourne	Flash	
8	Hotham Street	East Melbourne	East Melbourne	Flash	

Properties at risk from Flash Flooding along the Yarra River's stormwater drains during a 1% AEP event

Residential	Docklands Zone	Industrial	Capital City Zone	Public Use	Commercial
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
10	Hotham Street	East Melbourne	East Melbourne	Flash	
20-22	Hotham Street	East Melbourne	East Melbourne	Flash	
310-324	Ingles Street	Port Melbourne	Fishermans Bend	Flash	
34	Kavanagh Street	Southbank	Southbank	Flash or Storm Suge	
54-68	Kavanagh Street	Southbank	Southbank	Flash or Storm Suge	
110-120	Kavanagh Street	Southbank	Southbank	Flash or Storm Suge	
132-136	Kavanagh Street	Southbank	Southbank	Flash or Storm Suge	
15-23	Kings Way	Southbank	Southbank	Flash or Storm Suge	
40	Kings Way	Southbank	Southbank	Flash or Storm Suge	
63-83	Kings Way	Southbank	Southbank	Flash or Storm Suge	
100-110	Kings Way	Southbank	Southbank	Flash or Storm Suge	
135-149	Kings Way	Southbank	Southbank	Flash or Storm Suge	
151-169	Kings Way	Southbank	Southbank	Flash or Storm Suge	
300	La Trobe Street	Melbourne	Elizabeth Street D.S.	Flash	
16-32	Leicester Street	Carlton	Elizabeth Street D.S.	Flash	
34-58	Leicester Street	Carlton	Elizabeth Street D.S.	Flash	
60	Leicester Street	Carlton	Elizabeth Street D.S.	Flash	
108-128	Leicester Street	Carlton	Elizabeth Street D.S.	Flash	
189-191	Little Bourke Street	Melbourne	Elizabeth Street D.S.	Flash	
195	Little Bourke Street	Melbourne	Elizabeth Street D.S.	Flash	
118-148	Lonsdale Street	Melbourne	Elizabeth Street D.S.	Flash	
139	Lonsdale Street	Melbourne	Elizabeth Street D.S.	Flash	
145-147	Lonsdale Street	Melbourne	Elizabeth Street D.S.	Flash	
149-155	Lonsdale Street	Melbourne	Elizabeth Street D.S.	Flash	
51-59	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
63-67	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
75	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
80	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
81	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
85-93	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
95-97	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
99-109	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
104	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
111	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
118-122	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
124	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
126	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
128	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
130	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
132	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
150	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
152	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
154	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
156	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	

Properties at risk from Flash Flooding along the Yarra River's stormwater drains during a 1% AEP event

Residential	Docklands Zone	Industrial	Capital City Zone	Public Use	Commercial
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
158	Lorimer Street	Docklands	Fishermans Bend	Flash or Storm Suge	
184-192	Lorimer Street	Docklands	Fishermans Bend	Flash	
194-206	Lorimer Street	Docklands	Fishermans Bend	Flash	
224-260	Lorimer Street	Port Melbourne	Fishermans Bend	Flash	
262	Lorimer Street	Port Melbourne	Fishermans Bend	Flash	
320	Lorimer Street	Port Melbourne	Fishermans Bend	Flash	
322-326	Lorimer Street	Port Melbourne	Fishermans Bend	Flash	
344	Lorimer Street	Port Melbourne	Fishermans Bend	Flash	
604-608	Lorimer Street	Port Melbourne	Fishermans Bend	Flash	
610-616	Lorimer Street	Port Melbourne	Fishermans Bend	Flash	
674-702	Lorimer Street	Port Melbourne	Fishermans Bend	Flash	
750	Lorimer Street	Port Melbourne	Fishermans Bend	Flash	
33-89	Lygon Street	Carlton	Elizabeth Street D.S.	Flash	
26	Manchester Lane	Melbourne	Elizabeth Street D.S.	Flash	
30-44	Manchester Lane	Melbourne	Elizabeth Street D.S.	Flash	
55-65	Miles Street	Southbank	Southbank	Flash or Storm Suge	
10	Mills Place	Docklands	Fishermans Bend	Flash or Storm Suge	
1-5	Moray Street	Southbank	Southbank	Flash or Storm Suge	
7	Moray Street	Southbank	Southbank	Flash or Storm Suge	
13	Moray Street	Southbank	Southbank	Flash or Storm Suge	
18-24	Moray Street	Southbank	Southbank	Flash or Storm Suge	
21	Moray Street	Southbank	Southbank	Flash or Storm Suge	
26-40	Moray Street	Southbank	Southbank	Flash or Storm Suge	
31-49	Moray Street	Southbank	Southbank	Flash or Storm Suge	
42	Moray Street	Southbank	Southbank	Flash or Storm Suge	
1-13	Point Park Crescent	Docklands	Fishermans Bend	Flash or Storm Suge	
1-5	Queen Street	Melbourne	Elizabeth Street D.S.	Flash	
2	Queen Street	Melbourne	Elizabeth Street D.S.	Flash	
365-371	Queen Street	Melbourne	Elizabeth Street D.S.	Flash	
17-23	Queens Bridge Street	Southbank	Southbank	Flash or Storm Suge	
25	Queens Bridge Street	Southbank	Southbank	Flash or Storm Suge	
31-49	Queens Bridge Street	Southbank	Southbank	Flash or Storm Suge	
40-56	Queens Bridge Street	Southbank	Southbank	Flash or Storm Suge	
58	Queens Bridge Street	Southbank	Southbank	Flash or Storm Suge	
107-127	Queens Bridge Street	Southbank	Southbank	Flash or Storm Suge	
129	Queens Bridge Street	Southbank	Southbank	Flash or Storm Suge	
133	Queens Bridge Street	Southbank	Southbank	Flash or Storm Suge	
233-251	Queensberry Street	Carlton	Elizabeth Street D.S.	Flash	
8	Riggers Place	Docklands	Fishermans Bend	Flash or Storm Suge	
102-108	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
200	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
202	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
204	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
206	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	

Properties at risk from Flash Flooding along the Yarra River's stormwater drains during a 1% AEP event

Residential	Docklands Zone	Industrial	Capital City Zone	Public Use	Commercial
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
208	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
210	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
212	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
214	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
216	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
218	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
220	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
222	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
224	River Esplanade	Docklands	Fishermans Bend	Flash or Storm Suge	
1	Rogers Street	Port Melbourne	Fishermans Bend	Flash	
163	Russell Street	Melbourne	Elizabeth Street D.S.	Flash	
171-173	Russell Street	Melbourne	Elizabeth Street D.S.	Flash	
175	Russell Street	Melbourne	Elizabeth Street D.S.	Flash	
177	Russell Street	Melbourne	Elizabeth Street D.S.	Flash	
179	Russell Street	Melbourne	Elizabeth Street D.S.	Flash	
181-183	Russell Street	Melbourne	Elizabeth Street D.S.	Flash	
185-189	Russell Street	Melbourne	Elizabeth Street D.S.	Flash	
191-193	Russell Street	Melbourne	Elizabeth Street D.S.	Flash	
197	Russell Street	Melbourne	Elizabeth Street D.S.	Flash	
262	Salmon Street	Port Melbourne	Fishermans Bend	Flash	
132-134	Simpson Street	East Melbourne	East Melbourne	Flash	
21	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
22	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
23	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
25	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
27	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
29	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
31	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
33	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
35	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
37	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
39	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
41	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
43	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
44	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
45	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
46	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
47	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
48	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
49	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
50	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
51	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
52	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
53	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	

Properties at risk from Flash Flooding along the Yarra River's stormwater drains during a 1% AEP event

Residential	Docklands Zone	Industrial	Capital City Zone	Public Use	Commercial
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
54	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
56	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
57	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
58	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
59	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
60	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
61	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
61	South Wharf Promenade	South Wharf	Fishermans Bend	Flash or Storm Suge	
62	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
63	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
64	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
65	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
66	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
68	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
70	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
72-74	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
75	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
80	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
82	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
84	South Wharf Drive	Docklands	Fishermans Bend	Flash or Storm Suge	
55	Southbank Boulevard	Southbank	Southbank	Flash or Storm Suge	
2	Stokehold Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
4	Stokehold Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
6	Stokehold Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
8	Stokehold Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
9	Stokehold Mews	Docklands	Fishermans Bend	Flash or Storm Suge	
252-262	Sturt Street	Southbank	Southbank	Flash or Storm Suge	
264-274	Sturt Street	Southbank	Southbank	Flash or Storm Suge	
276-280	Sturt Street	Southbank	Southbank	Flash or Storm Suge	
9-29	Swanston Street	Melbourne	Elizabeth Street D.S.	Flash	
179-183	Swanston Street	Melbourne	Elizabeth Street D.S.	Flash	
207-209	Swanston Street	Melbourne	Elizabeth Street D.S.	Flash	
208	Swanston Street	Melbourne	Elizabeth Street D.S.	Flash	
211-213	Swanston Street	Melbourne	Elizabeth Street D.S.	Flash	
215-217	Swanston Street	Melbourne	Elizabeth Street D.S.	Flash	
225	Swanston Street	Melbourne	Elizabeth Street D.S.	Flash	
226-228	Swanston Street	Melbourne	Elizabeth Street D.S.	Flash	
483	Swanston Street	Melbourne	Elizabeth Street D.S.	Flash	
501	Swanston Street	Melbourne	Elizabeth Street D.S.	Flash	
700	Swanston Street	Carlton	Elizabeth Street D.S.	Flash	
15-21	Therry Street	Melbourne	Elizabeth Street D.S.	Flash	
25	Therry Street	Melbourne	Elizabeth Street D.S.	Flash	
93-125	Todd Road	Port Melbourne	Fishermans Bend	Flash	
63	Turner Street	Port Melbourne	Fishermans Bend	Flash	

Properties at risk from Flash Flooding along the Yarra River's stormwater drains during a 1% AEP event					
Residential	Docklands Zone	Industrial	Capital City Zone	Public Use	Commercial
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
8	Wells Street	Southbank	Southbank	Flash or Storm Suge	
90-104	Wells Street	Southbank	Southbank	Flash or Storm Suge	
8	Whiteman Street	Southbank	Southbank	Flash or Storm Suge	
27-45	Whiteman Street	Southbank	Southbank	Flash or Storm Suge	
63	Whiteman Street	Southbank	Fishermans Bend	Flash or Storm Suge	
69-71	Whiteman Street	Southbank	Fishermans Bend	Flash or Storm Suge	
79	Whiteman Street	Southbank	Fishermans Bend	Flash or Storm Suge	
83	Whiteman Street	Southbank	Southbank	Flash or Storm Suge	
99	Whiteman Street	Southbank	Fishermans Bend	Flash or Storm Suge	
Total					
365					

Table C1.7 – Properties at risk of flash flooding along the Yarra River's stormwater drains in the City of Melbourne

Isolation

No major isolation risks exist for areas around Melbourne CBD, Southbank, Fishermans Bend or East Melbourne during a 1% AEP (100yr ARI) event. Some localised short-duration isolation may occur due to flash flooding.

Essential Infrastructure

- **Southbank FRV Station** on Moray Street, Southbank likely has access issues with flooding in surrounding roads during 10% AEP event or at Moderate Flood Level on the Southbank Gauge
- Tram Services on **Routes 96, 109 & 12** likely affected by flooding along Clarendon Street, Southbank at Stops 124B, 125 & 126
- Tram Services on **Route 55** likely affected by flooding along Queens Bridge Street and Kings Way, Southbank at Stops 12, 122A, 113, 114 & 115
- Tram Services on **Route 1** likely affected by flooding along Sturt Street, Southbank at Stop 19
- Entrance to **Melbourne Central Station** via Elizabeth Street likely flooded during a 1% AEP event
- Tram Services along Elizabeth Street (**Routes: 19, 57 & 59**) likely affected by flooding during a 5% AEP event or greater
- Tram Services along Flinders Street (**Routes: 70, 75 & City Circle**) likely affected by flooding during a 5% AEP event or greater
- Flinders Street Station **Elizabeth Street and Degraeves Street Pedestrian Subways** likely flooded during a 5% AEP event or greater

Apart from the roads outlined below, all other essential infrastructure and services areas around Melbourne CBD & Southbank 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 Melbourne CBD & Southbank. Check the VicRoads website for more details: alerts.vicroads.vic.gov.au

Department of Transport (VicRoads) Roads flooded in a 1% AEP (100yr ARI) event
• Batman Avenue south of Olympic Boulevard, Melbourne
• City Road east of Southbank Boulevard and between Power Street and Clarendon Street, Southbank
• Citylink on and off ramps at Kings Way, Southbank
• Clarendon Street at Whiteman Street, Southbank
• Flinders Street at Kings Street, Melbourne CBD
• Kings Way from Dorcas Street to the Citylink underpass, Southbank
• Punt Road at Gosch's Paddock, Melbourne

Table C1.8 – Department of Transport (VicRoads) Possible Road Closures during a flooding event

Melbourne City Council Roads likely flooded in a 1% AEP (100yr ARI) event		
EAST MELBOURNE	SOUTHBANK	
• Grey Street between Simpson Street and Hoddle Street	• Balston Street	• Kavanagh Street
• Hoddle Street at Grey Street	• Blakeney Place	• Miles Street
• Simpson Street between Grey Street and Victoria Parade	• Catherine Street	• Moore Street
• Victoria Parade east bound at Rupert Street	• Clarke Street between Haig Street and Citylink underpass	• Moray Street
		• Queensbridge Street

MELBOURNE	<ul style="list-style-type: none"> • Cook Street 	<ul style="list-style-type: none"> • Riverside Quay
<ul style="list-style-type: none"> • Batman Avenue 	<ul style="list-style-type: none"> • Coventry Street 	<ul style="list-style-type: none"> • Southbank Boulevard
<ul style="list-style-type: none"> • Boathouse Drive 	<ul style="list-style-type: none"> • Fawkner Street 	<ul style="list-style-type: none"> • Sturt Street
<ul style="list-style-type: none"> • Elizabeth Street between Little Bourke Street and Flinders Street 	<ul style="list-style-type: none"> • Haig Lane 	<ul style="list-style-type: none"> • Whiteman Street
<ul style="list-style-type: none"> • Flinders Street between Elizabeth Street and Swanston Street 	<ul style="list-style-type: none"> • Haig Street 	
<ul style="list-style-type: none"> • Little Bourke Street between Swanston Street and Russell Street 	<ul style="list-style-type: none"> • Hancock Street 	

Table C1.9 – Melbourne City Council Possible flooded roads due to flash flooding over 30cm depth in a 1% AEP event

Flood Mitigation

Retarding Basins

Melbourne City Council Retarding Basin	Location	Area	Melway Reference
Fawkner Park, South Yarra	Between Toorak & Commercial Roads, South Yarra	407,600m ²	2LC6

Table C1.10 – Melbourne City Council Retarding Basins within the Yarra River Stormwater catchment

Pumping Stations

Melbourne Water Pumping Station	On Drain / Waterway	Location	No. of Pumps	Capacity	Consequence of Failure	Melway Reference
Crown Casino	Hanna Street Main Drain & the Yarra River	Crown Entertainment Complex on Clarendon Street at Spencer Street Bridge, Southbank	4	2000L/s (500L/s per pump)	Flooding of Crown Casino Basement and local street flooding affecting traffic and trams	2F B9

Table C1.11 – Melbourne Water Pumping Stations along the Yarra River and its stormwater drains in the City of Melbourne

Melbourne City Council Pumping Station	Suburb	Melway Reference
Docklands Drive (near Waterfront Way)	Docklands	2ED3

Table C1.12 – City of Melbourne Pumping Stations along the Yarra River and its stormwater drains

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located around the Yarra River are contained within the following two tables.

Sewer Pumping Stations

Sewerage Pumping Station	On Drain / Waterway	Bank / Side of Waterway	Operator	Location	Melway Reference
Casino	Hanna Street Main Drain	-	South East Water	Crown Casino, Whiteman Street, Southbank	2F B9
Salmon Street	Local Drainage	-	South East Water	Salmon Street at Turner Street, Port Melbourne	42 H11

Table C1.13 – Sewer Pumping Stations within the Yarra River Stormwater Catchment in the City of Melbourne

Sewer Emergency Relief Points

On Drain / Waterway	Bank / Side of Waterway	Operator	Location	Melway Reference
Yarra River	South Bank	Melbourne Water	Alexandra Avenue, South Yarra (City of Stonnington) at Railway Bridge	2L H2
Yarra River	West Bank	Melbourne Water	Douglas Parade, Spotswood (City of Hobsons Bay) at Scienceworks Museum	56 B1

Table C1.14 – Sewer Emergency Relief Points in the Yarra River stormwater catchment in the City of Melbourne

Command, Control and Coordination

VICSES will assume overall control of the response to flood incidents. Other agencies will be requested to support operations as detailed in this Plan. Control and coordination of a flood incident shall be carried out at the lowest effective level and in accordance with the State Emergency Response Plan (EMMV Part 3). During significant events, VICSES will conduct incident management using multi-agency resources.

Flood Impacts and Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along the Yarra River and its stormwater drains at various river heights or rain totals within the City of Melbourne. 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:

- Yarra River at Crown Casino, Southbank
- Melbourne CBD, Carlton and East Melbourne
- Southbank to Fishermans Bend

FLOOD INTELLIGENCE CARD – SOUTHBANK GAUGE, YARRA RIVER

Version 3 – February 2021



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.**



LOCATION:	Yarra Promenade at Crown Entertainment Complex, Southbank
CURRENT LEVEL:	https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/229663A
STREAM:	Yarra River
GAUGE NUMBER:	229663A
GAUGE ZERO:	0.00m AHD
GAUGE TYPE:	Stream Level & Tide Level

MELWAY REFERENCE:	2F B8
MINOR:	1.1m
MODERATE:	1.3m
MAJOR:	1.6m
LEEVE HEIGHT:	N/A
HIGHEST RECORDED FLOOD:	2.24m (13 th July 1891)

River Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
0.28m		<ul style="list-style-type: none"> Zero Clearance at Spencer Street Bridge, Southbank 	
0.95m		Properties at Flood Risk 1 Buildings in Total Yarra River <ul style="list-style-type: none"> Ponyfish Café under Evan Walker Bridge, Southbank 	Automatic Alarm sent to Ponyfish Café by Melbourne Water to warn of possible flooding.
1.05m		Water Over Road (over 30cm depth) Southbank <ul style="list-style-type: none"> Queensbridge Street, Southbank near Power Street 	
1.1m	MINOR FLOOD LEVEL	Community Infrastructure Likely Flooded Yarra River <ul style="list-style-type: none"> South Wharf Promenade starts flooding including under the Charles Grimes Bridge, South Wharf (location of rough sleepers) Yarra Promenade at Southbank starts flooding 	

River Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
<p>1.14m</p> <p>Note: gauge is affected by tidal flows and this may alter river height. This should be used as a guide only.</p>	<p>20% AEP (5-year ARI flow)</p>	<p>Properties at Flood Risk (above 30cm depth) (note each building likely to comprise one or more shops or businesses) 1 New at Level; 2 Buildings in Total</p> <ul style="list-style-type: none"> 1-5 Spencer Street, Docklands <p>Essential Infrastructure Likely Impacted</p> <ul style="list-style-type: none"> Helipad Pontoons at Batman Park and Seafarers Bridge may be impacted <p>Water Over Road (over 30cm depth) Yarra River</p> <ul style="list-style-type: none"> Nil expected in the City of Melbourne 	<p>VICSES will provide warnings using OSOM and SMSER to CoMelb and appropriate agencies as required based on the predictions 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 Commander will maintain operational awareness and form an appropriate response arrangement to suit the level of incident</p> <p>VICSES to respond on a request-by-request basis.</p>
<p>1.3m</p> <p>Note: gauge is affected by tidal flows and this may alter river height. This should be used as a guide only.</p>	<p>MODERATE FLOOD LEVEL</p>		
<p>1.35m</p> <p>Note: gauge is affected by tidal flows and this may alter river height. This should be used as a guide only.</p>	<p>5% AEP (20-year ARI flow) (Moderate)</p>	<p>Properties at Flood Risk (where flooding at building likely and flood depth in yard > 30cm) (information on over-floor flooding unavailable) (note each building likely to comprise one or more shops or businesses) 1 New at Level; 3 Properties in Total</p> <ul style="list-style-type: none"> Melbourne Aquarium on King Street, Melbourne <p>Community Infrastructure Likely Flooded</p> <ul style="list-style-type: none"> Flinders Walk Trail likely flooded at various locations between Olympic Boulevard and Swanston Street Main Yarra Trail likely flooded at various locations between Punt Road and Swanston Street <p>Water Over Road (above 30cm depth) Yarra River</p> <ul style="list-style-type: none"> Nil expected in the City of Melbourne 	<p>VICSES to respond on a request-by-request basis.</p>
<p>1.37m</p>	<p>February 2005 Flood Level</p>	<p>Event Summary</p> <ul style="list-style-type: none"> Significant widespread disruption to traffic movements on road and rail in the impacted area 	
<p>1.6m</p> <p>Note: gauge is affected by tidal flows and this may</p>	<p>MAJOR FLOOD LEVEL</p>		

River Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
alter river height. This should be used as a guide only.			
1.61m	1 st December 1934 Flood Level Peak	Event Summary Levee banks on Como Island (now Herring Island) swept away	
2.12m	1% AEP (100-year ARI flow)	Properties at Flood Risk (where flooding at building likely and flood depth in yard > 30cm) (information on over-floor flooding unavailable) (note each building likely to comprise one or more shops or businesses) 174 New at Level; 177 Buildings in Total <ul style="list-style-type: none"> • 1-13 Balston Street, Southbank • Boathouse Drive, Melbourne • 10-24 Cecil Street, Southbank • 9, 15, 18-28, 21-23 & 25-29 Chessell Street, Southbank • 16-60, 63, 67-69, 71, 77-79, 81, 85-87, 89-91, 135, 151, 163, 167-169, 171-193, 180, 190-198, 207, 235-239, 241, 245-261, 252, 256-258, 260-266, 268-270, 272, 274, 276, 278, 280, 282, 283, 284-290, 285, 292-294, 300, 308-310 & 312-320 City Road, Southbank • 28, 50-54, 56-58, 57-91, 60-62, 64-68 & 93-103 Clarendon Street, Southbank • 25-29, 43-47, 51-65, 54, 56, 58, 60-66 & 67-69 Clarke Street, Southbank • 162-170 & 172-174 Coventry Street, South Melbourne • 100 Dorcas Street, Southbank • 127 Dorcas Street, South Melbourne • 79 Fawkner Street, Southbank • 490, 492-500, 502-504, 508-514, 516-518, 520-522, 524, 525, 539-545, 546 & 555 Flinders Street, Melbourne • 1-9 Freshwater Place, Southbank • 45 & 50 Haig Street, Southbank • 11-13, 15-17, 33, 35-37 & 39-51 Hancock Street, Southbank • 1, 3, 5 & 7 Highlander Lane, Melbourne • 7 Katherine Place, Melbourne • 14, 20-22, 34-52, 54-68, 88, 93-119, 100 & 121-125 Kavanagh Street, Southbank • 63-83 & 151-169 Kings Way, Southbank • 164, 184A, 186A, 188-190, 194-210, 222, 240-254, 256-262 & 264-276 Kings Way, South Melbourne • 22-24, 26, 28, 30 & 32 Market Street, Southbank • 55-65 Miles Street, Southbank • 7, 13, 18-24, 26-40, 42-48, 65-79, 66-76, 78-82, 84-86 & 90-94 Moray Street, Southbank • 81-87 & 113-115 Moray Street, South Melbourne • 1-7, 9-15, 25-29, 31-49, 40-56, 58, 83, 84-90, 87-89, 91-93, 95-105, 107-127, 129 & 133 Queens Bridge Street, Southbank • 1, 2, 7 & 12 Riverside Quay, Southbank 	VICSES may provide warnings via VicEmergency and EM-COP as required based on the predictions 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 Commander will maintain operational awareness and form an appropriate response arrangement to suit the level of incident VICSES Units to respond on a request-by-request basis.

River Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • 1-9, 55, 65 & 120-130 Southbank Boulevard, Southbank • 12 Southgate Avenue, Southbank • 1-5 Spencer Street, Docklands • 2A Spencer Street, Melbourne • 131-139, 141-151, 152, 153-159, 242-246, 248-250, 252-274 & 276-280 Sturt Street, Southbank • 30-32, 33-35 & 45-47 Tope Street, South Melbourne • 2-68, 27-59, 69-71, 79, 81-89, 99 & 115-125 Whiteman Street, Southbank • 2-8, 10-12, 14, 15, 21-23 & 25-27 York Street, South Melbourne <p>Community Infrastructure Likely Flooded</p> <ul style="list-style-type: none"> • Alexandra Gardens on Alexandra Avenue, Melbourne • Batman Park on Flinders Street, Melbourne CBD • Boyd Community Hub at 207 City Road, Southbank • Victorian College of the Arts Secondary School on Miles Street, Southbank likely has access issues with flooding on Miles Street and Sturt Street <p>Essential Infrastructure Likely Impacted</p> <ul style="list-style-type: none"> • Southbank FRV Station on Moray Street, Southbank likely has access issues with flooding in surrounding roads • Tram Services on Routes 96, 109 & 12 likely affected by flooding along Clarendon Street, Southbank at Stops 124B, 125 & 126 • Tram Services on Route 55 likely affected by flooding along Queens Bridge Street and Kings Way, Southbank at Stops 12, 122A, 113, 114 & 115 • Tram Services on Route 1 likely impacted by flooding along Sturt Street, Southbank at Stop 19 <p>Water Over Road (above 30cm depth) (roads in red text are Department of Transport roads)</p> <p>Yarra River</p> <ul style="list-style-type: none"> • Balston Street, Southbank • Batman Avenue, Melbourne • Blakeney Place, Southbank • Boathouse Drive, Melbourne • Catherine Street, Southbank • City Road east of Southbank Boulevard and between Power Street and Clarendon Street, Southbank • Citylink on and off ramps at Kings Way, Southbank • Clarendon Street at Whiteman Street, Southbank • Clarke Street between Haig Street and Citylink underpass, Southbank • Cook Street, Southbank • Coventry Street, Southbank • Fawkner Street, Southbank • Flinders Street at Kings Street, Melbourne • Haig Lane, Southbank • Haig Street, Southbank • Hancock Street, Southbank 	<p>Tram services likely to stop when flooding level reaches approx. 100mm, though may change dependant on location. This is more likely in flash flood events.</p> <p>Council to provide road closure signage under predetermined arrangement with citywide, prompted by notification</p>

River Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • Kavanagh Street, Southbank • Kings Way from Dorcas Street to the Citylink underpass, Southbank • Miles Street, Southbank • Moore Street, Southbank • Moray Street, Southbank • Punt Road at Gosch's Paddock, Melbourne • Queensbridge Street, Southbank • Riverside Quay, Southbank • Southbank Boulevard, Southbank • Sturt Street, Southbank • Whiteman Street, Southbank 	
2.24m	13 th July 1891 Flood Level Peak		

Table C1.15 – Breakdown of likely consequences at various Southbank gauge level heights along the Yarra River with operational considerations

FLOOD INTELLIGENCE CARD – MELBOURNE CBD, CARLTON & EAST MELBOURNE (UNGAUGED)

Version 3 – February 2021



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 rain totals for this gauge.**

CLOSEST RAIN GAUGE:	North Wharf
LOCATION:	Between Siddeley Street and Seafarers Bridge, Docklands
RECENT RAINFALL:	https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/586100

MELWAY REF:	2E K8
GAUGE NUMBER	586100
GAUGE TYPE	Rain

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
62mm in 20 mins	30 January 2004 Flood Event 5.8% AEP (17-year ARI)		
39mm in 1 hour	25 January 1998 Flood Event 2.6% AEP (38-year ARI)	Event Summary <ul style="list-style-type: none"> Ibis Hotel on Therry Street inundated by floodwaters trapping several hundred patrons in the hotel restaurant A shop at 250 Elizabeth Street was inundated by 0.5m of floodwaters 	
22mm in 12 mins	4 February 2011 Flood Event 1.6% AEP (62-year ARI)		
43mm in 1 hour	28 July 2008 Flood Event		

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
<p>24mm in 10 mins; 39mm in 30 mins; 48mm in 1 hour; 59mm in 2 hours; 66mm in 3 hours; or 81mm in 6 hours</p> <p>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.</p>	<p>1% AEP (100-year ARI)</p>	<ul style="list-style-type: none"> Note: Information unavailable at what level infrastructure contained below starts being flooded <p>Properties at Flood Risk (where flooding at building likely and flood depth in yard > 30cm) (information on over-floor flooding unavailable) (note each building likely to comprise one or more shops or businesses)</p> <p>158 Properties in Total</p> <p>East Melbourne</p> <ul style="list-style-type: none"> 14-22, 24-26, 28-30 & 32 Darling Street, East Melbourne 10-12 & 14 Gipps Street, East Melbourne 1-11 Grey Street, East Melbourne 2, 4, 6-8, 10, 12-14, 15, 17, 18-30, 19, 21-23, 34, 36, 38, 40, 42, 56, 58, 60, 62, 64 & 68 Grey Street, East Melbourne 1137, 1/1141, 2/1141, 3/1141, 4/1141, 1169, 1173-1177, 1181-1191, 1193, 1195, 1197, 1199, 1201, 1225, 1227, 1229, 1231 & 1233 Hoddle Street, East Melbourne 2-4, 6, 8, 10 & 20-22 Hotham Street, East Melbourne 132-134 Simpson Street, East Melbourne <p>Elizabeth Street Main Drain</p> <ul style="list-style-type: none"> 16-24 Bond Street, Melbourne 194-200, 206-218, 222-244, 246-260, 314-336, 338-352, 351 & 359-385 Bourke Street, Melbourne 67, 117-121, 123-127 & 129-135 Bouverie Street, Carlton 24 Centre Place, Melbourne 271-285, 294, 298-304 & 308-336 Collins Street, Melbourne 360-374 Collins Street, Melbourne 16-20 & 22-26 Corrs Lane, Melbourne 10 Degraes Street, Melbourne 1, 7, 11-15, 17-19, 21-23, 25, 29, 35, 84-86, 118, 126, 422-440, 478, 480-488, 490-494, 496-504 & 506-516 Elizabeth Street, Melbourne 265 & 313-329 Exhibition Street, Melbourne 8 Exploration Lane, Melbourne 238-242, 247-251, 248, 258, 276, 292-298, 300, 318-332, 335, 340, 342, 363-397, 376-388 & 390-398 Flinders Street, Melbourne 34-38, 50, 58 & 87 Franklin Street, Melbourne 300 La Trobe Street, Melbourne 16-32, 34-58, 60 & 108-128 Leicester Street, Carlton 189-191 & 195 Little Bourke Street, Melbourne 118-148, 139, 145-147 & 149-155 Lonsdale Street, Melbourne 33-89 Lygon Street, Carlton 26 & 30-44 Manchester Lane, Melbourne 1-5, 2 & 365-371 Queen Street, Melbourne 233-251 Queensberry Street, Carlton 163, 171-173, 175, 177, 179, 181-183, 185-189, 191-193 & 197 Russell Street, Melbourne 	<p>VICES Units to respond on a request-by-request basis.</p>

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • 9-29, 179-183, 207-209, 208, 211-213, 215-217, 225, 226-228, 483 & 501 Swanston Street, Melbourne • 700 Swanston Street, Carlton • 15-21 & 25 Therry Street, Melbourne <p>Community Infrastructure Likely Flooded</p> <p>Elizabeth Street Main Drain</p> <ul style="list-style-type: none"> • Bourke Street Mall near Elizabeth Street <p>Essential Infrastructure Likely Impacted</p> <p>Elizabeth Street Main Drain</p> <ul style="list-style-type: none"> • Entrances to Melbourne Central via Elizabeth and Latrobe Streets may be inundated, affecting access to station • Tram Services along Elizabeth Street (Routes: 19, 57 & 59) • Tram Services along Flinders Street (Routes: 70, 75 & City Circle) • Flinders Street Station, Elizabeth Street and Degraeves Street Pedestrian Subways <p>Water Over Road (above 30cm depth) (roads in red text are Department of Transport roads)</p> <p>East Melbourne</p> <ul style="list-style-type: none"> • Grey Street between Simpson Street and Hoddle Street, East Melbourne • Hoddle Street at Grey Street, East Melbourne • Simpson Street between Grey Street and Victoria Parade, East Melbourne • Victoria Parade east bound at Rupert Street, East Melbourne <p>Elizabeth Street Main Drain</p> <ul style="list-style-type: none"> • Elizabeth Street between Little Bourke Street and Flinders Street, Melbourne CBD • Flinders Street between Elizabeth Street and Swanston Street, Melbourne CBD • Little Bourke Street between Swanston Street and Russell Street, Melbourne CBD 	<p>Tram services likely to stop when flooding level reaches approx. 100mm, though may change dependant on location. This is more likely in flash flood events.</p> <p>Additional time may be required for track maintenance works including cleaning once floodwaters have receded.</p> <p>Metro Trains responsible for signage of platform closures</p> <p>Council to provide road closure signage under predetermined arrangement with Citywide, prompted by notification</p>
43mm in 30 mins	6 March 2010 Flood Event (>100-year ARI)	<p>Event Summary</p> <ul style="list-style-type: none"> • Floodwaters along Elizabeth Street at car-door level • Hailstones the size of golf balls experienced • Southern Cross Railway Station roof was damaged as a result of hail, affecting operations • Floodwaters enter buildings such as the Melbourne Aquarium; Ian Potter Centre & No.1 Treasury Place • Flinders Street pedestrian underpass impacted • Tram, train and road networks compromised affecting operations • 20 people treated by paramedics at Moomba Festival following hail related injuries 	
78.5mm in 1 hour	17 February 1972 Flood Event (>100-year ARI)	<p>Event Summary</p> <ul style="list-style-type: none"> • Wall of water 3-4 feet deep roared down Elizabeth Street sweeping along stranded cars that were in its path (Board of Works, 1972) • Floodwaters sprayed over the tops of parking metres along Elizabeth Street • Woman rescued after she fell into deep water after a manhole cover had been washed away • Train and Tram services stopped • Traffic Jam caused by flooded streets and stranded and abandoned vehicles 	

Design Rainfall Depths (mm) – <i>Indication of Possible Flooding</i>	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • Flinders Street, Spencer Street, Queen Street & William Streets also affected • Shops along the affected streets damaged by floodwaters 	

Table C1.16 – Breakdown of likely consequences at various rainfall intensities around the Melbourne CBD, Carlton and East Melbourne with operational considerations

FLOOD INTELLIGENCE CARD – SOUTHBANK TO FISHERMANS BEND (UNGAUGED)

Version 1 – February 2021



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 rain totals for this gauge.**

CLOSEST RAIN GAUGE:	North Wharf
LOCATION:	Between Siddeley Street and Seafarers Bridge, Docklands
RECENT RAINFALL:	https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/586100

MELWAY REF:	2E K8
GAUGE NUMBER:	586100
GAUGE TYPE:	Rain

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
24mm in 10 mins; 39mm in 30 mins; 48mm in 1 hour; 59mm in 2 hours; 66mm in 3 hours; or 81mm 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)	<ul style="list-style-type: none"> Note: Information unavailable at what level infrastructure contained below starts being flooded <p>Properties at Flood Risk (where flooding at building likely and flood depth in yard > 30cm) (information on over-floor flooding unavailable) (note each building likely to comprise one or more shops or businesses)</p> <p>207 Properties in Total Fishermans Bend</p> <ul style="list-style-type: none"> 1, 2, 3, 4, 5 & 6 Barring Mews, Docklands 213-215 & 223-235 Boundary Street, Port Melbourne 1, 3 & 5 Canal Mews, Docklands 28, 50-54, 56-58, 60-62 & 64-68 Clarendon Street, Southbank 20-30 Convention Centre Place, South Wharf 1, 2, 3, 4, 5, 6, 7, 8, 9 & 10 Foundry Way, Docklands 45 Haig Street, Southbank 13-33 Hartley Street, Docklands 310-324 Ingles Street, Port Melbourne 51-59 & 63-67 Lorimer Street, Docklands 75 Lorimer Street, Docklands 80, 81, 85-93, 95-97, 99-109, 104, 111, 118-122, 124, 126 & 128 Lorimer Street, Docklands 81, 85-93, 95-97, 99-109, 104, 111, 118-122, 124, 126, 128, 130, 132, 150, 152, 154, 156, 158, 184-192 & 194-206 Lorimer Street, Docklands 224-260, 262, 320, 322-326, 344, 604-608, 610-616, 674-702 & 750 Lorimer Street, Port Melbourne 	

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • 10 Mills Place, Docklands • 1-13 Point Park Crescent, Docklands • 8 Riggers Place, Docklands • 102-108, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222 & 224 River Esplanade, Docklands • 1 Rogers Street, Port Melbourne • 262 Salmon Street, Port Melbourne • 21, 22, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 68, 70, 72-74, 75, 80 & 82 South Wharf Drive, Docklands • 61 South Wharf Promenade, South Wharf • 2, 4, 6, 8 & 9 Stokehold Mews, Docklands • 93-125 Todd Road, Port Melbourne • 63 Turner Street, Port Melbourne • 63, 69-71, 79 & 99 Whiteman Street, Southbank Southbank • 8 Catherine Street, Southbank • 81, 85-87, 89-91, 207, 235-239, 241, 248, 256-266, 260-266, 263, 268-270, 269-283, 272, 274, 276, 278, 280, 282, 284-290, 292-294 & 300 City Road, Southbank • 57-91 Clarendon Street, Southbank • 25-29, 33, 39, 51-65, 54, 56, 67-69 & 71-75 Clarke Street, Southbank • 111 Coventry Street, Southbank • Pony Fish Café under Evan Walker Bridge, Southbank • 25-45 Grant Street, Southbank • 11-13 & 9/15-17 Hancock Street, Southbank • 34, 54-68, 110-120 & 132-136 Kavanagh Street, Southbank • 15-23, 40, 63-83, 100-110, 135-149 & 151-169 Kings Way, Southbank • 55-65 Miles Street, Southbank • 1-5, 7, 13, 18-24, 21, 26-40, 31-49 & 42 Moray Street, Southbank • 17-23, 25, 31-49, 40-56, 58, 107-127, 129 & 133 Queens Bridge Street, Southbank • 55 Southbank Boulevard, Southbank • 252-262, 264-274 & 276-280 Sturt Street, Southbank • 8 & 90-104 Wells Street, Southbank • 8, 27-45 & 83 Whiteman Street, Southbank Community Infrastructure Likely Flooded • Boyd Community Hub at 207 City Road, Southbank • Victorian College of the Arts Secondary School on Miles Street, Southbank likely has access issues with flooding on Miles Street and Sturt Street Essential Infrastructure Likely Impacted • Southbank FRV Station on Moray Street, Southbank likely has access issues with flooding in surrounding roads • Tram Services on Routes 96, 109 & 12 likely affected by flooding along Clarendon Street, Southbank at Stops 124B, 125 & 126 	

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • Tram Services on Route 55 likely affected by flooding along Queens Bridge Street and Kings Way, Southbank at Stops 12, 122A, 113, 114 & 115 • Tram Services on Route 1 likely impacted by flooding along Sturt Street, Southbank at Stop 19 <p>Water Over Road (over 30cm depth) (roads in red text are Department of Transport roads)</p> <ul style="list-style-type: none"> • Catherine Street, Southbank • City Road between Kings Way underpass and Clarendon Street, Southbank • Citylink on and off ramps at Kings Way, Southbank • Clarendon Street at Whiteman Street, Southbank • Clarke Street between Haig Street and Citylink underpass, Southbank • Haig Lane, Southbank • Haig Street, Southbank • Hancock Street, Southbank • Kings Way from Dorcas Street to the Citylink underpass, Southbank • Moore Street, Southbank • Queensbridge Street, Southbank • Riverside Quay, Southbank • Sturt Street, Southbank • Whiteman Street, Southbank 	
43mm in 30 mins	6 March 2010 Flood Event (>100-year ARI)	<p>Event Summary</p> <ul style="list-style-type: none"> • Hailstones the size of golf balls experienced • Floodwaters enter buildings such as the National Gallery of Victoria; the Ballet Centre and Victoria SES headquarters • Kings Way flooded affecting traffic around Sturt Street and Citylink ramps. • Tram, train and road networks compromised affecting operations 	

Table C1.17 – Breakdown of possible consequences at various rainfall intensities around Southbank, South Wharf, Fishermans Bend and Port Melbourne with operational considerations

APPENDIX C2 – MARIBYRNONG FLOOD EMERGENCY PLAN

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 Maribyrnong River in the City of Melbourne					
Property					
Properties	43				
Residential	0				
Commercial	22				
Industrial	16				
Public Land	4				
Special Use	1	Flemington Racecourse			
Community Infrastructure					
Essential Infrastructure					
Major Roads	2	Dynon Road; and Smithfield Road			
Railway	1	Flemington Racecourse Station - not expected to be inaccessible but surrounding flooding may influence behaviour of event patrons			
Drainage & Water Facilities	1	Retarding Basin at Riverside Park, Kensington			
Levees	4	Flemington Flood Walls			
Sewerage Facilities	8	Emergency Relief Points			
Tourism / Recreation					
Sports Facilities	1	Flemington Racecourse			
Reserves & Parks	2	JJ Holland Park and Riverside Park			
Tourist Attractions	1	Flemington Racecourse			
Trails & Footbridges	1	Maribyrnong Trail			
Economic					
Business of Interest	1	Flemington Racecourse			
Government Boundaries					
Local Gov't Areas	1	Melbourne (City of)	CMA	1	Port Phillip & Westernport
Adjacent LGAs	2	Maribyrnong and Moonee Valley	CFA District	0	
SES Unit Area	1	Footscray	FRV District	1	North West Metro

Table C2.1 – Consequence Summary of 1% AEP flood along the Maribyrnong River in the City of Melbourne

The Maribyrnong River joins the Yarra River in the City of Melbourne where relatively flat terrain sees floodwaters from the river spread out at locations such as the Kensington Road, Hobsons Road and Dynon Road in Kensington & West Melbourne.

A flood wall exists along the western and southern boundaries of the Flemington Racecourse which is designed to protect the area from flooding in all but the more extreme events.

Because of the flat terrain, standing floodwaters are likely and may persist for 48-72 hours.

Gauges and Warnings

Warnings are available for flooding expected along the Maribyrnong River at Maribyrnong. For other 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
Maribyrnong River at Keilor (SWRMP site)	230105A	South side of the River in Brimbank Park, Keilor East	✓	✓	14 J8
Maribyrnong River at Maribyrnong	230106A	South bank of the River on Chifley Drive west of Plantation Street	✓	✓	28 B7
Footscray	587024	Footscray Bowling Club next to Fern Terrace, Footscray		✓	2S D4

Table C2.2 – Gauges within the Maribyrnong River catchment monitoring flood levels for the City of Melbourne

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.

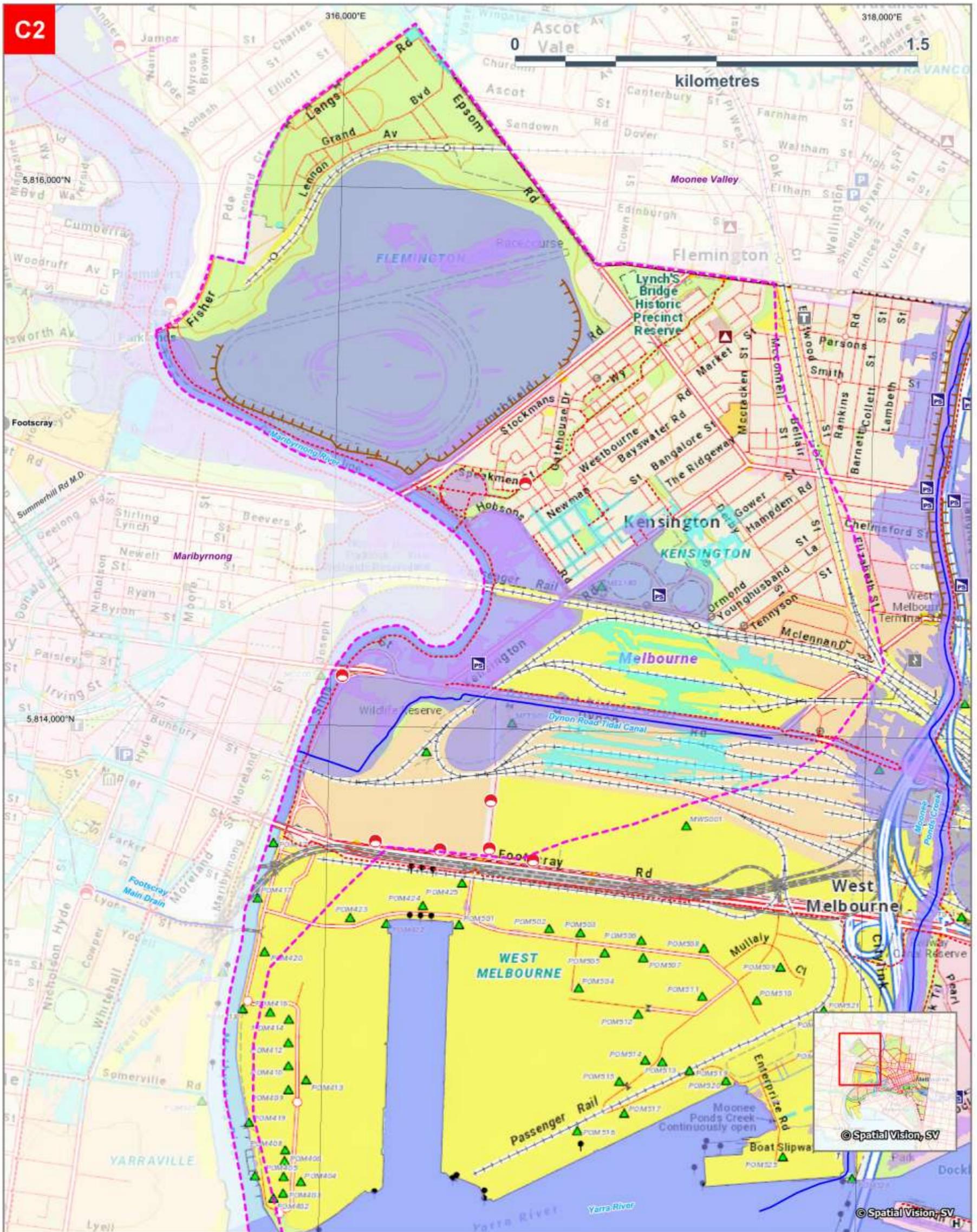
There is currently one Melbourne Water flood warning gauge on the Maribyrnong River that could be used to assist with public safety through the issue of flood warnings. This is at Maribyrnong township.

Gauge	River / Creek Flood Class Level		
	Minor	Moderate	Major
Maribyrnong River at Maribyrnong	1.7m	2.3m	2.9m

Table C2.3 – Gauges with established Flood Class Levels for the Maribyrnong River (Lower)

At these sites on the Maribyrnong River, 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 Melbourne monitors these warnings in times of high rainfall, there are no specific guidelines to advise how these situations should be responded to.

Area Map of Flood Risk along the Maribyrnong River



Maribyrnong River flood modelling compiled by Melbourne Water, February 2013. Map Produced by VICSES February 2021.

<p>CITY OF MELBOURNE</p> <p>1% AEP (100yr ARI) Flooding</p> <p>C2. Areas of flood risk around the Maribyrnong River and Kensington</p>	<p>Building</p> <p>Waterbody</p> <p>1% AEP Riverine Flood Extent</p> <p>1% AEP Flash Flood Extent</p> <p>1% AEP Storm Surge Extent</p> <p>Waterway</p> <p>Boundary for this Appendix</p> <p>Melbourne Water Stormwater Drain</p>	<p>Bicycle / Walking Trail</p> <p>Levee</p> <p>Police Station</p> <p>Drainage Pumping Station</p> <p>Municipal Offices</p> <p>Aged Care / Retirement Village</p> <p>Power Terminal Station</p> <p>Sewer Emergency Relief Point</p>	<p>Rain Gauge</p> <p>Telephone Exchange</p>	<p>LAND USE</p> <p>Residential</p> <p>Commercial and Business</p> <p>Industrial</p> <p>Public Parks / Cemeteries / Recreation</p> <p>Utilities and Local Government Facilities</p> <p>Education</p>	<p>© Spatial Vision, SV</p> <p>Melbourne Water</p> <p>This map publication is presented by the Victorian State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victorian 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.</p>
--	--	--	---	--	---

Figure C2.1 – Areas of flood risk along the Maribyrnong River in the City of Melbourne

Areas of Flemington, Kensington and West Melbourne that may be affected by flooding during high rainfall events are highlighted in Figure C2.2 & C2.3. Hot Spots identified are detailed in table C1.5:

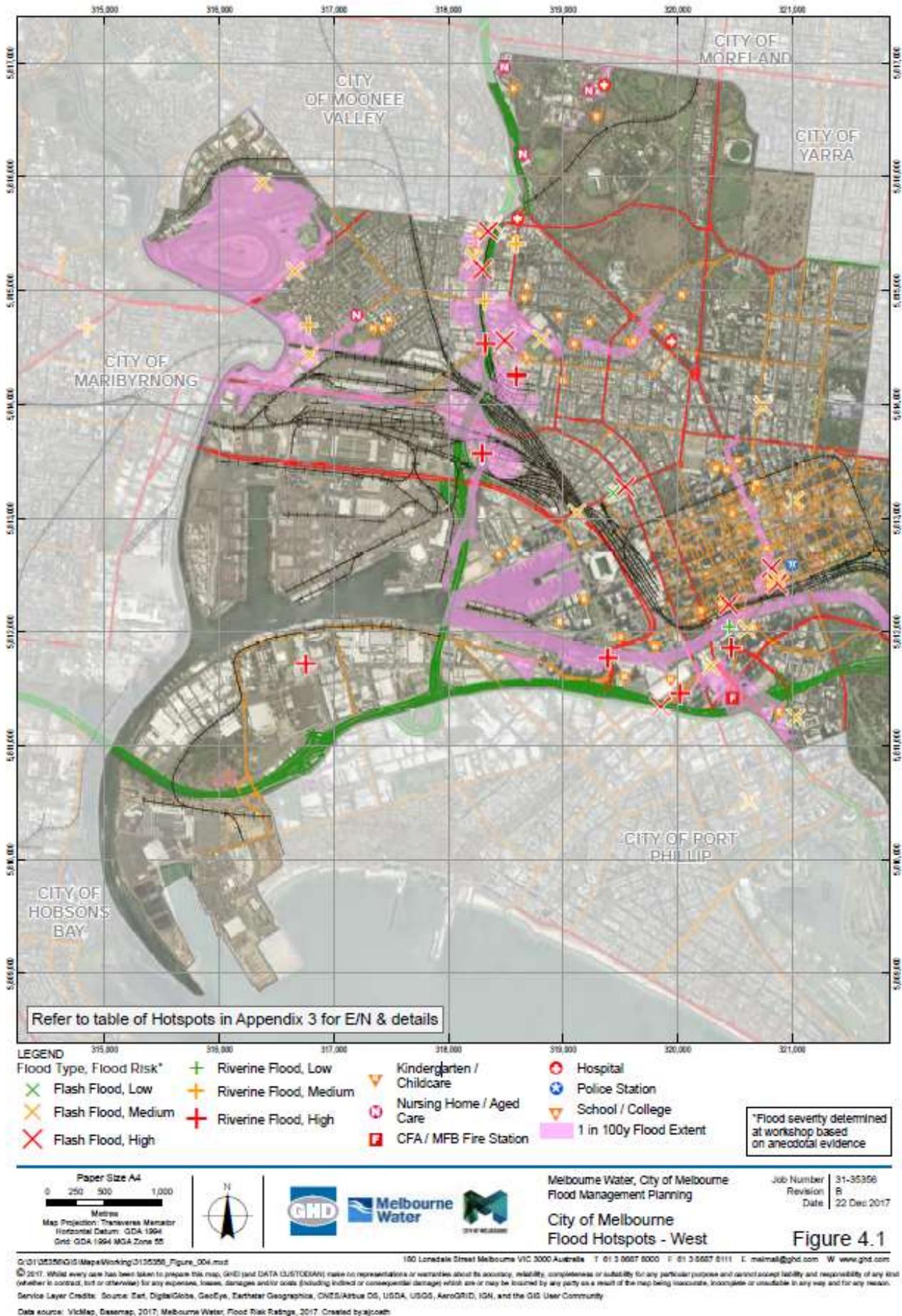


Figure C2.2 – Melbourne City Council Identified Hot Spots (West) (City of Melbourne Flood Management Plan 2018)



Refer to table of Hotspots in Appendix 3 for E/N & details

LEGEND	Flood Type, Flood Risk*	+ Riverine Flood, Low	H Hospital
X Flash Flood, Low	+ Riverine Flood, Medium	P Police Station	S School / College
X Flash Flood, Medium	+ Riverine Flood, High	N Nursing Home / Aged Care	F CFA / MFB Fire Station
X Flash Flood, High			1 in 100y Flood Extent

*Flood severity determined at workshop based on anecdotal evidence

<p>Paper Size A4</p> <p>0 250 500 1,000</p> <p>Metres</p> <p>Map Projection: Transverse Mercator</p> <p>Horizontal Datum: GDA 1994</p> <p>Grid: GDA 1994 MGA Zone 55</p>			<p>Melbourne Water, City of Melbourne Flood Management Planning</p> <p>City of Melbourne Flood Hotspots - East</p>	<p>Job Number 31-35356 Revision B Date 22 Dec 2017</p>
--	--	--	--	--

G:\01\35356\GIS\Mapa\Working\3135356_Figure_004.mxd
 100 Londale Street Melbourne VIC 3000 Australia T 61 3 8667 8000 F 61 3 8667 8111 E melmail@ghd.com W www.ghd.com
 © 2017. Whilst every care has been taken to prepare this map, GHD (and DATA CUSTODIAN) make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and do not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damages) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.
 Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
 Data source: VicMap, BaseMap, 2017; Melbourne Water, Flood Risk Ratings, 2017. Created by: jcoath

Figure C2.3 – Melbourne City Council Identified Hot Spots (East) (City of Melbourne Flood Management Plan 2018)

Suburb	Flood Type	Street/s	Flooding Description	Melbourne City Council Flood Risk Rating
Flemington	Flash	Epsom Street	Flemington Race Course	Medium
Flemington	Flash		Railway Bridge in Flemington	Medium
Kensington	Riverine	Kensington Road and Hobsons Road	low point near rail bridge, constrained by river levels	Medium
Kensington	Flash		South Kensington – tracks susceptible to flooding	Medium

Table C2.4 – Flood Risks and Hotspots identified in Melbourne Water and City of Melbourne workshop as part of the Flood Management Plan 2018 development

Properties at Flood Risk

Properties listed in the table below are at risk from flooding along the Maribyrnong River in Flemington, Kensington and West Melbourne. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Maribyrnong River (Melbourne Water, February 2013) flood mapping and risk assessment program. Note that any multi-lot properties situated above ground floor likely impacted by isolation only with flooding on ground floor impacting access to common areas and/or carpark and storage facilities. Information on above ground-floor properties is not available in this list.

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 Riverine Flooding during a 1% AEP event				
Residential	Commercial	Industrial	Special Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
69-371	Dynon Road	West Melbourne	Maribyrnong River	Riverine
385	Dynon Road	West Melbourne	Maribyrnong River	Riverine
388-398	Dynon Road	West Melbourne	Maribyrnong River	Riverine
400-408	Dynon Road	West Melbourne	Maribyrnong River	Riverine
414-420	Dynon Road	West Melbourne	Maribyrnong River	Riverine
439-459	Dynon Road	West Melbourne	Maribyrnong River	Riverine
1/440	Dynon Road	West Melbourne	Maribyrnong River	Riverine
2/440	Dynon Road	West Melbourne	Maribyrnong River	Riverine
3/440	Dynon Road	West Melbourne	Maribyrnong River	Riverine
4/440	Dynon Road	West Melbourne	Maribyrnong River	Riverine
5/440	Dynon Road	West Melbourne	Maribyrnong River	Riverine
6/440	Dynon Road	West Melbourne	Maribyrnong River	Riverine
442-452	Dynon Road	West Melbourne	Maribyrnong River	Riverine
458-484	Dynon Road	West Melbourne	Maribyrnong River	Riverine
461	Dynon Road	West Melbourne	Maribyrnong River	Riverine
500	Epsom Road	Flemington	Maribyrnong River	Riverine
1-39	Hobsons Road	Kensington	Maribyrnong River	Riverine
41-45	Hobsons Road	Kensington	Maribyrnong River	Riverine
47-63	Hobsons Road	Kensington	Maribyrnong River	Riverine
65-69	Hobsons Road	Kensington	Maribyrnong River	Riverine
67-121	Kensington Road	Kensington	Maribyrnong River	Riverine

Properties at risk from Riverine Flooding during a 1% AEP event				
Residential	Commercial	Industrial	Special Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
1/133	Kensington Road	West Melbourne	Maribyrnong River	Riverine
2/133	Kensington Road	West Melbourne	Maribyrnong River	Riverine
156-158	Kensington Road	West Melbourne	Maribyrnong River	Riverine
160-174	Kensington Road	West Melbourne	Maribyrnong River	Riverine
167-169	Kensington Road	West Melbourne	Maribyrnong River	Riverine
171-183	Kensington Road	West Melbourne	Maribyrnong River	Riverine
176-178	Kensington Road	West Melbourne	Maribyrnong River	Riverine
180-194	Kensington Road	West Melbourne	Maribyrnong River	Riverine
185-193	Kensington Road	West Melbourne	Maribyrnong River	Riverine
195-199	Kensington Road	West Melbourne	Maribyrnong River	Riverine
196-214	Kensington Road	West Melbourne	Maribyrnong River	Riverine
201-205	Kensington Road	West Melbourne	Maribyrnong River	Riverine
207	Kensington Road	West Melbourne	Maribyrnong River	Riverine
209-213	Kensington Road	West Melbourne	Maribyrnong River	Riverine
216-232	Kensington Road	West Melbourne	Maribyrnong River	Riverine
234-250	Kensington Road	West Melbourne	Maribyrnong River	Riverine
8-22	Sims Street	West Melbourne	Maribyrnong River	Riverine
24-40	Sims Street	West Melbourne	Maribyrnong River	Riverine
61-75	Sims Street	West Melbourne	Maribyrnong River	Riverine
77-95	Sims Street	West Melbourne	Maribyrnong River	Riverine
93-111	Sims Street	West Melbourne	Maribyrnong River	Riverine
93-95	The Crescent	Kensington	Maribyrnong River	Riverine
Totals				
43				

Table C2.5 – Properties at risk of flooding along the Maribyrnong River in the City of Melbourne

Isolation

No major isolation risks exist for areas around Flemington, Kensington & West Melbourne during a 1% AEP (100yr ARI) event. Some localised short-duration isolation may occur due to flash flooding and high tides.

Essential Infrastructure

- **Flemington Racecourse station** – not expected to be inaccessible but surrounding flooding may influence behaviour of event patrons

Apart from the roads outlined below, all other essential infrastructure and services areas along the Maribyrnong River in Flemington, Kensington & West Melbourne 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 along the Maribyrnong River in Flemington, Kensington & West Melbourne. Check the VicRoads website for more details: alerts.vicroads.vic.gov.au

Department of Transport (VicRoads) Roads flooded in a 1% AEP (100yr ARI) event
<ul style="list-style-type: none"> Dynon Road between Sims Street and Lloyd Street
<ul style="list-style-type: none"> Smithfield Road, Kensington between Maribyrnong River and Epsom Road

Table C2.6 – Department of Transport (VicRoads) Possible Road Closures during a flooding event

Melbourne City Council Roads likely flooded in a 1% AEP (100yr ARI) event	
KENSINGTON	WEST MELBOURNE
<ul style="list-style-type: none"> Bangalore Street 	<ul style="list-style-type: none"> Sims Street
<ul style="list-style-type: none"> Childers Street 	
<ul style="list-style-type: none"> Hobsons Road 	
<ul style="list-style-type: none"> Kensington Road 	

Table C2.7 – Melbourne City Council Possible flooded roads due to flash flooding over 30cm depth

Flood Mitigation

Retarding Basins

Melbourne City Council Retarding Basin	Location	Area	Melway Reference
Riverside Park, Kensington	Corner Smithfield Road & Maribyrnong River, Kensington	43,500m ²	2TC5

Table C2.8 – Melbourne City Council Retarding Basins within the Maribyrnong River catchment

Levees

Levee	Reach	Side	Levee Height	Levee Length	Expected Level of Protection	ANCOLD Hazard Rating	Consequence of Failure	Melway Reference
Flemington Flood Wall (Victorian Racing Club)	Flemington Racecourse Straight to Maribyrnong River	East	Unavailable	200m	Unavailable	Unavailable	Flemington Racecourse flooded	2SJ2-2SJ3
Flemington Flood Wall (Victorian Racing Club)	Maribyrnong River	East	Unavailable	600m	Unavailable	Unavailable	Flemington Racecourse flooded	2SJ3-2TB4
Flemington Flood Wall (Victorian Racing Club)	Maribyrnong River to Gatehouse Drive	East	Unavailable	800m	Unavailable	Unavailable	Flemington Racecourse flooded	2TA4-2TE3
Flemington Flood Wall (Victorian Racing Club)	Gatehouse Drive to Stables	East	Unavailable	400m	Unavailable	Unavailable	Flemington Racecourse flooded	2TE3-2TE1

Table C2.9 – Melbourne Water Levees in the Maribyrnong River Catchment in the City of Melbourne

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located along the Maribyrnong River and the lower Yarra River downstream of the convergence of the Maribyrnong River is contained within the following table.

Sewer Emergency Relief Points

On Drain / Waterway	Bank / Side of Waterway	Operator	Location	Melway Reference
Local Drainage	-	City West Water	Holsten Lane, Kensington	
Local Drainage	-	City West Water	5 X Relief Points around Footscray Road and Dock Link Road	2T D12
Maribyrnong River	West Bank (City of Maribyrnong)	City West Water	Burton Crescent, Maribyrnong	28 C8
Maribyrnong River	West Bank (City of Maribyrnong)	City West Water	Pipemakers Park, Maribyrnong	28 B10
Maribyrnong River	East Bank (City of Moonee Valley)	City West Water	Angler Parade, Ascot Vale	28 D11
Maribyrnong River	East Bank (City of Moonee Valley)	City West Water	Fisher Parade, Ascot Vale	2S H2
Maribyrnong River	East Bank	Melbourne Water	Sims Street, West Melbourne at the Dynon Road Hopetown Bridge	2T A8
Yarra River	West Bank (City of Hobsons Bay)	Melbourne Water	Douglas Parade, Spotswood (City of Hobsons Bay) at Scienceworks Museum	56 B1

Table C2.10 – Sewer Emergency Relief Points in the Maribyrnong River Catchment in the City of Melbourne

Command, Control and Coordination

VICSES will assume overall control of the response to flood incidents. Other agencies will be requested to support operations as detailed in this Plan. Control and coordination of a flood incident shall be carried out at the lowest effective level and in accordance with the State Emergency Response Plan (EMMV Part 3). During significant events, VICSES will conduct incident management using multi-agency resources.

Flood Impacts and Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along the Maribyrnong River and surrounding areas at various river heights or rain totals within the City of Melbourne. 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:

- Maribyrnong River at Maribyrnong

FLOOD INTELLIGENCE CARD – MARIBYRNONG GAUGE, MARIBYRNONG RIVER

Version 3 – February 2021



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.**



LOCATION:	Chifley Drive, Maribyrnong
CURRENT LEVEL:	https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/230106A
STREAM:	Maribyrnong River
GAUGE NUMBER:	230106A
GAUGE ZERO:	0.0m AHD
GAUGE TYPE:	Water Level & Rain

MELWAY REFERENCE:	28 B7
MINOR:	1.7m
MODERATE:	2.3m
MAJOR:	2.9m
LEVEE HEIGHT:	Unavailable
HIGHEST RECORDED FLOOD:	4.50m (8 th September 1906)

River Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
1.0m		Water Over Road <ul style="list-style-type: none"> Kensington Road, West Melbourne between Dynon Road and Hobsons Road may become flooded because of local drainage backup caused by high tides 	
1.3m		Properties at Flood Risk 1 Properties in Total <ul style="list-style-type: none"> Flemington Racecourse at 500 Epsom Road, Flemington potentially flooded outside of the levee 	
1.7m	MINOR FLOOD LEVEL 20% AEP (5yr ARI) Flood Level	Community Infrastructure Flooded <ul style="list-style-type: none"> Maribyrnong Trail begins flooding in sections 	
2.21m	14 th January 2011 Flood Level Peak		
2.3m	MODERATE FLOOD LEVEL		
2.4m	10% AEP (10yr ARI) Flood Level (Moderate)		
2.9m	MAJOR FLOOD LEVEL		

River Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
	5% AEP (20yr ARI) Flood Level		
3.78m	2% AEP (50yr ARI) Flood Level (Major)	Water Over Road <ul style="list-style-type: none"> Smithfield Road, Kensington becomes flooded Dynon Road, West Melbourne becomes flooded 	Council to provide road closure signage under predetermined arrangement with Citywide, prompted by notification
3.83m	15 th September 1993 Flood Level Peak		
4.4m	1% AEP (100yr ARI) Flood Level (Major)	<ul style="list-style-type: none"> Note: It is not known at what level property and infrastructure contained below starts being flooded Properties at Flood Risk 42 New at Level; 43 Properties in Total <ul style="list-style-type: none"> 69-371, 385, 388-398, 400-408, 414-420, 439-459, Factories 1-6/440, 442-452, 458-484 & 461 Dynon Road, West Melbourne 1-39, 41-45, 47-63 & 65-69 Hobsons Road, Kensington 67-121, 1/133, 2/133, 156-158, 160-174, 167-169, 171-183, 176-178, 180-194, 185-193, 195-199, 196-214, 201-205, 207, 209-213, 216-232 & 234-250 Kensington Road, West Melbourne 8-22, 24-40, 61-75, 77-95 & 93-111 Sims Street, West Melbourne 93-95 The Crescent, Kensington Community Infrastructure Likely Flooded <ul style="list-style-type: none"> JJ Holland Park on Kensington Road, Kensington Riverside Park on The Crescent, Kensington Water Over Road <ul style="list-style-type: none"> Hobsons Road, Kensington Childers Street, Kensington Sims Street, West Melbourne 	<p>VICSES may provide warnings via VicEmergency and EM-COP as required based on the predictions 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 Commander will maintain operational awareness and form an appropriate response arrangement to suit the level of incident</p> <p>VICSES Units to respond on a request-by-request basis</p> <p>EHOs to advise of contamination of flood waters</p> <p>Council to provide road closure signage under predetermined arrangement with Citywide, prompted by notification</p>

Table C2.11 – Breakdown of likely consequences at various Maribyrnong gauge level heights along the Maribyrnong River with operational considerations

APPENDIX C3 – MOONEE PONDS CREEK FLOOD EMERGENCY PLAN

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 Moonee Ponds Creek and its Stormwater drains					
Property					
Properties	357				
Residential	147				
Commercial	20				
Industrial	62				
Public Land	6				
Mixed Use	122				
Community Infrastructure					
Child Care / Kindergartens	2	Federation Family Day Care; and Lady Huntinfield Children's Centre			
Schools / Colleges		North Melbourne Primary School			
Essential Infrastructure					
Major Roads	4	Boundary Road, Dudley Street, Dynon Road, Macaulay Road			
Railway	1	Melbourne Railway Freight Terminal			
Power Facility	1	West Melbourne Terminal Station			
Health Facilities	1	Royal Melbourne Hospital			
Drainage & Water Facilities	9	2 Municipal Retarding Basins; and 7 Municipal Pumping Stations			
Levees	6	Along Moonee Ponds Creek			
Sewerage Facilities	2	Emergency Relief Points			
Tourism / Recreation					
Trails & Footbridges	2	Moonee Ponds Creek Bicycle Trail; and the Dynon Road Bicycle Trail			
Economic					
Government Boundaries					
Local Gov't Areas	1	Melbourne (City of)	CMA	1	Port Phillip & Westernport
Adjacent LGAs	2	Moonee Valley and Moreland	CFA District	0	
SES Unit Area	1	Footscray	FRV District	1	North West Metro

Table C3.1 – Consequence Summary of 1% AEP flood along Moonee Ponds Creek and surrounds

Moonee Ponds Creek is an open concrete channel and flows in a southerly direction, discharging into the Yarra River at Docklands in the City of Melbourne. Along a section of the creek from Parkville to North Melbourne / Kensington, the creek is bordered on both sides by a levee designed to protect adjacent properties, businesses and roads from flooding to a 1% AEP level. The levees may also exacerbate local floodwaters however from draining into the creek with areas around Bent Street in

Kensington and Langford Street in North Melbourne experiencing this in the past. Downstream, The SP AusNet West Melbourne Terminal Station on the corner of Arden & Lloyd Streets along with Dynon Road and the parts of the Railway Freight Terminal in West Melbourne may also experience flooding from Moonee Ponds Creek.

Gauges and Warnings

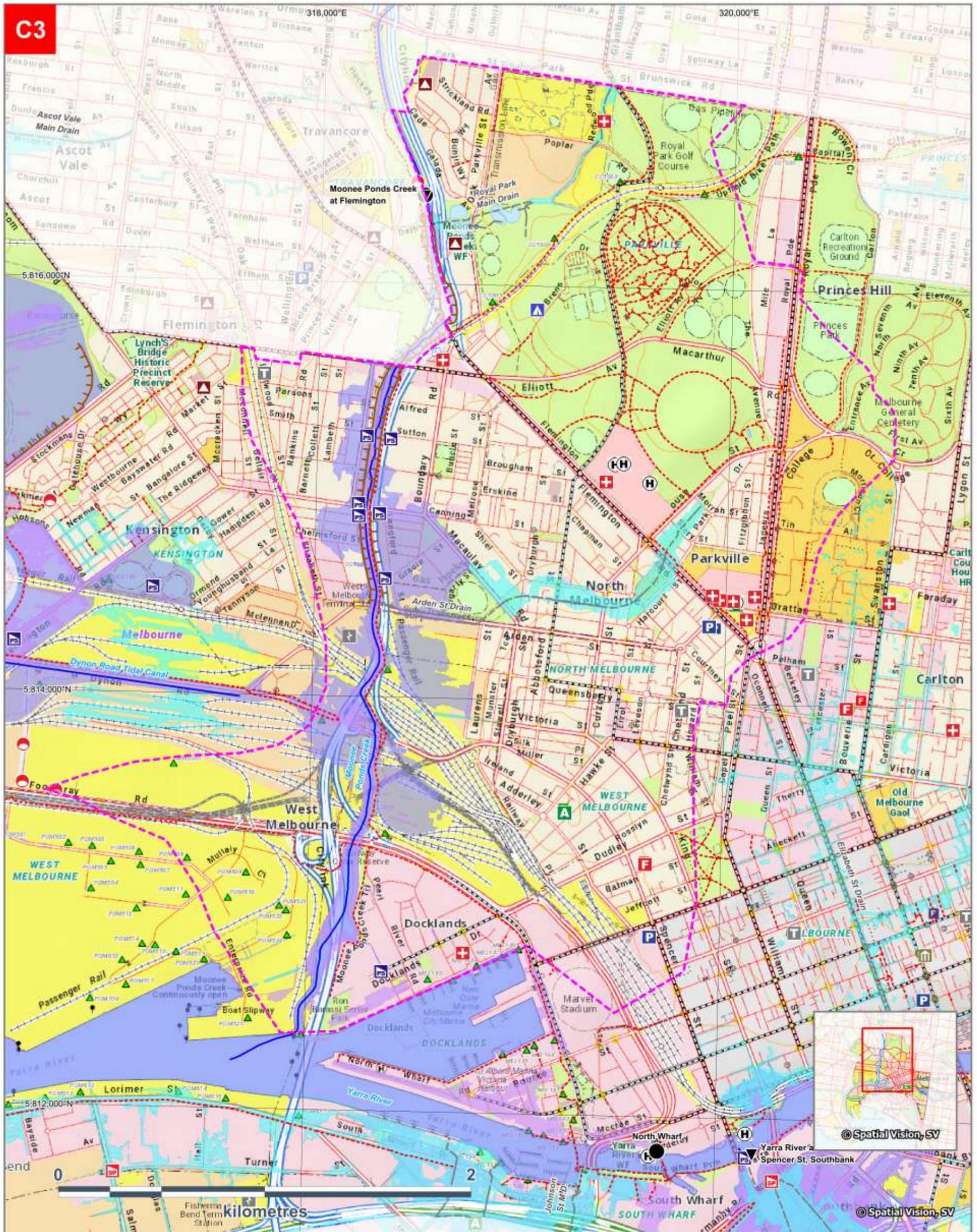
Neither the Bureau of Meteorology nor Melbourne Water currently provides flood forecasts for the Moonee Ponds Creek. All flood response actions must therefore be driven by rainfall and / or water level observations. Telemetered water level / flood gauges are located at Jacana and Flemington. See **Appendix B** for typical flood travel times for Moonee Ponds Creek.

Gauge	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Reference
Moonee Ponds Creek at Jacana Retarding Basin, Glenroy	229665A	Jacana Retarding Basin near Embankment, Glenroy	✓	✓	6 D12
Moonee Ponds Creek at Flemington	229643A	West side of the channel along the Moonee Ponds Creek Trail near Delhi Ct, Travancore	✓	✓	29 B12

Table C3.2 – Gauges within the Moonee Ponds Creek catchment monitoring flood levels for the City of Melbourne

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.

Area Map of Flood Risk within the Moonee Ponds Creek catchment



Moonee Ponds Creek / Arden St Drain flood modelling completed by Engery, August 2020. Map Produced by VICSES February 2021.

<p>CITY OF MELBOURNE</p> <p>1% AEP (100yr ARI) Flooding</p> <p>C3. Areas of flood risk around Moonee Ponds Creek</p>	<p>Building</p> <p>Waterbody</p> <p>1% AEP Riverine Flood Extent</p> <p>1% AEP Flash Flood Extent</p> <p>1% AEP Storm Surge Extent</p> <p>Waterway</p> <p>Boundary for this Appendix</p> <p>Melbourne Water Stormwater Drain</p>	<p>Bicycle / Walking Trail</p> <p>Ambulance Station</p> <p>Fire Station</p> <p>Drainage Pumping Station</p> <p>Sewer Pumping Station</p> <p>Aged Care / Retirement Village</p> <p>Power Terminal Station</p> <p>Telephone Exchange</p>	<p>Municipal Offices</p> <p>Helipad</p> <p>Hospital</p> <p>Police Station</p> <p>Stream Level Gauge</p> <p>Rain Gauge</p> <p>Camp Ground</p> <p>Sewer Emergency Relief Point</p>	<p>LAND USE</p> <p>Residential</p> <p>Commercial and Business</p> <p>Industrial</p> <p>Public Parks / Cemeteries / Recreation</p> <p>Utilities and Local Government Facilities</p> <p>Education</p>	<p>SES VICTORIA</p> <p>Melbourne Water</p> <p>This map 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.</p>
--	--	--	--	--	--

Figure C3.1 – Areas of flood risk along Moonee Ponds Creek in the City of Melbourne

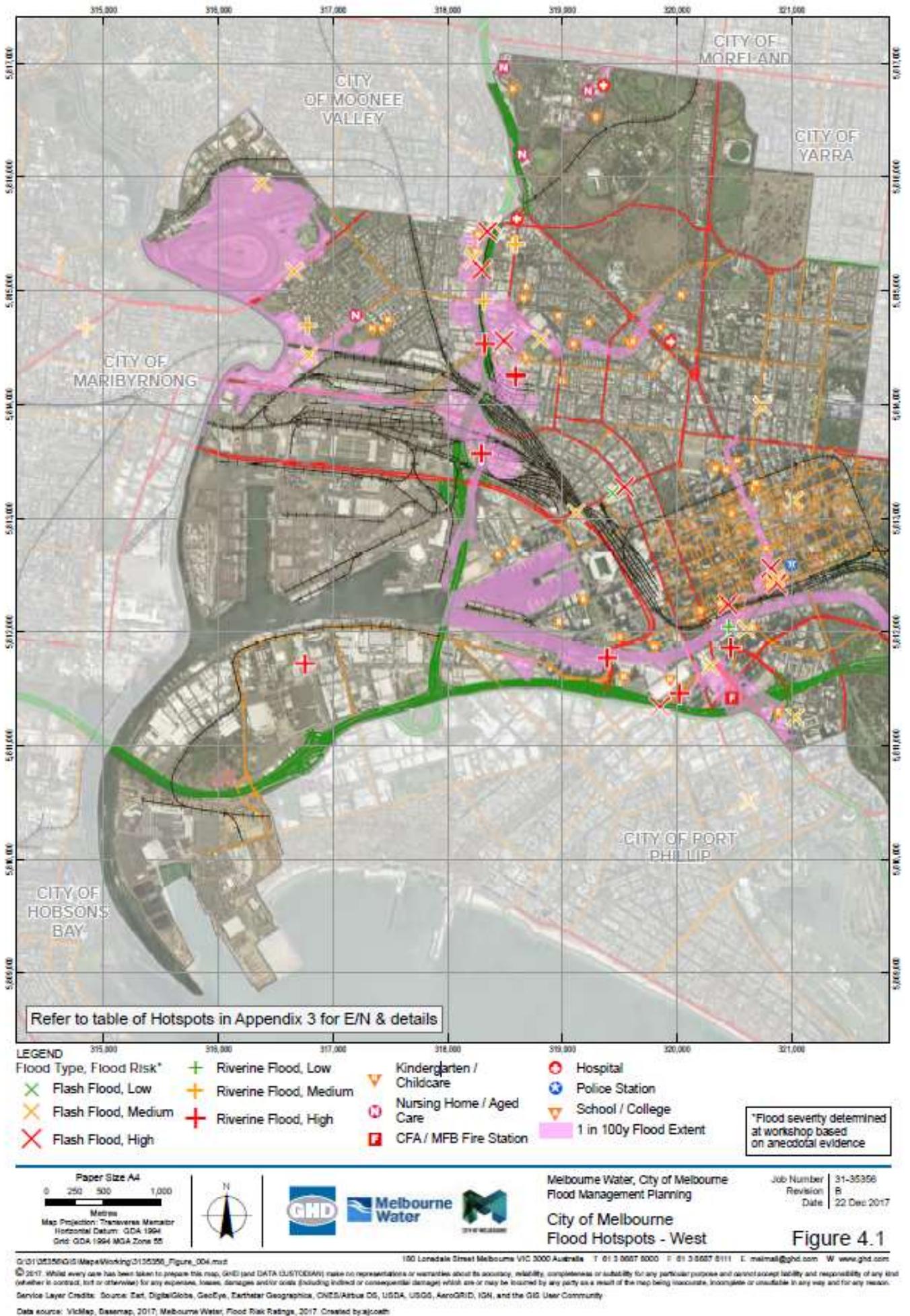


Figure C3.2 – Melbourne City Council Identified Hot Spots (West) (City of Melbourne Flood Management Plan 2018)

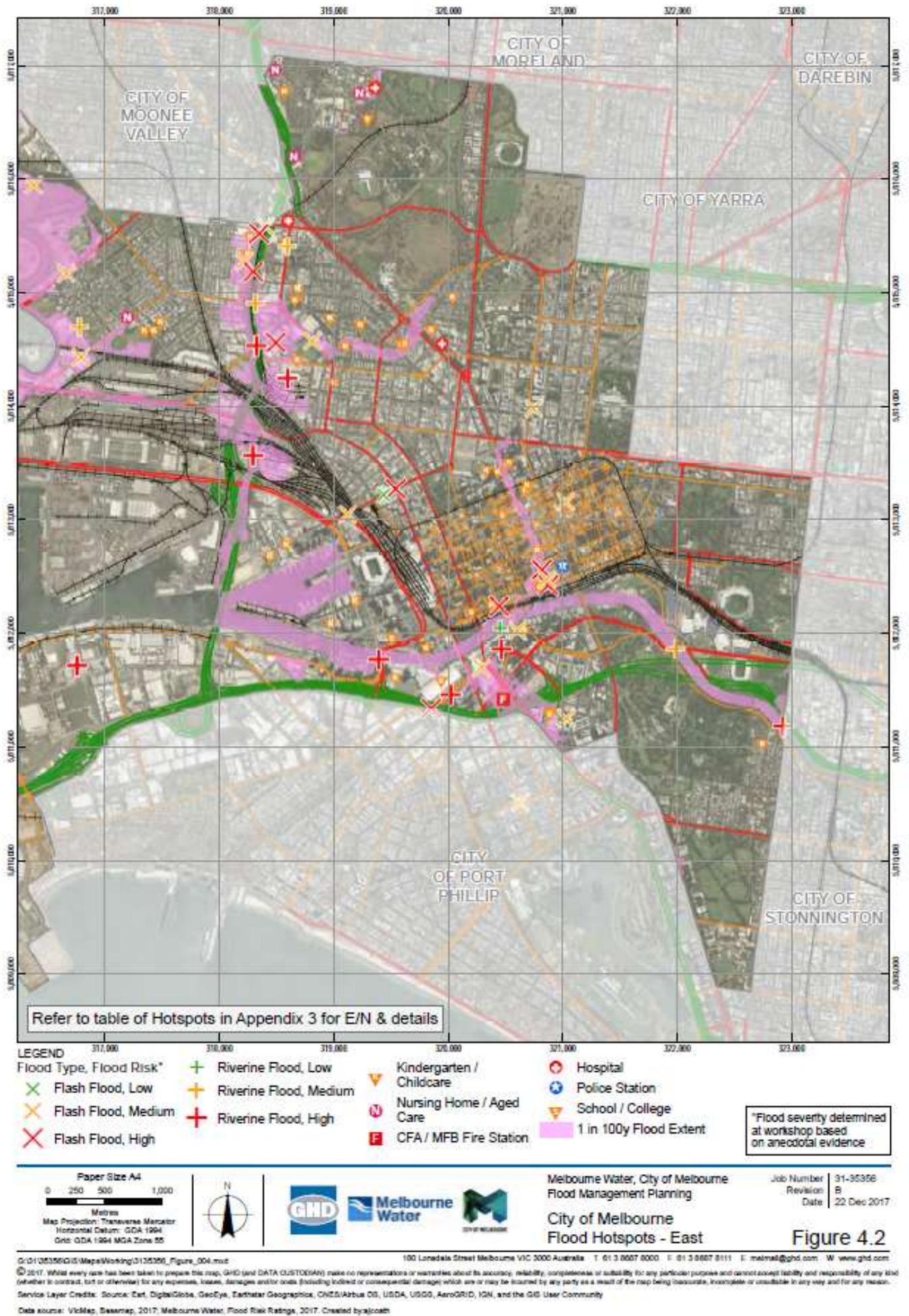


Figure C2.3 – Melbourne City Council Identified Hot Spots (East) (City of Melbourne Flood Management Plan 2018)

Suburb	Flood Type	Street/s	Flooding Description	Melbourne City Council Flood Risk Rating
Kensington	Riverine	Stubbs Street	Between Racecourse Road and Macaulay Road. Low lying and subject to flooding when Moonee Ponds Creek is high. Possible flooding of up to 1.0m	High
North Melbourne	Flash	Langford St (Arden St to Gracie St)	Low lying behind the creek levee	High
North Melbourne	Flash		Arden Siding site at proposed Arden Station for Melbourne Metro Rail Project	High
North Melbourne	Riverine	Macaulay Bridge	Rough sleepers. High risk of death due to sleepers in river bed.	High
Kensington	Flash		Kensington Railway Station and tracks flood	High
North Melbourne	Riverine	Arden Street Bridge	Rough sleepers. High risk of death due to sleepers in river bed.	High
Kensington	Riverine		Moonee Ponds Creek	Medium
North Melbourne	Flash		Arden Street Lost Dogs Home	Medium
Flemington	Riverine	Racecourse Road Bridge	Flooding of bicycle path under bridge	Medium
Kensington	Riverine	Macaulay Bridge	Flooding of bike path under bridge	Medium

Table C2.4 – Flood Risks and Hotspots identified in Melbourne Water and City of Melbourne workshop as part of the Flood Management Plan 2018 development

Properties at Flood Risk

Properties listed in the table below are at risk from flooding along Moonee Ponds Creek and surrounding stormwater drains in the City of Melbourne. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Moonee Ponds Creek & Arden Street Drain (Engeny, February 2016) flood mapping and risk assessment program. Note that any multi-lot properties situated above ground floor likely impacted by isolation only with flooding on ground floor impacting access to common areas and/or carpark and storage facilities. Information on above ground-floor properties is not available in this list.

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 Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event					
Residential		Commercial	Industrial	Mixed Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
340	Abbotsford Street	North Melbourne	Arden Street Main Drain	Flash	
340A	Abbotsford Street	North Melbourne	Arden Street Main Drain	Flash	
1/340	Abbotsford Street	North Melbourne	Arden Street Main Drain	Flash	
2/340	Abbotsford Street	North Melbourne	Arden Street Main Drain	Flash	
344	Abbotsford Street	North Melbourne	Arden Street Main Drain	Flash	
2	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
4	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
6	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
8	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event					
Residential		Commercial	Industrial	Mixed Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
10	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
12	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
13	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
15	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
16	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
17	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
18	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
19	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
20	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
21	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
22	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
23	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
25	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
28-32	Albermarle Street	Kensington	Moonee Ponds Creek	Riverine	
208-292	Arden Street	North Melbourne	Moonee Ponds Creek	Riverine	
297-307	Arden Street	Kensington	Moonee Ponds Creek	Riverine	
330	Arden Street	Kensington	Moonee Ponds Creek	Riverine	
1	Barrett Street	Kensington	Moonee Ponds Creek	Riverine	
2-12	Barrett Street	Kensington	Moonee Ponds Creek	Riverine	
3-5	Barrett Street	Kensington	Moonee Ponds Creek	Riverine	
1	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
2	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
3	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
4	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
5	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
6	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
7	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
8	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
9	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
10	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
11	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
12	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
13	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
16-28	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
1/18	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
2/18	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
3/18	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
4/18	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
5/18	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
6/18	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
7/18	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
8/18	Bent Street	Kensington	Moonee Ponds Creek	Riverine	
1-3	Boundary Road	North Melbourne	Moonee Ponds Creek	Riverine	

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event					
Residential		Commercial	Industrial	Mixed Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
2	Boundary Road	North Melbourne	Moonee Ponds Creek	Riverine	
5-9	Boundary Road	North Melbourne	Moonee Ponds Creek	Riverine	
11	Boundary Road	North Melbourne	Moonee Ponds Creek	Riverine	
13	Boundary Road	North Melbourne	Moonee Ponds Creek	Riverine	
34-70	Bruce Street	Kensington	Moonee Ponds Creek	Riverine	
27	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
29	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
31	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
33	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
35	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
37	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
39	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
41	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
43	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
45	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
47-51	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
53-59	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
70-90	Chelmsford Street	Kensington	Moonee Ponds Creek	Riverine	
146	Curzon Street	North Melbourne	Arden Street Main Drain	Flash	
147	Curzon Street	North Melbourne	Arden Street Main Drain	Flash	
148	Curzon Street	North Melbourne	Arden Street Main Drain	Flash	
150	Curzon Street	North Melbourne	Arden Street Main Drain	Flash	
152	Curzon Street	North Melbourne	Arden Street Main Drain	Flash	
159-169	Curzon Street	North Melbourne	Arden Street Main Drain	Flash	
27-33	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
39-45	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
2/88	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
3/88	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
4/88	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
5/88	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
6/88	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
7/88	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
8/88	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
9/88	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
10/88	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
11/88	Dynon Road	West Melbourne	Moonee Ponds Creek	Riverine	
200-214	Errol Street	North Melbourne	Arden Street Main Drain	Flash	
213	Errol Street	North Melbourne	Arden Street Main Drain	Flash	
215	Errol Street	North Melbourne	Arden Street Main Drain	Flash	
217-219	Errol Street	North Melbourne	Arden Street Main Drain	Flash	
20	Falshaws Lane	North Melbourne	Arden Street Main Drain	Flash	
40	Flemington Road	Parkville	Arden Street Main Drain	Flash	
42	Flemington Road	Parkville	Arden Street Main Drain	Flash	

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event					
Residential		Commercial	Industrial	Mixed Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
2-4	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
6	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
8	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
10	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
12	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
14-18	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
22-24	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
26	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
28	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
30	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
32	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
34	Gatehouse Street	Parkville	Arden Street Main Drain	Flash	
2-52	Gracie Street	North Melbourne	Moonee Ponds Creek	Riverine	
13	Gracie Street	North Melbourne	Moonee Ponds Creek	Riverine	
15-19	Gracie Street	North Melbourne	Moonee Ponds Creek	Riverine	
54-60	Gracie Street	North Melbourne	Moonee Ponds Creek	Riverine	
62-70	Gracie Street	North Melbourne	Moonee Ponds Creek	Riverine	
74-92	Gracie Street	North Melbourne	Moonee Ponds Creek	Riverine	
2-54	Green Street	North Melbourne	Moonee Ponds Creek	Riverine	
3B	Haines Street	North Melbourne	Arden Street Main Drain	Flash	
3A	Haines Street	North Melbourne	Arden Street Main Drain	Flash	
49	Haines Street	North Melbourne	Arden Street Main Drain	Flash	
55	Haines Street	North Melbourne	Arden Street Main Drain	Flash	
61	Haines Street	North Melbourne	Arden Street Main Drain	Flash	
89-97	Haines Street	North Melbourne	Arden Street Main Drain	Flash	
45	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
47	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
51-61	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
54	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
56-58	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
60	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
62	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
63	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
64	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
65	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
66	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
67	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
67A	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
68	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
69	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
70	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
72	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
74	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event					
Residential		Commercial	Industrial	Mixed Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
78	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
80	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
82	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
84	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
86	Hardiman Street	Kensington	Moonee Ponds Creek	Riverine	
1	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
1A	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
2	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
2C	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
2B	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
3	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
4	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
5	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
6	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
7	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
9	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
10	Harris Street	North Melbourne	Arden Street Main Drain	Flash	
49	Henderson Street	North Melbourne	Moonee Ponds Creek	Riverine	
37	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
39	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
41	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
43	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
45	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
1/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
2/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
3/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
4/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
5/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
6/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
7/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
8/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
9/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
10/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
11/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
12/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
13/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
14/99-101	Lambeth Street	Kensington	Moonee Ponds Creek	Riverine	
56-92	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
63-119	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
96-106	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
110-116	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
120	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
121-151	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event					
Residential		Commercial	Industrial	Mixed Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
122-124	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
134	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
138-140	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
142	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
144	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
146-148	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
153-185	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
155	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
185	Langford Street	North Melbourne	Moonee Ponds Creek	Riverine	
77-199	Laurens Street	North Melbourne	Moonee Ponds Creek	Riverine	
183-199	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
201-241	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
243-251	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
248-276	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
253-255	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
257	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
259	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
261-263	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
271-273	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
275-285	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
280-286	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
287-313	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
288-294	Macaulay Road	North Melbourne	Moonee Ponds Creek	Riverine	
346-350	Macaulay Road	Kensington	Moonee Ponds Creek	Riverine	
347-367	Macaulay Road	Kensington	Moonee Ponds Creek	Riverine	
4/352	Macaulay Road	Kensington	Moonee Ponds Creek	Riverine	
5/352	Macaulay Road	Kensington	Moonee Ponds Creek	Riverine	
369-381	Macaulay Road	Kensington	Moonee Ponds Creek	Riverine	
383-399	Macaulay Road	Kensington	Moonee Ponds Creek	Riverine	
74-88	Mark Street	North Melbourne	Moonee Ponds Creek	Riverine	
83	Mark Street	North Melbourne	Moonee Ponds Creek	Riverine	
87	Mark Street	North Melbourne	Moonee Ponds Creek	Riverine	
21/80	Morrah Street	Parkville	Arden Street Main Drain	Flash	
1/24-30	Oshanassy Street	North Melbourne	Arden Street Main Drain	Flash	
2/24-30	Oshanassy Street	North Melbourne	Arden Street Main Drain	Flash	
3/24-30	Oshanassy Street	North Melbourne	Arden Street Main Drain	Flash	
4/24-30	Oshanassy Street	North Melbourne	Arden Street Main Drain	Flash	
5/24-30	Oshanassy Street	North Melbourne	Arden Street Main Drain	Flash	
6/24-30	Oshanassy Street	North Melbourne	Arden Street Main Drain	Flash	
7/24-30	Oshanassy Street	North Melbourne	Arden Street Main Drain	Flash	
8/24-30	Oshanassy Street	North Melbourne	Arden Street Main Drain	Flash	
50	Oshanassy Street	North Melbourne	Arden Street Main Drain	Flash	
60	Oshanassy Street	North Melbourne	Arden Street Main Drain	Flash	

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event					
Residential		Commercial	Industrial	Mixed Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
70	Oshanassy Street	North Melbourne	Arden Street Main Drain	Flash	
62	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
64	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
66	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
68	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
70	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
73	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
75-89	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
11/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
12/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
13/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
14/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
15/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
16/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
17/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
18/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
19/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
20/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
21/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
22/75-103	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
80	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
82	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
84	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
86	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
90-92	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
91-93	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
94	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
95-97	Parsons Street	Kensington	Moonee Ponds Creek	Riverine	
9	Radcliffe Street	West Melbourne	Moonee Ponds Creek	Riverine	
11-15	Radcliffe Street	West Melbourne	Moonee Ponds Creek	Riverine	
17-31	Radcliffe Street	West Melbourne	Moonee Ponds Creek	Riverine	
19	Reynolds Street	North Melbourne	Moonee Ponds Creek	Riverine	
21-31	Reynolds Street	North Melbourne	Moonee Ponds Creek	Riverine	
18	Robertson Street	Kensington	Moonee Ponds Creek	Riverine	
26	Robertson Street	Kensington	Moonee Ponds Creek	Riverine	
49	Robertson Street	Kensington	Moonee Ponds Creek	Riverine	
51A	Robertson Street	Kensington	Moonee Ponds Creek	Riverine	
51B	Robertson Street	Kensington	Moonee Ponds Creek	Riverine	
53-55	Robertson Street	Kensington	Moonee Ponds Creek	Riverine	
57-59	Robertson Street	Kensington	Moonee Ponds Creek	Riverine	
70	Robertson Street	Kensington	Moonee Ponds Creek	Riverine	
13	Scarborough Place	Kensington	Moonee Ponds Creek	Riverine	
14	Scarborough Place	Kensington	Moonee Ponds Creek	Riverine	

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event					
Residential		Commercial	Industrial	Mixed Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
15	Scarborough Place	Kensington	Moonee Ponds Creek	Riverine	
16-18	Scarborough Place	Kensington	Moonee Ponds Creek	Riverine	
1/64	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
2/64	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
3/64	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
4/64	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
65	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
69	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
70-74	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
71	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
73	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
75	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
76-78	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
80	Smith Street	Kensington	Moonee Ponds Creek	Riverine	
2-4	Steel Street	North Melbourne	Moonee Ponds Creek	Riverine	
10-16	Steel Street	North Melbourne	Moonee Ponds Creek	Riverine	
18-20	Steel Street	North Melbourne	Moonee Ponds Creek	Riverine	
22-32	Steel Street	North Melbourne	Moonee Ponds Creek	Riverine	
33-41	Steel Street	North Melbourne	Moonee Ponds Creek	Riverine	
34-48	Steel Street	North Melbourne	Moonee Ponds Creek	Riverine	
43-47	Steel Street	North Melbourne	Moonee Ponds Creek	Riverine	
49-53	Steel Street	North Melbourne	Moonee Ponds Creek	Riverine	
55-57	Steel Street	North Melbourne	Moonee Ponds Creek	Riverine	
56	Steel Street	North Melbourne	Moonee Ponds Creek	Riverine	
56A	Steel Street	North Melbourne	Moonee Ponds Creek	Riverine	
34-40	Straker Street	North Melbourne	Moonee Ponds Creek	Riverine	
42-48	Straker Street	North Melbourne	Moonee Ponds Creek	Riverine	
20-26	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
25	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
27	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
29	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
30	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
31	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
32	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
33	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
34	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
35	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
36	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
37	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
39	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
40-48	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
41	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
42	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event					
Residential		Commercial	Industrial	Mixed Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type	
43	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
45	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
46	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
47	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
48	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
49	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
51	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
53	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
55	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
57	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
59	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
2/60	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
3/60	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
7/60	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
8/60	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
9/60	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
19/60	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
20/60	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
22/60	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
23/60	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
24/60	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
61	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
62	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
63	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
64-68	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
65	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
67	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
69	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
71	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
72	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
73	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
75	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
77A	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
77	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
86-96	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
106-116	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
113-127	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
129-139	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
141-151	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
161-179	Stubbs Street	Kensington	Moonee Ponds Creek	Riverine	
2-4	Thompson Street	Kensington	Moonee Ponds Creek	Riverine	
6	Thompson Street	Kensington	Moonee Ponds Creek	Riverine	
8	Thompson Street	Kensington	Moonee Ponds Creek	Riverine	

Properties at risk from Flooding along Moonee Ponds Creek and surrounding stormwater drains during a 1% AEP event				
Residential	Commercial	Industrial	Mixed Use	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
10	Thompson Street	Kensington	Moonee Ponds Creek	Riverine
14	Thompson Street	Kensington	Moonee Ponds Creek	Riverine
16-20	Thompson Street	Kensington	Moonee Ponds Creek	Riverine
22	Thompson Street	Kensington	Moonee Ponds Creek	Riverine
Total				
357				

Table C3.3 – Properties at risk of flooding along Moonee Ponds Creek and surrounding stormwater drains in the City of Melbourne

Isolation

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

Essential Infrastructure

- **SP AusNet West Melbourne Terminal Station** on the corner of Arden and Lloyd Streets, West Melbourne may have flooding along eastern and southern boundaries
- **Melbourne Railway Freight Terminal** along Moonee Ponds Creek between Dynon Road and Footscray Road, West Melbourne

Apart from the roads outlined below, all other essential infrastructure and services areas along Moonee Ponds 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 along Moonee Ponds Creek and the surrounding drainage network. Check the VicRoads website for more details: <http://alerts.vicroads.vic.gov.au/>

Department of Transport (VicRoads) Roads flooded in a 1% AEP (100yr ARI) event	
•	Boundary Road between Gracie Street and Macaulay Road
•	Dudley Street, West Melbourne at rail underpass near Wurundjeri Way, with significant levels of over 1.5m possible
•	Dynon Road, West Melbourne at Citylink underpass
•	Macaulay Road, North Melbourne between Citylink underpass and Haines Street

Table C3.4 – Department of Transport (VicRoads) Possible Road Closures during a flooding event

Melbourne City Council Roads likely flooded in a 1% AEP (100yr ARI) event		
KENSINGTON	• Smith Street at Stubbs Street end	• Ink Lane
• Bent Street	• Stubbs Street	• Langford Street
• Chelmsford Street	• Thompson Street	• Laurens Street
• Hardiman Street	• Weigall Street	• Reynolds Street
• Little Chelmsford Street	NORTH MELBOURNE	• Steel Street
• Little Hardiman Street	• Haines Street	• Straker Street
• Lloyd Street	• Arden Street east of Citylink underpass	WEST MELBOURNE

<ul style="list-style-type: none"> Parsons Street at Stubbs Street end 	<ul style="list-style-type: none"> Fogarty Street 	<ul style="list-style-type: none"> Radcliffe Street
<ul style="list-style-type: none"> Robertson Street at Stubbs Street end 	<ul style="list-style-type: none"> Gracie Street 	

Table C3.5 – Melbourne City Council Possible flooded roads due to flash flooding over 30cm depth

Flood Mitigation

Retarding Basins

Melbourne City Council Retarding Basin	Location	Area	Melway Reference
Riverside Park (Lynch's Bridge Park), Kensington	Corner Smithfield Road & Maribyrnong River, Kensington	43,500m ²	2TC5
Royal Park Wetlands, Parkville	Oak Street, Parkville	23,000m ²	29C11

Table C3.6 – Melbourne City Council Retarding Basins within the Moonee Ponds Creek catchment

Pumping Stations

Melbourne City Council Pumping Station	Suburb	Melway Reference
Corner Stubbs & Smith Streets	Kensington	2AB3
Sutton Street	North Melbourne	2AC3
Corner Macaulay & Stubbs Streets	Kensington	2AB5
Corner Macaulay & Bent Streets	Kensington	2AB5
Corner Macaulay & Langford Streets	North Melbourne	2AC5
Langford Street (near Gracie Street)	North Melbourne	2AC7
Kensington Road (near Dynon Road)	West Melbourne	2TC8

Table C3.8 – Melbourne City Council Pumping Stations along Moonee Ponds Creek

Levees

Levee	Reach	Side	Levee Height	Levee Length	Expected Level of Protection	ANCOLD Hazard Rating	Consequence of Failure	Melway Reference
Moonee Ponds Creek (Melbourne Water)	Mt Alexander Road to Manningham Road	East	2.2m	600m	1% AEP (100yr ARI) event with 500mm freeboard	High C	7 Houses and 3 Industrial Properties to the east of the levee flooded	29B11 – 43B1
Moonee Ponds Creek (Melbourne Water)	Mt Alexander Road to Manningham Road (City of Moonee Valley)	West	2.2m	500m	1% AEP (100yr ARI) event with 500mm freeboard	Low	1 House and 2 Industrial Properties to the west of the levee flooded	29B11 – 43B1
Moonee Ponds Creek (Melbourne Water)	Mt Alexander Road to Macaulay Road	East	3.0m	950m	1% AEP (100yr ARI) event with 500mm freeboard	Significant	18 Industrial Properties to the east of the levee flooded	2AD1-2AB5
Moonee Ponds Creek (Melbourne Water)	Mt Alexander Road to Macaulay Road	West	2.6m	1.0km	1% AEP (100yr ARI) event with 500mm freeboard	Significant	10 Houses and 28 Industrial Properties to the west of the levee flooded	2AD1-2AB5
Moonee Ponds Creek (Melbourne Water)	Arden Street to Macaulay Road	East	2.2m	400m	1% AEP (100yr ARI) event with 500mm freeboard	Significant	10 Industrial Properties to the east of the levee flooded	2AB5-2AC7
Moonee Ponds Creek (Melbourne Water)	Arden Street to Macaulay Road	West	2.2m	450m	1% AEP (100yr ARI) event with 500mm freeboard	Significant	20 Industrial Properties to the west of the levee flooded	2AB5-2AB7

Table C3.9 – Melbourne Water Levees in the Moonee Ponds Creek Catchment in the City of Melbourne

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located along Moonee Ponds Creek is contained within the following table.

Sewer Emergency Relief Points

On Drain / Waterway	Bank / Side of Waterway	Location	Melway Reference
Moonee Ponds Creek	West Bank	Moonee Ponds Creek Track at Travancore Park, Travancore (City of Moonee Valley)	29 B11
Arden Street Drain	Between dual drains	Arden Street (westbound lane), North Melbourne at Langford Street	2A C8

Table C3.10 – Sewer Emergency Relief Points in the Moonee Ponds Creek Catchment in the City of Melbourne

Command, Control and Coordination

VICSES will assume overall control of the response to flood incidents. Other agencies will be requested to support operations as detailed in this Plan. Control and coordination of a flood incident shall be carried out at the lowest effective level and in accordance with the State Emergency Response Plan (EMMV Part 3). During significant events, VICSES will conduct incident management using multi-agency resources.

Flood Impacts and Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along Moonee Ponds Creek at various creek heights or rain totals within the City of Melbourne. 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:

- Moonee Ponds Creek at Flemington
- Moonee Ponds Creek's Stormwater Drains

FLOOD INTELLIGENCE CARD – FLEMINGTON GAUGE, MOONEE PONDS CREEK

Version 3 – February 2021



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.**

LOCATION:	West side of the channel along the Moonee Ponds Creek Trail near Delhi Ct, Travancore
CURRENT LEVEL:	https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/229643A
STREAM:	Moonee Ponds Creek
GAUGE NUMBER:	229643A
GAUGE ZERO:	2.37m AHD
GAUGE TYPE:	Water Level & Rain

MELWAY REFERENCE:	29 B12
MINOR:	N/A
MODERATE:	N/A
MAJOR:	N/A
LEEVE HEIGHT:	3.45m
HIGHEST RECORDED FLOOD:	3.13m (1 st June 2013)

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
3.13m	1 st June 2013 Flood Level Peak		
3.20m	1% AEP (100yr ARI) Flood Level	<ul style="list-style-type: none"> Note: It is not known at what level infrastructure contained below starts being flooded Properties at Flood Risk 297 Industrial Properties in Total 2, 4, 6, 8, 10, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25 & 28-32 Albermarle Street, Kensington 208-292 Arden Street, North Melbourne 297-307 Arden Street, Kensington 330 Arden Street, Kensington 1, 2-12 & 3-5 Barrett Street, Kensington 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16-28 & Units 1-8/18 Bent Street, Kensington 1-3, 2, 5-9, 11 & 13 Boundary Road, North Melbourne 34-70 Bruce Street, Kensington 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47-51, 53-59 & 70-90 Chelmsford Street, Kensington 27-33, 39-45 & Factories 2-11/88 Dynon Road, West Melbourne 2-52, 13, 15-19, 54-60, 62-70 & 74-92 Gracie Street, North Melbourne 2-54 Green Street, North Melbourne 45, 47, 51-61, 54, 56-58, 60, 62, 63, 64, 65, 66, 67, 67A, 68, 69, 70, 72, 74, 78, 80, 82, 84 & 86 Hardiman Street, Kensington 	<p>VICSES may provide warnings via VicEmergency and EM-COP as required based on the predictions provided by BoM regarding flood levels and the risk of Flash Flooding. The North West Metro Region Duty officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response arrangement to suit the level of incident</p> <p>VICSES Units to respond on a request-by-request basis.</p>

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • 49 Henderson Street, North Melbourne • 37, 39, 41, 43, 45 & Units 1-14/99-101 Lambeth Street, Kensington • 56-92, 63-119, 96-106, 110-116, 120, 121-151, 122-124, 134, 138-140, 142, 144, 146-148, 153-185, 155 & 185 Langford Street, North Melbourne • 183-199, 201-241, 243-251, 248-276, 253-255, 257, 259, 261-263, 271-273, 275-285, 280-286, 287-313 & 288-294 Macaulay Road, North Melbourne • 346-350, 347-367, 4/352, 5/352, 369-381 & 383-399 Macaulay Road, Kensington • 74-88, 83 & 87 Mark Street, North Melbourne • Parsons Street, Kensington • 62, 64, 66, 68, 70, 73, 75-89, Shops 11-22/75-103, 80, 82, 84, 86, 90-92, 91-93, 94 & 95-97 Parsons Street, Kensington • 9, 11-15 & 17-31 Radcliffe Street, West Melbourne • 19 & 21-31 Reynolds Street, North Melbourne • 18, 26, 49, 51A, 51B, 53-55, 57-59 & 70 Robertson Street, Kensington • 49 Robertson Street, Kensington • 51A, 51B, 53-55, 57-59 & 70 Robertson Street, Kensington • 13, 14, 15 & 16-18 Scarborough Place, Kensington • 1/64, 2/64, 3/64, 4/64, 65, 69, 70-74, 71, 73, 75, 76-78 & 80 Smith Street, Kensington • 2-4, 10-16, 18-20, 22-32, 33-41, 34-48, 43-47, 49-53, 55-57, 56 & 56A Steel Street, North Melbourne • 34-40 & 42-48 Straker Street, North Melbourne • 20-26, 25, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 40-48, 41, 42, 43, 45, 46, 47, 48, 49, 51, 53, 55, 57, 59, 2/60, 3/60, 7/60, 8/90, 9/60, 19/60, 20/60, 22/60, 23/60, 24/60, 61, 62, 63, 64-68, 65, 67, 69, 71, 72, 73, 75, 77A, 77, 86-96, 106-116, 113-127, 129-139, 141-151 & 161-179 Stubbs Street, Kensington • 2-4, 6, 8, 10, 14, 16-20 & 22 Thompson Street, Kensington <p>Community Infrastructure Likely Flooded</p> <ul style="list-style-type: none"> • Federation Family Day Care at 37 Stubbs Street, Kensington • Moonee Ponds Creek Bicycle Trail at various locations along Moonee Ponds Creek including Racecourse Road and Macaulay Road • The Dynon Road Bicycle Trail between Maribyrnong River and Moonee Ponds Creek <p>Essential Infrastructure Likely Impacted</p> <ul style="list-style-type: none"> • West Melbourne Terminal Station on the corner of Arden and Lloyd Streets, West Melbourne may have flooding along eastern and southern boundaries • Melbourne Railway Freight Terminal along Moonee Ponds Creek between Dynon Road and Footscray Road, West Melbourne • Water Over Road (over 30cm depth) (roads in red text are Department of Transport roads) • Arden Street east of Citylink underpass, North Melbourne • Boundary Road between Gracie Street and Macaulay Road, North Melbourne • Chelmsford Street, Kensington • Dynon Road at Citylink Underpass, West Melbourne • Fogarty Street, North Melbourne • Gracie Street, North Melbourne • Green Street, North Melbourne 	<p>Sludge build-up on Melbourne Railway Freight Terminal following floodwaters receding may require 1-5 hrs of cleaning works, causing interruptions to V-line ARTC freight services</p> <p>Council to provide road closure signage under predetermined arrangement with Citywide, prompted by notification</p>

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • Hardiman Street, Kensington • Ink Lane, North Melbourne • Langford Street, North Melbourne • Laurens Street, North Melbourne • Little Chelmsford Street, Kensington • Little Hardiman Street, Kensington • Lloyd Street, Kensington • Macaulay Road, North Melbourne • Parsons Street at Stubbs Street end, Kensington • Radcliffe Street, West Melbourne • Reynolds Street, North Melbourne • Robertson Street at Stubbs Street end, Kensington • Scarborough Place, Kensington • Smith Street at Stubbs Street end, Kensington • Steel Street, North Melbourne • Straker Street, North Melbourne • Stubbs Street, Kensington • Thompson Street, Kensington • Weigall Street, Kensington 	
3.45m		<ul style="list-style-type: none"> • Approximate Height of Levee Banks downstream of Gauging Station 	

Table C3.11 – Breakdown of likely consequences at various Flemington gauge level heights along Moonee Ponds Creek with operational considerations

FLOOD INTELLIGENCE CARD – MOONEE PONDS CREEK’S STORMWATER DRAINS (UNGAUGED)

Version 3 – February 2021



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 rain totals for this gauge.**

CLOSEST RAIN GAUGE:	Moonee Ponds Creek at Flemington
LOCATION:	West side of the channel along the Moonee Ponds Creek Trail near Delhi Ct, Travancore
RECENT RAINFALL:	https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/229643A

MELWAY REF:	29 B12
GAUGE NUMBER	229643A
GAUGE TYPE	Rain

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
24mm in 10 mins; 39mm in 30 mins; 49mm in 1 hour; 59mm in 2 hours; 67mm in 3 hours; or 82mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungauged nature of the catchment. This should be used as a guide only.	1% AEP (100-year ARI)	Properties at Flood Risk 60 Properties in Total Arden Street Main Drain <ul style="list-style-type: none"> 340, 340A, 1/340, 2/340 & 344 Abbotsford Street, North Melbourne 146, 147, 148, 150, 152 & 159-169 Curzon Street, North Melbourne 200-214 Errol Street, North Melbourne 213, 215 & 217-219 Errol Street, North Melbourne 20 Falshaws Lane, North Melbourne 40 Flemington Road, Parkville 42 Flemington Road, Parkville 2-4, 6, 8, 10, 12, 14-18, 22-24, 26, 28, 30, 32 & 34 Gatehouse Street, Parkville 3B, 3A, 49, 55, 61 & 89-97 Haines Street, North Melbourne 1, 1A, 2, 2C, 2B, 3, 4, 5, 6, 7, 9 & 10 Harris Street, North Melbourne 21/80 Morrah Street, Parkville Units 1-8/24-30, 50, 60 & 70 Oshanassy Street, North Melbourne Community Infrastructure Likely Flooded Arden Street Main Drain <ul style="list-style-type: none"> North Melbourne Primary School at 210 Errol Street, North Melbourne Lady Huntingfield Children’s Centre on Haines Street, North Melbourne Royal Park Drain Area <ul style="list-style-type: none"> Royal Melbourne Hospital – Royal Park Campus on Poplar Road, Parkville very likely to experience flooding along eastern boundary involving carparks and north-eastern buildings 	VICSES may provide warnings via VicEmergency and EM-COP as required based on the predictions provided by BoM regarding flood levels and the risk of Flash Flooding. The North West Metro Region Duty officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response arrangement to suit the level of incident VICSES Units to respond on a request-by-request basis. There is potential for additional impacts during construction of new Melbourne rail tunnel Sewage to advise of contamination of flood waters. Additional monitoring may be required by council EHO’s or EPA/Melbourne Water as appropriate

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		Water Over Road (over 30cm depth) Local Drainage <ul style="list-style-type: none"> • Dudley Street at Railway underpass near Wurundjeri Way, West Melbourne Arden Street Drain Area <ul style="list-style-type: none"> • Haines Street, North Melbourne 	Council to provide road closure signage under predetermined arrangement with Citywide, prompted by notification

Table C3.12 – Breakdown of possible consequences at various rainfall intensities around Kensington and North Melbourne with operational considerations

APPENDIX D - FLOOD EVACUATION ARRANGEMENTS

Phase 1 - Decision to Evacuate

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

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

The following should be considered when planning for evacuation:

- Anticipated flood consequences and their timing and reliability of predictions;
- Size and location of the community to be evacuated;
- Likely duration of evacuation;
- Forecast weather;
- Flood Models;
- Predicted timing of flood consequences;
- Time required 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 by the IC in consultation with the MEMO, MERC, DFFH, Health Commander and other key agencies and expert advice (CMA's and Flood Intelligence specialists).

The City of Melbourne MEMP and CBD Safety Plan provide additional information regarding evacuations. The table below details triggers for evacuation, if these heights are predicted or are likely to occur evacuation should be considered. No triggers have been identified as yet, the table will be populated if more intelligence is available.

Sector	Gauge	Trigger

The table below details time required to evacuate established areas.

Sector	Likely time required for evacuation (including resource assumptions)

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, DFFH 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.

Evacuation Routes will be determined by VicPol, City of Melbourne and VicRoads

Special needs groups will be identified in City of Melbourne's MEMPlan

Phase 4 – Shelter

Relief Centres and/or assembly areas which cater for people's basic needs may be established to meet the immediate needs of people affected by storms or flooding. Relief Centres will be determined dependant on the location and size of the event.

Details about locations of potential Relief Centres can be found in City of Melbourne's MEMPlan

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

Animal Shelter

The need for animal shelter compounds will be determined dependant on the location and size of the event. Details about arrangements for animals are contained in City of Melbourne's MEMPlan.

Phase 5 – Return

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

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

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

Considerations for deciding whether to evacuate include:

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

Disruption to Services

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

Details about response arrangements are contained in City of Melbourne's MEMPlan.

APPENDIX E - FLOOD WARNING SYSTEMS

Flood and Storm Warning

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

Flood Bulletins

VICSES distributes flood emergency information to the media through “Flood Bulletins”. Flood Bulletins provide BoM Flood Warning information as well as information regarding possible flood consequences and safety advice, not contained in BoM Flood Warning products. VICSES uses the title Flood Bulletin to ensure emphasis is placed upon BoM Flood Warning product titles.

The relevant VICSES Region Headquarters or the established ICC will normally be responsible for drafting, authorizing and issuing issue Flood Bulletins, using the One Source, One Message system.

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

Flood Bulletins should follow the following structure

- What is the current flood situation;
- What is the predicted flood situation;
- What are the likely flood consequences;
- What should the community do in response to flood warnings;
- Where to seek further information;
- Who to call if emergency assistance is required.

It is important that the description of the predicted flood situation is consistent with and reflects the relevant BoM Flood Warning.

Flood Bulletins should be focused on specific gauge (or in the absence of gauges, catchment) reference areas, that is the area in which flood consequences specifically relate to the relevant flood gauge.

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

To ensure flood bulletins are released in a timely manner, standardised flood bulletins may be drafted based on different scenarios, prior to events occurring. The standardised flood bulletins can then be adapted to the specifics of the event occurring or predicted to occur.

Local Flood Warning System Arrangements

There are no local flood warning systems or arrangements in the City of Melbourne.

APPENDIX F – MAPS & SCHEMATICS

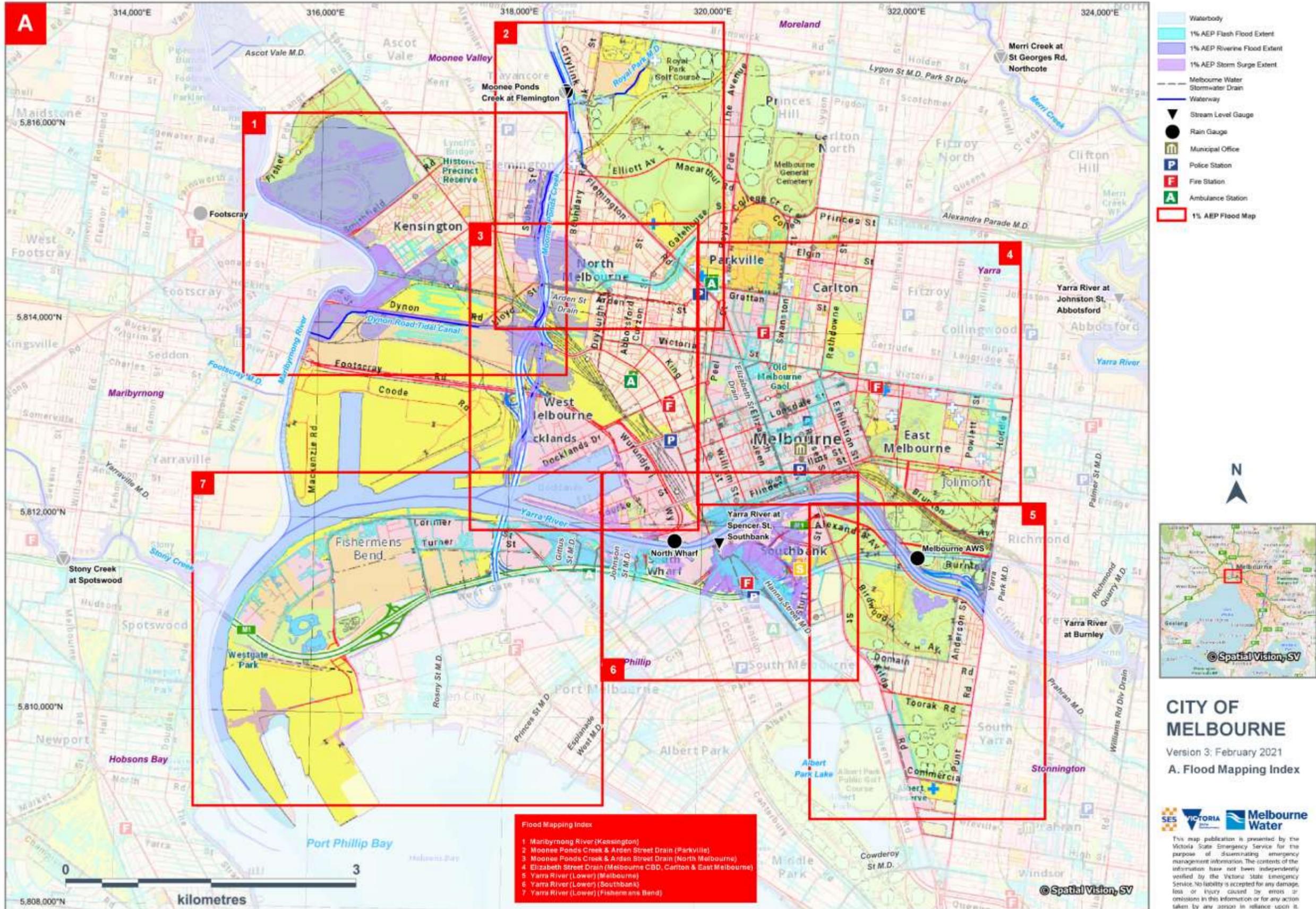
Overview

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 Melbourne.
- A map showing the Municipal boundary together with the open waterways and underground stormwater drainage pipe network within the City of Melbourne and the 1% AEP (100-year ARI) flood extents (sourced from Melbourne Water GIS).
- A set of seven maps showing flooding hot spots within the City of Melbourne 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 & 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 SES Units and local government, and provide a reference link to the corresponding Municipal Flood Emergency Plan.
 - Details within these Catchment Schematics reflect those contained within either other sections of this Municipal Flood Emergency Plan or refer to other Municipal Flood Emergency Plans. These details have been filtered to contain only key facts. For more information on a gauge, drainage system or town consult the corresponding Flood Emergency Plan

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 Melbourne 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 Energy Environment and Climate Action (DEECA) website <https://mapshare.vic.gov.au/vicplan/>.
- 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>

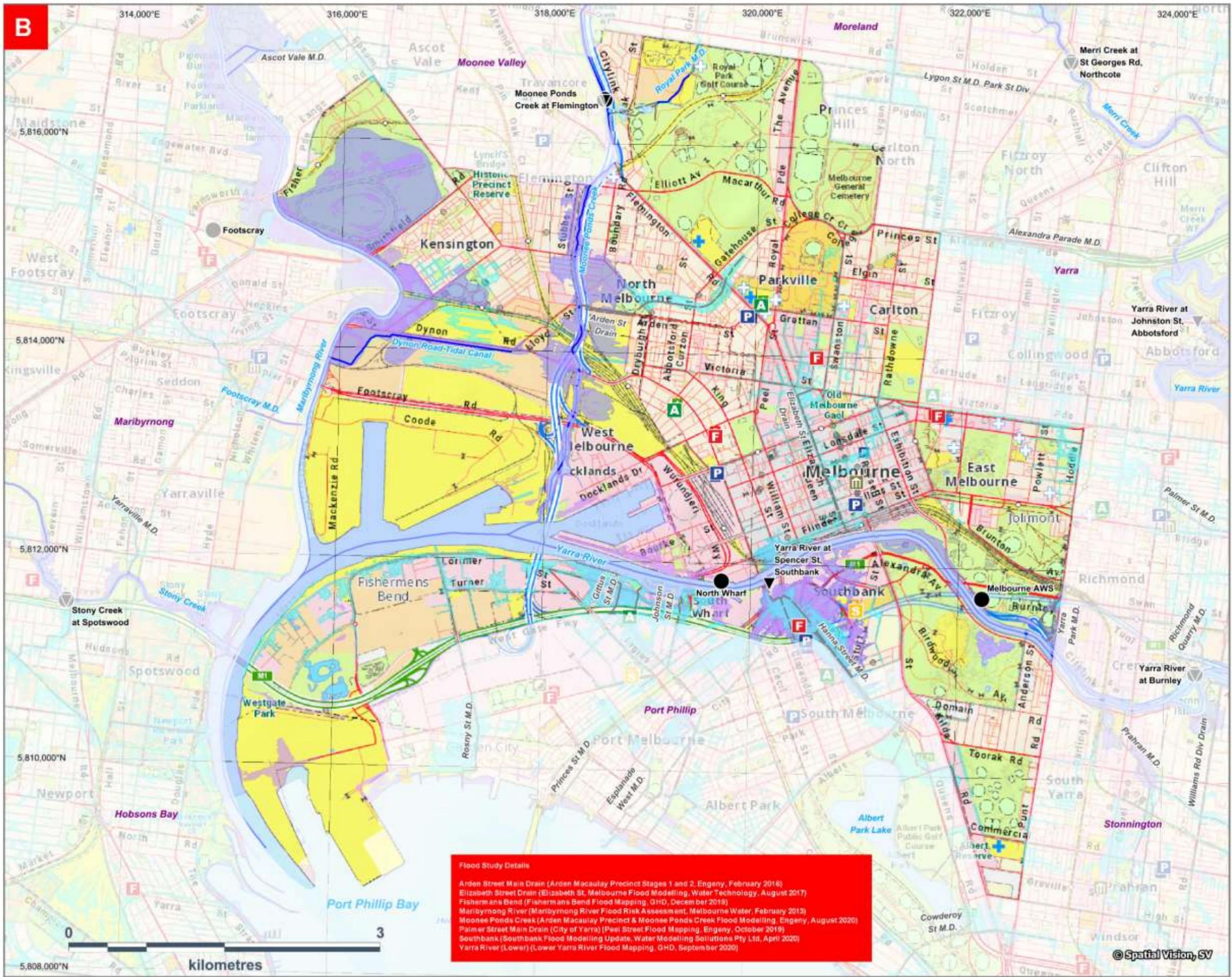


- Flood Mapping Index**
1. Maribyrnong River (Kensington)
 2. Moonee Ponds Creek & Arden Street Drain (Parkville)
 3. Moonee Ponds Creek & Arden Street Drain (North Melbourne)
 4. Elizabeth Street Drain (Melbourne CBD, Carlton & East Melbourne)
 5. Yarra River (Lower) (Melbourne)
 6. Yarra River (Lower) (Southbank)
 7. Yarra River (Lower) (Fishermans Bend)

CITY OF MELBOURNE
 Version 3; February 2021
 A. Flood Mapping Index

SES VICTORIA Melbourne Water

This map publication is provided 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.



- Waterbody
- 1% AEP Flash Flood Extent
- 1% AEP Riverine Flood Extent
- 1% AEP Storm Surge Extent
- Melbourne Water Stormwater Drain
- Waterway
- Stream Level Gauge
- Rain Gauge
- Municipal Office
- Police Station
- Fire Station
- Ambulance Station



CITY OF MELBOURNE
 Version 3: February 2021
B. 1% AEP (100yr ARI) Flood Mapping

SES VICTORIA MELBOURNE WATER
 This map 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.

Map Produced by VICSES February 2021.



- Waterbody
- 1% AEP Flood Extent
- Special Building Control Overlay
- Land Subject to Inundation Overlay
- Melbourne Water Stormwater Drain
- Waterway



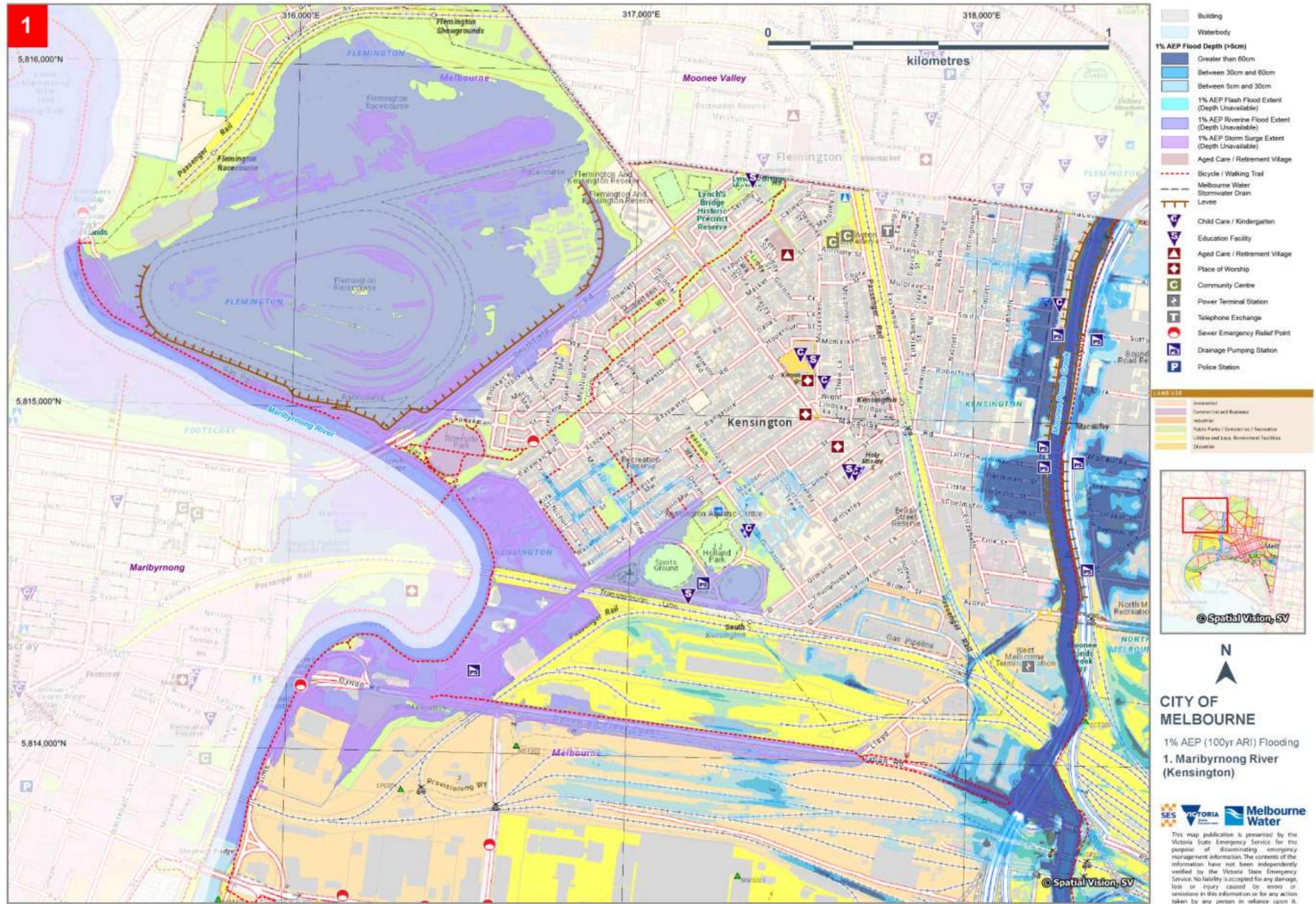
CITY OF MELBOURNE
 Version 1: February 2021
C. City of Melbourne Planning Scheme Overlays



This map publication is presented by the Victorian State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victorian 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.

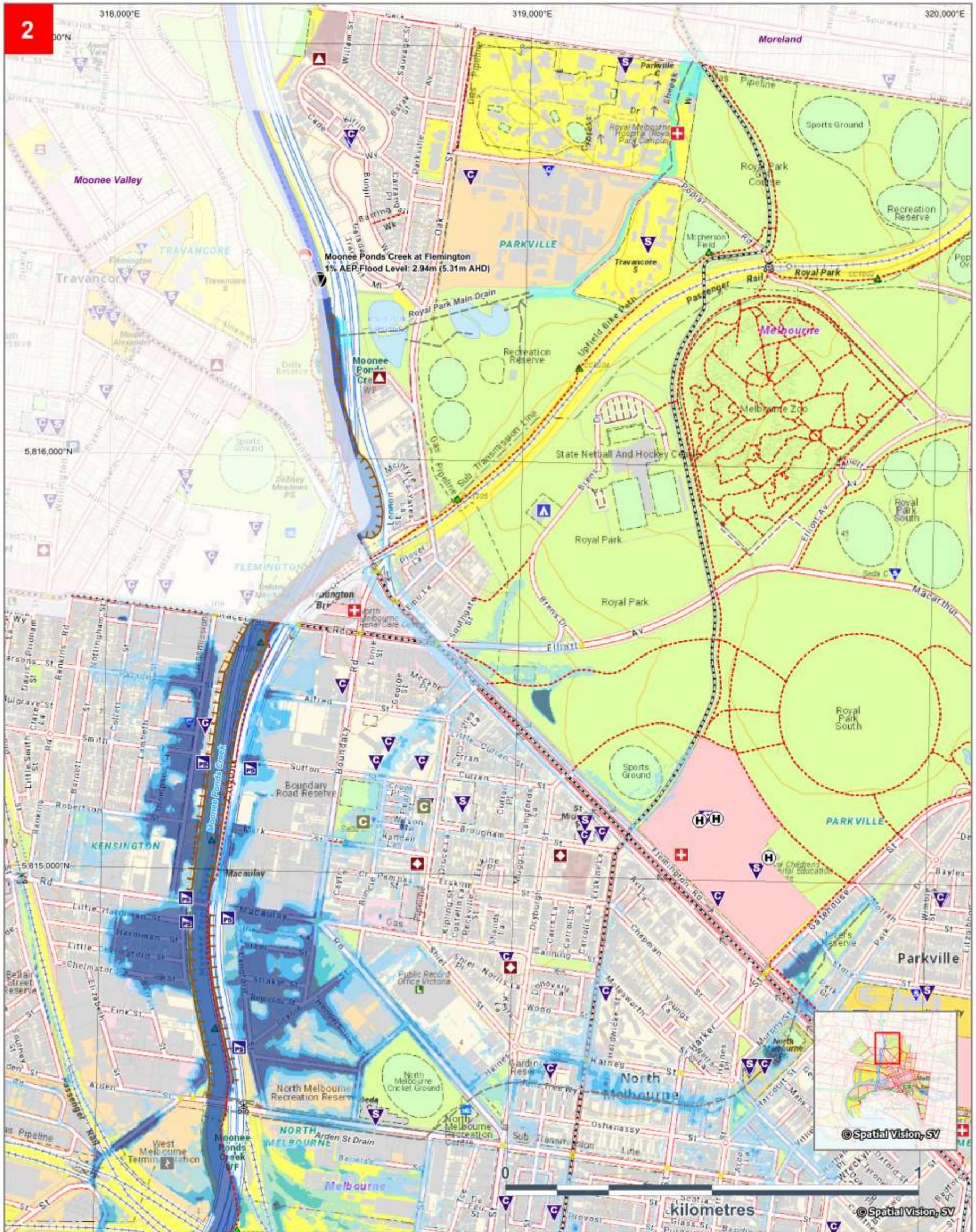
Map Produced by VICSES February 2021

Flood Extent Maps for 1% AEP flood events (sourced Melbourne Water GIS)



Moonee Ponds Creek flood modelling compiled by Engage, February 2016; Maribyrnong river flood modelling compiled by Melbourne Water, February 2015. Map Produced by VICSES February 2021.

This map publication is prepared 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 error or omissions in this information or for any action taken by any person in reliance upon it.



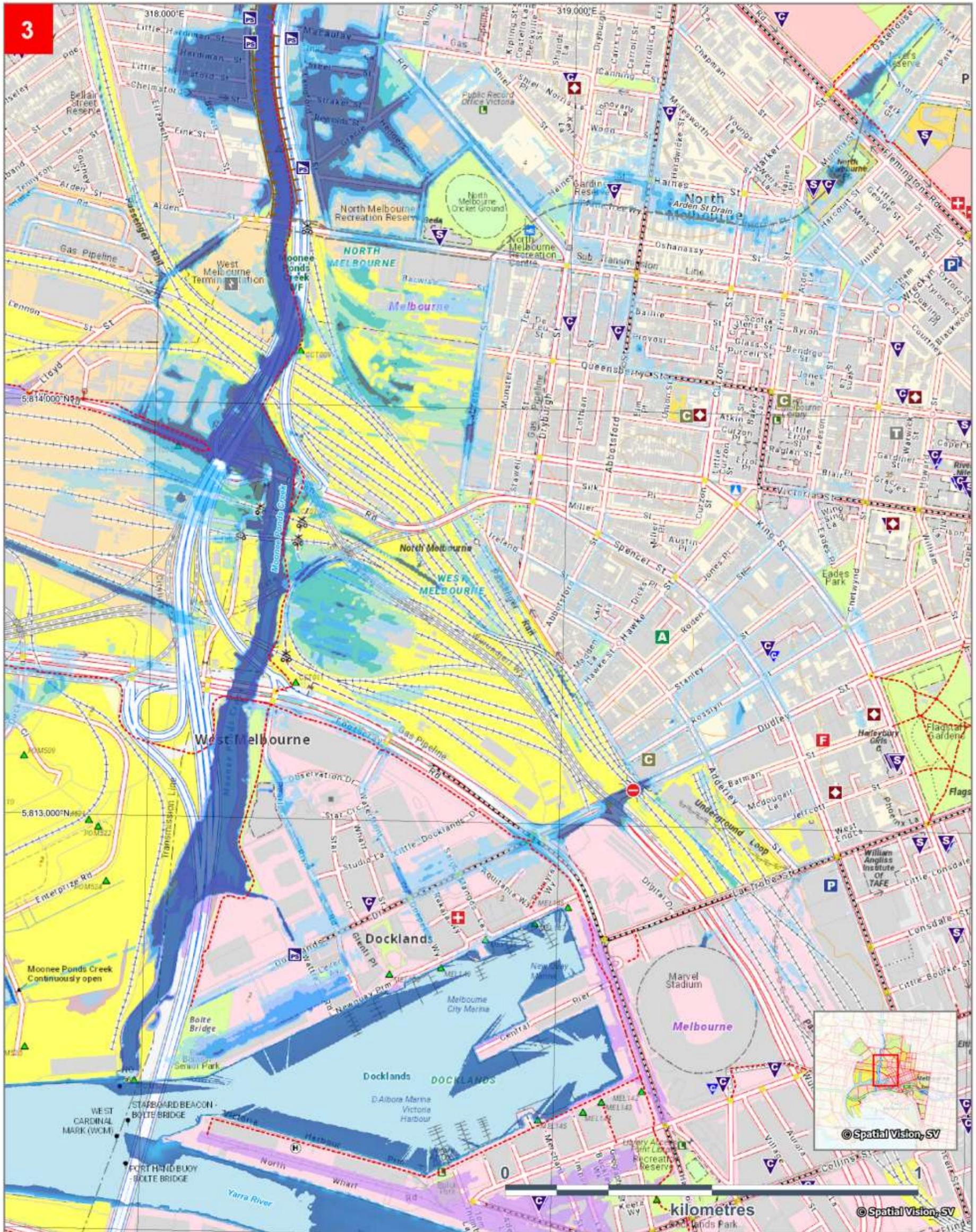
Moonee Ponds Creek / Arden St Drain flood modelling completed by Engery, February 2016. Map Produced by VICSES February 2021.

CITY OF MELBOURNE
 1% AEP (100yr ARI) Flooding
2. Moonee Ponds Creek & Arden St Drain (Parkville)

	Building		Bicycle / Walking Trail		Aged Care / Retirement Village	LAND USE		Residential
	Waterbody		Education Facility		Melbourne Water Stormwater Drain		Commercial and Business	Commercial and Business
	1% AEP Flood Depth (>5cm) Greater than 60cm		Child Care / Kindergarten		Hospital		Industrial	Industrial
	1% AEP Flood Depth (>5cm) Between 30cm and 60cm		Community Centre		Police Station		Public Parks / Cemeteries / Recreation	Public Parks / Cemeteries / Recreation
	1% AEP Flood Depth (>5cm) Between 5cm and 30cm		Place of Worship		Stream Level Gauge 1% AEP Flood Level		Utilities and Local Government Facilities	Utilities and Local Government Facilities
	1% AEP Riverine Flood Extent (Depth Unavailable)		Aged Care / Retirement Village		Rain Gauge		Education	Education
	1% AEP Flash Flood Extent (Depth Unavailable)		Power Terminal Station		Camp Ground		Levee	Levee
	Hospital		Road Likely requiring closure during 1% AEP flood event		Sewer Emergency Relief Point			

SES VICTORIA **Melbourne Water**

This map 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.



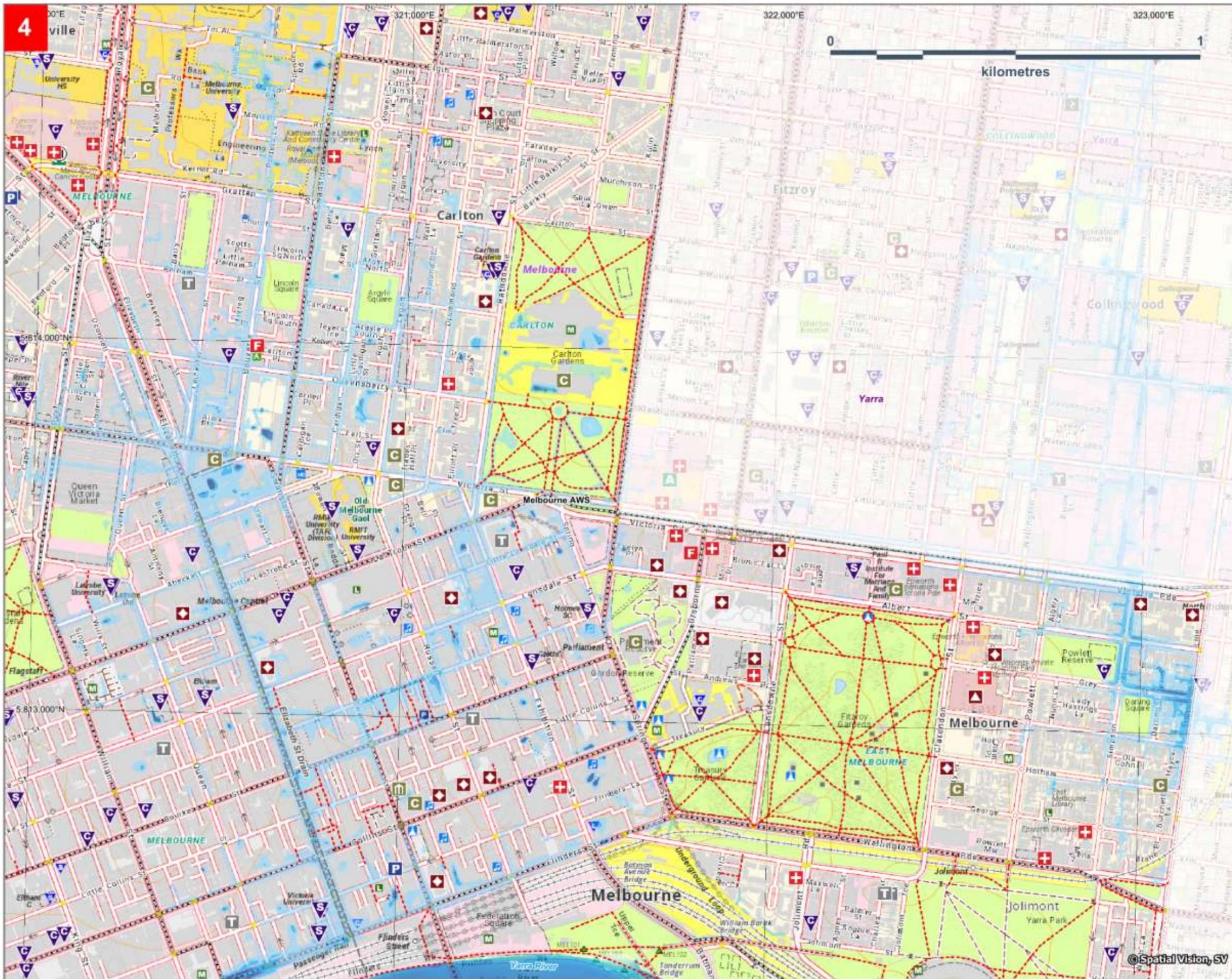
Yarra River (Lower) flood modelling completed by GHD, September 2020. Moonee Ponds Creek / Arden St Drain flood modelling completed by Engry, February 2018. Map Produced by VICSES February 2021.

CITY OF MELBOURNE
 1% AEP (100yr ARI) Flooding
3. Moonee Ponds Creek & Arden St Drain (North Melbourne)

				LAND USE
1% AEP Flood Depth (>5cm)				

SES VICTORIA **Melbourne Water**

This map 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.



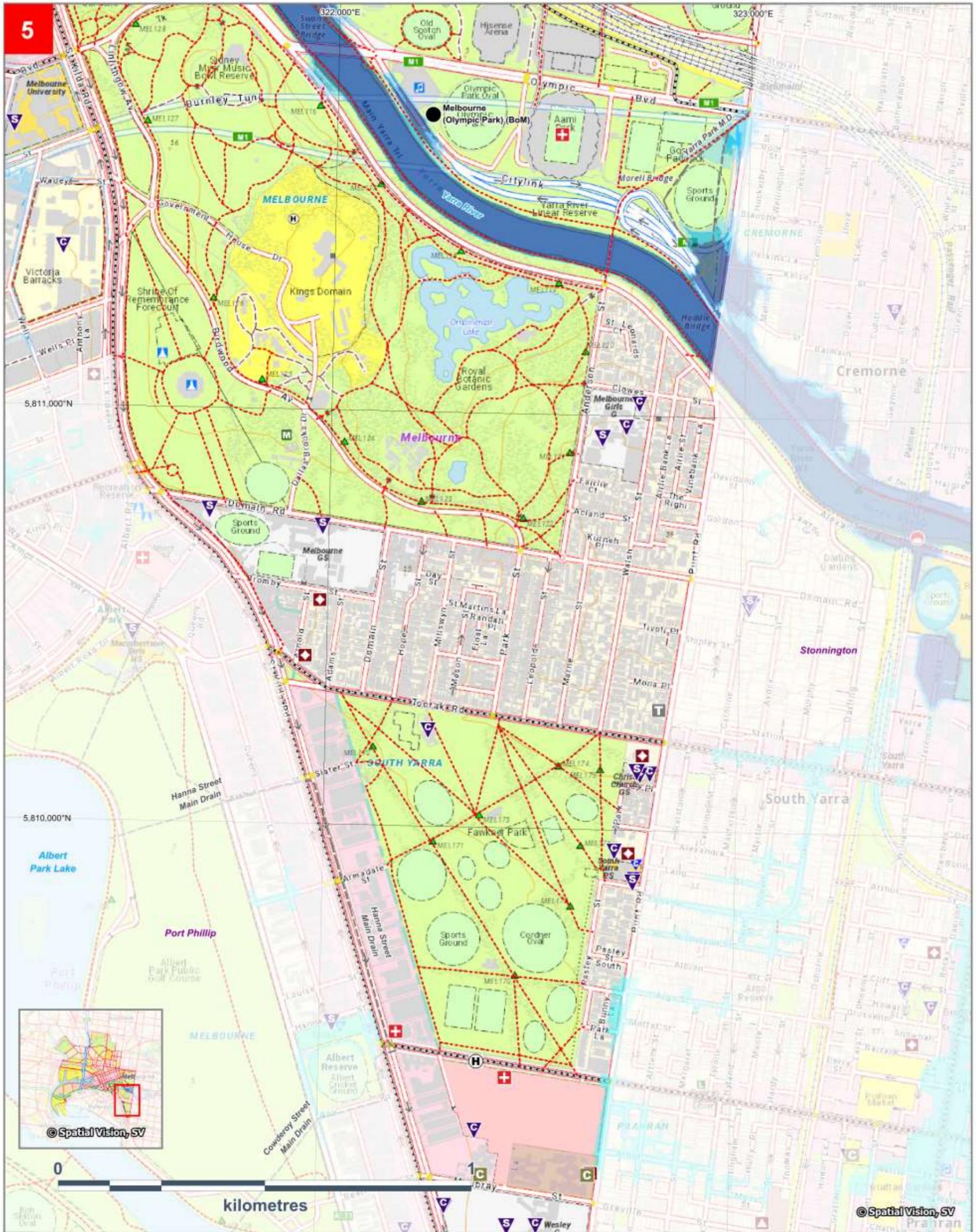
- Building
 - Waterbody
 - 1% AEP Flood Depth (>5cm)**
 - Greater than 60cm
 - Between 30cm and 60cm
 - Between 5cm and 30cm
 - Aged Care / Retirement Village
 - Bicycle / Walking Trail
 - Melbourne Water Stormwater Drain
 - Waterway
 - Child Care / Kindergarten
 - Education Facility
 - Aged Care / Retirement Village
 - Place of Worship
 - Sewer Pumping Station
 - Community Centre
 - Power Terminal Station
 - Fire Station
 - Ambulance Station
 - Hospital
 - Municipal Offices
 - Police Station
 - Telephone Exchange
-
- LAND USE**
 - Residential
 - Commercial and Business
 - Industrial
 - Public Parks / Recreation
 - Utilities and Local Government Facilities
 - Greenery



CITY OF MELBOURNE
 1% AEP (100yr ARI) Flooding
4. Elizabeth Street Drain (Melbourne CBD, Carlton & East Melbourne)

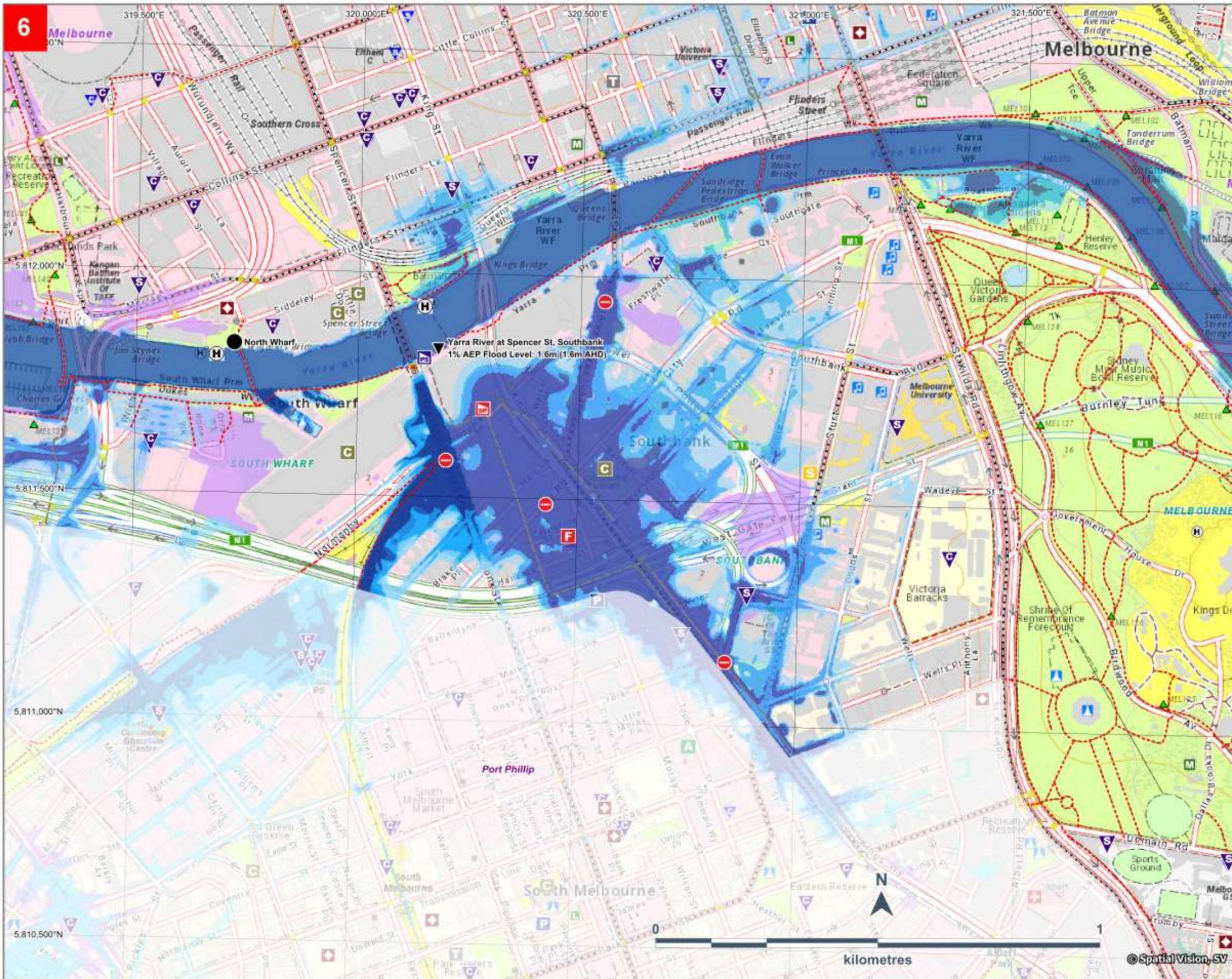
This map publication is prepared by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victoria State Emergency Service. No liability is accepted for any damage, loss or injury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

Yarra River (Lower) flood modelling completed by GHD, September 2020. Elizabeth Street flood modelling completed by Water Technology, August 2017. Palmer Street Main Drain (City of Yarra) flood modelling completed by Engeny, October 2019. Map Produced by VICSES February 2021.



Yarra River (Lower) flood modelling completed by GHD, September 2020. Stonnington Special Building Overlay, June 2019. Map Produced by VICSES February 2021.

<p>CITY OF MELBOURNE</p> <p>1% AEP (100yr ARI) Flooding</p> <p>5. Yarra River (Lower) (Melbourne)</p>	<p>1% AEP Flood Depth (>5cm)</p> <ul style="list-style-type: none"> Greater than 60cm Between 30cm and 60cm Between 5cm and 30cm <p>1% AEP Flash Flood Extent (Depth Unavailable)</p> <ul style="list-style-type: none"> <p>Melbourne Water Stormwater Drain</p>	<ul style="list-style-type: none"> - - - Bicycle / Walking Trail S Education Facility C Child Care / Kindergarten A Aged Care / Retirement Village G Community Centre W Place of Worship T Telephone Exchange 	<ul style="list-style-type: none"> + Sewer Emergency Relief Point H Helipad + Hospital ● Rain Gauge 	<p>LAND USE</p> <ul style="list-style-type: none"> Residential Commercial and Business Industrial Public Parks / Cemeteries / Recreation Utilities and Local Government Facilities Education 	<p>SES VICTORIA</p> <p>Melbourne Water</p> <p>This map 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.</p>
---	---	--	---	---	---



1% AEP Flood Depth (>5cm)

- Greater than 60cm
- Between 30cm and 60cm
- Between 5cm and 30cm
- 1% AEP Flash Flood Extent (Depth Unavailable)
- 1% AEP Storm Surge Extent (Depth Unavailable)

Other Symbols:

- Bicycle / Walking Trail
- Melbourne Water Stormwater Drain
- Waterway
- Child Care / Kindergarten
- Education Facility
- Telephone Exchange
- Place of Worship
- Sewer Pumping Station
- Community Centre
- Hospital
- Fire Station
- State Emergency Service
- Municipal Offices
- Police Station
- Ambulance Station
- Helpad
- Stream Level Gauge & 1% AEP Flood Level
- Road Likely Requiring Closure during 1% AEP flood event
- Drainage Pumping Station
- Rain Gauge

LAND USE

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

Inset Map: Shows the location of the study area within the City of Melbourne.

© Spatial Vision, SV

CITY OF MELBOURNE

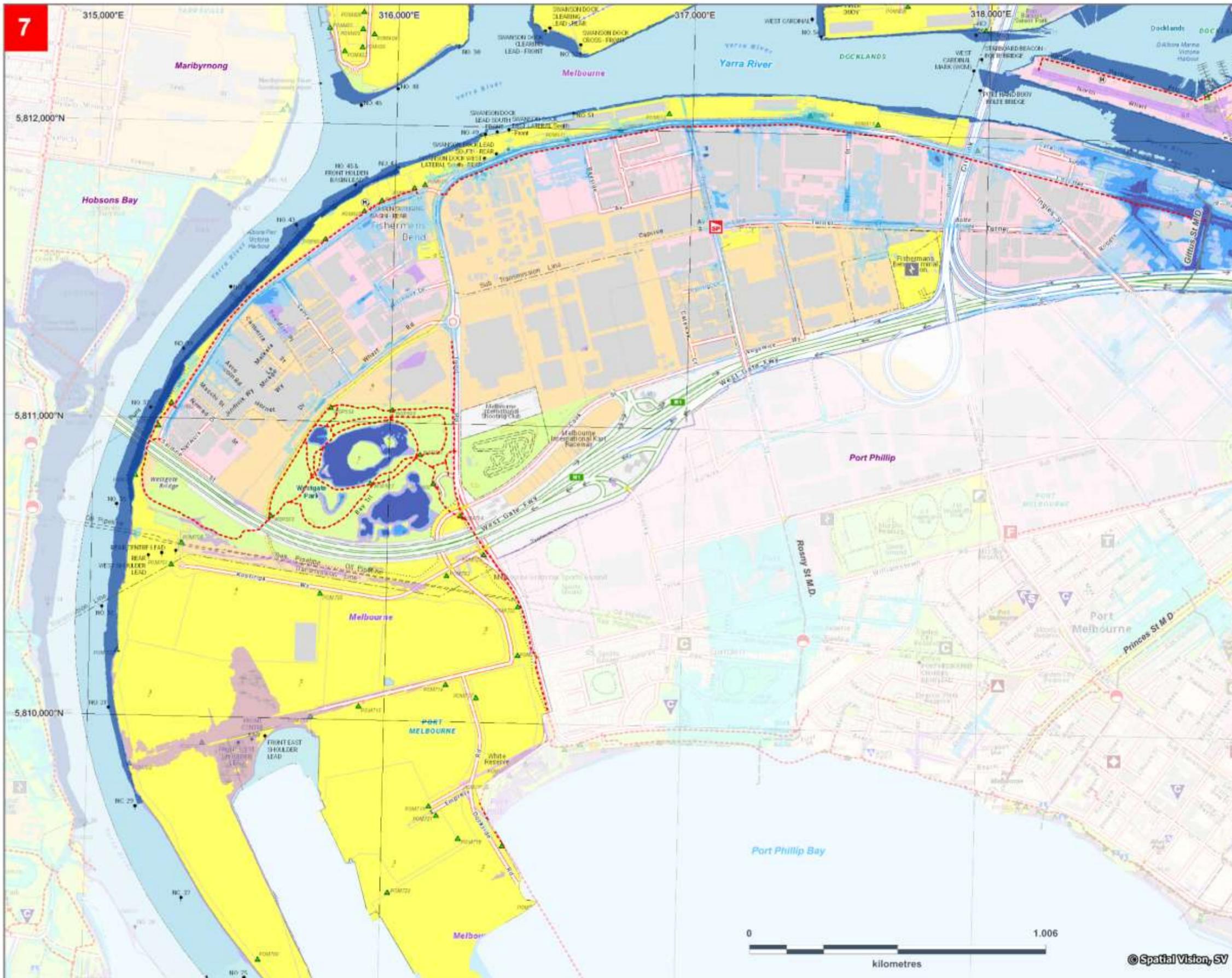
1% AEP (100yr ARI) Flooding

7. Yarra River (Lower) (Southbank)

SES VICTORIA Melbourne Water

This map 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.

Southbank flood modelling completed by Water Modelling Solutions Pty Ltd, April 2020. Yarra River (Lower) flood modelling completed by GHD, September 2020. Map Produced by VICSES February 2021.



Fishermans Bend flood modelling completed by GHD, December 2019. Yarra River (Lower) flood modelling completed by GHD, September 2020. Map Produced by VICSES February 2021.

CITY OF MELBOURNE

1% AEP (100yr ARI) Flooding
7. Yarra River (Lower)
(Fishermans Bend)

© Spatial Vision, SV

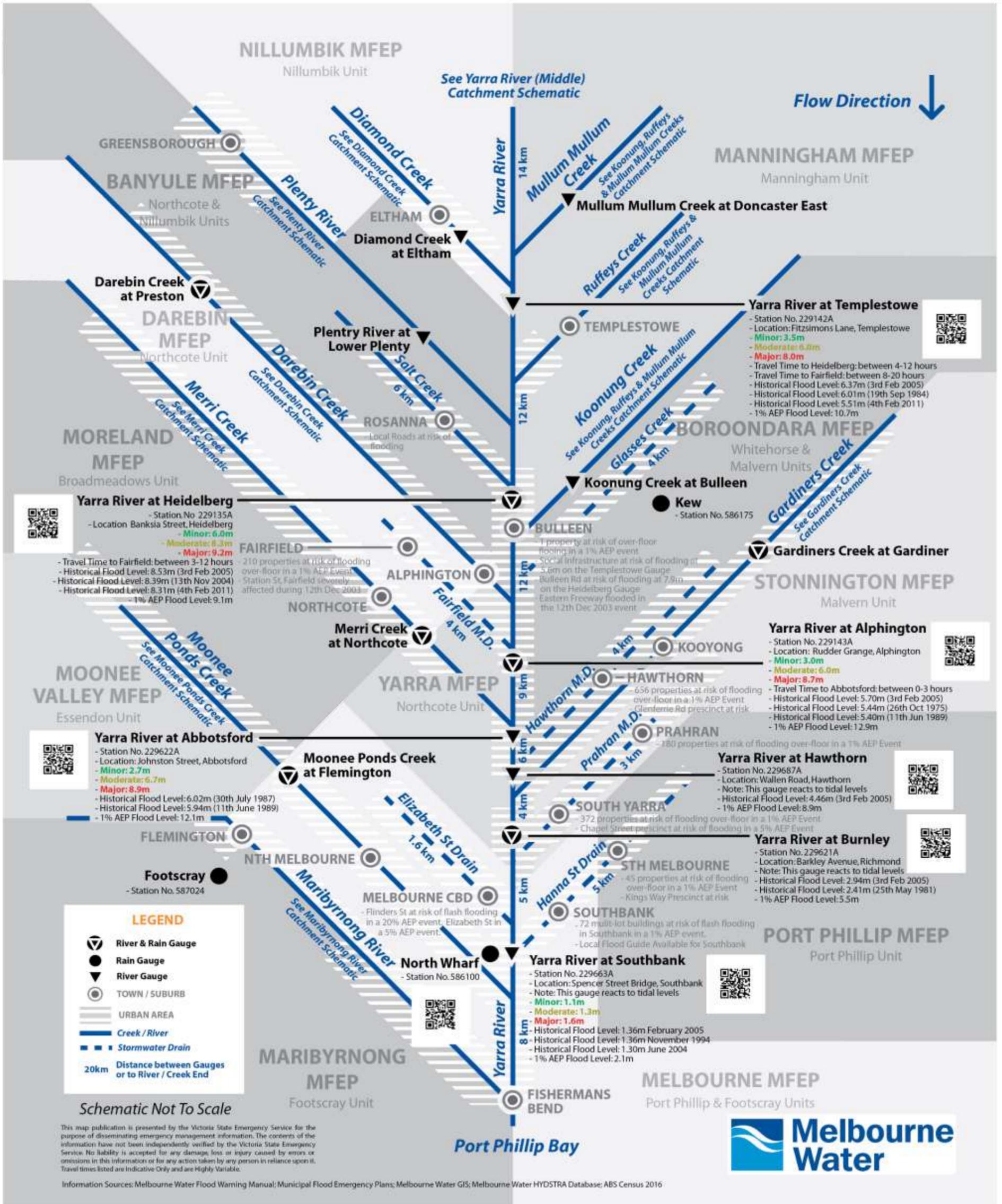
SES VICTORIA Melbourne Water

This map 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.



Yarra River (Lower) Catchment Schematic

Version 6 - February 2021





Maribyrnong River Catchment Schematic

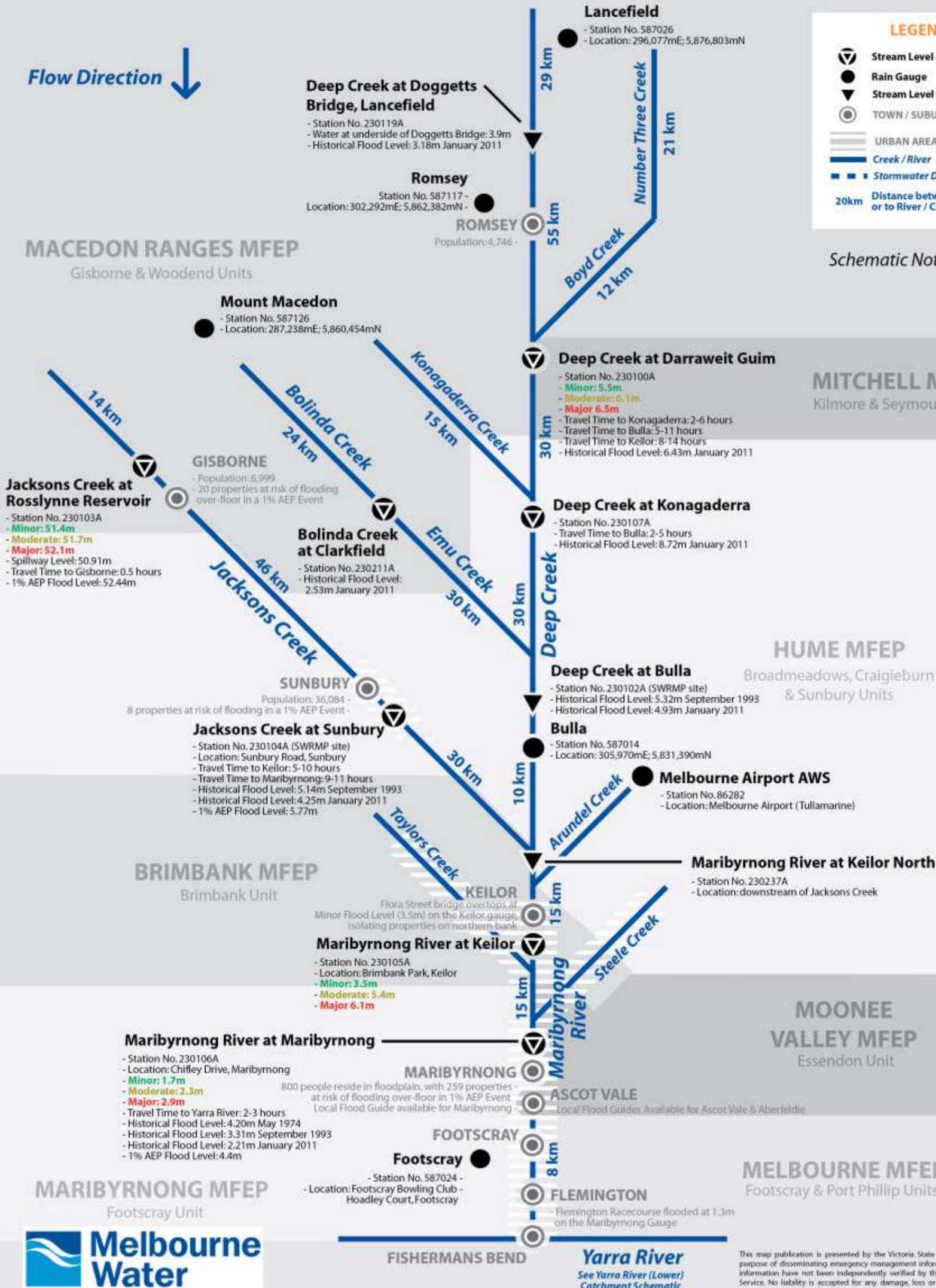
Version 4 - January 2020

Flow Direction ↓

LEGEND

- Stream Level & Rain Gauge
- Rain Gauge
- Stream Level Gauge
- TOWN / SUBURB
- URBAN AREA
- Creek / River
- Stormwater Drain
- 20km Distance between Gauges or to River / Creek End

Schematic Not To Scale



Information Sources: Melbourne Water Flood Warning Manual; Municipal Flood Emergency Plans; Melbourne Water GIS; Melbourne Water HYDSTRA Database; ABS Census 2016

This map 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. Travel times listed are Indicative Only and are Highly Variable.



Moonee Ponds Creek Catchment Schematic

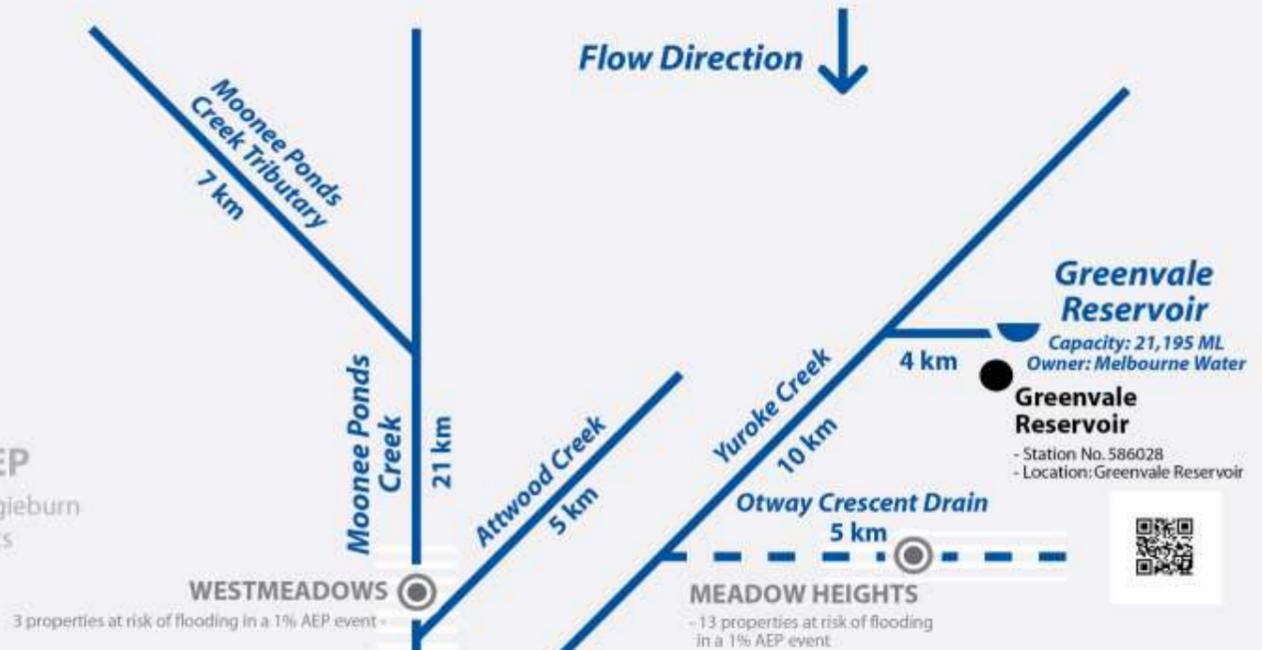
Version 5 - February 2021

LEGEND

- Stream Level & Rain Gauge
- Rain Gauge
- Stream Level Gauge
- TOWN / SUBURB
- Reservoir / Dam / Lake
- URBAN AREA
- Creek / River
- Stormwater Drain
- 20km Distance between Gauges or to River / Creek End

Schematic Not To Scale

HUME MSFEP
Broadmeadows, Craigieburn
& Sunbury Units



Jacana Retarding Basin

Moonee Ponds Creek at Jacana Retarding Basin

- Station No. 229665A
- Location: Jacana Retarding Basin, Glenroy
- Historical Flood Level: 12.57m (3rd February 2005)
- Spillway Level (Glory Hole): 12.0m
- Spillway Level (Secondary): 13.5m
- Embankment Level (Crest): 15.04m
- 1% AEP Flood Level: 15.09m

Essendon North

- Station No. 586182
- Location: Essendon Reservoir, Essendon Airport

MOONEE VALLEY MSFEP
Essendon Unit



This map 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 actions taken by any person in reliance upon it. Travel times listed are Indicative Only and are Highly Variable.

OAK PARK

- 7 properties at risk of flooding in a 1% AEP event

GLENROY

- 97 properties at risk of flooding over-floor in a 1% AEP event
- 49 properties at risk of flooding over-floor in a 5% AEP event
- 24 properties at risk of flooding over-floor in a 20% AEP event

MORELAND MSFEP
Broadmeadows Unit

COBURG

- 94 properties at risk of flooding over-floor in a 1% AEP event
- 10 properties at risk of flooding over-floor in a 5% AEP event
- 2 properties at risk of flooding over-floor in a 20% AEP event

Melville Main Drain

- 5 km

BRUNSWICK WEST

- 140 properties at risk of flooding over-floor in a 1% AEP event
- 32 properties at risk of flooding over-floor in a 5% AEP event
- 1 property at risk of flooding over-floor in a 20% AEP event

Moonee Ponds Creek at Flemington

- Station No. 229643A
- Location: Delhi Court, Travancore
- Historical Flood Level: 2.61m (3rd February 2005)
- Historical Flood Level: 3.13m (1st June 2013)
- 1% AEP Flood Level: 3.20m

NORTH MELBOURNE

Langford Street, Gracie Street and surrounding streets at risk of flooding

KENSINGTON

Stubbs Street, Bent Street and surrounding streets at risk of flooding - A number of council operated drainage pumping stations located either side of creek to help with drainage

DOCKLANDS

North Wharf

- Station No. 586182
- Location: North Wharf, Docklands

MELBOURNE MSFEP
Footscray & Port Phillip Units

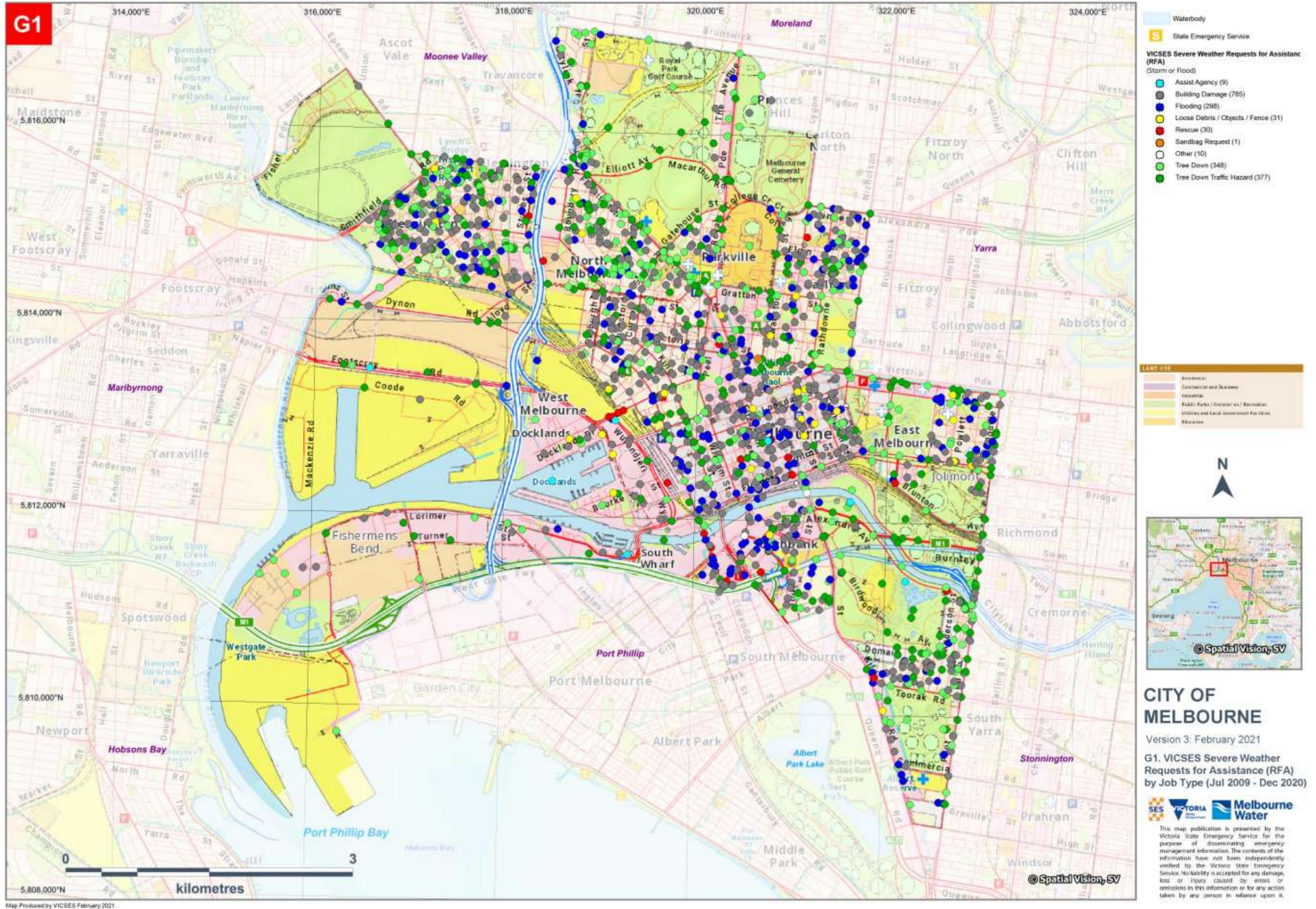
← **Yarra River**
See Yarra River (Lower) Catchment Schematic

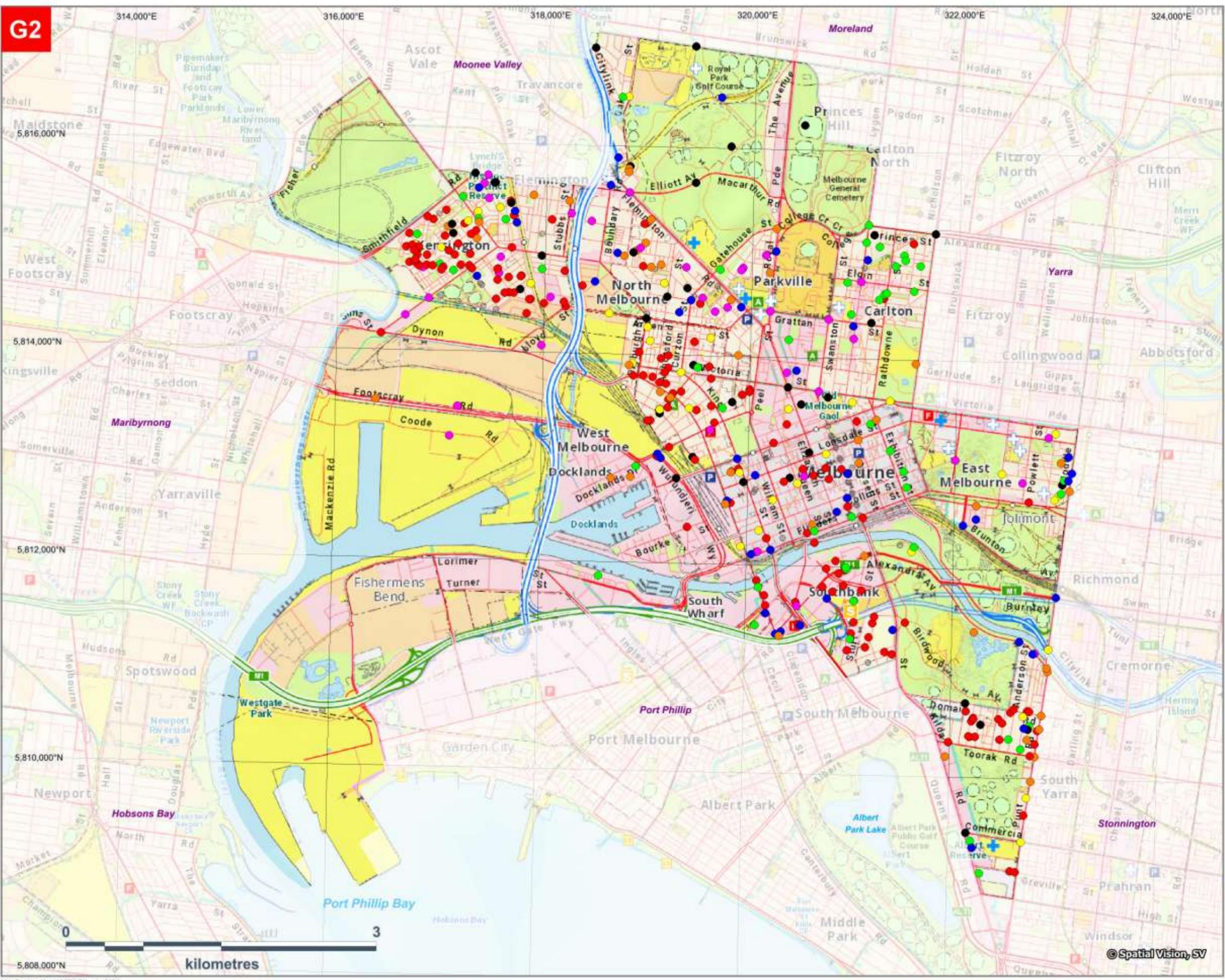
Yarra River at Southbank

- Station No. 229663A
- Location: Spencer Street, Southbank
- Historical Flood Level: 1.36m (3rd February 2005)
- 1% AEP Flood Level: 2.1m

Information Sources: Melbourne Water Flood Warning Manual; Municipal Flood Emergency Plans; Melbourne Water GIS; Melbourne Water HYDSTRA Database; ABS Census 2016

Severe Weather VICSES Requests for Assistance Maps





G2

- Waterbody
 - State Emergency Service
- VICES Severe Weather Requests for Assistance (RFA)**
(Storm or Flood)
- March 2010 (195)
 - October 2013 (43)
 - November 2015 (40)
 - October 2016 (40)
 - December 2017 (48)
 - December 2018 (47)
 - November 2019 (48)

- LAND USE**
- Residential
 - Commercial and Services
 - Industrial
 - Public Parks / Cemeteries / Recreation
 - Utilities and Local Government Facilities
 - Private



CITY OF MELBOURNE
Version 3: February 2021
G2. VICES Severe Weather Requests for Assistance (RFA) by Event (Jul 2009 - Dec 2020)



This map 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.

Map Produced by VICES February 2021.

APPENDIX H – SEVERE WEATHER (STORM) EVENTS

Overview

The effects that intense storms can have on the City of Melbourne can be far reaching due to the amounts of road, rail and freight infrastructure and also the dense concentration of people, including residents, workers and tourists. The ability for residents and workers to move in and out of the CBD can be greatly impacted. As many large events and festivals are also held within the Municipality, there is the potential for large amounts of people to be impacted at one time.

The built-up nature of the City of Melbourne makes it susceptible in Severe Weather Events. Older drainage infrastructure unable to cope with flash flooding volumes, combined with roads and buildings interrupting overland flow paths will divert floodwaters, putting property at risk. Mature trees located within the municipality may also create traffic hazards or building damage in storm events.

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, the Footscray and Port Phillip units would expect to be impacted by a large storm event once or twice a year (more than 100 RFA's per event).

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

- March 2010 – Hailstorm and flash flooding event that caused significant damage in a path from Flemington to South Yarra. Flemington Racecourse, Dudley Street, Stubbs Street, Elizabeth Street, Flinders Street, Kings Way, City Road and Clarendon Street all experienced flooding.
- October 2013 – Windstorm event that saw **43** requests received for trees down and building damage.
- December 2017 – Series of rain events that saw **48** requests received across the month
- November 2019 – Windstorm event that saw **48** requests received.

VICSES Requests for Assistance

The Victoria State Emergency Service records requests for assistance (RFA) made by the public during severe weather events. Table H1 below is a breakdown of requests by suburb and damage type during the period June 2009 and December 2020.

VICSES Request for Assistance (July 2009 – December 2020)					
Suburb	Building Damage	Flooding	Tree Down	Tree Down Traffic Hazard	Other *
Carlton	83	34	31	25	4
Carlton North	1	0	4	2	0
Docklands	26	8	5	10	14
East Melbourne	35	20	23	28	11
Flemington	1	0	0	9	0
Kensington	136	48	66	55	5
Melbourne	190	73	52	60	26
North Melbourne	103	28	56	51	5

VICSES Request for Assistance (July 2009 – December 2020)					
Suburb	Building Damage	Flooding	Tree Down	Tree Down Traffic Hazard	Other *
Parkville	20	11	42	35	0
Port Melbourne	6	0	10	4	0
Princes Hill	1	0	1	0	0
South Wharf	0	1	0	1	0
South Yarra	45	13	31	38	0
Southbank	72	42	12	21	8
West Melbourne	58	17	10	27	7

Table H1 – Breakdown of severe weather RFAs received by VICSES Footscray and Port Phillip units by suburb in City of Melbourne

*Assist Agency, Fence Down, Landslide, Loose Debris / Objects, Rescue Persons Trapped, Rescue Structure Collapse, Rescue Vehicle into Structure and Sandbag Request

Table 2 is a breakdown of requests for assistance by Date (Month) and damage type. High figures are predominantly from smaller, very intense storm events causing flash flooding.

VICSES Request for Assistance (July 2009 – December 2020)					
Date	Building Damage	Flooding	Tree Down	Tree Down Traffic Hazard	Other*
July 2009	0	0	1	0	0
August 2009	16	0	1	3	0
September 2009	8	0	3	1	0
October 2009	0	0	1	1	0
November 2009	9	0	1	1	0
December 2009	2	0	1	1	0
January 2010	1	0	4	2	0
February 2010	14	7	0	2	0
March 2010	128	57	1	2	7
April 2010	1	0	0	1	0
May 2010	0	0	0	0	0
June 2010	5	0	1	0	0
July 2010	2	0	1	1	0
August 2010	5	0	2	1	0
September 2010	4	0	1	1	0
October 2010	8	7	2	1	0
November 2010	3	1	1	1	0
December 2010	4	6	3	6	2
January 2011	4	5	2	0	0
February 2011	9	7	4	2	1
March 2011	4	0	0	2	0
April 2011	5	0	0	2	0
May 2011	1	1	1	0	0
June 2011	3	0	2	1	0
July 2011	0	0	1	0	0
August 2011	0	0	0	0	0
September 2011	6	1	1	1	0
October 2011	0	1	1	1	0
November 2011	3	1	3	10	1
December 2011	11	3	3	3	0
January 2012	4	0	5	10	0
February 2012	1	1	10	13	0
March 2012	2	1	0	1	0
April 2012	3	2	0	3	0
May 2012	3	1	1	1	0

VICSES Request for Assistance (July 2009 – December 2020)					
Date	Building Damage	Flooding	Tree Down	Tree Down Traffic Hazard	Other*
June 2012	4	0	1	2	0
July 2012	1	0	0	0	0
August 2012	0	0	2	2	0
September 2012	8	0	3	4	0
October 2012	2	0	0	0	0
November 2012	4	0	1	3	0
December 2012	5	0	3	3	0
January 2013	5	0	2	3	0
February 2013	2	0	0	2	0
March 2013	7	2	7	4	0
April 2013	2	0	1	2	0
May 2013	2	0	2	1	0
June 2013	5	0	1	1	0
July 2013	2	1	1	8	0
August 2013	19	0	6	9	0
September 2013	9	1	6	2	0
October 2013	19	1	12	11	0
November 2013	4	2	1	2	0
December 2013	2	2	3	4	0
January 2014	1	0	3	5	0
February 2014	0	0	3	6	0
March 2014	2	0	1	1	0
April 2014	0	0	1	2	0
May 2014	1	0	0	1	0
June 2014	22	1	6	6	0
July 2014	5	0	3	1	0
August 2014	2	0	0	0	0
September 2014	7	1	4	4	0
October 2014	6	2	2	4	0
November 2014	8	1	2	1	1
December 2014	11	0	4	7	0
January 2015	4	0	10	8	0
February 2015	6	1	3	5	0
March 2015	5	1	3	2	0
April 2015	2	0	0	0	0
May 2015	3	2	2	0	0
June 2015	1	0	1	1	0
July 2015	2	3	3	0	0
August 2015	6	0	0	0	1
September 2015	3	2	1	1	0
October 2015	4	1	3	4	0
November 2015	17	7	8	8	0
December 2015	3	0	7	11	0
January 2016	5	0	4	4	0
February 2016	1	1	1	1	0
March 2016	3	0	3	2	0
April 2016	4	0	1	0	0
May 2016	3	0	1	4	0
June 2016	4	0	1	2	0
July 2016	2	0	3	0	0
August 2016	2	0	0	0	0
September 2016	2	1	0	0	0
October 2016	23	1	10	6	0
November 2016	2	0	1	1	0
December 2016	5	6	3	5	0
January 2017	2	0	2	9	0
February 2017	6	2	4	2	0

VICSES Request for Assistance (July 2009 – December 2020)					
Date	Building Damage	Flooding	Tree Down	Tree Down Traffic Hazard	Other*
March 2017	6	1	1	4	0
April 2017	4	3	3	2	0
May 2017	2	0	1	1	0
June 2017	1	1	0	0	0
July 2017	9	1	1	4	0
August 2017	4	0	1	0	0
September 2017	4	0	2	2	0
October 2017	7	0	1	5	0
November 2017	8	5	7	3	0
December 2017	22	17	5	3	1
January 2018	4	0	7	7	0
February 2018	3	1	14	6	0
March 2018	5	1	3	4	0
April 2018	3	3	2	3	0
May 2018	7	0	2	0	0
June 2018	3	6	2	1	0
July 2018	8	0	1	3	0
August 2018	3	1	0	1	0
September 2018	1	2	2	1	0
October 2018	4	0	0	3	0
November 2018	4	10	3	4	3
December 2018	12	16	3	7	9
January 2019	3	1	6	3	2
February 2019	8	1	2	3	2
March 2019	2	3	4	2	3
April 2019	0	0	1	2	0
May 2019	2	3	1	1	0
June 2019	3	1	0	1	0
July 2019	2	4	1	1	0
August 2019	6	6	1	1	3
September 2019	2	7	0	1	0
October 2019	4	3	4	3	3
November 2019	14	3	15	12	4
December 2019	6	3	4	7	1
January 2020	8	8	10	6	4
February 2020	9	4	7	4	4
March 2020	2	4	1	2	2
April 2020	3	4	5	3	1
May 2020	3	1	1	1	4
June 2020	4	2	0	0	0
July 2020	5	0	1	1	0
August 2020	7	1	4	5	3
September 2020	2	4	3	2	2
October 2020	4	2	4	1	1
November 2020	4	5	3	6	4
December 2020	2	2	5	4	5

Table H2 – Breakdown of severe weather RFAs received by VICSES Footscray and Port Phillip units by month in the City of Melbourne

*Assist Agency, Dam Incident, Fence Down, Landslide, Loose Debris / Objects, Rescue Persons Trapped, Rescue Structure Collapse, Rescue Vehicle into Structure and Sandbag Request