

City of Monash

Storm and Flood Emergency Plan

A Sub-Plan of the Municipal Emergency Management Plan

For the City of Monash
And
VICSES Monash Unit

Version 5.0 September 2019



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Document Transmittal Form / Amendment Certificate

This Storm and Flood Emergency Plan (SFEP) will be amended, maintained and distributed as required by VICSES in consultation with the Monash MEMPC

Suggestions for amendments to this Plan should be forwarded to:

VICSES Central Region,
Mulgrave

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
Draft 2.2	June 2012	L Daniels	
Draft 2.3	February 2013	A. Barnard	Pre meeting with MCC
3.0	March 2013	A Barnard	Final including amendments
4.0	April 2016	R Butler	Update of Appendix A, B, C & F. Addition of Appendix G.
5.0	September 2019	R Butler – SES A. Barnard- SES R Gibney	Update of Appendix A, B, C, F & G, Corrected abbreviations and updated departments. Addition of Appendix I. Approved by MEMP

This Plan will be maintained on the SES and Monash City Council websites.

www.ses.vic.gov.au/get-ready/your-local-flood-information and www.monash.vic.gov.au

List of Abbreviations & Acronyms

The following abbreviations and acronyms are used in the Plan:

The following abbreviations and acronyms are used in the Plan			
AAR	After Action Review	FZ	Floodway Zone
AEP	Annual Exceedance Probability	IC	Incident Controller
AHD	Australian Height Datum (the height of a location above mean sea level in metres)	ICC	Incident Control Centre
AIDR	Australian Institute of Disaster Resilience	IMT	Incident Management Team
AIIMS	Australasian Inter-service Incident Management System	IMS	Incident Management System
AoCC	Area of Operations Control Centre / Command Centre	EMLO	Emergency Management Liaison Officer
ARI	Average Recurrence Interval	LSIO	Land Subject to Inundation Overlay
ARMCANZ	Agricultural & Resource Management Council of Australia & New Zealand	MECC	Municipal Emergency Coordination Centre
AV	Ambulance Victoria	MEMP	Municipal Emergency Management Plan
BoM	Bureau of Meteorology	MEMPC	Municipal Emergency Management Planning Committee
CEO	Chief Executive Officer	MERC	Municipal Emergency Response Coordinator
CERA	Community Emergency Risk Assessment	MERO	Municipal Emergency Resource Officer
CFA	Country Fire Authority	MFB	Metropolitan Fire and Emergency Services Board
CMA	Catchment Management Authority	MRM	Municipal Recovery Manager
RERC	Regional Emergency Response Coordinator	PMF	Probable Maximum Flood
RERCC	Regional Emergency Response Coordination Centre	RCC	Regional Control Centre
DHHS	Department of Health and Human Services	RDO	Regional Duty Officer
Dol	Department of Infrastructure	SBO	Special Building Overlay
DEDJTR	Department of Economic Development, Jobs, Transport, Resources	SCC	State Control Centre
DELWP	Department of Environment, Land, Water and Planning	SERP	State Emergency Response Plan
EMMV	Emergency Management Manual 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
FWS	Flood Warning System	VICSES	Victoria State Emergency Service

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. Note that not all overland flows cause flooding under the definition in the Knox City Service Plan Appendices.
Retarding Basin	A Retarding Basin is a large, open, free draining basin that temporarily stores collected stormwater runoff. These basins are normally maintained in a dry condition between storm events.
Stormwater drainage system	A series of drains and waterways into which surface and stormwater flows. Features of a stormwater drainage system can include underground pipe drains, open channels, retarding basins, floodways, waterway improvements, water sensitive urban design, integrated water management systems and environment protection measures. All drainage under 60 ha is maintained and operated by Monash Council
Stormwater Runoff	The amount of rainfall that enters the stormwater drainage system, (via pits, pipes, retarding basins, water sensitive structures, harvesting tanks and overland flow paths) after water which is not absorbed into the ground has been taken into account.

Part 1. INTRODUCTION

1.1 Municipal Endorsement

This Storm and Flood Emergency Plan (SFEP) has been prepared by the and Storm and Flood Planning Working Group (SFPWG) and with the authority of the City of Monash MEMPC pursuant to Section 20 of the Emergency Management Act 1986 (as amended).

This SFEP is a sub plan to the City of Monash Municipal Emergency Management Plan (MEMP), is consistent with the Emergency Management Manual Victoria (EMMV) and the Victoria Flood Management Strategy (DNRE, 1998a), and takes into account the outcomes of the Community Emergency Risk Assessment (CERA) process undertaken by the Municipal Emergency Management Planning Committee (MEMPC). The Storm and Flood Emergency Plan is consistent with the Regional Flood Emergency Plan, Regional Storm Emergency Plan and the State Flood Emergency Plan.

This Storm and Flood Emergency Plan is a result of the cooperative efforts of the Monash Storm and Flood Planning Working Group and its member agencies.

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

This SFEP is endorsed by the Monash MEMPC as a sub-plan to the MEMP.

1.2 The Municipality

An outline of the City of Monash in terms of its location, demography and other general matters is provided in the MEMP. An outline of the flood threat is provided in Appendix A of this Plan.

1.3 Purpose and Scope of this Storm and Flood Emergency Plan

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

As such, the scope of the Plan is to:

- Identify the Flood Risk to City of Monash;
- Support the implementation of measures by the Council and other agencies to minimise the causes and impacts of flood incidents within the City of Monash;
- 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 flood.

1.4 Storm and Flood Planning Working Group (SFPWG)

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

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

Other agencies as required

1.5 Responsibility for Planning, Review & Maintenance of this Plan

This SFEP must be maintained in order to remain effective.

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

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

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

- Following any new flood or stormwater drainage study;
- Following a change in non-structural and/or structural flood mitigation measures;
- After the occurrence of a significant storm or flood event within the Municipality
- Changes to emergency planning procedures (EMMV)

Part 2. PREVENTION / PREPAREDNESS ARRANGEMENTS

2.1 Community Awareness for all Types of Flooding

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

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

2.2 Structural Flood Mitigation Measures

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

2.3 Non-structural Flood Mitigation Measures

2.3.1 Exercising the Plan

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

2.3.2 Storm and Flood Warning

Arrangements for storm and flood warning are contained within the State Flood Emergency Plan (see <http://www.ses.vic.gov.au/em-sector/em-planning/state-plans>),

Part 3 of the EMMV and on the BoM website (see <http://www.bom.gov.au>).

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

2.3.3 Flood Wardens

In some rural municipalities across Victoria, Flood Wardens provide a means of gathering information in real time on flood behaviour along a stream system, and a network for the distribution of community information and warnings to the community along the stream system.

Note: There are no Flood Wardens within the Monash Municipality.

Part 3. RESPONSE ARRANGEMENTS

3.1 Introduction

3.1.1 Activation of Response

Storm and Flood response arrangements may be activated by the VICSES Central Region Duty officer (RDO) or Incident Controller (IC).

The VICSES Central Region RDO / IC will activate agencies as required and documented in the VICSES Central Region Storm and Flood Emergency Plans, State Storm Emergency Plan (see <http://www.ses.vic.gov.au/em-sector/em-planning/em-partners-resources/state-storm-emergency-plan>) and State Flood Emergency Plan (see <http://www.ses.vic.gov.au/em-sector/em-planning/em-partners-resources/state-flood-emergency-plan>)

3.1.2 Responsibilities

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

The general roles and responsibilities of supporting agencies are as agreed within the City of Monash MEMP, Part 7 of the EMMV, VICSES Central Region Emergency Response Plans (Flood and Storm) and State Emergency Response Plan (Storm and Flood Sub Plans)

3.1.3 Municipal Emergency Coordination Centre (MECC)

The function, location, establishment and operation of the MECC will be as detailed in the City of Monash MEMP. There may be no need for a physical MECC to be established and the work may be carried out remotely

Liaison with the MECC if opened will be through the VICSES Central Region RDO/IC or established ICC

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 State's arrangements provide for further resources to be made available, firstly from neighbouring Municipalities (on a regional basis) and then on a State-wide basis.

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

3.2 Strategic Control Priorities

To provide guidance to the Incident Management Team (IMT), the following strategic control priorities shall form the basis of incident action planning processes:

1. Protection and preservation of life is paramount - this includes:
 - Safety of emergency services personnel, and;
 - Safety of community members including vulnerable community members and visitors/tourist located within the incident area.
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 values that considers the cultural, biodiversity, and social values of the environment.

Circumstances may arise where the Incident Controller 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 Controller and relevant stakeholders based on sound incident predictions and risk assessments.

3.3 Command, Control, Coordination, Consequences, Communication and Community

The Command, Control and Coordination arrangements in this Plan must be consistent with those detailed in State and Regional Storm and Flood Emergency Plans. For further information, refer to Part 3 of the EMMV.

The specific details of the Command, Control and Coordination arrangements for this plan have been provided in **Appendix C**.

Command, Control and Coordination are familiar and traditional mechanisms in emergency and incident management however over the past few years there has been a supplementary focus on Consequence, Communication and Community Connection.

This is an approach to emergency management and an approach that is inclusive and community focused. It is also one that supports resilience in communities and in the EM sector.

Control

The overall direction of response activities in an emergency, operating horizontally across agencies.

Command

The internal direction of personnel and resources of an agency, operating vertically within the agency.

Coordination

The bringing together of agencies and resources to ensure effective preparation for, response to and recovery from emergencies.

Consequences

The management of the effect of emergencies on individuals, the community, infrastructure and the environment.

Communication

The engagement and provision of information across agencies and proactively with the community to prepare for, respond to and recover from emergencies.

Community Connection

The understanding of and connecting with trusted networks, trusted leaders and all communities to support resilience and decision making.

3.3.1 Control

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

Part 7.1 of the EMMV prepared under the *Emergency Management Act 1986 (as amended)*, identifies VICSES as the Control Agency for flood. It identifies DELWP as the Control Agency responsible for dam safety, water and sewerage asset related incidents and other emergencies.

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

3.3.2 Incident Controller (IC)

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

3.3.3 Incident Control Centre (ICC)

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

Pre-determined Incident Control Centre - (Level 3) locations in Central Region are listed below:

Location	Facility owner
Sunshine	SES
Burnley	MFB
Ferntree Gully	CFA
Dandenong	CFA
Kangaroo Ground	CFA

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.

Sectors may be established to assist with the management of flooding and storm response within the Municipality:

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

3.3.5 Incident Management Team (IMT)

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

Refer to Part 3 of the EMMV for further guidance on IMTs and Incident Management Systems such as AIIMS.

3.3.6 Emergency Management Team (EMT)

The IC will establish a multi-agency EMT to assist the storm and/or flood response. The EMT 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 EMT (including Monash 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 Part 3 of the [EMMV for guidance on EMTs](#).

3.3.7 On Receipt of a Flood Watch / Severe Weather Warning

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

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

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

- Assess ICC readiness (including staffing of IMT and EMT) and open if required
- Ensure flood bulletins and community information are prepared and issued to the community
- Monitor watercourses and undertake reconnaissance of low-lying areas
- Develop media and community information management strategy
- Ensure storm and flood mitigation works are being checked by owners
- Develop and issue incident action plan, if required
- Develop and issue situation report, if required

3.3.8 On Receipt of the First and Subsequent Flood Warnings

Incident Controller/VicSES RDO (until an incident controller 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:

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

3.4 Community Information and Warnings

Guidelines for the distribution of community information and warnings are contained in the VICSES Central Region Emergency Plans and State Emergency Plan.

Refer to JSOP [J04.01- Public Information and Warnings](#).

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

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

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

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

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

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

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

DHHS will coordinate information regarding public health precautions

3.5 Media Communication

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

3.6 Impact assessment

An impact assessment can be conducted in accordance with Part 3 of the EMMV to assess and record the extent and nature of damage caused by storm and/or flooding. This

information may then be used to provide the basis for further needs assessment and recovery planning by council at the local level and applicable recovery agencies.

VicPol is responsible for coordinating the collection, collations and dissemination of IA information on a whole-of government basis. The IC is responsible for activation VicPol to undertake this function.

The purpose, function and conduct of IA's are outline in the State Flood Emergency Plan. All IAs should be conducted in accordance with Part 3 of the EMMV

3.7 Preliminary Deployments

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

3.8 Response to Flash Flooding

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

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

1. Determine if there are barriers to evacuation by considering warning time, safe routes, resources available etc.
2. If evacuation is possible, then evacuation should be the adopted strategy and it must be supported by a public information capability and a rescue contingency plan;
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.

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

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

Refer to Vic Roads Website for road closures <https://traffic.vicroads.vic.gov.au/>.

3.9 Evacuation

The decision to recommend or warn people to prepare to evacuate or to evacuate immediately rests with the IC and where possible the EMT.

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

Refer to Part 3 of [the EMMV for guidance of evacuations](#) for flood emergencies.

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

3.10 Flood Rescue

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

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

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

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

3.11 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 Policies.

3.12 Resupply

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

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

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

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

3.13 Essential Community Infrastructure and Property Protection

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

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

The Monash Council maintains a minimal stock of sandbags for the protection of council facilities; supplies if required are available through the VICSES Regional Headquarters. The IC will determine the priorities related to the use of sandbags, which will be consistent with the strategic priorities.

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

Property may be protected by:

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

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

3.14 Disruption to Services

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

3.15 Levee Management

Levee owners / operators are responsible for the maintenance, operation and monitoring of their levees.

Levee owners / operators must keep the Incident Controller informed of levee status and be prepared to provide expert advice to the Incident Controller about the design and construction of their levees.

In accordance with the strategic control priorities, the Incident Controller 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 Road Closures

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

VicRoads, VicPol and the Monash Council will communicate community information regarding road closures.

3.17 Dam Failure

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

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

3.18 Waste Water related Public Health Issues and Critical Sewerage Assets

Overflows of stormwater through the sewerage network and Melbourne Water emergency relief structures may result in water quality problems within the Municipality. Where this is likely to occur or has occurred the responsibility agency for the critical sewerage asset should undertake the following:

- Advise VICSES and the Monash MERO of the security of critical sewerage assets to assist preparedness and response activities in the event of flood;
- Maintain or improve the security of critical sewerage assets;
- Check and correct where possible the operation of critical sewerage assets in times of flood;
- Advise the ICC in the event of inundation of critical sewerage assets.

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

Sewerage assets at risk of inundation are identified in **Appendix C**.

3.19 After Action Review

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

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

Part 4. EMERGENCY RELIEF AND RECOVERY ARRANGEMENTS

4.1 General

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

4.2 Emergency Relief

The IC determines the need for Emergency Relief Services in accordance with part 4 of the EMMV. IC's are responsible for ensuring that relief arrangements have been considered and implemented where required under the [State Emergency Relief and Recovery Plan \(Part 4 of the EMMV\)](#). These should be carried out in line with the Monash MEMP Relief and Recovery sub-plan.

The range and type of emergency relief services to be provided in response to a storm and/or flood event will be dependent upon the size, impact, and scale of the storm or flood. Refer to Part 4 of the EMMV for further information.

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

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

4.3 Animal Welfare

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

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

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

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

4.4 Transition from Response to Recovery

VicSES as the Control Agency is responsible for ensuring effective transition from response to recovery. This transition will be conducted in accordance with existing arrangements as detailed in Part 3 Section 3.10 of the EMMV.

APPENDIX A - FLOOD THREATS FOR CITY OF MONASH

General

The City of Monash (Council) was formed in 1994, predominately from the City of Waverley and part of the City of Oakleigh. The municipality includes 14 suburbs within its boundaries. It covers a total area of 82 square kilometres and is located approximately 20 kilometres south-east of Melbourne's CBD. Within the municipality, there are approximately 176 000 residents and major facilities including the Monash Medical Centre, Monash University and the Victorian Police Academy.

The City of Monash is almost entirely urbanised with a population density of 19.8 people per hectare.

There are 14 suburbs within the municipality. These are:

- Ashwood
- Burwood;
- Chadstone;
- Clayton;
- Glen Waverley;
- Hughesdale;
- Huntingdale;
- Mount Waverley;
- Mulgrave;
- Notting Hill;
- Oakleigh;
- Oakleigh East;
- Oakleigh South (part); and
- Wheelers Hill.

The City of Monash stormwater drainage system comprises of 44 catchments, the largest of which are Scotchmans Creek, Mile Creek East and Mile Creek West. Principal waterways include Damper Creek, Dandenong Creek, Gardiners Creek and Scotchmans Creek.

Insufficient drainage capacity to cater for major storms through low lying areas has caused some of the major flooding issues throughout the municipality. The more vulnerable areas within the community are often located within low lying areas of their catchments and are particularly susceptible to flooding risks. A typical example of this is the Monash Medical Centre, on Clayton Road, Clayton.

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.

Riverine flooding is likely to occur along the Dandenong Creek catchment when either of the above conditions occur. The Gardiners Creek and Scotchmans Creek are contained within smaller catchments and are less likely to be impacted by longer sustained rainfall.

Flash Flooding and Overland Flows

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

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

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

Description of Major Waterways and Drains

The major waterways are described briefly below

Damper Creek

Damper Creek begins towards the north of the municipality with two tributaries connecting just south of High Street Road, Mount Waverley, near Stephenson's Road intersection. The downstream part of the system is Damper Creek which flows from east to west from Riversdale Golf Club to Gardiners Creek. Upstream of Riversdale Golf Club are two branches, Damper Creek West that flows down from the north from near the corner of Stephenson's Road and Highbury Road and Damper Creek East that is a shorter tributary that flows from Stephenson's Road near Mount Waverley Secondary College.

Gardiners Creek

This waterway begins well north of the municipality and then flows through the north west region of the municipality. Damper Creek meets Gardiners Creek in Ashwood near the centre of its path through the municipality, it then goes under Warrigal Road near the Glen Waverley railway line and continues to the west.

Mile Creek

The Mile Creek West tributary begins in the Clayton / Notting Hill area on the east side of Monash University. It flows south-east and then flows south from the Blackburn and Wellington Roads intersection. The Mile Creek East tributary flows south west, beginning at the MW flood retarding basin on Freeway Reserve at the Wellington Road and Monash Freeway intersection. It then turns south and flows adjacent to Springvale Road just past Princes Highway. The confluence of the two Mile Creek tributaries is downstream of and just south of the municipality.

Scotchmans Creek

Scotchmans Creek begins at the north end of the municipality and flows south to south-east where it meets with the outfall of the Orchard St Drain before continuing south to its confluence with the Glen Waverley Drain. It then continues south west to the Monash Freeway and then west to the extent of the municipality near the Warrigal Road and Monash Freeway intersection in Clayton, before flowing into Gardiners Creek downstream of the City of Monash boundary.

Dandenong Creek

This is a 34 kilometre long creek with almost 33% (11 kilometres) within the City of Monash. Tributaries of Dandenong Creek begin in the Dandenong Ranges and the creek flows from Bayswater through Ringwood South, Vermont, Scoresby, and Dandenong and eventually meets Mordialloc Creek and the Patterson River at Pillars Crossing in Keysborough South. Within the City of Monash, it travels north-south along the eastern border of the municipality.

Melbourne Water Drains & Waterways	Suburb/s	Melbourne Water Drains & Waterways	Suburb/s
Bishop St Drain	Oakleigh & Oakleigh South	Lum Rd / Jells Rd Drain	Wheelers Hill
Brockhoffs Main Drain	Ashwood & Burwood	Macrina St Drain	Mount Waverley & Oakleigh East
Burton Ave Drain	Clayton	Mile Creek East Branch	Clayton & Mulgrave
Burwood South Drain	Glen Waverley	Mile Creek West Branch	Mulgrave & Notting Hill
Carlisle Cres Main Drain	Hughesdale	Monash University	Clayton
Clayton Drain	Clayton & Oakleigh East	Montclair Ave Drain	Glen Waverley
Damper Creek	Ashwood & Mount Waverley	Mount Waverley Drain	Mount Waverley
Damper Creek East Branch	Mount Waverley	Mt View Drain	Glen Waverley
Dandenong Creek	Glen Waverley & Mulgrave	Murrumbeena Drain	Hughesdale & Oakleigh South
Deviation Rd Drain	Wheelers Hill	Nunawading Outfall	Glen Waverley
East Burwood Drain	Glen Waverley	Oakleigh Main Drain	Hughesdale & Oakleigh
East Oakleigh Drain	Clayton & Oakleigh South	Oakleigh North Drain	Chadstone & Mount Waverley
Gardiners Creek	Ashwood & Burwood	Police Rd / Jacksons Rd Drain	Mulgrave
Glen Waverley Drain	Glen Waverley	Scotchmans Creek	Chadstone, Glen Waverley, Mount Waverley & Oakleigh
Jacksons Rd North Drain	Mulgrave	Tally-Ho Drain	Glen Waverley & Mount Waverley
Jells Rd South Drain	Mulgrave & Wheelers Hill	Winbirra Pde Drain	Ashwood & Chadstone
Jells Rd / Ferntree Gully Rd Drain	Wheelers Hill		

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

Flood Mitigation Systems

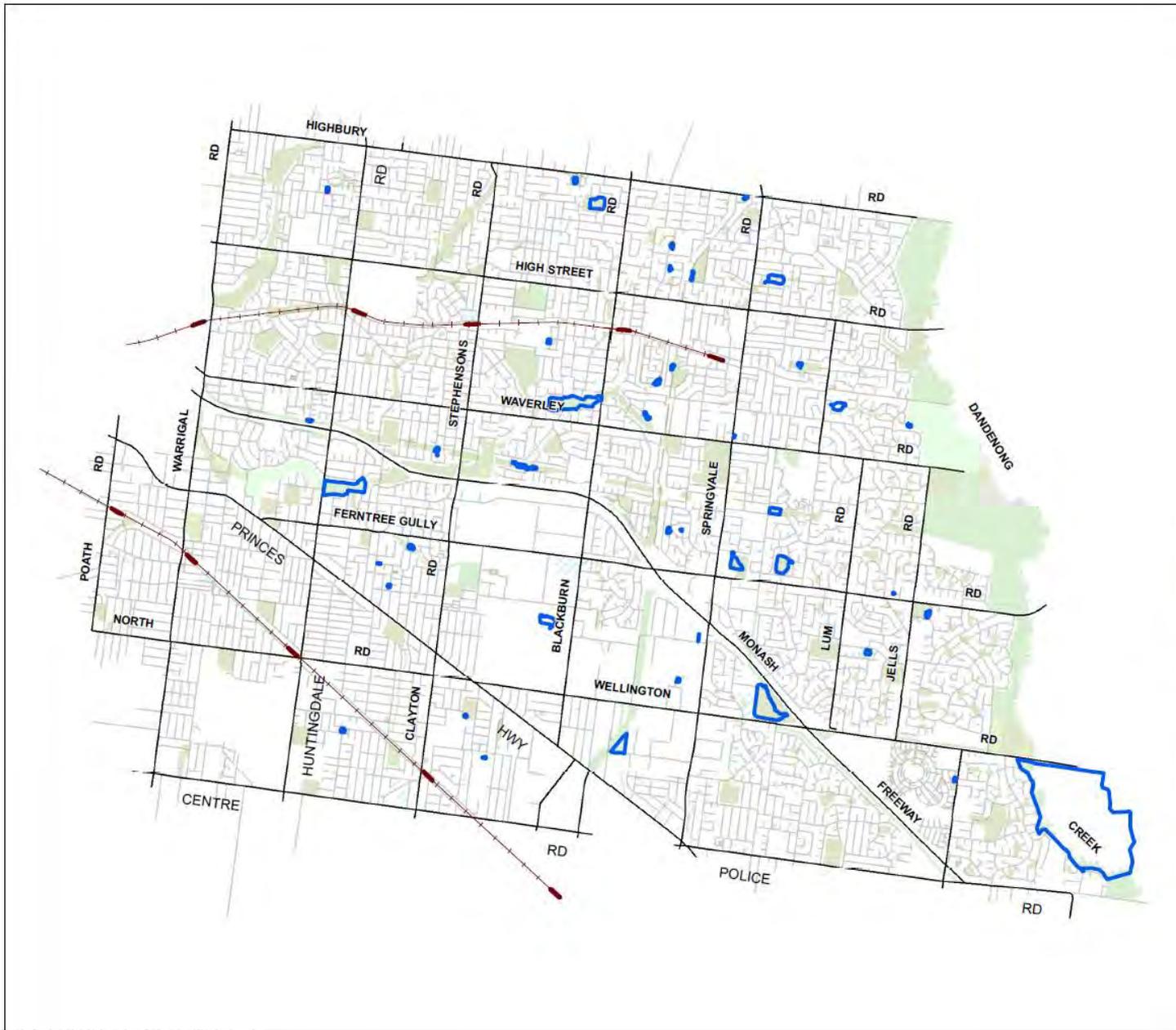
Flood mitigation has predominantly been developed in the form of Melbourne Water Retarding Basins. These flood mitigation systems are as follows in the tables below. To view their locations and connecting waterway/drainage systems, see map B in Appendix F. There are no formal pumping stations or Melbourne Water levees built within the City of Monash. There is a small levee on Parks Vic land at the rear of Appletree Drive Glen Waverley which was constructed to prevent water flowing into properties when the subdivision occurred. The levee has a large drain to prevent water backing up on properties draining back into the creek near Shepherd Road.

Retarding Basins

Melbourne Water Retarding Basin	On Drain/ Waterway	Area	Storage Capacity	Spillway Crest Level	Full Supply Level	Embankment Crest Height (Level)	ANCOLD Hazard Rating	Properties In Flow Path (dam breach)	Melway Reference
Huntingdale Road, Oakleigh	Scotchmans Creek	6.1 ha	136 ML	57.0m AHD	57.6m AHD	5.1m (57.9m AHD)	Significant	Unavailable	69 K6
Mile Creek East	Mile Creek East Branch	8.6 ha	117.2 ML	72.9m AHD	73.4m AHD	4.6m (73.5m AHD)	High A	Unavailable	80 D1
Mile Creek West	Mile Creek West Branch	1.4 ha	66 ML	60.0m AHD	60.6m AHD	3.0m (60.5m AHD)	Low	25 industrial lots	79 J1
Monash University	Monash University Drain	1.7 ha	35 ML	78.6m AHD	79.0m AHD	4.0m (81.5m AHD)	Low	Unavailable	70 G10
Police Road, Rowville	Dandenong Creek	118.1 ha	660 ML	39.6m AHD	42.0m AHD	4.9m (42.7m AHD)	Very Low	0	81 E5
Waverley Road, Glen Waverley	Scotchmans Creek	7.2 ha	185 ML	85.1m AHD	86.6m AHD	8.4m (87.0m AHD)	Significant	Unavailable	70 J3

Table A2 – Melbourne Water Retarding Basins within the City of Monash

Monash Retarding Basins



Legend

Retarding Basins

0 740 1,480 2,220 2,960
Metres

Date of Production: 15/02/2013 **1:45,000**

North point is True North. Magnetic North is 11° 32' 38" E (2004)

This map was produced on the Map Grid of Australia 1994 (GDA94). For most practical purposes MGA 1994 (GDA94) coordinates and satellite derived (GPS) coordinates based on the World Geodetic Datum 1984 (WGS84) are the same.

This map is for general use only and may not be used as proof of ownership, dimensions or any other status. The City of Monash endeavours to keep information up to date and would welcome notification of omissions or inaccuracies. Contact: GIS@monash.vic.gov.au. Base data supplied under licence from Land Victoria.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31				

Path: M:\working\Engineering_2013\RetardingBasin A3.mxd

Figure A1 – Retarding Basins within the City of Monash

Levees

Levee	Reach	Side	Levee Height	Levee Length	Expected Level of Protection	ANCOLD Hazard Rating	Consequences of Failure	Melway Reference
Appletree Drive Levee, Dandenong Creek	Appletree Drive to Shepherd Road, Glen Waverley	West	1.4m to 1.75m	420m	400mm above the 1% AEP Flood Level	Unavailable	Residential properties at risk of flooding	71 J2 to J3

Table A5 – Levees within the City of Monash

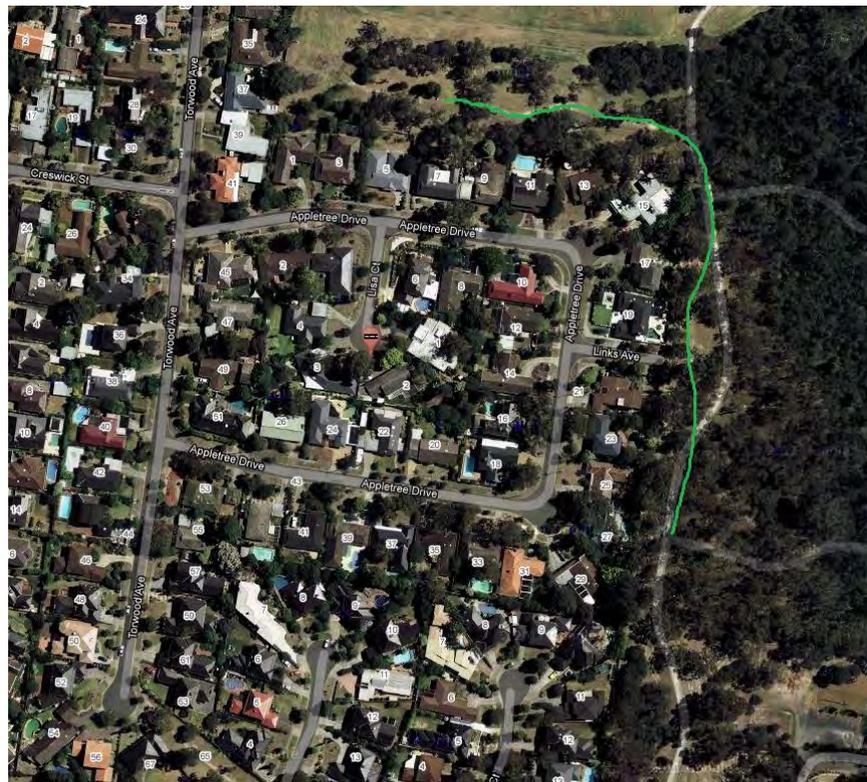


Figure A2 – Appletree Drive Levee along Dandenong Creek

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located within the City of Monash is contained within the following table. To view their locations, view mapping in **Appendix F**.

Sewer Pumping Stations

Sewerage Pumping Station	On Drain / Waterway	Bank / Side of Waterway	Operator	Location	Melway Reference
Cinnabar Avenue	Local Drainage	-	Yarra Valley Water	Cinnabar Avenue, Mount Waverley	61 H9

Table A4 – Sewer Pumping Stations within or close to the City of Monash

Sewer Emergency Relief Points

Contact the Melbourne Water EMLO/Duty Officer for information on any recent or planned releases at a Sewer Emergency Relief Point as part of a Dynamic Risk Assessment (DRA) if work is to be conducted at or downstream of the outlet.

On Drain / Waterway	Bank / Side of Waterway	Operator	Location	Melway Reference
Dandenong Creek	West	Yarra Valley Water	Mulgrave Reserve, Wheelers Hill	81 B2
Gardiners Creek	South	Melbourne Water	Holmesglen Reserve, Mount Waverley	60 G12
Scotchmans Creek	-	Yarra Valley Water	Baily Reserve, Baily Street, Mount Waverley	61 J11

Table A5 – Sewer Emergency Relief Points within or close to the City of Monash

Flood Warning System

Within the City of Monash, Melbourne Water has 6 hydrographic monitoring sites along the 4 major waterways in the Municipality. These are outlined in the table below. These gauges can be monitored online through Melbourne Water at:

<http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx>

or through the Bureau of Meteorology at:

http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDV60201.html

To view their locations, see mapping in **Appendix F**.

Melbourne Water Hydrographic Monitoring Station	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Reference
Dandenong Creek at Police Road Retarding Basin, Rowville	228368A	North side of embankment. Access via Illawarra Avenue and through gate to the north.	✓	✓	81 E6
Gardiners Creek at Ashwood	229625A	East side of the Creek adjacent to Hedley Hull Field	✓	✓	60 H11
Mount View	586197	Mount View Reservoir, Waverley Rd, Glen Waverley		✓	71 E5
Notting Hill	586023	Notting Hill Reservoir, Gardiner Rd, Clayton		✓	70 E8
Scotchmans Creek at Huntingdale Road Retarding Basin, Oakleigh	229640A	East side of Huntingdale Road, Mount Waverley	✓		69 K5
Scotchmans Creek at Waverley Road Retarding Basin, Glen Waverley	229639A	East side of Spillway	✓		70 G3

Table A6 – Hydrographic Monitoring Stations within the City of Monash

Other gauges located in adjoining Municipalities that may assist in flood warning are outlined below. To view their locations, see mapping in **Appendix F**.

Melbourne Water Hydrographic Monitoring Station	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Reference
Blind Creek at High Street Road, Wantirna South	228351A	West side of the creek, South side of High Street Rd, Wantirna South	✓		72 E1
Clayton South Drain at Clayton Retarding Basin	228603A	In wetland at end of Merlyn Avenue, Clayton South	✓	✓	79 B5
Dandenong Creek at Wantirna Road, Wantirna	228357A	South side of the creek 150m east of Wantirna Road, Wantirna	✓	✓	63 H3
Gardiners Creek at Gardiner	229624A	South side of the creek at Great Valley Road Bridge, Glen Iris	✓	✓	59 J7
Mile Creek Parshall Flume at Springvale West	228362A	West Side of Channel at end of Oakdale Court, Springvale	✓	✓	79 K6

Oakleigh South	586185	Moorabbin Reservoir, Warrigal Road, Bentleigh East		✓	78 D1
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Table A7 – Hydrographic Monitoring Stations within adjacent Municipalities to the City of Monash

The Bureau does not issue formal flood warnings for Scotchmans Creek or Mile Creek due to their rapid response to rainfall. This is due to the urban surrounds which quickly direct stormwater into drains and waterways. This results in rapid stream rises during thunderstorms and heavy rainfall creating a short lead time for response.

There is currently one Melbourne Water flood warning gauge on Dandenong Creek that could be used to assist with public safety through the issue of flood warnings. This is at Rowville. Flood class levels have been established for this gauge and are used in flood warning to help convey a level of risk or impact to the community.

Hydrographic Monitoring Station	River / Creek Flood Class Level		
	Minor	Moderate	Major
Dandenong Creek at Police Road Retarding Basin, Rowville	4.6m	5.0m	5.5m

Table A8 – Hydrographic Monitoring Stations with established Flood Class Levels for the City of Monash

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 Monash monitors these warnings in times of high rainfall, there are no specific guidelines to advise how these situations should be responded to.

Historic Floods

Significant floods (with high flood gauge levels and likely flooding consequences to property and infrastructure) to have occurred within the City of Monash are as follows in the table below. To view the locations of these floods, see map B in **Appendix F**. Where available, radar loops of the storm can be accessed by clicking on the flood event date.

Event	Gardiners Creek at Ashwood (229625)		Scotchmans Creek at Glen Waverley (229639)	Scotchmans Creek at Oakleigh (229640)	Dandenong Creek at Rowville (228368)		Mile Creek at Springvale West (228362)
	Rainfall at Gauge	River Height	River Height	River Height	Rainfall at Gauge	Creek Height	Creek Height
Normal Water Level	-	0.2m	0.3m	0.2m	-	0.5m	0.03m
			Spillway – 6.5m	Spillway – 4.2m		Minor - 4.6m	
			1% AEP – 7.3m	Full Supply – 4.8m		Moderate - 5.0m	
			Full Supply – 8.0m	1% AEP – 5.1m		Major - 5.5m	
18 th October 1937	-	3.82m	-	-	-	-	-
10 th November 1954	-	4.21m	-	-	-	-	-
29 th January 1963	-	4.01m	-	-	-	-	-
17 th February 1972	-	3.68m	-	-	-	-	-
19 th November 1974	-	2.20m	-	-	-	-	-
18 th September 1975	-	-	-	-	-	-	-
28 th April 1977	-	-	-	-	-	-	0.53m
27 th July 1977	-	-	-	-	-	-	0.65m
7 th August 1978	-	1.22m	3.42m	3.09m	43mm / 36 Hrs	4.74m	-
19 th November 1978	-	1.30m	2.82m	3.01m	61mm / 32 Hrs.	4.88m	1.13m
24 th December 1978	-	1.66m	3.34m	2.82m	64mm / 24 Hrs.	4.29m	2.05m
6 th October 1979	-	1.39m	3.72m	3.45m	-	4.85m	1.63m
25 th May 1981	-	1.17m	2.94m	3.21m	47mm / 23 Hrs.	4.77m	1.33m
15 th October 1983	-	1.14m	2.41m	2.73m	70mm / 33 Hrs.	4.86m	1.11m
2 nd January 1984	-	-	7.93m	-	28mm / 1 Hr	1.57m	1.38m
18 th September 1984	-	2.65m	5.49m	4.56m	91mm / 99 Hrs.	5.69m	1.61m
12 th December 1985	-	1.36m	6.89m	3.48m	20mm / 3 Hrs.	3.81m	-

Event	Gardiners Creek at Ashwood (229625)		Scotchmans Creek at Glen Waverley (229639)	Scotchmans Creek at Oakleigh (229640)	Dandenong Creek at Rowville (228368)		Mile Creek at Springvale West (228362)
	Rainfall at Gauge	River Height	River Height	River Height	Rainfall at Gauge	Creek Height	Creek Height
Normal Water Level	-	0.2m	0.3m	0.2m	-	0.5m	0.03m
			Spillway – 6.5m	Spillway – 4.2m		Minor - 4.6m	
			1% AEP – 7.3m	Full Supply – 4.8m		Moderate - 5.0m	
			Full Supply – 8.0m	1% AEP – 5.1m		Major - 5.5m	
29 th July 1987		1.83m	3.61m	-		5.14m	-
22 nd November 1988	-	2.24m	4.05m	4.33m	-	3.41m	1.57m
25 th December 1988	-	1.94m	4.57m	3.38m	40mm / 8 Hrs.	4.60m	1.92m
21 st March 1989	-	1.72m	2.73m	2.23m	30mm / 15 Hrs.	-	1.10m
5 th April 1989	-	2.46m	4.06m	4.21m	56mm / 10 Hrs.	4.46m	1.97m
11 th June 1989	-	1.39m	1.17m	1.25m	33mm / 44 Hrs.	5.01m	0.68m
18 th July 1990	-	2.02m	1.81m	3.51m	44mm / 55 Hrs.	4.95m	1.35m
11 th October 1990	-	1.61m	-	2.11m	55mm / 88 Hrs.	4.91m	1.02m
5 th July 1991	-	1.69m	-	2.43m	38mm / 25 Hrs.	5.04m	1.14m
31 st December 1991		2.35m	6.13m	3.73m	46mm / 19 Hrs.	4.70m	0.78m
27 th December 1993	88mm / 46 Hrs.	2.54m	4.93m	3.71m	63mm / 46 Hrs.	4.97m	2.09m
29 th July 1996	54mm / 34 Hrs.	0.98m	3.29m	2.28m	59mm / 35 Hrs.	5.12m	1.00m
10 th June 1999	45mm / 11 Hrs.	2.36m	-	-	22mm / 13 Hrs.	4.46m	1.24m
26 th December 1999	63mm / 36 Hrs.	2.77m	2.03m	-	55mm / 31 Hrs.	1.00m	2.23m
3 rd December 2003	33mm / 3 Hrs.	2.18m	4.61m	2.52m	30mm / 3 Hrs.	4.64m	2.22m
13 th November 2004	35mm / 6 Hrs.	1.98m	3.40m	2.30m	38mm / 10 Hrs.	4.91m	1.53m
3 rd February 2005	140mm / 27 Hrs.	2.46m	6.80m	2.68m	130mm / 37 Hrs.	5.56m	1.69m
22 nd December 2007	118mm / 59 Hrs.	2.82m	3.38m	3.22m	113mm / 71 Hrs.	4.76m	2.18m
31st December 2009	15mm / 4 Hrs.	3.31m	1.02m	0.92m	15mm / 4 Hrs.	0.73m	0.95m
31st October 2010	72mm / 39 Hrs.	1.85m	2.93m	2.28m	68mm / 39 Hrs.	4.80m	1.89m
20th December 2010	44mm / 48 Hrs.	1.60m	2.72m	1.79m	48mm / 46 Hrs.	4.83m	2.00m
5th February 2011	130mm / 15 Hrs.	3.17m	3.35m	3.64m	146mm / 15 Hrs.	5.45m	2.62m
12th April 2011	80mm / 66 Hrs.	2.17m	4.43m	2.62m	48mm / 62 Hrs.	4.40m	1.97m

Event	Gardiners Creek at Ashwood (229625)		Scotchmans Creek at Glen Waverley (229639)	Scotchmans Creek at Oakleigh (229640)	Dandenong Creek at Rowville (228368)		Mile Creek at Springvale West (228362)
	Rainfall at Gauge	River Height	River Height	River Height	Rainfall at Gauge	Creek Height	Creek Height
Normal Water Level	-	0.2m	0.3m	0.2m	-	0.5m	0.03m
			Spillway – 6.5m	Spillway – 4.2m		Minor - 4.6m	
			1% AEP – 7.3m	Full Supply – 4.8m		Moderate - 5.0m	
			Full Supply – 8.0m	1% AEP – 5.1m		Major - 5.5m	
26th November 2011	56mm / 22 Hrs.	2.12m	3.20m	2.19m	52mm / 22 Hrs.	4.66m	1.86m
22nd June 2012	46mm / 26 Hrs.	1.11m	2.23m	1.67m	65mm / 31 Hrs.	4.80m	0.99m
1st June 2013	57mm / 16 Hrs.	1.64m	2.40m	2.01m	53mm / 15 Hrs.	4.87m	2.46m
13th February 2015	26mm / 14 Hrs.	1.59m	3.23m	1.47m	48mm / 16 Hrs.	1.63m	2.00m
5th February 2017	31mm / 6 Hrs.	1.77m	1.42m	1.65m	42mm / 12 Hrs.	2.52m	1.96m
21st March 2017	14mm / 1 Hr.	1.26m	2.95m	1.49m	25mm / 4 Hrs.	0.95m	1.96m
3rd December 2017	96mm / 45 Hrs.	1.65m	3.31m	2.32m	70mm / 41 Hrs.	4.76m	1.21m
7th December 2017	24mm / 7 Hrs.	1.33m	1.51m	1.69m	65mm / 11 Hrs.	4.61m	1.49m
6th November 2018	51mm / 6 Hrs.	2.57m	4.34m	2.49m	52mm / 6 Hrs.	3.86m	1.96m

Table A9 – Selection of Historical Flood Events along Gardiners Creek, Scotchmans Creek, Dandenong Creek, Mile Creek & Clayton South Drain

Dam Failure

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

Service Reservoirs located within the Municipality are listed below.

Melbourne Water Service Reservoir	Location	Owner	Material	Reservoir Capacity	Melway Reference
Mount View	Victoria Police Academy, Waverley Road, Glen Waverley	Melbourne Water	Concrete Basin	85.5 ML	71 E5
Mount Waverley	Mount Waverley Reserve, High Street Road, Mount Waverley	Melbourne Water	Concrete Basin	201 ML	61 G12
Notting Hill No.1	Gardiner Road, Clayton	Melbourne Water	Steel Tank	75 ML	70 E8
Notting Hill No.2	Gardiner Road, Clayton	Melbourne Water	Steel Tank	75 ML	70 E8

Table A10 – Melbourne Water Service Reservoirs in the City of Monash

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 (e.g. The first flood after a dry period will travel more slowly than the second flood in a series of floods). Hence, recent flood history, soil moisture and forecast weather conditions all need to be considered when using the following information to direct flood response activities.

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

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

Typical Travel Times

Location From (gauge)	Location To (gauge)	Typical Travel Time	Flood Class	Comments
DANDENONG CREEK				
Wantirna	Rowville	Between 5 to 25 hours	Minor Flood at Rowville	Inflows from Blind, Corhanwarrabul and Mile Creeks may impact on travel time
Wantirna	Rowville	Between 3 to 7 hours	Moderate Flood at Rowville	Inflows from Blind & Corhanwarrabul Creeks may impact on travel time
Wantirna	Rowville	Between 1 to 2 hours	Major Flood at Rowville	Inflows from Blind & Corhanwarrabul Creeks may impact on travel time

Table B1 – Typical Flood Travel Times between gauges on Dandenong Creek

Historical Travel Times

Flood Event	Location From (gauge)	Location To (gauge)	Flood Peak Travel Time	Flood Class at Rowville
DANDENONG CREEK				
7 th August 1978	Wantirna	Police Rd, Rowville	11 hours	Minor
19 th November 1978	Wantirna	Police Rd, Rowville	9 hours	Minor
6 th October 1979	Wantirna	Police Rd, Rowville	9 hours	Minor
25 th May 1981	Wantirna	Police Rd, Rowville	10 hours	Minor
15 th October 1983	Wantirna	Police Rd, Rowville	26 hours	Minor
18 th September 1984	Wantirna	Police Rd, Rowville	Less than 1 hour	Major
29 th July 1987	Wantirna	Police Rd, Rowville	9 hours	Moderate
25 th December 1988	Wantirna	Police Rd, Rowville	12 hours	Minor
5 th April 1989	Wantirna	Police Rd, Rowville	18 hours	Minor
11 th June 1989	Wantirna	Police Rd, Rowville	7 hours	Moderate
18 th July 1990	Wantirna	Police Rd, Rowville	28 hours	Minor
11 th October 1990	Wantirna	Police Rd, Rowville	7 hours	Minor
5 th July 1991	Wantirna	Police Rd, Rowville	7 hours	Moderate
31 st December 1991	Wantirna	Police Rd, Rowville	21 hours	Minor
27 th December 1993	Wantirna	Police Rd, Rowville	10 hours	Minor
29 th July 1996	Wantirna	Police Rd, Rowville	7 hours	Moderate
3 rd December 2003	Wantirna	Police Rd, Rowville	14 hours	Minor
13 th November 2004	Wantirna	Police Rd, Rowville	9 hours	Minor
3 rd February 2005	Wantirna	Police Rd, Rowville	1 hour	Major
22 nd December 2007	Wantirna	Police Rd, Rowville	11 hours	Minor
31 st October 2010	Wantirna	Police Rd, Rowville	16 hours	Minor
20 th December 2010	Wantirna	Police Rd, Rowville	8 hours	Minor
5 th February 2011	Wantirna	Police Rd, Rowville	3 hours	Moderate
26 th November 2011	Wantirna	Police Rd, Rowville	18 hours	Minor
22 nd June 2012	Wantirna	Police Rd, Rowville	5 hours	Minor
1 st June 2013	Wantirna	Police Rd, Rowville	11 hours	Minor
3 rd December 2017	Wantirna	Police Rd, Rowville	11 hours	Minor
8 th December 2017	Wantirna	Police Rd, Rowville	20 hours	Minor

Table B2 – Historical Flood Travel Times between gauges on Dandenong Creek

APPENDIX C1 – SCOTCHMANS 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 within Scotchmans Creek Catchment					
Property at risk of over-floor flooding					
Properties	182				
Residential	154				
Commercial	11				
Industrial	15				
Public Land	2				
Rural	0				
Community Infrastructure					
Health Facilities	0		Child Care / Kindergartens	0	
Care Facilities	1	Scotchmans Creek Aged Care	Community Venues	2	David Crawford Reserve Scout Hall; & Fioretto Fencing Club
Retirement Villages	1	Yeringa Retirement Village	Places of Worship	0	
Schools / Colleges	1	Glenallen School	Prisons	0	
Essential Infrastructure					
Major Roads	5	Blackburn Road; Clayton Road; Forster Road; High Street Road; & Waverley Road	Police Stations	0	
Major Rail	0		Government Buildings	0	
Bus Routes	5	623; 703; 733; 734; 737	Sewerage Facilities	2	1 Pumping Station; & 1 Emergency Relief Point
Power Facility	0		Levees	0	
Comms Services	0		Drainage Facilities	2	Retarding Basins
Emergency Services	0		Airports / Airfields	0	
Tourism / Recreation					
Sports Facilities	1	Oakleigh Public Golf Course	Caravan Parks	0	
Recreation Facilities	1	Monash Aquatic & Recreation Centre	Camping Grounds	0	
Government Boundaries					
Local Gov't Areas	1	Monash	CMA	1	Port Phillip & Westernport
Adjacent LGAs	1	Stonnington	CFA District	0	
SES Unit Area	1	Monash	MFB District	1	Eastern

Table C1.1 – Consequence Summary of 1% AEP flood within Scotchments Creek Catchment in Monash

Scotchmans Creek and its adjoining suburbs of Glen Waverley, Mount Waverley, Oakleigh East & Chadstone are located between 12 and 20km east of Melbourne in a predominantly residential area. Scotchmans Creek is the prominent watercourse in the area, flowing from the north east in Glen Waverley and traveling west through Mount Waverley, Oakleigh East and Chadstone where the creek leaves the City of Monash before joining with Gardiners Creek and the boundary of the Cities of Stonnington and Boroondara. High Intensity, short duration rainfall events are the primary concern and cause flash flooding in and around the underground drainage network and Scotchmans Creek. Major traffic thoroughfares in Blackburn Road, High Street Road, Waverley Road and Forster Road are all susceptible to flash flooding at the stormwater drainage overpasses. See mapping in Appendix F for more insight into flooding in the area.

Warning Times

Neither the Bureau of Meteorology nor Melbourne Water currently provides flood forecasts for Scotchmans Creek. All flood response actions must therefore be driven by rainfall and / or river level observations. Telemetered water level / flood gauges are located at the Waverley Road and Huntingdale Road Retarding Basins.

Melbourne Water Hydrographic Monitoring Station	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Reference
Mount View	586197	Mount View Reservoir, Waverley Rd, Glen Waverley		✓	71 E5
Notting Hill	586023	Notting Hill Reservoir, Gardiner Rd, Clayton		✓	70 E8
Scotchmans Creek at Huntingdale Road Retarding Basin, Oakleigh	229640A	East side of Huntingdale Road, Mount Waverley	✓		69 K5
Scotchmans Creek at Waverley Road Retarding Basin, Glen Waverley	229639A	East side of Spillway	✓		70 G3

Table C1.2 – Hydrographic Monitoring Stations within the Scotchmans Creek catchment

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: <http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx>. It is advised that residents monitor the Bureau of Meteorology's website <http://www.bom.gov.au/> and the VicEmergency website <https://emergency.vic.gov.au/> for any thunderstorm, flood or severe weather warnings present for their area.

Areas of Flood Risk



Figure C1 – Areas of flood risk around Scotchmans Creek in the City of Monash

Properties at Flood Risk

Properties listed in the table below are at risk from flooding over-floor within the Scotchmans Creek catchment in Monash. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Scotchmans Creek (BMT-WBM, July 2009) 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 over-floor within Scotchmans Creek catchment						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	7 Allen Street	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	3 Amesbury Court	Mount Waverley	Oakleigh North Drain	Flash
		✓	1/12 Aristoc Road	Glen Waverley	Glen Waverley Drain	Flash
		✓	2/12 Aristoc Road	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	1/13 Aristoc Road	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	2/13 Aristoc Road	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	3/13 Aristoc Road	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	4/13 Aristoc Road	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	14-16 Aristoc Road	Glen Waverley	Glen Waverley Drain	Flash
		✓	17 Aristoc Road	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	18 Aristoc Road	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	20 Aristoc Road	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	4 Ashbury Court	Mount Waverley	Oakleigh North Drain	Flash
		✓	5 Ashbury Court	Mount Waverley	Oakleigh North Drain	Flash
	✓	✓	23 Baily Street	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	25 Baily Street	Mount Waverley	Tally-Ho Drain	Flash
		✓	2/29 Baily Street	Mount Waverley	Tally-Ho Drain	Flash
		✓	2 Batten Street	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	1/4 Batten Street	Glen Waverley	Glen Waverley Drain	Flash
✓	✓	✓	2/4 Batten Street	Glen Waverley	Glen Waverley Drain	Flash
✓	✓	✓	3/4 Batten Street	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	4/4 Batten Street	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	5/4 Batten Street	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	1A Beacon Street	Glen Waverley	Glen Waverley Drain	Flash
✓	✓	✓	2/1 Beacon Street	Glen Waverley	Glen Waverley Drain	Flash
		✓	7 Bizley Street	Mount Waverley	Scotchmans Creek	Flash
		✓	8 Bizley Street	Mount Waverley	Scotchmans Creek	Flash
		✓	9 Bizley Street	Mount Waverley	Scotchmans Creek	Flash
	✓	✓	10 Bizley Street	Mount Waverley	Scotchmans Creek	Flash
	✓	✓	11 Bizley Street	Mount Waverley	Scotchmans Creek	Flash

Properties at risk from Flooding over-floor within Scotchmans Creek catchment

Properties at risk from Flooding over-floor within Scotchmans Creek catchment						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	12 Bizley Street	Mount Waverley	Scotchmans Creek	Flash
	✓	✓	149 Blackburn Road	Mount Waverley	Tally-Ho Drain	Flash
		✓	151 Blackburn Road	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	1/160 Blackburn Road	Glen Waverley	Tally-Ho Drain	Flash
	✓	✓	2/160 Blackburn Road	Glen Waverley	Tally-Ho Drain	Flash
	✓	✓	3/160 Blackburn Road	Glen Waverley	Tally-Ho Drain	Flash
		✓	162 Blackburn Road	Glen Waverley	Tally-Ho Drain	Flash
	✓	✓	233-235 Blackburn Road	Mount Waverley	Scotchmans Creek	Flash
		✓	258 Blackburn Road	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	260A Blackburn Road	Glen Waverley	Scotchmans Creek	Flash
		✓	260 Blackburn Road	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	262 Blackburn Road	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	264 Blackburn Road	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	266 Blackburn Road	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	268 Blackburn Road	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	10 Bradstreet Road	Mount Waverley	Oakleigh North Drain	Flash
		✓	1/23 Bradstreet Road	Mount Waverley	Oakleigh North Drain	Flash
		✓	2/23 Bradstreet Road	Mount Waverley	Oakleigh North Drain	Flash
		✓	57 Briggs Street	Mount Waverley	Macrina St Drain	Flash
		✓	7 Coleman Parade	Glen Waverley	Scotchmans Creek	Flash
		✓	9 Coleman Parade	Glen Waverley	Scotchmans Creek	Flash
		✓	61 Drummond Street	Chadstone	Scotchmans Creek	Flash
	✓	✓	1/1 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
	✓	✓	4/1 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	5/1 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	6/1 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	1/3 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	2/3 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	3/3 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	4/3 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	1/7-11 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	4/7-11 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	5/7-11 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	6/7-11 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
	✓	✓	7/7-11 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
	✓	✓	8/7-11 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	1/14 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	20 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
		✓	22 Elm Grove	Mount Waverley	Scotchmans Creek	Flash
	✓	✓	8 Esperance Road	Mount Waverley	Scotchmans Creek	Flash
		✓	9 Esperance Road	Mount Waverley	Scotchmans Creek	Flash
	✓	✓	10 Esperance Road	Mount Waverley	Scotchmans Creek	Flash
		✓	11 Esperance Road	Mount Waverley	Scotchmans Creek	Flash

Properties at risk from Flooding over-floor within Scotchmans Creek catchment

Properties at risk from Flooding over-floor within Scotchmans Creek catchment						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	13 Esperance Road	Mount Waverley	Scotchmans Creek	Flash
		✓	15 Esperance Road	Mount Waverley	Scotchmans Creek	Flash
		✓	1/27 Fairland Avenue	Oakleigh East	Macrina St Drain	Flash
		✓	2/122 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
		✓	3/122 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
		✓	4/122 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
	✓	✓	5/122 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
		✓	6/122 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
		✓	7/122 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
	✓	✓	1/130 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
	✓	✓	2/130 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
	✓	✓	3/130 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
	✓	✓	4/130 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
		✓	1/131 Ferntree Gully Road	Mount Waverley	Macrina St Drain	Flash
	✓	✓	2/131 Ferntree Gully Road	Mount Waverley	Macrina St Drain	Flash
		✓	1/132 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
		✓	2/132 Ferntree Gully Road	Oakleigh East	Macrina St Drain	Flash
✓	✓	✓	23 Fiander Avenue	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	3/26 Fraser Street	Glen Waverley	Mt View Drain	Flash
	✓	✓	1/554 High Street Road	Mount Waverley	Scotchmans Creek	Flash
	✓	✓	2/554 High Street Road	Mount Waverley	Scotchmans Creek	Flash
	✓	✓	1/605 High Street Road	Mount Waverley	Scotchmans Creek	Flash
		✓	2/605 High Street Road	Mount Waverley	Scotchmans Creek	Flash
		✓	3/605 High Street Road	Mount Waverley	Scotchmans Creek	Flash
		✓	1/607 High Street Road	Mount Waverley	Scotchmans Creek	Flash
		✓	6 Ivanhoe Street	Glen Waverley	Glen Waverley Drain	Flash
		✓	23 Larch Crescent	Mount Waverley	Scotchmans Creek	Flash
		✓	25 Larch Crescent	Mount Waverley	Scotchmans Creek	Flash
	✓	✓	1/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	2/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	3/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	4/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	5/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	6/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	7/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	8/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	9/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	10/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	11/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	12/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	13/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	14/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	15/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash

Properties at risk from Flooding over-floor within Scotchmans Creek catchment

Properties at risk from Flooding over-floor within Scotchmans Creek catchment						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	16/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	17/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	18/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	19/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	20/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	21/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	22/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	23/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	24/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	25/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	26/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	27/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	28/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	29/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	30/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
	✓	✓	31/32-42 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
		✓	1/44 Larch Crescent	Mount Waverley	Tally-Ho Drain	Flash
		✓	3/4 Lee Avenue	Mount Waverley	Scotchmans Creek	Flash
		✓	2 Macrina Street	Oakleigh East	Macrina St Drain	Flash
		✓	7 Marcella Court	Oakleigh East	Macrina St Drain	Flash
		✓	2/1 Mayfield Drive	Mount Waverley	Oakleigh North Drain	Flash
	✓	✓	1/3 Melaleuca Drive	Glen Waverley	Mt View Drain	Flash
	✓	✓	2/3 Melaleuca Drive	Glen Waverley	Mt View Drain	Flash
		✓	2/6 Melaleuca Drive	Glen Waverley	Mt View Drain	Flash
		✓	3 Melanie Court	Mount Waverley	Macrina St Drain	Flash
	✓	✓	16 Melissa Street	Mount Waverley	Macrina St Drain	Flash
✓	✓	✓	1/42 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	2/42 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	3/42 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
		✓	1/44 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
		✓	2/44 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
✓	✓	✓	3/44 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
		✓	4/44 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
		✓	5/44 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
		✓	1/46-48 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
✓	✓	✓	2/46-48 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
✓	✓	✓	3/46-48 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
✓	✓	✓	4/46-48 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
✓	✓	✓	5/46-48 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	47 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
		✓	49-55 Myrtle Street	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	3/31 Orchard Street	Glen Waverley	Tally-Ho Drain	Flash
		✓	2 Rome Court	Glen Waverley	Tally-Ho Drain	Flash

Properties at risk from Flooding over-floor within Scotchmans Creek catchment						
Residential		Commercial	Industrial	Rural	Public Use	
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	3 Rome Court	Glen Waverley	Tally-Ho Drain	Flash
	✓	✓	3 Rowland Court	Glen Waverley	Tally-Ho Drain	Flash
✓	✓	✓	4 Rowland Court	Glen Waverley	Tally-Ho Drain	Flash
		✓	13 Sesame Street	Mount Waverley	Scotchmans Creek	Flash
		✓	1/14-18 Sesame Street	Mount Waverley	Scotchmans Creek	Flash
		✓	2/14-18 Sesame Street	Mount Waverley	Scotchmans Creek	Flash
		✓	4/14-18 Sesame Street	Mount Waverley	Scotchmans Creek	Flash
		✓	13 Settler Court	Glen Waverley	Mt View Drain	Flash
		✓	5/21 Shirley Avenue	Glen Waverley	Scotchmans Creek	Flash
		✓	6/21 Shirley Avenue	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	1/5 Somers Court	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	2/5 Somers Court	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	3/5 Somers Court	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	4/5 Somers Court	Glen Waverley	Scotchmans Creek	Flash
	✓	✓	3 Tawonga Court	Glen Waverley	Tally-Ho Drain	Flash
	✓	✓	4 Tawonga Court	Glen Waverley	Tally-Ho Drain	Flash
	✓	✓	5 Tawonga Court	Glen Waverley	Tally-Ho Drain	Flash
		✓	6 Tawonga Court	Glen Waverley	Tally-Ho Drain	Flash
		✓	2/624 Waverley Road	Glen Waverley	Glen Waverley Drain	Flash
		✓	3/624 Waverley Road	Glen Waverley	Glen Waverley Drain	Flash
	✓	✓	635-645 Waverley Road	Glen Waverley	Glen Waverley Drain	Flash
		✓	647 Waverley Road	Glen Waverley	Glen Waverley Drain	Flash
		✓	651-653 Waverley Road	Glen Waverley	Glen Waverley Drain	Flash
Totals						
11	105	182				

Table C1.3 – Properties at risk of flooding within the Scotchmans Creek catchment in the City of Monash

Isolation

No major isolation risks exist for areas around Glen Waverley, Mount Waverley, Oakleigh East & Chadstone along Scotchmans Creek during a 1% AEP (100yr ARI) event. Some localised short-duration isolation may occur due to flash flooding.

Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. <http://ptv.vic.gov.au/live-travel-updates/>. A map of Public Transport routes within the City of Monash is available via the website at: https://www.ptv.vic.gov.au/assets/default-site/more/maps/Local-area-maps/Metropolitan/c6849f1d8e/33_Monash_LAM.pdf

Apart from the roads outlined below, all other essential infrastructure and services areas around Glen Waverley, Mount Waverley, Oakleigh East & Chadstone 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 Glen Waverley, Mount Waverley, Oakleigh East & Chadstone. Check the VicRoads website for more details: <https://traffic.vicroads.vic.gov.au/>

VicRoads Roads flooded in a 1% AEP (100yr ARI) event
<ul style="list-style-type: none"> Blackburn Road, Glen Waverley near Utah Road and also at Prince Avenue near Syndal Railway Station
<ul style="list-style-type: none"> Clayton Road, Oakleigh East near Fairland Avenue
<ul style="list-style-type: none"> Forster Road, Mount Waverley next to Fairway Reserve car-park north of Monash Freeway underpass
<ul style="list-style-type: none"> High Street Road, Mount Waverley west of Blackburn Road Intersection

Table C1.4 – VicRoads Possible Road Closures during a flooding event

Monash City Council Roads flooded in a 1% AEP (100yr ARI) event			
CHADSTONE	<ul style="list-style-type: none"> Crosby Drive 	MOUNT WAVERLEY	<ul style="list-style-type: none"> Stanley Avenue
<ul style="list-style-type: none"> Park Road 	<ul style="list-style-type: none"> Aristoc Road 	<ul style="list-style-type: none"> Esperance Road 	<ul style="list-style-type: none"> Melissa Street
<ul style="list-style-type: none"> Atkinson Street 	<ul style="list-style-type: none"> Myrtle Street 	<ul style="list-style-type: none"> Bizley Street 	<ul style="list-style-type: none"> Melanie Court
<ul style="list-style-type: none"> Drummond Street 	<ul style="list-style-type: none"> Settler Court 	<ul style="list-style-type: none"> Sesame Street 	OAKLEIGH EAST
<ul style="list-style-type: none"> Cole Crescent 	<ul style="list-style-type: none"> Monterey Avenue 	<ul style="list-style-type: none"> Larch Crescent 	<ul style="list-style-type: none"> Nonna Street
GLEN WAVERLEY	<ul style="list-style-type: none"> Kauri Grove 	<ul style="list-style-type: none"> Baily Street 	<ul style="list-style-type: none"> Highland Avenue
<ul style="list-style-type: none"> Orchard Street 	<ul style="list-style-type: none"> Melaleuca Drive 	<ul style="list-style-type: none"> Elm Grove 	<ul style="list-style-type: none"> Patrick Street
<ul style="list-style-type: none"> Coleman Parade 	<ul style="list-style-type: none"> Kurrajong Avenue 	<ul style="list-style-type: none"> St Clair Crescent 	
<ul style="list-style-type: none"> Fiander Avenue 	<ul style="list-style-type: none"> Fraser Street 	<ul style="list-style-type: none"> Regent Street 	

Table C1.5 – Monash City Council Possible Road Closures during a flooding event

Flood Mitigation

Retarding Basins

Melbourne Water Retarding Basin	On Drain/ Waterway	Area	Storage Capacity	Spillway Crest Level	Full Supply Level	Embankment Crest Height (Level)	ANCOLD Hazard Rating	Properties In Flow Path (dam breach)	Melway Reference
Huntingdale Road, Oakleigh	Scotchmans Creek	6.1 ha	136 ML	57.0m AHD	57.6m AHD	5.1m (57.9m AHD)	Significant	Unavailable	69 K6
Waverley Road, Glen Waverley	Scotchmans Creek	7.2 ha	185 ML	85.1m AHD	86.6m AHD	8.4m (87.0m AHD)	Significant	Unavailable	70 J3

Table C1.5 – Melbourne Water Retarding Basins within the Scotchmans Creek catchment in the City of Monash

No formal Pumping Stations or Levees exist around Glen Waverley, Mount Waverley, Oakleigh East & Chadstone.

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located around Scotchmans Creek is contained within the following two tables.

Sewer Pumping Stations

Sewerage Pumping Station	On Drain / Waterway	Bank / Side of Waterway	Operator	Location	Melway Reference
Cinnabar Avenue	Local Drainage	-	Yarra Valley Water	Cinnabar Avenue, Mount Waverley	61 H9

Table C1.6 – Sewer Pumping Stations within the Scotchmans Creek Catchment in the City of Monash

Sewer Emergency Relief Points

There are Sewer Emergency Relief Points along Scotchmans Creek that will likely affect floodwater conditions should they be activated. Contact the Infrastructure Operator EMLO/Duty Officer for information on any recent or planned releases at a Sewer Emergency Relief Point as part of a Dynamic Risk Assessment (DRA) if work is to be conducted at or downstream of the outlet.

On Drain / Waterway	Bank / Side of Waterway	Operator	Location	Melway Reference
Scotchmans Creek	-	Yarra Valley Water	Baily Reserve, Baily Street, Mount Waverley	61 J11

Table C1.7 – Sewer Emergency Relief Points in the Scotchmans Creek Catchment in the City of Monash

Command, Control & 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 & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along Scotchmans Creek at various retarding basin heights within Monash. 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:

- Scotchmans Creek at Waverley Road Retarding Basin, Glen Waverley
- Scotchmans Creek at Huntingdale Road Retarding Basin, Oakleigh

FLOOD INTELLIGENCE CARD – GLEN WAVERLEY GAUGE, SCOTCHMANS CREEK

Version 3 – June 2019



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.

LOCATION	East side of the Spillway in the Waverley Road Retarding Basin, Glen Waverley
MELWAY REFERENCE:	70 G3
STREAM:	Scotchmans Creek
GAUGE NUMBER:	229639A
GAUGE ZERO:	78.56m AHD
GAUGE TYPE	Stream Level

MINOR:	Not Established
MODERATE:	Not Established
MAJOR	Not Established
EMBANKMENT HEIGHT:	8.4m
TELEMETRIC/MANUAL	Telemetric
HIGHEST RECORDED FLOOD:	7.93m (2 nd January 1984)

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
6.0m	20% AEP (5yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor) 11 Properties in Total</p> <ul style="list-style-type: none"> Units 2-3/4 Batten Street, Glen Waverley 2/1 Beacon Street, Glen Waverley 23 Fiander Avenue, Glen Waverley 1/42, 3/44 & Units 2-5/46-48 Myrtle Street, Glen Waverley 4 Rowland Court, Glen Waverley <p>Water Over Road (over 300mm depth)</p> <ul style="list-style-type: none"> Blackburn Road, Glen Waverley at Prince Avenue near Syndal Railway station Fiander Avenue, Glen Waverley Myrtle Street, Glen Waverley near Bridget Street roundabout Forster Road, Mount Waverley. Breakout over road occurs next to Fairway Reserve car-park north of Freeway underpass 	<p>VicSES State and Region to provide warnings to the community and other agencies.</p> <p>VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident</p>
6.54m		<ul style="list-style-type: none"> Spillway Starts Operating at Retarding Basin 	
6.6m	10% AEP (10yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor) 62 Properties in Total</p>	VicSES to respond as per request by request basis.

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • 7 Allen Street, Glen Waverley • Factories 1-4/13 Aristoc Road, Glen Waverley • Units 1-5/4 Batten Street, Glen Waverley • 2/1 & 1A Beacon Street, Glen Waverley • 10 & 11 Bizley Street, Mount Waverley • 149, Units 1-3/160 & 233-235 Blackburn Road, Glen Waverley • 1/1 Elm Grove, Mount Waverley • 8 & 10 Esperance Road, Mount Waverley • 23 Fiander Avenue, Glen Waverley • Units 1-31/32-42 Larch Crescent, Mount Waverley • 1/42, 3/42, 3/44 & Units 2-5/46-48 Myrtle Street, Glen Waverley • 4 Rowland Court, Glen Waverley • 4 Tawonga Court, Glen Waverley • 635-645 Waverley Road, Glen Waverley <p>Water Over Road (over 300mm depth)</p> <ul style="list-style-type: none"> • Sesame Street, Mount Waverley • Blackburn Road, Glen Waverley at Prince Avenue near Syndal Railway station with significant depths. • Elm Grove, Mount Waverley near High Street Road • Fiander Avenue, Glen Waverley (significant depths) • Myrtle Street, Glen Waverley near Bridget Street roundabout • Forster Road, Mount Waverley. Breakout over road occurs next to Fairway Reserve car-park north of Freeway underpass 	<p>Council to provide road closure signage if required.</p>
6.9m	5% AEP (20yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor) 95 Properties in Total</p> <ul style="list-style-type: none"> • 7 Allen Street, Glen Waverley • Factories 1-4/13, 14-16, 18 & 20 Aristoc Road, Glen Waverley • 23 & 25 Baily Street, Mount Waverley • Units 1-5/4 Batten Street, Glen Waverley • 2/1 & 1A Beacon Street, Glen Waverley • 10, 11 & 12 Bizley Street, Mount Waverley • 149, Units 1-3/160, 233-235, 260A, 262, 264, 266 & 268 Blackburn Road, Glen Waverley • 1/1, 4/1 & Units 7-8/7-11 Elm Grove, Mount Waverley • 8, 10 & 13 Esperance Road, Mount Waverley • 23 Fiander Avenue, Glen Waverley • 3/26 Fraser Street, Glen Waverley • Units 1-2/554 & 1/605 High Street Road, Mount Waverley • Units 1-31/32-42 Larch Crescent, Mount Waverley • Units 1-2/3 Melaleuca Drive, Glen Waverley • Units 1-3/42, 3/44, Units 2-5/46-48 & 47 Myrtle Street, Glen Waverley • 3/31 Orchard Street, Glen Waverley 	<p>VicSES to respond as per request by request basis.</p>

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • 3 & 4 Rowland Court, Glen Waverley • Units 1-4/5 Somers Court, Glen Waverley • 3, 4 & 5 Tawonga Court, Glen Waverley • 635-645 Waverley Road, Glen Waverley <p>Community Infrastructure Flooded</p> <ul style="list-style-type: none"> • Yernga Retirement Village affected by property flooding along southern boundary and car-park • David Crawford Reserve Scout Hall, Glen Waverley affected by property flooding <p>Water Over Road (over 300mm depth)</p> <ul style="list-style-type: none"> • Sesame Street, Mount Waverley • Larch Crescent, Mount Waverley (breakout occurs at two locations either side of Merton Close) • Blackburn Road, Glen Waverley near Utah Road. Also at Prince Avenue near Syndal Railway station with significant depths. • Orchard Street, Glen Waverley at Cherry Street Intersection • Baily Street, Mount Waverley • Elm Grove, Mount Waverley (significant depths near High Street Road) • St Clair Crescent, Mount Waverley • Fiander Avenue, Glen Waverley (significant depths) • Myrtle Street, Glen Waverley near Bridget Street roundabout • Fraser Street, Glen Waverley between Kurrajong Avenue and Melaleuca Drive • Regent Street, Mount Waverley near Waverley Road • Forster Road, Mount Waverley. Breakout over road occurs next to Fairway Reserve car-park north of Freeway underpass 	<p>Retirement village to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>
7.1m	2% AEP (50yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor)</p> <p>133 Properties in Total</p> <ul style="list-style-type: none"> • 7 Allen Street, Glen Waverley • Factories 1-2/12, Factories 1-4/13, 14-16, 17, 18 & 20 Aristoc Road, Glen Waverley • 23 & 25 Baily Street, Mount Waverley • 2 & Units 1-5/4 Batten Street, Glen Waverley • 2/1 & 1A Beacon Street, Glen Waverley • 7, 8, 9, 10, 11 & 12 Bizley Street, Mount Waverley • 149, 151, Units 1-3/160, 162, 233-235, 260, 260A, 262, 264, 266 & 268 Blackburn Road, Glen Waverley • 7 Coleman Parade, Glen Waverley • 1/1, Units 4-6/1, Units 1-4/3, 1/7-11 & Units 4-8/7-11 Elm Grove, Mount Waverley • 8, 9, 10, 11 & 13 Esperance Road, Mount Waverley • 23 Fiander Avenue, Glen Waverley • 3/26 Fraser Street, Glen Waverley • Units 1-2/554 & Units 1-3/605 High Street Road, Mount Waverley • 25 & Units 1-31/32-42 Larch Crescent, Mount Waverley • Units 1-2/3 & 2/6 Melaleuca Drive, Glen Waverley 	VicSES to respond as per request by request basis.

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • Units 1-3/42, Units 2-5/44, Units 1-5/46-48 & 47 Myrtle Street, Glen Waverley • 3/31 Orchard Street, Glen Waverley • 3 & 4 Rowland Court, Glen Waverley • Units 1-2/14-18 & 4/14-18 Sesame Street, Mount Waverley • 13 Settler Court, Glen Waverley • Units 5-6/21 Shirley Avenue, Glen Waverley • Units 1-4/5 Somers Court, Glen Waverley • 3, 4, 5 & 6 Tawonga Court, Glen Waverley • 635-645, 647 & 651-653 Waverley Road, Glen Waverley <p>Community Infrastructure Flooded</p> <ul style="list-style-type: none"> • Monash Aquatic & Recreation Centre, Glen Waverley affected by flooding in car park at front of premises along Waverley Road • Glenallen School, Glen Waverley affected by property flooding to recreational areas to rear of school • Yernga Retirement Village affected by property flooding along southern boundary and car-park • David Crawford Reserve Scout Hall, Glen Waverley affected by property flooding <p>Water Over Road (over 300mm depth)</p> <ul style="list-style-type: none"> • Esperance Road, Mount Waverley • Sesame Street, Mount Waverley (significant depths) • Larch Crescent, Mount Waverley (breakout occurs at two locations either side of Merton Close) • Blackburn Road, Glen Waverley near Utah Road. Also at Prince Avenue near Syndal Railway station with significant depths. • Orchard Street, Glen Waverley at Cherry Street Intersection • Baily Street, Mount Waverley • Elm Grove, Mount Waverley (significant depths along most of road) • High Street Road, Mount Waverley west of Blackburn Road Intersection • St Clair Crescent, Mount Waverley • Coleman Parade, Syndal also affecting car-park to rear of shops • Fiander Avenue, Glen Waverley (significant depths) • Crosby Drive, Glen Waverley near roundabout • Aristoc Road, Glen Waverley • Myrtle Street, Glen Waverley near Bridget Street roundabout (significant depths) • Monterey Avenue, Glen Waverley near Kauri Grove • Kauri Grove, Glen Waverley near Monterey Avenue • Melaleuca Drive, Glen Waverley • Kurrajong Avenue, Glen Waverley • Fraser Street, Glen Waverley between Kurrajong Avenue and Melaleuca Drive • Regent Street, Mount Waverley near Waverley Road (significant depths) • Forster Road, Mount Waverley. Breakout over road occurs next to Fairway Reserve car-park north of Freeway underpass with significant depths. 	<p>Retirement village to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>
7.3m	1% AEP (100yr ARI)	Properties at Flood Risk (Over-Floor)	VicSES to respond as per request by request basis.

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
	Flood Level	<p>154 Properties in Total</p> <ul style="list-style-type: none"> • 7 Allen Street, Glen Waverley • Factories 1-2/12, Factories 1-4/13, 14-16, 17, 18 & 20 Aristoc Road, Glen Waverley • 23, 25 & 2/29 Baily Street, Mount Waverley • 2 & Units 1-5/4 Batten Street, Glen Waverley • 2/1 & 1A Beacon Street, Glen Waverley • 7, 8, 9, 10, 11 & 12 Bizley Street, Mount Waverley • 149, 151, Units 1-3/160, 162, 162, 233-235, 258, 260, 260A, 262, 264, 266 & 268 Blackburn Road, Glen Waverley • 7 & 9 Coleman Parade, Glen Waverley • 1/1, Units 4-6/1, Units 1-4/3, 1/7-11, Units 4-8/7-11, 1/14, 20 & 22 Elm Grove, Mount Waverley • 8, 9, 10, 11, 13 & 15 Esperance Road, Mount Waverley • 23 Fiander Avenue, Glen Waverley • 3/26 Fraser Street, Glen Waverley • Units 1-2/554, Units 1-3/605 & 1/607 High Street Road, Mount Waverley • 6 Ivanhoe Street, Glen Waverley • 23, 25, Units 1-31/32-42 & 1/44 Larch Crescent, Mount Waverley • 3/4 Lee Avenue, Mount Waverley • Units 1-2/3 & 2/6 Melaleuca Drive, Glen Waverley • Units 1-3/42, Units 1-5/44, Units 1-5/46-48, 47 & 49-55 Myrtle Street, Glen Waverley • 3/31 Orchard Street, Glen Waverley • 2 & 3 Rome Court, Glen Waverley • 3 & 4 Rowland Court, Glen Waverley • 13, Units 1-2/14-18 & 4/14-18 Sesame Street, Mount Waverley • 13 Settler Court, Glen Waverley • Units 5-6/21 Shirley Avenue, Glen Waverley • Units 1-4/5 Somers Court, Glen Waverley • 3, 4, 5 & 6 Tawonga Court, Glen Waverley • Units 2-3/624, 635-645, 647 & 651-653 Waverley Road, Glen Waverley <p>Community Infrastructure Flooded</p> <ul style="list-style-type: none"> • Monash Aquatic & Recreation Centre, Glen Waverley affected by flooding in car park at front of premises along Waverley Road • Glenallen School, Glen Waverley affected by property flooding to recreational areas to rear of school • Yernga Retirement Village affected by property flooding along southern boundary and car-park • David Crawford Reserve Scout Hall, Glen Waverley affected by property flooding • Scotchmans Creek Aged Care, Mount Waverley with likely flooding to lower car park and Café. Previous flooding reported as contaminated. <p>Water Over Road (over 300mm depth)</p> <p>Residential streets grouped below are all in close proximity, possible overflow from the Tallo Ho Reserve retarding basin</p> <ul style="list-style-type: none"> ○ Esperance Road, Mount Waverley 	<p>Retirement village to implement their emergency evacuation plan if required</p> <p>Aged care facility to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> ○ Bizley Street, Mount Waverley ○ Sesame Street, Mount Waverley (significant depths) ○ Larch Crescent, Mount Waverley (breakout occurs at two locations either side of Merton Close) ○ Blackburn Road, Glen Waverley near Utah Road. Also at Prince Avenue near Syndal Railway station with significant depths. ○ Orchard Street, Glen Waverley at Cherry Street Intersection ○ Baily Street, Mount Waverley (significant depths) ○ Elm Grove, Mount Waverley (significant depths along most of road) ○ High Street Road, Mount Waverley west of Blackburn Road Intersection ○ St Clair Crescent, Mount Waverley ● Coleman Parade, Syndal also affecting car-park to rear of shops ● Fiander Avenue, Glen Waverley (significant depths) ● Crosby Drive, Glen Waverley near roundabout ● Aristoc Road, Glen Waverley ● Myrtle Street, Glen Waverley near Bridget Street roundabout (significant depths) (back of Glenallen School, industrial area) <ul style="list-style-type: none"> ○ Streets below grouped together behind Aquatic Centre ○ Settler Court, Glen Waverley affected at end of court ○ Monterey Avenue, Glen Waverley near Kauri Grove ○ Kauri Grove, Glen Waverley near Monterey Avenue ○ Melaleuca Drive, Glen Waverley ○ Kurrajong Avenue, Glen Waverley ○ Fraser Street, Glen Waverley between Kurrajong Avenue and Melaleuca Drive ● Regent Street, Mount Waverley near Waverley Road (significant depths) (Scotchmans creek crossing at Waverley Road) ● Forster Road, Mount Waverley. Breakout over road occurs next to Fairway Reserve car-park north of Freeway underpass with significant depths. 	
8.04m		<ul style="list-style-type: none"> ● Full Supply Level Reached at Retarding Basin 	

Table C1.8 – Breakdown of likely consequences at various retarding basin gauge level heights along Scotchmans Creek at Glen Waverley with operational considerations

FLOOD INTELLIGENCE CARD – OAKLEIGH GAUGE, SCOTCHMANS CREEK

Version 3 – June 2019



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

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LOCATION	Huntingdale Road Retarding Basin, Oakleigh
MELWAY REFERENCE:	69 K5
STREAM:	Scotchmans Creek
GAUGE NUMBER:	229640A
GAUGE ZERO:	52.8m AHD
GAUGE TYPE	Stream Level

MINOR:	Not Established
MODERATE:	Not Established
MAJOR	Not Established
EMBANKMENT HEIGHT	5.1m
TELEMETRIC/MANUAL	Telemetric
HIGHEST RECORDED FLOOD:	4.56m (18 th September 1984)

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
4.2m		<ul style="list-style-type: none"> Spillway Starts Operating at Retarding Basin 	
4.61m	20% AEP (5yr ARI) Flood Level	<p>Community Infrastructure Flooded</p> <ul style="list-style-type: none"> Oakleigh Public Golf Course Inundated <p>Water Over Road (above 300mm depth)</p> <ul style="list-style-type: none"> Stanley Avenue, Mount Waverley. Breakout occurs between Briggs Street and Carrol Grove Melissa Street, Mount Waverley at Karen Court Nonna Street, Oakleigh East near Ferntree Gully Road Park Road, Chadstone at bridge near Oakleigh Recreation Centre Cole Crescent, Chadstone 	<p>VicSES State and Region to provide warnings to the community and other agencies.</p> <p>VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident</p> <p>Council to provide road closure signage if required.</p>
4.71m	10% AEP (10yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor)</p> <p>4 Properties in Total</p> <ul style="list-style-type: none"> Units1-4/130 Ferntree Gully Road, Oakleigh East <p>Community Infrastructure Flooded</p> <ul style="list-style-type: none"> Oakleigh Public Golf Course Inundated <p>Water Over Road (above 300mm depth)</p> <ul style="list-style-type: none"> Stanley Avenue, Mount Waverley. Breakout occurs between Briggs Street and Carrol 	<p>VicSES to respond as per request by request basis.</p> <p>Council to provide road closure signage if required.</p>

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		Grove <ul style="list-style-type: none"> • Melissa Street, Mount Waverley at Karen Court • Nonna Street, Oakleigh East near Ferntree Gully Road • Park Road, Chadstone at bridge near Oakleigh Recreation Centre • Drummond Street, Chadstone at Caloola Reserve • Cole Crescent, Chadstone 	
4.8m	5% AEP (20yr ARI) Flood Level	Properties at Flood Risk (Over-Floor) 7 Properties in Total <ul style="list-style-type: none"> • 5/122, Units 1-4/130 & 2/131 Ferntree Gully Road, Oakleigh East • 16 Melissa Street, Mount Waverley Community Infrastructure Flooded <ul style="list-style-type: none"> • Oakleigh Public Golf Course Inundated Water Over Road (above 300mm depth) <ul style="list-style-type: none"> • Stanley Avenue, Mount Waverley. Breakout occurs between Briggs Street and Carrol Grove • Melissa Street, Mount Waverley at Karen Court (significant depths) • Melanie Court, Mount Waverley • Nonna Street, Oakleigh East near Ferntree Gully Road (significant depths) • Clayton Road, Oakleigh East near Fairland Avenue • Park Road, Chadstone at bridge near Oakleigh Recreation Centre • Drummond Street, Chadstone at Caloola Reserve • Cole Crescent, Chadstone 	VicSES to respond as per request by request basis. Council to provide road closure signage if required.
4.94m	2% AEP (50yr ARI) Flood Level	Properties at Flood Risk (Over-Floor) 12 Properties in Total <ul style="list-style-type: none"> • 3/122, Units 5-7/122, Units 1-4/130 & 2/131 Ferntree Gully Road, Oakleigh East • 2 Macrina Street, Oakleigh East • 3 Melanie Court, Mount Waverley • 16 Melissa Street, Mount Waverley Community Infrastructure Flooded <ul style="list-style-type: none"> • Girl Guides, F.E. Hunt Reserve, Oakleigh East affected by property flooding • Oakleigh Public Golf Course Inundated Water Over Road (over 300mm depth) <ul style="list-style-type: none"> • Stanley Avenue, Mount Waverley. Breakout occurs between Briggs Street and Carrol Grove • Melissa Street, Mount Waverley at Karen Court (significant depths) • Melanie Court, Mount Waverley • Nonna Street, Oakleigh East near Ferntree Gully Road (significant depths) • Highland Avenue, Oakleigh East at F.E. Hunt Reserve • Patrick Street, Oakleigh East near Fairland Avenue roundabout • Clayton Road, Oakleigh East near Fairland Avenue 	VicSES to respond as per request by request basis. Council to provide road closure signage if required.

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • Park Road, Chadstone at bridge near Oakleigh Recreation Centre • Drummond Street, Chadstone at Caloola Reserve • Cole Crescent, Chadstone 	
5.11m	1% AEP (100yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor)</p> <p>21 Properties in Total</p> <ul style="list-style-type: none"> • 57 Briggs Street, Mount Waverley • 61 Drummond Street, Chadstone • 1/27 Fairland Avenue, Oakleigh East • Units 2-7/122, Units 1-4/130, Units 1-2/131 & Units 1-2/132 Ferntree Gully Road, Oakleigh East • 2 Macrina Street, Oakleigh East • 7 Marcella Court, Oakleigh East • 3 Melanie Court, Mount Waverley • 16 Melissa Street, Mount Waverley <p>Community Infrastructure Flooded</p> <ul style="list-style-type: none"> • Fioretto Fencing Club, F.E. Hunt Reserve, Oakleigh East affected by property flooding (within Retarding Basin) • Oakleigh Public Golf Course Inundated <p>Water Over Road (over 300mm depth)</p> <ul style="list-style-type: none"> • Stanley Avenue, Mount Waverley. (at Head of Retarding Basin) Breakout occurs between Briggs Street and Carrol Grove • Melissa Street, Mount Waverley at Karen Court (significant depths) (southern border of retarding basin) • Melanie Court, Mount Waverley (southern border of retarding basin) • Nonna Street, Oakleigh East near Ferntree Gully Road (significant depths) • Highland Avenue, Oakleigh East at F.E. Hunt Reserve • Patrick Street, Oakleigh East near Fairland Avenue roundabout • Clayton Road, Oakleigh East near Fairland Avenue • Park Road, Chadstone at bridge near Oakleigh Recreation Centre • Atkinson Street, Chadstone at Caloola Reserve • Drummond Street, Chadstone at Caloola Reserve • Cole Crescent, Chadstone 	<p>VicSES to respond as per request by request basis.</p> <p>Council to provide road closure signage if required.</p>

Table C1.9 – Breakdown of likely consequences at various Oakleigh gauge level heights along Scotchmans Creek with operational considerations

APPENDIX C2 – GARDINERS 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 Gardiners Creek and its stormwater tributaries					
Property at risk of flooding over-floor					
Properties	7	Along Brockhoffs Drain in Ashwood			
Residential	7				
Commercial	0				
Industrial	0				
Public Land	0				
Rural	0				
Community Infrastructure					
Health Facilities	0		Child Care / Kindergartens	1	Ashwood Memorial Kindergarten
Care Facilities	0		Community Venues	1	Mount Waverley Bowling Club
Retirement Villages	1	Waverley Lions Village Inc	Places of Worship	0	
Schools / Colleges	0		Prisons	0	
Essential Infrastructure					
Major Roads	3	Highbury Road; High Street Road; and Huntingdale Road	Police Stations	0	
Major Rail	0		Government Buildings	0	
Bus Routes	2	734; & 767	Sewerage Facilities	1	Emergency Relief Point
Power Facility	0		Levees	0	
Comms Services	0		Drainage Facilities	0	
Emergency Services	0		Airports / Airfields	0	
Tourism / Recreation					
Sports Facilities	1	Riversdale Golf Club	Caravan Parks	0	
Recreation Facilities	1	Gardiners Creek Trail	Camping Grounds	0	
Government Boundaries					
Local Gov't Areas	1	Monash	CMA	1	Port Phillip & Westernport
Adjacent LGAs	2	Whitehorse; & Stonnington	CFA District	0	
SES Unit Area	1	Monash	MFB District	1	Eastern

Table C2.1 – Consequence Summary of 1% AEP flood along and around Gardiners Creek

Gardiners Creek and Damper Creek in the City of Monash are located between 13 and 16km east of Melbourne in an established residential area. Gardiners Creek is the prominent watercourse in the area, flowing from the north through the Municipality of Whitehorse. High Intensity, short duration

rainfall events are the primary concern and cause flash flooding in and around the underground stormwater drainage network and Damper Creek, while more prolonged rainfall may see Gardiners Creek flood. The major concern for the area is High Street Road in Ashwood with its susceptibility to flooding at the Damper Creek overpass just west of Huntingdale Road which has the potential to cut traffic access. See mapping in Appendix F for more insight into flooding in the area.

Warning Times

Warnings are available for flooding expected along Gardiners Creek at Gardiner. For other hydrographic/telemetry (river gauges) within the Municipality, Melbourne Water does not provide any flood warning service at this point, due to the generally short warning times available.

Melbourne Water Hydrographic Monitoring Station	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Ref
Gardiners Creek at Middleborough Road Retarding Basin, Box Hill	229637A	Corner of Middleborough Road and Canterbury Road, Box Hill near Spillway	✓		47 F12
Gardiners Creek at Ashwood	229625A	East side of the Creek adjacent to Hedley Hull Field	✓	✓	60 H11
Gardiners Creek at Gardiner	229624A	South side of the creek at Great Valley Road Bridge, Glen Iris	✓	✓	59 J7

Table C2.2 – Hydrographic Monitoring Stations within the Gardiners Creek catchment

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: <http://www.melbournewater.com.au/waterdata/rainfallandrivereleveldata/Pages/Rainfall-and-river-level-new.aspx>. It is advised that residents monitor the Bureau of Meteorology's website <http://www.bom.gov.au/> and the VicEmergency website <https://emergency.vic.gov.au/> for any thunderstorm, flood or severe weather warnings present for their area.

Properties at Flood Risk

Properties listed in the table below are at risk from flooding over-floor along Gardiners Creek and its stormwater tributaries in the City of Monash. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Gardiners Creek (Water Technology, April 2014) and Damper Creek (Water Technology, November 2009) 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. Information on above ground-floor properties is not available in this list.

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Properties at risk from Flooding over-floor along Gardiners Creek at its stormwater tributaries						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	7 Arthur Street	Ashwood	Brockhoffs Drain	Flash
		✓	19 Arthur Street	Ashwood	Brockhoffs Drain	Flash
		✓	21 Arthur Street	Ashwood	Brockhoffs Drain	Flash
		✓	25 Arthur Street	Ashwood	Brockhoffs Drain	Flash
	✓	✓	38 Ashwood Drive	Ashwood	Brockhoffs Drain	Flash
	✓	✓	1/8 Vannam Drive	Ashwood	Brockhoffs Drain	Flash
	✓	✓	1/9 Vannam Drive	Ashwood	Brockhoffs Drain	Flash
Totals						
0	4	7				

Table C2.3 – Properties at risk of flooding within the Gardiners Creek catchment in the City of Monash

Isolation

No major isolation risks exist for areas around Gardiners Creek in Burwood, Mount Waverley & Ashwood during a 1% AEP (100yr ARI) event. Some localised short-duration isolation may occur due to flash flooding.

Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. <http://ptv.vic.gov.au/live-travel-updates/>. A map of Public Transport routes within the City of Monash is available via the website at: https://www.ptv.vic.gov.au/assets/default-site/more/maps/Local-area-maps/Metropolitan/c6849f1d8e/33_Monash_LAM.pdf

Apart from the roads outlined below, all other essential infrastructure and services areas around Gardiners Creek in Burwood, Mount Waverley & Ashwood 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 Gardiners Creek in Burwood, Mount Waverley & Ashwood. Check the VicRoads website for more details: <https://traffic.vicroads.vic.gov.au/>

VicRoads Roads flooded in a 1% AEP (100yr ARI) event
<ul style="list-style-type: none"> • Highbury Road, Burwood at Montpellier Road
<ul style="list-style-type: none"> • High Street Road, Ashwood at Ashwood College and in Mount Waverley west of Stephensons Road
<ul style="list-style-type: none"> • Huntingdale Road, Mount Waverley at Riversdale Golf Club

Table C2.4 – VicRoads Possible Road Closures during a flooding event

Monash City Council Roads flooded in a 1% AEP (100yr ARI) event	
ASHWOOD	CHADSTONE
<ul style="list-style-type: none"> • Arthur Street 	<ul style="list-style-type: none"> • Power Avenue
<ul style="list-style-type: none"> • Ashwood Drive 	MOUNT WAVERLEY
<ul style="list-style-type: none"> • Malmsbury Drive 	<ul style="list-style-type: none"> • Alive Road
<ul style="list-style-type: none"> • Vannam Drive 	<ul style="list-style-type: none"> • Park Road
<ul style="list-style-type: none"> • Winbirra Parade 	

Table C2.5 – Monash City Council Possible Road Closures during a flooding event

Flood Mitigation

No formal Retarding Basins, Pumping Stations or Levees exist around Gardiners Creek in Burwood, Mount Waverley & Ashwood.

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located around Gardiners Creek in Burwood, Mount Waverley & Ashwood is contained within the following table.

Sewer Emergency Relief Points

There are Sewer Emergency Relief Points along Gardiners Creek that will likely affect floodwater conditions should they be activated. Contact the Infrastructure Operator EMLO/Duty Officer for information on any recent or planned releases at a Sewer Emergency Relief Point as part of a Dynamic Risk Assessment (DRA) if work is to be conducted at or downstream of the outlet.

On Drain / Waterway	Bank / Side of Waterway	Operator	Location	Melway Reference
Gardiners Creek	South	Melbourne Water	Holmesglen Reserve, Mount Waverley	60 G12

Table C2.6 – Sewer Emergency Relief Points in the Gardiners Creek Catchment in the City of Monash

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 & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along Gardiners Creek and its stormwater tributaries at various Creek heights or rain totals within the City of Monash. 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:

- Gardiners Creek at Ashwood
- Gardiners Creek Stormwater Tributaries in Ashwood and Mount Waverley

FLOOD INTELLIGENCE CARD – ASHWOOD GAUGE, GARDINERS CREEK

Version 3 – June 2019



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

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LOCATION	East side of the Creek adjacent to Hedley Hull Field, Winbirra Pde, Ashwood
MELWAY REFERENCE:	60 H11
STREAM:	Gardiners Creek
GAUGE NUMBER:	229625A
GAUGE ZERO:	229625A
GAUGE TYPE	Stream Level

MINOR:	Not Established
MODERATE:	Not Established
MAJOR	Not Established
LEVEE HEIGHT:	N/A
TELEMETRIC/MANUAL	Telemetric
HIGHEST RECORDED FLOOD:	3.31m (31 st December 2009)

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
3.1m	1% AEP (100yr ARI) Flood Level	<p>Properties at Flood Risk 7 Properties in Total</p> <ul style="list-style-type: none"> 83, 85, 87, 89, 91, 93 & 95 Ashwood Drive, Ashwood <p>Community Infrastructure Flooded</p> <ul style="list-style-type: none"> Gardiners Creek trail inundated at various sections along Creek in Ashwood and Burwood <p>Water Over Road (over 300mm depth)</p> <ul style="list-style-type: none"> Highbury Road, Burwood west of Montpellier Road Ashwood Drive, Ashwood 	<p>VicSES State and Region to provide warnings to the community and other agencies.</p> <p>VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident</p> <p>VicSES to respond as per request by request basis. Council to provide road closure signage if required.</p>

Table C2.7 – Breakdown of likely consequences at various Ashwood gauge level heights along Gardiners Creek with operational considerations

FLOOD INTELLIGENCE CARD – GARDINERS CREEK STORMWATER TRIBUTARIES (UNGAUGED)

Version 3 – June 2019



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

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CLOSEST RAIN GAUGE	Gardiners Creek at Ashwood
LOCATION	East side of the Creek adjacent to Hedley Hull Field, Winbirra Pde, Ashwood
MELWAY REF:	60 H11

GAUGE NUMBER	229625A
GAUGE TYPE	Rain
TELEMETRIC/MANUAL	Telemetric

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
11mm in 10 mins; 19mm in 30 mins; 24mm in 1 hour; 30mm in 2 hours; 34mm in 3 hours; or 43mm 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.	20% AEP (5 year ARI)	Properties at Flood Risk (Over-Floor) 0 Properties in Total Water Over Road (over 300mm depth) Damper Creek <ul style="list-style-type: none"> Park Road, Mount Waverley at Damper Creek next to children's playground 	Council to provide road closure signage if required.
14mm in 10 mins; 23mm in 30 mins; 29mm in 1 hour; 35mm in 2 hours; 40mm in 3 hours; or	10% AEP (10 year ARI)	Properties at Flood Risk (Over-Floor) 1 Properties in Total Brockhoffs Drain <ul style="list-style-type: none"> 7 Arthur Street, Ashwood Water Over Road (over 300mm depth) Damper Creek	VicSES to respond as per request by request basis. Council to provide road closure signage if required.

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
<p>50mm 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>		<ul style="list-style-type: none"> • Park Road, Mount Waverley at Damper Creek next to children’s playground • Vannam Drive, Ashwood at Malmsbury Drive 	
<p>16mm in 10 mins; 27mm in 30 mins; 34mm in 1 hour; 41mm in 2 hours; 46mm in 3 hours; or 57mm 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>	5% AEP (20 year ARI)	<p>Properties at Flood Risk (Over-Floor)</p> <p>4 Properties in Total</p> <p>Brockhoffs Drain</p> <ul style="list-style-type: none"> • 7 Arthur Street, Ashwood • 38 Ashwood Drive, Ashwood • 1/8 & 1/9 Vannam Drive, Ashwood <p>Water Over Road (over 300mm depth)</p> <p>Damper Creek</p> <ul style="list-style-type: none"> • Park Road, Mount Waverley at Damper Creek next to children’s playground • Vannam Drive, Ashwood at Malmsbury Drive <p>Winbirra Pde Drain</p> <ul style="list-style-type: none"> • Power Avenue, Chadstone • Winbirra Parade, Ashwood 	<p>VicSES to respond as per request by request basis.</p> <p>Council to provide road closure signage if required.</p>
<p>20mm in 10 mins; 33mm in 30 mins; 41mm in 1 hour; 49mm in 2 hours; 55mm in 3 hours; or 68mm 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>	2% AEP (50 year ARI)	<p>Properties at Flood Risk (Over-Floor)</p> <p>5 Properties in Total</p> <p>Brockhoffs Drain</p> <ul style="list-style-type: none"> • 7 & 21 Arthur Street, Ashwood • 38 Ashwood Drive, Ashwood • 1/8 & 1/9 Vannam Drive, Ashwood <p>Community Infrastructure Flooded</p> <p>Damper Creek</p> <ul style="list-style-type: none"> • Mount Waverley Bowling Club • Riversdale Golf Club flooded along northern lakes sections <p>Winbirra Pde Drain</p> <ul style="list-style-type: none"> • Waverley Lions Village Retirement Community on Winbirra Pde, Ashwood <p>Water Over Road (over 300mm depth)</p> <p>Damper Creek</p> <ul style="list-style-type: none"> • Park Road, Mount Waverley at Damper Creek next to children’s playground 	<p>VicSES to respond as per request by request basis.</p> <p>Nursing home to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • High Street Road, Mount Waverley west of Stephensons Road Intersection and west of Huntingdale Road Intersection • Huntingdale Road, Mount Waverley south of High Street Road Intersection • Vannam Drive, Ashwood at Malmsbury Drive • Malmsbury Drive, Ashwood along majority of road <p>Winbirra Pde Drain</p> <ul style="list-style-type: none"> • Power Avenue, Chadstone • Winbirra Parade, Ashwood 	
<p>24mm in 10 mins; 39mm in 30 mins; 47mm in 1 hour; 56mm in 2 hours; 62mm in 3 hours; or 77mm 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>	<p>Properties at Flood Risk (Over-Floor)</p> <p>7 Properties in Total</p> <p>Brockhoffs Drain</p> <ul style="list-style-type: none"> • 7, 19, 21 & 25 Arthur Street, Ashwood • 38 Ashwood Drive, Ashwood • 1/8 & 1/9 Vannam Drive, Ashwood <p>Community Infrastructure Flooded</p> <p>Brockhoffs Drain</p> <ul style="list-style-type: none"> • Ashwood Memorial Kindergarten cnr Arthur St and Montpellier Rd may be impacted with flooding along Arthur St <p>Damper Creek</p> <ul style="list-style-type: none"> • Mount Waverley Bowling Club • Riversdale Golf Club flooded along northern lakes sections <p>Winbirra Pde Drain</p> <ul style="list-style-type: none"> • Waverley Lions Village Retirement Community on Winbirra Pde, Ashwood with flooding under the rail bridge, likely blocking Winbirra Parade <p>Water Over Road (over 300mm depth)</p> <p>Damper Creek</p> <ul style="list-style-type: none"> • Park Road, Mount Waverley at Damper Creek next to children's playground • High Street Road, Mount Waverley west of Stephensons Road Intersection and west of Huntingdale Road Intersection • Alive Road, Mount Waverley. South-bound lane affected near Mt Waverley Bowling Club • Huntingdale Road, Mount Waverley south of High Street Road Intersection • Vannam Drive, Ashwood at Malmsbury Drive • Malmsbury Drive, Ashwood along majority of road <p>Winbirra Pde Drain</p> <ul style="list-style-type: none"> • Power Avenue, Chadstone • Winbirra Parade, Ashwood 	<p>VicSES to respond as per request by request basis.</p> <p>Nursing home to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>

Table C2.8 – Breakdown of possible consequences at various rainfall intensities along Gardiners Creek's stormwater tributaries in Monash with operational considerations

APPENDIX C3 – MURRUMBEENA DRAIN SYSTEM 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 within the Murrumbeena Drainage System in Monash					
Property (at risk from flooding over-floor)					
Properties	135				
Residential	101				
Commercial	0				
Industrial	34				
Public Land	0				
Rural	0				
Community Infrastructure					
Health Facilities	0		Child Care / Kindergartens	1	Brine Street Child Care
Care Facilities	0		Community Venues	0	
Retirement Villages	0		Places of Worship	0	
Schools / Colleges	0		Prisons	0	
Essential Infrastructure					
Major Roads	1	North Road	Police Stations	0	
Major Rail	0		Government Buildings	0	
Bus Routes	2	630 & 978	Sewerage Facilities	0	
Power Facility	0		Levees	0	
Comms Services	0		Drainage Facilities	0	
Emergency Services	0		Airports / Airfields	0	
Tourism / Recreation					
Sports Facilities	0		Caravan Parks	0	
Recreation Facilities	0		Camping Grounds	0	
Government Boundaries					
Local Gov't Areas	1	Monash	CMA	1	Port Phillip & Westernport
Adjacent LGAs	1	Glen Eira	CFA District	0	
SES Unit Area	1	Monash	MFB District	1	Eastern

Table C3.1 – Consequence Summary of 1% AEP flood along the Oakleigh Drain system

Oakleigh, Oakleigh South & Hughesdale are located approximately 15km south east of Melbourne in a mixed residential, light industrial and business zone. Two main underground stormwater drains service the area both flowing from east to west where they combine in the City of Glen Eira before discharging into Gardiners Creek. High Intensity, short duration rainfall events are the primary concern and cause flash flooding in and around the area. North Road in Hughesdale is the only major traffic thoroughfare at risk from flooding. See mapping in Appendix F for more insight into flooding in the area.

Warning Times

Neither the Bureau of Meteorology nor Melbourne Water currently provides flood forecasts for the Oakleigh Drain. All flood response actions must therefore be driven by rainfall and / or river level observations. A telemetered rain gauge is located at Oakleigh South.

Melbourne Water Hydrographic Monitoring Station	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Ref
Oakleigh South	586185	Moorabbin Reservoir, Warrigal Road, Bentleigh East		✓	78 D1

Table C3.2 – Hydrographic Monitoring Stations within the Oakleigh Drain catchment

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: <http://www.melbournewater.com.au/waterdata/rainfallandrivervelldata/Pages/Rainfall-and-river-level-new.aspx>. It is advised that residents monitor the Bureau of Meteorology's website <http://www.bom.gov.au/> and the VicEmergency website <https://emergency.vic.gov.au/> for any thunderstorm, flood or severe weather warnings present for their area.

Areas of Flood Risk

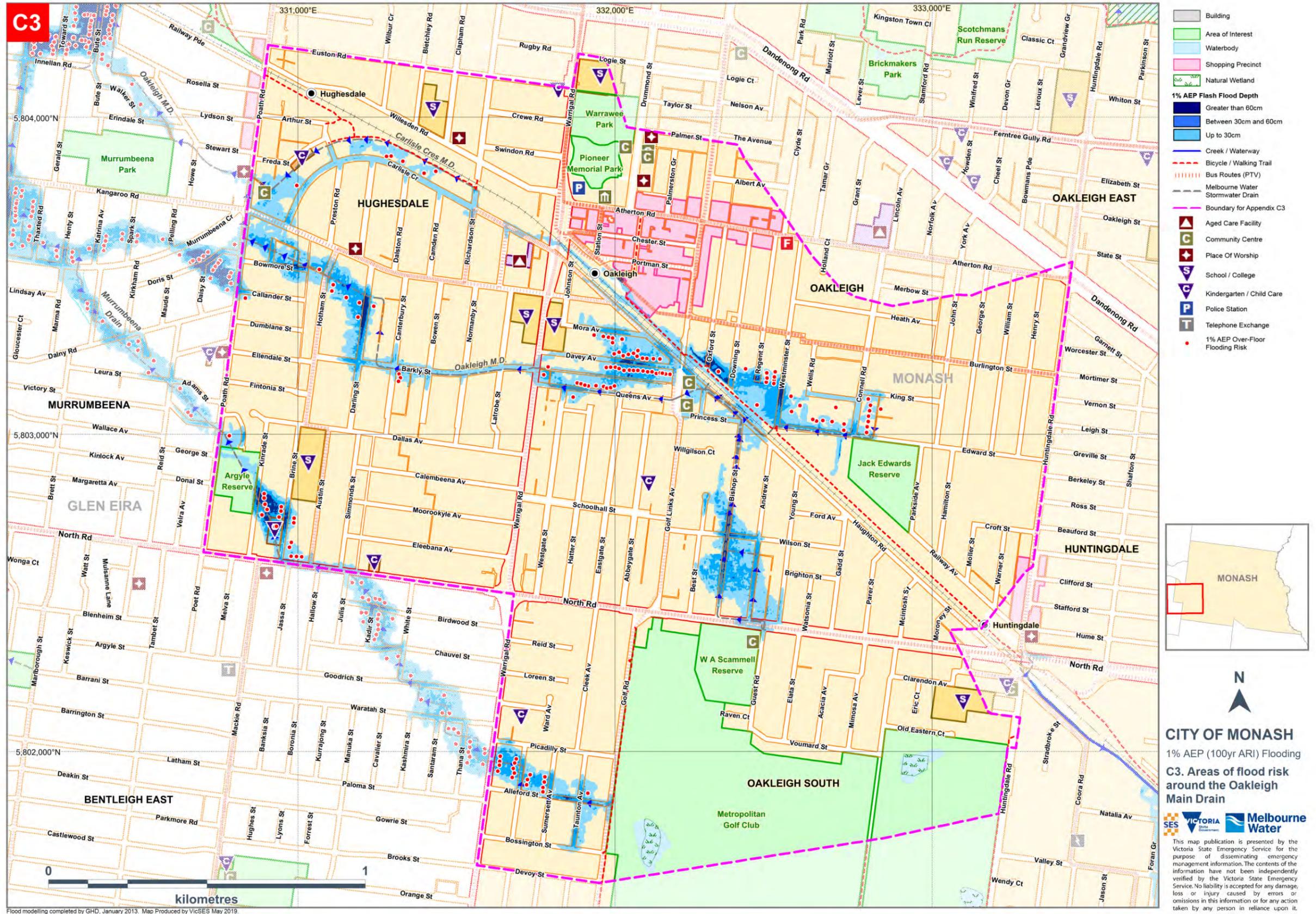


Figure C3 – Areas of flood risk around Oakleigh, Oakleigh South & Hughesdale in the City of Monash

Properties at Flood Risk

Properties listed in the table below are at risk from flooding over-floor around the Oakleigh Drain system. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Murrumbeena Main Drain (GHD, January 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 Flooding over-floor in Murrumbeena Drainage System						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	8 Brine Street	Hughesdale	Murrumbeena Drain	Flash
		✓	10 Brine Street	Hughesdale	Murrumbeena Drain	Flash
		✓	18 Brine Street	Hughesdale	Murrumbeena Drain	Flash
		✓	20 Brine Street	Hughesdale	Murrumbeena Drain	Flash
		✓	25 Brine Street	Hughesdale	Murrumbeena Drain	Flash
		✓	27 Brine Street	Hughesdale	Murrumbeena Drain	Flash
		✓	29 Brine Street	Hughesdale	Murrumbeena Drain	Flash
		✓	31-33 Brine Street	Hughesdale	Murrumbeena Drain	Flash
✓	✓	✓	26 Canterbury Street	Hughesdale	Oakleigh Main Drain	Flash
	✓	✓	28 Canterbury Street	Hughesdale	Oakleigh Main Drain	Flash
		✓	30 Canterbury Street	Hughesdale	Oakleigh Main Drain	Flash
		✓	9 Carlisle Crescent	Hughesdale	Carlisle Crescent Drain	Flash
	✓	✓	47 Carlisle Crescent	Hughesdale	Carlisle Crescent Drain	Flash
		✓	49 Carlisle Crescent	Hughesdale	Carlisle Crescent Drain	Flash
	✓	✓	53 Carlisle Crescent	Hughesdale	Carlisle Crescent Drain	Flash
		✓	61 Carlisle Crescent	Hughesdale	Carlisle Crescent Drain	Flash
		✓	2/65 Carlisle Crescent	Hughesdale	Carlisle Crescent Drain	Flash
		✓	38 Connell Road	Oakleigh	Oakleigh Main Drain	Flash
		✓	40 Connell Road	Oakleigh	Oakleigh Main Drain	Flash
		✓	42 Connell Road	Oakleigh	Oakleigh Main Drain	Flash
		✓	43-45 Connell Road	Oakleigh	Oakleigh Main Drain	Flash
		✓	44 Connell Road	Oakleigh	Oakleigh Main Drain	Flash
		✓	46 Connell Road	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	47 Connell Road	Oakleigh	Oakleigh Main Drain	Flash
✓	✓	✓	48 Connell Road	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	49 Connell Road	Oakleigh	Oakleigh Main Drain	Flash
		✓	8 Darling Street	Hughesdale	Oakleigh Main Drain	Flash

Properties at risk from Flooding over-floor in Murrumbeena Drainage System

Properties at risk from Flooding over-floor in Murrumbeena Drainage System						
Residential		Commercial	Industrial	Rural	Public Use	
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	9 Darling Street	Hughesdale	Oakleigh Main Drain	Flash
	✓	✓	1/15 Darling Street	Hughesdale	Oakleigh Main Drain	Flash
	✓	✓	23 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	24 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	25 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	26 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	27 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	28 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	29 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	30 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	31 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	32 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	1/33 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	2/33 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	34 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	35 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	36 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	37 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	38 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	39 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	40 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	41 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	42 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	44 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	46 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	48 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	48A Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	50 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	52 Davey Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	35 Downing Street	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	37 Downing Street	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	1-9 Edward Street	Oakleigh	Oakleigh Main Drain	Flash
		✓	11 Edward Street	Oakleigh	Oakleigh Main Drain	Flash
		✓	13 Edward Street	Oakleigh	Oakleigh Main Drain	Flash
		✓	15-17 Edward Street	Oakleigh	Oakleigh Main Drain	Flash
		✓	3 Hotham Street	Hughesdale	Oakleigh Main Drain	Flash
		✓	4 Hotham Street	Hughesdale	Oakleigh Main Drain	Flash
		✓	1/6 Hotham Street	Hughesdale	Oakleigh Main Drain	Flash
		✓	2/6 Hotham Street	Hughesdale	Oakleigh Main Drain	Flash

Properties at risk from Flooding over-floor in Murrumbeena Drainage System

Properties at risk from Flooding over-floor in Murrumbeena Drainage System						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	3/6 Hotham Street	Hughesdale	Oakleigh Main Drain	Flash
		✓	4/6 Hotham Street	Hughesdale	Oakleigh Main Drain	Flash
		✓	5/6 Hotham Street	Hughesdale	Oakleigh Main Drain	Flash
		✓	6/6 Hotham Street	Hughesdale	Oakleigh Main Drain	Flash
		✓	7/6 Hotham Street	Hughesdale	Oakleigh Main Drain	Flash
		✓	4/8 Hotham Street	Hughesdale	Oakleigh Main Drain	Flash
✓	✓	✓	2D King Street	Oakleigh	Oakleigh Main Drain	Flash
✓	✓	✓	2C King Street	Oakleigh	Oakleigh Main Drain	Flash
✓	✓	✓	2F King Street	Oakleigh	Oakleigh Main Drain	Flash
✓	✓	✓	2A King Street	Oakleigh	Oakleigh Main Drain	Flash
✓	✓	✓	2B King Street	Oakleigh	Oakleigh Main Drain	Flash
✓	✓	✓	2E King Street	Oakleigh	Oakleigh Main Drain	Flash
		✓	22 Kinrade Street	Hughesdale	Murrumbeena Drain	Flash
		✓	24A Kinrade Street	Hughesdale	Murrumbeena Drain	Flash
		✓	24 Kinrade Street	Hughesdale	Murrumbeena Drain	Flash
		✓	26 Kinrade Street	Hughesdale	Murrumbeena Drain	Flash
		✓	28 Kinrade Street	Hughesdale	Murrumbeena Drain	Flash
		✓	8 Mora Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	12 Mora Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	14 Mora Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	1/16 Mora Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	2/16 Mora Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	20 Mora Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	1049 North Road	Hughesdale	Murrumbeena Drain	Flash
		✓	1051 North Road	Hughesdale	Murrumbeena Drain	Flash
		✓	1053 North Road	Hughesdale	Murrumbeena Drain	Flash
		✓	234 Poath Road	Hughesdale	Murrumbeena Drain	Flash
		✓	11 Queens Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	12 Queens Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	13 Queens Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	15 Queens Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	17 Queens Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	21 Queens Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	25 Queens Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	27 Queens Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	29 Queens Avenue	Oakleigh	Oakleigh Main Drain	Flash
		✓	31 Queens Avenue	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	51 Regent Street	Oakleigh	Oakleigh Main Drain	Flash
		✓	56 Regent Street	Oakleigh	Oakleigh Main Drain	Flash

Properties at risk from Flooding over-floor in Murrumbeena Drainage System						
Residential		Commercial	Industrial	Rural	Public Use	
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	58 Regent Street	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	60 Regent Street	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	5 Selworthy Avenue	Oakleigh South	Murrumbeena Drain	Flash
	✓	✓	7 Selworthy Avenue	Oakleigh South	Murrumbeena Drain	Flash
	✓	✓	9 Selworthy Avenue	Oakleigh South	Murrumbeena Drain	Flash
	✓	✓	11 Selworthy Avenue	Oakleigh South	Murrumbeena Drain	Flash
	✓	✓	12 Selworthy Avenue	Oakleigh South	Murrumbeena Drain	Flash
	✓	✓	13 Selworthy Avenue	Oakleigh South	Murrumbeena Drain	Flash
	✓	✓	14 Selworthy Avenue	Oakleigh South	Murrumbeena Drain	Flash
	✓	✓	16 Selworthy Avenue	Oakleigh South	Murrumbeena Drain	Flash
		✓	11 Sumersett Avenue	Oakleigh South	Murrumbeena Drain	Flash
	✓	✓	13 Sumersett Avenue	Oakleigh South	Murrumbeena Drain	Flash
	✓	✓	15 Sumersett Avenue	Oakleigh South	Murrumbeena Drain	Flash
		✓	17 Sumersett Avenue	Oakleigh South	Murrumbeena Drain	Flash
		✓	16 Taunton Avenue	Oakleigh South	Murrumbeena Drain	Flash
		✓	88 Warrigal Road	Oakleigh	Oakleigh Main Drain	Flash
		✓	90-94 Warrigal Road	Oakleigh	Oakleigh Main Drain	Flash
		✓	254 Warrigal Road	Oakleigh South	Murrumbeena Drain	Flash
	✓	✓	256 Warrigal Road	Oakleigh South	Murrumbeena Drain	Flash
		✓	258 Warrigal Road	Oakleigh South	Murrumbeena Drain	Flash
	✓	✓	260 Warrigal Road	Oakleigh South	Murrumbeena Drain	Flash
		✓	27 Wells Road	Oakleigh	Oakleigh Main Drain	Flash
		✓	42 Westminster Street	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	44 Westminster Street	Oakleigh	Oakleigh Main Drain	Flash
✓	✓	✓	46 Westminster Street	Oakleigh	Oakleigh Main Drain	Flash
		✓	51 Westminster Street	Oakleigh	Oakleigh Main Drain	Flash
		✓	55 Westminster Street	Oakleigh	Oakleigh Main Drain	Flash
	✓	✓	57 Westminster Street	Oakleigh	Oakleigh Main Drain	Flash
✓	✓	✓	59 Westminster Street	Oakleigh	Oakleigh Main Drain	Flash
✓	✓	✓	61 Westminster Street	Oakleigh	Oakleigh Main Drain	Flash
Totals						
11	48	135				

Table C3.3 – Properties at risk of flooding within the Oakleigh Drain catchment in the City of Monash

Isolation

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

Essential Infrastructure

During an event, see the Public Transport Victoria’s Website for details on delays or alterations to services. <http://ptv.vic.gov.au/live-travel-updates/>. A map of Public Transport routes within the City of Monash is available via the website at: https://www.ptv.vic.gov.au/assets/default-site/more/maps/Local-area-maps/Metropolitan/c6849f1d8e/33_Monash_LAM.pdf

Apart from the roads outlined below, all other essential infrastructure and services areas around Oakleigh, Hughesdale & Oakleigh South 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 Oakleigh, Hughesdale & Oakleigh South. Check the VicRoads website for more details: <https://traffic.vicroads.vic.gov.au/>

VicRoads Roads flooded in a 1% AEP (100yr ARI) event
<ul style="list-style-type: none"> North Road, Hughesdale west of Warrigal Road

Table C3.4 – VicRoads Possible Road Closures during a flooding event

Monash City Council Roads flooded in a 1% AEP (100yr ARI) event		
HUGHESDALE	OAKLEIGH	
		<ul style="list-style-type: none"> Queens Avenue
<ul style="list-style-type: none"> Ardour Street 	<ul style="list-style-type: none"> Andrew Street 	<ul style="list-style-type: none"> Regent Street
<ul style="list-style-type: none"> Barkly Street 	<ul style="list-style-type: none"> Bishop Street 	<ul style="list-style-type: none"> Westminister Street
<ul style="list-style-type: none"> Bowmore Street 	<ul style="list-style-type: none"> Davey Avenue 	<ul style="list-style-type: none"> Wilson Street
<ul style="list-style-type: none"> Brine Street 	<ul style="list-style-type: none"> Downing Street 	OAKLEIGH SOUTH
<ul style="list-style-type: none"> Carlisle Crescent 	<ul style="list-style-type: none"> Haughton Road 	<ul style="list-style-type: none"> Alleford Street
<ul style="list-style-type: none"> Darling Street 	<ul style="list-style-type: none"> Mona Walk 	<ul style="list-style-type: none"> Selworthy Avenue
<ul style="list-style-type: none"> Kelvinside Street 	<ul style="list-style-type: none"> Mora Avenue 	<ul style="list-style-type: none"> Sumerset Avenue
<ul style="list-style-type: none"> Kinrade Street 	<ul style="list-style-type: none"> Oxford Street 	<ul style="list-style-type: none"> Taunton Avenue

Table C3.5 – Monash City Council Possible Road Closures during a flooding event

Flood Mitigation

No formal Retarding Basins, Pumping Stations or Levees exist around Oakleigh, Hughesdale & Oakleigh South.

Sewerage Infrastructure

There is no sewerage Infrastructure expected to be within the vicinity of floodwaters during severe flood events around Oakleigh, Hughesdale & Oakleigh South.

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 & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along the Murrumbeena Drainage System at various rain totals within Monash. 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:

- Murrumbeena Drainage System, Oakleigh

FLOOD INTELLIGENCE CARD – MURRUMBEENA DRAINAGE SYSTEM, OAKLEIGH (UNGAUGED)

Version 3 – June 2019



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

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CLOSEST RAIN GAUGE	Oakleigh South
LOCATION	Moorabbin Reservoir, Warrigal Road, Bentleigh East
MELWAY REF:	78 D1

GAUGE NUMBER	586185
GAUGE TYPE	Rain
TELEMETRIC/MANUAL	Telemetric

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
11mm in 10 mins; 19mm in 30 mins; 24mm in 1 hour; 30mm in 2 hours; 34mm in 3 hours; or 43mm 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.	20% AEP (5 year ARI)	Properties at Flood Risk (Over-Floor) 11 Properties in Total <ul style="list-style-type: none"> 26 Canterbury Street, Hughesdale 48 Connell Road, Oakleigh Factories 2A-F King Street, Oakleigh 46, 59 & 61 Westminster Street, Oakleigh Water Over Road (over 300mm depth) Oakleigh Main Drain <ul style="list-style-type: none"> Westminster Street, Oakleigh near Edward Street Oxford Street, Oakleigh near Railway Line Darling Street, Hughesdale Bowmore Street, Hughesdale 	VicSES State and Region to provide warnings to the community and other agencies. VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident Council to provide road closure signage if required.
14mm in 10 mins; 23mm in 30 mins; 29mm in 1 hour; 35mm in 2 hours; 40mm in 3 hours; or	10% AEP (10 year ARI)	Properties at Flood Risk (Over-Floor) 32 Properties in Total Oakleigh Drain <ul style="list-style-type: none"> 26 Canterbury Street, Hughesdale 47, 48 & 49 Connell Road, Oakleigh 30, 32, 34, 37, 40 & 41 Davey Avenue, Oakleigh 	VicSES to respond as per request by request basis.

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
<p>50mm 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>		<ul style="list-style-type: none"> • 35 & 37 Downing Street, Oakleigh • 1-9 Edward Street, Oakleigh • Factories 2A-F King Street, Oakleigh • 51 & 60 Regent Street, Oakleigh • 46, 57, 59 & 61 Westminster Street, Oakleigh <p>Murrumbeena Drain</p> <ul style="list-style-type: none"> • 7, 9, 11, 13 & 14 Selworthy Avenue, Oakleigh South • 13 Sumersett Avenue, Oakleigh South • 260 Warrigal Road, Oakleigh South <p>Water Over Road (over 300mm depth)</p> <p>Bishop Street Drain</p> <ul style="list-style-type: none"> • Bishop Street, Oakleigh between Wilson Street and North Road <p>Oakleigh Main Drain</p> <ul style="list-style-type: none"> • Westminster Street, Oakleigh near Edward Street • Oxford Street, Oakleigh near Railway Line • Oakleigh Central Underpass near Oakleigh Railway Station (significant depths) • Darling Street, Hughesdale • Bowmore Street, Hughesdale <p>Murrumbeena Drain</p> <ul style="list-style-type: none"> • Alleford Street, Oakleigh South 	<p>Council to provide road closure signage if required.</p>
<p>16mm in 10 mins; 27mm in 30 mins; 34mm in 1 hour; 41mm in 2 hours; 46mm in 3 hours; or 57mm 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>5% AEP (20 year ARI)</p>	<p>Properties at Flood Risk (Over-Floor)</p> <p>48 Properties in Total</p> <p>Oakleigh Drain</p> <ul style="list-style-type: none"> • 26 & 28 Canterbury Street, Hughesdale • 47, 48 & 49 Connell Road, Oakleigh • 1/15 Darling Street, Hughesdale • 23, 30, 31, 32, 34, 36, 37, 38, 40 & 41 Davey Avenue, Oakleigh • 35 & 37 Downing Street, Oakleigh • 1-9 Edward Street, Oakleigh • Factories 2A-F King Street, Oakleigh • 25 & 27 Queens Avenue, Oakleigh • 51 & 60 Regent Street, Oakleigh • 44, 46, 57, 59 & 61 Westminster Street, Oakleigh <p>Murrumbeena Drain</p> <ul style="list-style-type: none"> • 5, 7, 9, 11, 12, 13, 14 & 16 Selworthy Avenue, Oakleigh South • 13 & 15 Sumersett Avenue, Oakleigh South • 256 & 260 Warrigal Road, Oakleigh South <p>Carlisle Crescent Main Drain</p> <ul style="list-style-type: none"> • 47 & 53 Carlisle Crescent, Hughesdale 	<p>VicSES to respond as per request by request basis.</p> <p>Council to provide road closure signage if required.</p>

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<p>Water Over Road (over 300mm depth)</p> <p>Bishop Street Drain</p> <ul style="list-style-type: none"> • Andrew Street, Oakleigh between Wilson Street and North Road • Bishop Street, Oakleigh between Wilson Street and North Road • Wilson Street, Oakleigh between Bishop and Andrew Streets <p>Oakleigh Main Drain</p> <ul style="list-style-type: none"> • Edward Street, Oakleigh between Westminister Street and Connell Road • Westminister Street, Oakleigh near Edward Street • Regent Street, Oakleigh near Railway Line • Downing Street, Oakleigh near Railway Line • Oxford Street, Oakleigh near Railway Line • Haughton Road, Oakleigh at Hanover Street Bridge • Queens Avenue, Oakleigh at Westgate Street • Mona Walk, Oakleigh • Davey Avenue, Oakleigh • Darling Street, Hughesdale • Bowmore Street, Hughesdale <p>Carlisle Crescent Main Drain</p> <ul style="list-style-type: none"> • Carlisle Crescent, Hughesdale near Kangaroo Road <p>Murrumbeena Drain</p> <ul style="list-style-type: none"> • Taunton Avenue, Oakleigh South • Alleford Street, Oakleigh South • Sumersett Avenue, Oakleigh South • Brine Street, Hughesdale 	
<p>20mm in 10 mins; 33mm in 30 mins; 41mm in 1 hour; 49mm in 2 hours; 55mm in 3 hours; or 68mm 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>2% AEP (50 year ARI)</p>	<p>Properties at Flood Risk (Over-Floor)</p> <p>95 Properties in Total</p> <p>Oakleigh Drain</p> <ul style="list-style-type: none"> • 26 & 28 Canterbury Street, Hughesdale • 46, 47, 48 & 49 Connell Road, Oakleigh • 9 & 1/15 Darling Street, Hughesdale • 23, 25, 26, 28, 29, 30, 31, 32, 1/33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 44, 48, 48A, 50 & 52 Davey Avenue, Oakleigh • 35 & 37 Downing Street, Oakleigh • 1-9 & 11 Edward Street, Oakleigh • 3, 4, Units 1-7/6 & 4/8 Hotham Street, Hughesdale • Factories 2A-F King Street, Oakleigh • 12 & 20 Mora Avenue, Oakleigh • 11, 15, 21, 25, 27 & 31 Queens Avenue, Oakleigh • 51, 56, 58 & 60 Regent Street, Oakleigh 	<p>VicSES to respond as per 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"> • 90-94 Warrigal Road, Oakleigh • 42, 44, 46, 51, 55, 57, 59 & 61 Westminster Street, Oakleigh • Murrumbeena Drain • 25, 27 & 31-33 Brine Street, Hughesdale • 22, 24, 24A & 26 Kinrade Street, Hughesdale • 5, 7, 9, 11, 12, 13, 14 & 16 Selworthy Avenue, Oakleigh South • 13 & 15 Sumersett Avenue, Oakleigh South • 16 Taunton Avenue, Oakleigh South • 254, 256 & 260 Warrigal Road, Oakleigh South • Carlisle Crescent Main Drain • 47, 53, 61 & 2/65 Carlisle Crescent, Hughesdale • Community Infrastructure Flooded • Murrumbeena Drain • Brine Street Child Care, Hughesdale likely flooded over-floor • Water Over Road (over 300mm depth) • Bishop Street Drain • Andrew Street, Oakleigh between Wilson Street and North Road • Bishop Street, Oakleigh between Wilson Street and North Road • Wilson Street, Oakleigh between Bishop and Andrew Streets • Oakleigh Main Drain • Edward Street, Oakleigh between Westminster Street and Connell Road • Westminster Street, Oakleigh near Edward Street • Regent Street, Oakleigh near Railway Line • Downing Street, Oakleigh near Railway Line • Oxford Street, Oakleigh near Railway Line • Haughton Road, Oakleigh at Hanover Street Bridge • Queens Avenue, Oakleigh at Westgate Street • Mona Walk, Oakleigh • Davey Avenue, Oakleigh • Mora Avenue, Oakleigh • Barkly Street, Hughesdale at Darling Street • Darling Street, Hughesdale • Bowmore Street, Hughesdale • Ardour Street, Hughesdale • Kelvinside Street, Hughesdale • Carlisle Crescent Main Drain • Carlisle Crescent, Hughesdale near Kangaroo Road • Murrumbeena Drain • Taunton Avenue, Oakleigh South 	<p>Child care centre to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> Alleford Street, Oakleigh South Sumersett Avenue, Oakleigh South Selworthy Avenue, Oakleigh South Brine Street, Hughesdale Kinrade Street, Hughesdale 	
<p>24mm in 10 mins; 39mm in 30 mins; 47mm in 1 hour; 56mm in 2 hours; 62mm in 3 hours; or 77mm 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>	1% AEP (100 year ARI)	<p>Properties at Flood Risk (Over-Floor) 135 Properties in Total Oakleigh Drain</p> <ul style="list-style-type: none"> 26, 28 & 30 Canterbury Street, Hughesdale 38, 40, 42, 43-45, 44, 46, 47, 48 & 49 Connell Road, Oakleigh 8, 9 & 1/15 Darling Street, Hughesdale 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 1/33, 2/33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 44, 46, 48, 48A, 50 & 52 Davey Avenue, Oakleigh 35 & 37 Downing Street, Oakleigh 1-9, 11, 13 & 15-17 Edward Street, Oakleigh 3, 4, Units 1-7/6 & 4/8 Hotham Street, Hughesdale Factories 2A-F King Street, Oakleigh 8, 12, 14, Units 1-2/16 & 20 Mora Avenue, Oakleigh 11, 12, 13, 15, 17, 21, 25, 27, 29 & 31 Queens Avenue, Oakleigh 51, 56, 58 & 60 Regent Street, Oakleigh 88 & 90-94 Warrigal Road, Oakleigh 27 Wells Road, Oakleigh 42, 44, 46, 51, 55, 57, 59 & 61 Westminster Street, Oakleigh <p>Murrumbeena Drain</p> <ul style="list-style-type: none"> 8, 10, 18, 20, 25, 27, 29 & 31-33 Brine Street, Hughesdale 22, 24, 24A, 26 & 28 Kinrade Street, Hughesdale 1049, 1051 & 1053 North Road, Hughesdale 234 Poath Road, Hughesdale 5, 7, 9, 11, 12, 13, 14 & 16 Selworthy Avenue, Oakleigh South 11, 13, 15 & 17 Sumersett Avenue, Oakleigh South 16 Taunton Avenue, Oakleigh South 254, 256, 258 & 260 Warrigal Road, Oakleigh South <p>Carlisle Crescent Main Drain</p> <ul style="list-style-type: none"> 9, 47, 49, 53, 61 & 2/65 Carlisle Crescent, Hughesdale <p>Community Infrastructure Flooded</p> <p>Murrumbeena Drain</p> <ul style="list-style-type: none"> Brine Street Child Care, Hughesdale likely flooded over-floor <p>Water Over Road (over 300mm depth)</p> <p>Bishop Street Drain</p>	<p>VicSES to respond as per request by request basis.</p> <p>Nursing home to implement their emergency evacuation plan if required</p>

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • Andrew Street, Oakleigh between Wilson Street and North Road • Bishop Street, Oakleigh between Wilson Street and North Road • Wilson Street, Oakleigh between Bishop and Andrew Streets • Oakleigh Main Drain • Westminister Street, Oakleigh near Edward Street • Regent Street, Oakleigh near Railway Line • Downing Street, Oakleigh near Railway Line • Oxford Street, Oakleigh near Railway Line • Haughton Road, Oakleigh at Hanover Street Bridge • Queens Avenue, Oakleigh at Westgate Street • Mona Walk, Oakleigh • Davey Avenue, Oakleigh • Mora Avenue, Oakleigh • Barkly Street, Hughesdale at Darling Street • Darling Street, Hughesdale • Bowmore Street, Hughesdale • Ardour Street, Hughesdale • Kelvinside Street, Hughesdale • Carlisle Crescent Main Drain • Carlisle Crescent, Hughesdale near Kangaroo Road • Murrumbeena Drain • Taunton Avenue, Oakleigh South • Alleford Street, Oakleigh South • Sumersett Avenue, Oakleigh South • Selworthy Avenue, Oakleigh South • Brine Street, Hughesdale • Kinrade Street, Hughesdale 	<p>Council to provide road closure signage if required.</p>

Table C3. 6 – Breakdown of possible consequences at various rainfall intensities around the Murrumbeena Drainage system in Oakleigh with operational considerations

APPENDIX C4 – CLAYTON DRAIN 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 Clayton Drainage System					
Property					
Properties	304				
Residential	183				
Commercial	103				
Industrial	4				
Public Land	14				
Rural	0				
Community Infrastructure					
Health Facilities	1	Monash Medical Centre	Child Care / Kindergartens	1	Kanooka Child Care Centre
Care Facilities	0		Community Venues	0	
Retirement Villages	0		Places of Worship	0	
Schools / Colleges	0		Prisons	0	
Essential Infrastructure					
Major Roads	2	Dandenong Road; & Centre Road	Police Stations	0	
Major Rail	0		Government Buildings	0	
Bus Routes	7	631; 703; 704; 733; 802; 804; & 862	Sewerage Facilities	0	
Power Facility	0		Levees	0	
Comms Services	0		Drainage Facilities	0	
Emergency Services	0		Airports / Airfields	0	
Tourism / Recreation					
Sports Facilities	0		Caravan Parks	0	
Recreation Facilities	1	Fregon Reserve	Camping Grounds	0	
Government Boundaries					
Local Gov't Areas	1	Monash	CMA	1	Port Phillip & Westport
Adjacent LGAs	1	Kingston	CFA District	0	
SES Unit Area	1	Monash	MFB District	1	Eastern

Table C4.1 – Consequence Summary of 1% AEP flood along the Clayton Drainage System

Clayton and East Oakleigh are located approximately 18km south east of Melbourne in a mixed residential, business & industrial zoned area. Three main stormwater drains service the area, the Clayton, East Oakleigh and Burton Avenue drains, flowing from north to south where they converge just north of Centre Road west of Clayton Road and exit the City of Monash to enter the City of Kingston. High Intensity, short duration rainfall events are the primary concern and can cause flash

flooding around the area. The Monash Medical Centre is at risk from flash flooding along the Burton Avenue Drain affecting the eastern and southern sections of the premises. See mapping in Appendix F for more insight into flooding in the area.

Warning Times

Neither the Bureau of Meteorology nor Melbourne Water currently provides flood forecasts for the Clayton Drain. All flood response actions must therefore be driven by rainfall and / or river level observations. A telemetered water level / flood gauge is located at Clayton South Retarding Basin within the Clayton Drain catchment.

Melbourne Water Hydrographic Monitoring Station	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Ref
Notting Hill	586023	Notting Hill Reservoir, Gardiner Rd, Clayton		✓	70 E8
Clayton South Drain at Clayton Retarding Basin	228603A	In wetland at end of Merlyn Avenue, Clayton South	✓	✓	79 B5

Table C4.2 – Hydrographic Monitoring Stations within the Clayton Drain catchment

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: <http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx>. It is advised that residents monitor the Bureau of Meteorology's website <http://www.bom.gov.au/> and the VicEmergency website <https://emergency.vic.gov.au/> for any thunderstorm, flood or severe weather warnings present for their area.

Areas of Flood Risk

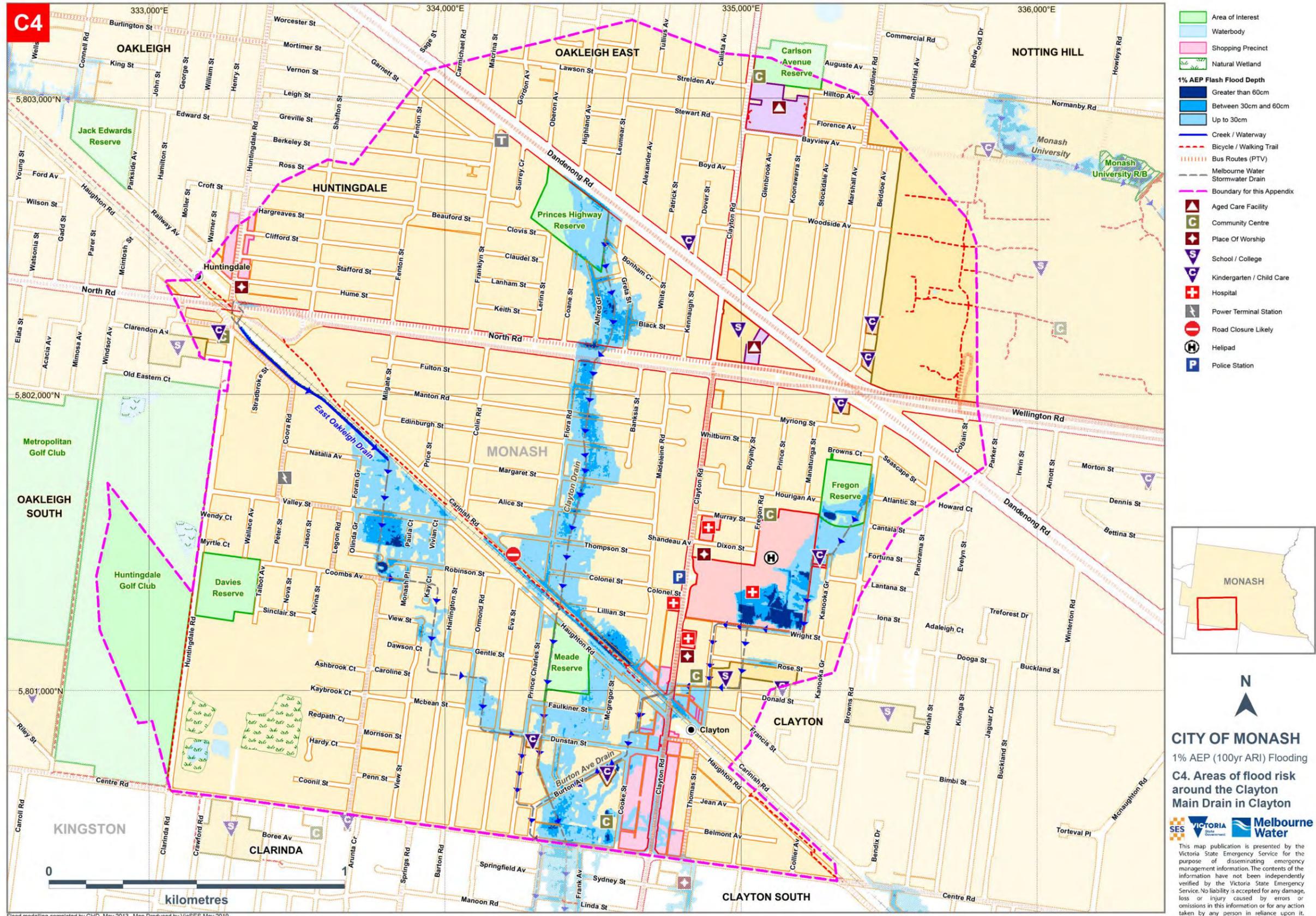


Figure C4 – Areas of flood risk around Clayton & Huntingdale in the City of Monash

Properties at Flood Risk

Properties listed in the table below are at risk from flooding over-floor on and around the Clayton Drainage System. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Clayton Drain (GHD, May 2013) 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. 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 over-floor within the Clayton Drainage Catchment						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	8 Alfred Grove	Oakleigh East	Clayton Drain	Flash
		✓	1/36 Alice Street	Clayton	Clayton Drain	Flash
		✓	2/36 Alice Street	Clayton	Clayton Drain	Flash
		✓	3/39 Alice Street	Clayton	Clayton Drain	Flash
		✓	4/39 Alice Street	Clayton	Clayton Drain	Flash
		✓	3/41 Alice Street	Clayton	Clayton Drain	Flash
	✓	✓	4/41 Alice Street	Clayton	Clayton Drain	Flash
		✓	2/43 Alice Street	Clayton	Clayton Drain	Flash
✓	✓	✓	1/44 Alice Street	Clayton	Clayton Drain	Flash
✓	✓	✓	2/44 Alice Street	Clayton	Clayton Drain	Flash
✓	✓	✓	3/44 Alice Street	Clayton	Clayton Drain	Flash
✓	✓	✓	4/44 Alice Street	Clayton	Clayton Drain	Flash
		✓	4/45 Alice Street	Clayton	Clayton Drain	Flash
✓	✓	✓	47 Alice Street	Clayton	Clayton Drain	Flash
✓	✓	✓	49A Alice Street	Clayton	Clayton Drain	Flash
		✓	6B Browns Road	Clayton	Burton Avenue Drain	Flash
		✓	6/2 Burton Avenue	Clayton	Burton Avenue Drain	Flash
		✓	1/6 Burton Avenue	Clayton	Burton Avenue Drain	Flash
		✓	13 Burton Avenue	Clayton	Burton Avenue Drain	Flash
		✓	14-16 Burton Avenue	Clayton	Burton Avenue Drain	Flash
		✓	4/20 Burton Avenue	Clayton	Burton Avenue Drain	Flash
		✓	75 Carinish Road	Clayton	Clayton Drain	Flash
✓	✓	✓	99-121 Carinish Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	125 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	127 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	129 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	131-133 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	135 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	137 Carinish Road	Clayton	Burton Avenue Drain	Flash

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	137A Carinish Road	Clayton	Burton Avenue Drain	Flash
		✓	139 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	141 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	143 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	145 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	147 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	149 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	1/151 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	2/151 Carinish Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	3/151 Carinish Road	Clayton	Burton Avenue Drain	Flash
		✓	1371 Centre Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	1/1379 Centre Road	Clayton	Burton Avenue Drain	Flash
		✓	1383 Centre Road	Clayton	Burton Avenue Drain	Flash
		✓	1395 Centre Road	Clayton	Burton Avenue Drain	Flash
		✓	1397 Centre Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	224 Clayton Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	1/224-246 Clayton Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	246 Clayton Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	246 Clayton Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	1/246 Clayton Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	2/246 Clayton Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	3/246 Clayton Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	4/246 Clayton Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	5/246 Clayton Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	272 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	274 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	274A Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	282 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	282B Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	284 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	286A Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	286B Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	286 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	288 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	290 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	292 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	294 Clayton Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	1/309-315 Clayton Road	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	2/309-315 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	3/309-315 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	4/309-315 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	5/309-315 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	7/309-315 Clayton Road	Clayton	Burton Avenue Drain	Flash

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment						
Residential		Commercial	Industrial	Rural	Public Use	
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	8/309-315 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	9/309-315 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	322A Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	322 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	324 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	328A Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	328 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	330A Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	330 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	331 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	332A Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	332 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	333 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	334A Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	334 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	335A Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	336A Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	336 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	337 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	338A Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	338 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	339 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	340 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	340A Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	341 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	342 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	342A Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	343 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	344 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	346 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	346A Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	348 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	1/348A-350 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	2/348A-350 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	350A Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	352 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	354 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	356 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	357 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	358 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	359-365 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	360 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	362 Clayton Road	Clayton	Burton Avenue Drain	Flash

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	364 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	366 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	368 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	379 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	381 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	383 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	385 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	387 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	389 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	391 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	393 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	395 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	397 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	399 Clayton Road	Clayton	Burton Avenue Drain	Flash
		✓	401 Clayton Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	2 Coane Street	Oakleigh East	Clayton Drain	Flash
	✓	✓	4 Coane Street	Oakleigh East	Clayton Drain	Flash
		✓	1 Cooke Street	Clayton	Burton Avenue Drain	Flash
	✓	✓	2 Cooke Street	Clayton	Burton Avenue Drain	Flash
		✓	1/5 Cooke Street	Clayton	Burton Avenue Drain	Flash
		✓	2/5 Cooke Street	Clayton	Burton Avenue Drain	Flash
		✓	3/5 Cooke Street	Clayton	Burton Avenue Drain	Flash
		✓	1/7 Cooke Street	Clayton	Burton Avenue Drain	Flash
		✓	2/7 Cooke Street	Clayton	Burton Avenue Drain	Flash
		✓	3/7 Cooke Street	Clayton	Burton Avenue Drain	Flash
	✓	✓	9-15 Cooke Street	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	1658-1660 Dandenong Road	Oakleigh East	Clayton Drain	Flash
	✓	✓	1662-1664 Dandenong Road	Oakleigh East	Clayton Drain	Flash
		✓	1A Donald Street	Clayton	Burton Avenue Drain	Flash
		✓	1/1 Donald Street	Clayton	Burton Avenue Drain	Flash
		✓	2/1 Donald Street	Clayton	Burton Avenue Drain	Flash
		✓	3/1 Donald Street	Clayton	Burton Avenue Drain	Flash
		✓	4/1 Donald Street	Clayton	Burton Avenue Drain	Flash
		✓	5/1 Donald Street	Clayton	Burton Avenue Drain	Flash
		✓	6/1 Donald Street	Clayton	Burton Avenue Drain	Flash
		✓	1/1 Dunstan Street	Clayton	Clayton Drain	Flash
		✓	2/1 Dunstan Street	Clayton	Clayton Drain	Flash
		✓	3/1 Dunstan Street	Clayton	Clayton Drain	Flash
		✓	4/1 Dunstan Street	Clayton	Clayton Drain	Flash
		✓	5/1 Dunstan Street	Clayton	Clayton Drain	Flash
		✓	6/1 Dunstan Street	Clayton	Clayton Drain	Flash
	✓	✓	1/9 Dunstan Street	Clayton	Clayton Drain	Flash
	✓	✓	2/9 Dunstan Street	Clayton	Clayton Drain	Flash

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	3/9 Dunstan Street	Clayton	Clayton Drain	Flash
	✓	✓	11 Dunstan Street	Clayton	Clayton Drain	Flash
	✓	✓	13 Dunstan Street	Clayton	Clayton Drain	Flash
	✓	✓	15 Dunstan Street	Clayton	Clayton Drain	Flash
	✓	✓	16 Dunstan Street	Clayton	Burton Avenue Drain	Flash
	✓	✓	17 Dunstan Street	Clayton	Clayton Drain	Flash
		✓	19 Dunstan Street	Clayton	Clayton Drain	Flash
		✓	2/21 Dunstan Street	Clayton	Clayton Drain	Flash
		✓	3/21 Dunstan Street	Clayton	Clayton Drain	Flash
		✓	35 Dunstan Street	Clayton	Burton Avenue Drain	Flash
		✓	37 Dunstan Street	Clayton	Burton Avenue Drain	Flash
		✓	39 Dunstan Street	Clayton	Burton Avenue Drain	Flash
		✓	41 Dunstan Street	Clayton	Burton Avenue Drain	Flash
		✓	43 Dunstan Street	Clayton	Burton Avenue Drain	Flash
		✓	45 Dunstan Street	Clayton	Burton Avenue Drain	Flash
		✓	1/55 Edinburgh Street	Clayton	Clayton Drain	Flash
	✓	✓	2/55 Edinburgh Street	Clayton	Clayton Drain	Flash
		✓	61 Edinburgh Street	Clayton	Clayton Drain	Flash
	✓	✓	1/66 Edinburgh Street	Clayton	Clayton Drain	Flash
	✓	✓	2/66 Edinburgh Street	Clayton	Clayton Drain	Flash
	✓	✓	3/66 Edinburgh Street	Clayton	Clayton Drain	Flash
	✓	✓	4/66 Edinburgh Street	Clayton	Clayton Drain	Flash
	✓	✓	5/66 Edinburgh Street	Clayton	Clayton Drain	Flash
	✓	✓	1/57 Eva Street	Clayton	East Oakleigh Drain	Flash
		✓	1/2 Faulkner Street	Clayton	Clayton Drain	Flash
	✓	✓	2/2 Faulkner Street	Clayton	Clayton Drain	Flash
		✓	4 Faulkner Street	Clayton	Clayton Drain	Flash
		✓	1/6 Faulkner Street	Clayton	Clayton Drain	Flash
		✓	2/6 Faulkner Street	Clayton	Clayton Drain	Flash
		✓	8 Faulkner Street	Clayton	Clayton Drain	Flash
		✓	10 Faulkner Street	Clayton	Clayton Drain	Flash
	✓	✓	1/12 Faulkner Street	Clayton	Clayton Drain	Flash
	✓	✓	2/12 Faulkner Street	Clayton	Clayton Drain	Flash
✓	✓	✓	14 Faulkner Street	Clayton	Clayton Drain	Flash
✓	✓	✓	15 Faulkner Street	Clayton	Clayton Drain	Flash
	✓	✓	16 Faulkner Street	Clayton	Clayton Drain	Flash
	✓	✓	17 Faulkner Street	Clayton	Clayton Drain	Flash
		✓	18 Faulkner Street	Clayton	Clayton Drain	Flash
	✓	✓	4/19 Faulkner Street	Clayton	Clayton Drain	Flash
		✓	1/20 Faulkner Street	Clayton	Clayton Drain	Flash
		✓	2/20 Faulkner Street	Clayton	Clayton Drain	Flash
		✓	1/21 Faulkner Street	Clayton	Clayton Drain	Flash
		✓	22 Faulkner Street	Clayton	Clayton Drain	Flash

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
	✓	✓	23 Faulkner Street	Clayton	Clayton Drain	Flash
		✓	1/1 Francis Street	Clayton	Burton Avenue Drain	Flash
		✓	2/1 Francis Street	Clayton	Burton Avenue Drain	Flash
		✓	2B Francis Street	Clayton	Burton Avenue Drain	Flash
		✓	1/2 Francis Street	Clayton	Burton Avenue Drain	Flash
		✓	2/2 Francis Street	Clayton	Burton Avenue Drain	Flash
		✓	3/2 Francis Street	Clayton	Burton Avenue Drain	Flash
		✓	4/2 Francis Street	Clayton	Burton Avenue Drain	Flash
		✓	3 Francis Street	Clayton	Burton Avenue Drain	Flash
		✓	7 Francis Street	Clayton	Burton Avenue Drain	Flash
		✓	9 Francis Street	Clayton	Burton Avenue Drain	Flash
		✓	2/11 Francis Street	Clayton	Burton Avenue Drain	Flash
✓	✓	✓	2 Fregon Road	Clayton	Burton Avenue Drain	Flash
	✓	✓	1/9 Greta Street	Oakleigh East	Clayton Drain	Flash
	✓	✓	2/9 Greta Street	Oakleigh East	Clayton Drain	Flash
		✓	11 Harlington Street	Clayton	East Oakleigh Drain	Flash
		✓	1/13 Harlington Street	Clayton	East Oakleigh Drain	Flash
		✓	2/13 Harlington Street	Clayton	East Oakleigh Drain	Flash
		✓	15 Harlington Street	Clayton	East Oakleigh Drain	Flash
		✓	1/362 Haughton Road	Clayton	Clayton Drain	Flash
		✓	2/362 Haughton Road	Clayton	Clayton Drain	Flash
		✓	3/362 Haughton Road	Clayton	Clayton Drain	Flash
		✓	1/364 Haughton Road	Clayton	Clayton Drain	Flash
	✓	✓	43-51 Kanooka Grove	Clayton	Burton Avenue Drain	Flash
		✓	6 Kay Court	Clayton	East Oakleigh Drain	Flash
		✓	8 Kay Court	Clayton	East Oakleigh Drain	Flash
		✓	4A Lillian Street	Clayton	Clayton Drain	Flash
		✓	101 Madeleine Road	Clayton	Burton Avenue Drain	Flash
		✓	1/59 Margaret Street	Clayton	Clayton Drain	Flash
✓	✓	✓	64 Margaret Street	Clayton	Clayton Drain	Flash
		✓	16 Mary Street	Clayton	Burton Avenue Drain	Flash
		✓	23 Mary Street	Clayton	Burton Avenue Drain	Flash
		✓	24 Mary Street	Clayton	Burton Avenue Drain	Flash
		✓	29 Mary Street	Clayton	Burton Avenue Drain	Flash
		✓	32 Mary Street	Clayton	Burton Avenue Drain	Flash
		✓	1/1 Mcgregor Street	Clayton	Clayton Drain	Flash
		✓	2/1 Mcgregor Street	Clayton	Clayton Drain	Flash
		✓	3/1 Mcgregor Street	Clayton	Clayton Drain	Flash
	✓	✓	4/1 Mcgregor Street	Clayton	Clayton Drain	Flash
		✓	5/1 Mcgregor Street	Clayton	Clayton Drain	Flash
		✓	6/1 Mcgregor Street	Clayton	Clayton Drain	Flash
		✓	7/1 Mcgregor Street	Clayton	Clayton Drain	Flash
✓	✓	✓	8/1 Mcgregor Street	Clayton	Clayton Drain	Flash

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	9/1 Mcgregor Street	Clayton	Clayton Drain	Flash
		✓	1/3 Mcgregor Street	Clayton	Clayton Drain	Flash
		✓	2/3 Mcgregor Street	Clayton	Clayton Drain	Flash
	✓	✓	3/3 Mcgregor Street	Clayton	Clayton Drain	Flash
	✓	✓	4/3 Mcgregor Street	Clayton	Clayton Drain	Flash
	✓	✓	5 Mcgregor Street	Clayton	Clayton Drain	Flash
		✓	3 Monash Place	Clayton	East Oakleigh Drain	Flash
		✓	13 Monash Place	Clayton	East Oakleigh Drain	Flash
		✓	15-19 Natalia Avenue	Oakleigh South	East Oakleigh Drain	Flash
		✓	1407 North Road	Oakleigh East	Clayton Drain	Flash
		✓	1/1409-1411 North Road	Oakleigh East	Clayton Drain	Flash
	✓	✓	2/1409-1411 North Road	Oakleigh East	Clayton Drain	Flash
	✓	✓	3/1409-1411 North Road	Oakleigh East	Clayton Drain	Flash
		✓	1/1420 North Road	Clayton	Clayton Drain	Flash
		✓	1/6 Olinda Grove	Oakleigh South	East Oakleigh Drain	Flash
		✓	2/6 Olinda Grove	Oakleigh South	East Oakleigh Drain	Flash
		✓	3/6 Olinda Grove	Oakleigh South	East Oakleigh Drain	Flash
		✓	4/6 Olinda Grove	Oakleigh South	East Oakleigh Drain	Flash
		✓	5/6 Olinda Grove	Oakleigh South	East Oakleigh Drain	Flash
		✓	6/6 Olinda Grove	Oakleigh South	East Oakleigh Drain	Flash
		✓	7/6 Olinda Grove	Oakleigh South	East Oakleigh Drain	Flash
		✓	8/6 Olinda Grove	Oakleigh South	East Oakleigh Drain	Flash
	✓	✓	46 Ormond Road	Clayton	East Oakleigh Drain	Flash
	✓	✓	1/48 Ormond Road	Clayton	East Oakleigh Drain	Flash
		✓	50 Ormond Road	Clayton	East Oakleigh Drain	Flash
	✓	✓	6 Paula Court	Oakleigh South	East Oakleigh Drain	Flash
	✓	✓	2/30 Prince Charles Street	Clayton	Clayton Drain	Flash
		✓	1 Robinson Street	Clayton	East Oakleigh Drain	Flash
		✓	1/9 Robinson Street	Clayton	East Oakleigh Drain	Flash
		✓	2/9 Robinson Street	Clayton	East Oakleigh Drain	Flash
		✓	1/11 Robinson Street	Clayton	East Oakleigh Drain	Flash
		✓	2/11 Robinson Street	Clayton	East Oakleigh Drain	Flash
		✓	1/15 Robinson Street	Clayton	East Oakleigh Drain	Flash
	✓	✓	2/15 Robinson Street	Clayton	East Oakleigh Drain	Flash
	✓	✓	17 Robinson Street	Clayton	East Oakleigh Drain	Flash
	✓	✓	19 Robinson Street	Clayton	East Oakleigh Drain	Flash
	✓	✓	1/21-23 Robinson Street	Clayton	East Oakleigh Drain	Flash
✓	✓	✓	2/21-23 Robinson Street	Clayton	East Oakleigh Drain	Flash
	✓	✓	3/21-23 Robinson Street	Clayton	East Oakleigh Drain	Flash
	✓	✓	4/21-23 Robinson Street	Clayton	East Oakleigh Drain	Flash
	✓	✓	5/21-23 Robinson Street	Clayton	East Oakleigh Drain	Flash
	✓	✓	6/21-23 Robinson Street	Clayton	East Oakleigh Drain	Flash
	✓	✓	7/21-23 Robinson Street	Clayton	East Oakleigh Drain	Flash

Properties at risk from Flooding over-floor within the Clayton Drainage Catchment						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	25 Robinson Street	Clayton	East Oakleigh Drain	Flash
	✓	✓	3 Roy Street	Oakleigh East	Clayton Drain	Flash
✓	✓	✓	22 Thompson Street	Clayton	Clayton Drain	Flash
		✓	2/23 Thompson Street	Clayton	Clayton Drain	Flash
	✓	✓	7-15 Valley Street	Oakleigh South	East Oakleigh Drain	Flash
	✓	✓	17-27 Valley Street	Oakleigh South	East Oakleigh Drain	Flash
	✓	✓	2/34 Valley Street	Oakleigh South	East Oakleigh Drain	Flash
		✓	21/40 Valley Street	Oakleigh South	East Oakleigh Drain	Flash
	✓	✓	54 Valley Street	Oakleigh South	East Oakleigh Drain	Flash
	✓	✓	58A Valley Street	Oakleigh South	East Oakleigh Drain	Flash
	✓	✓	60 Valley Street	Oakleigh South	East Oakleigh Drain	Flash
		✓	3/18 View Street	Clayton	East Oakleigh Drain	Flash
✓	✓	✓	1 Vivian Court	Oakleigh South	East Oakleigh Drain	Flash
✓	✓	✓	2 Vivian Court	Oakleigh South	East Oakleigh Drain	Flash
	✓	✓	3 Vivian Court	Oakleigh South	East Oakleigh Drain	Flash
	✓	✓	4 Vivian Court	Oakleigh South	East Oakleigh Drain	Flash
	✓	✓	5 Vivian Court	Oakleigh South	East Oakleigh Drain	Flash
✓	✓	✓	6 Vivian Court	Oakleigh South	East Oakleigh Drain	Flash
✓	✓	✓	27-31 Wright Street	Clayton	Burton Avenue Drain	Flash
Totals						
30	138	304				

Table C4.3 – Properties at risk of flooding within the Clayton Drainage catchment in the City of Monash

Isolation

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

Essential Infrastructure

- **Monash Medical Centre**, Clayton affected by property flooding during a 10% AEP event with significant depths developing around the southern car park and loading bay off Wright Street during a 5% AEP event.

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. <http://ptv.vic.gov.au/live-travel-updates/>. A map of Public Transport routes within the City of Monash is available via the website at: https://www.ptv.vic.gov.au/assets/default-site/more/maps/Local-area-maps/Metropolitan/c6849f1d8e/33_Monash_LAM.pdf

Apart from the roads outlined below, all other essential infrastructure and services areas around Clayton & Huntingdale 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 Clayton & Huntingdale. Check the VicRoads website for more details: <https://traffic.vicroads.vic.gov.au/>

VicRoads Roads flooded in a 1% AEP (100yr ARI) event
<ul style="list-style-type: none"> Dandenong Road, Oakleigh East west of Clayton Road
<ul style="list-style-type: none"> Centre Road, Clayton between Burton Avenue and Cooke Street west of Clayton Road

Table C4.4 – VicRoads Possible Road Closures during a flooding event

Monash City Council Roads flooded in a 1% AEP (100yr ARI) event			
CLAYTON	<ul style="list-style-type: none"> Faulkner Street 	OAKLEIGH EAST	<ul style="list-style-type: none"> Vivian Court
<ul style="list-style-type: none"> Flora Road 	<ul style="list-style-type: none"> Yarram Crescent 	<ul style="list-style-type: none"> Bonham Crescent 	<ul style="list-style-type: none"> Robinson Street
<ul style="list-style-type: none"> Fulton Street 	<ul style="list-style-type: none"> Browns Road 	<ul style="list-style-type: none"> Roy Street 	<ul style="list-style-type: none"> Coombs Avenue
<ul style="list-style-type: none"> Manton Road 	<ul style="list-style-type: none"> Rose Street 	<ul style="list-style-type: none"> Alfred Grove 	<ul style="list-style-type: none"> Monash Place
<ul style="list-style-type: none"> Edinburgh Street 	HUNTINGDALE	<ul style="list-style-type: none"> Greta Street 	<ul style="list-style-type: none"> Kay Court
<ul style="list-style-type: none"> Alice Street 	<ul style="list-style-type: none"> Hume Street 	OAKLEIGH SOUTH	
<ul style="list-style-type: none"> Thompson Street 	OAKLEIGH	<ul style="list-style-type: none"> Valley Street 	
<ul style="list-style-type: none"> Carinish Road 	<ul style="list-style-type: none"> Railway Avenue 	<ul style="list-style-type: none"> Paula Court 	

Table C4.5 – Monash City Council Possible Road Closures during a flooding event

Flood Mitigation

No formal Retarding Basins, Pumping Stations or Levees exist around Clayton, Huntingdale & Oakleigh South.

Sewerage Infrastructure

There is no sewerage Infrastructure expected to be within the vicinity of floodwaters during severe flood events around Clayton, Huntingdale & Oakleigh South.

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 & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along the Clayton Drainage System at various retarding basin heights downstream of the Clayton Drain in Monash. This table is 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:

- Clayton Drain at Clayton Retarding Basin, Clayton South

FLOOD INTELLIGENCE CARD – CLAYTON SOUTH GAUGE, CLAYTON DRAIN

Version 3 – June 2019



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.

LOCATION	In wetland of Clayton Retarding Basin at end of Merlyn Avenue, Clayton South
MELWAY REFERENCE:	79 B5
STREAM:	Clayton Drain
GAUGE NUMBER:	228603A
GAUGE ZERO:	40.32m AHD
GAUGE TYPE	Stream Level & Rain

MINOR:	Not Established
MODERATE:	Not Established
MAJOR	Not Established
EMBANKMENT HEIGHT:	3.08m
TELEMETRIC/MANUAL	Telemetric
HIGHEST RECORDED FLOOD:	3.08m (4 th May 1992)

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
2.01m	20% AEP (5yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor)</p> <p>30 Properties in Total</p> <p>Burton Avenue Drain</p> <ul style="list-style-type: none"> 99-121 & 125 Carinish Road, Clayton 224, 1/224-246, 1/246, 2/246, 3/246, 4/246, 5/246, 272 & Shops 1-2/309-315 Clayton Road, Clayton 2 Fregon Road, Clayton 27-31 Wright Street, Clayton <p>Clayton Drain</p> <ul style="list-style-type: none"> Units 1-4/44, 47 & 49A Alice Street, Clayton 1658-1660 Dandenong Road, Oakleigh East 14 & 15 Faulkner Street, Clayton 64 Margaret Street, Clayton 8/1 Mcgregor Street, Clayton 22 Thompson Street, Clayton <p>East Oakleigh Drain</p> <ul style="list-style-type: none"> 2/21-23 Robinson Street, Clayton 1, 2 & 6 Vivian Court, Oakleigh South <p>Water Over Road (over 300mm depth)</p>	<p>VicSES State and Region to provide warnings to the community and other agencies.</p> <p>VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident</p>

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<p>Clayton Drain</p> <ul style="list-style-type: none"> Carinish Road, Clayton near Madeleine Road <p>Burton Avenue Drain</p> <ul style="list-style-type: none"> Browns Road, Clayton at Atlantic Street 	
2.25m	10% AEP (10yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor)</p> <p>70 Properties in Total</p> <p>Burton Avenue Drain</p> <ul style="list-style-type: none"> 99-121, 125 & 131-133 Carinish Road, Clayton 1/1379 Centre Road, Clayton 224, 1/224-246, 1/246, 2/246, 3/246, 4/246, 5/246, 272, 274, 274A & Shops 1-4/309-315 Clayton Road, Clayton 9-15 Cooke Street, Clayton 2 Fregon Road, Clayton 43-51 Kanooka Grove, Clayton 27-31 Wright Street, Clayton <p>Clayton Drain</p> <ul style="list-style-type: none"> 8 Alfred Grove, Oakleigh East Units 1-4/44, 47 & 49A Alice Street, Clayton 1658-1660 & 1662-1664 Dandenong Road, Oakleigh East 1/9, 2/9, 3/9, 11, 13 & 15 Dunstan Street, Clayton 14, 15, 16, 17, 4/19 & 23 Faulkner Street, Clayton 64 Margaret Street, Clayton 4/1, 8/1 & 4/3 Mcgregor Street, Clayton 2/1409-1411 & 3/1409-1411 North Road, Oakleigh East 2/30 Prince Charles Street, Clayton 22 Thompson Street, Clayton <p>East Oakleigh Drain</p> <ul style="list-style-type: none"> 1/57 Eva Street, Clayton 46 Ormond Road, Clayton 19 & Units 2-7/21-23 Robinson Street, Clayton 17-27, 2/34, 54, 58A & 60 Valley Street, Oakleigh South 1, 2, 4, 5 & 6 Vivian Court, Oakleigh South <p>Essential Infrastructure Impacted</p> <ul style="list-style-type: none"> Monash Medical Centre, Clayton likely flooded below floor off Wright Street <p>Water Over Road (over 300mm depth)</p> <p>Clayton Drain</p> <ul style="list-style-type: none"> Dandenong Road, Oakleigh East west of Clayton Road Carinish Road, Clayton between Price Street and Colin Road and near Madeleine Road <p>East Oakleigh Drain</p> <ul style="list-style-type: none"> Railway Avenue, Oakleigh at join with Parkside Avenue 	Council to provide road closure signage if required.

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> Vivian Court, Oakleigh South Burton Avenue Drain Browns Road, Clayton at Atlantic Street 	
2.53m	5% AEP (20yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor) 138 Properties in Total</p> <p>Burton Avenue Drain</p> <ul style="list-style-type: none"> 99-121, 125, 127, 129, 131-133, 135, 137, 137A, 141, 143, 145, 147, 149 & Shops 1-3/151 Carinish Road, Clayton 1/1379 Centre Road, Clayton 224, 1/224-246, 1/246, 2/246, 3/246, 4/246, 5/246, 272, 274, 274A, 286A, 286B, 288, 290, 292, Shops 1-9/309-315, 322A, 324, 328A, 330, 334, 336A, 338, 338A, 340, 340A, 342, 344, 346A, 348, Shops 1-2/348A-350, 350A & 352 Clayton Road, Clayton 2 & 9-15 Cooke Street, Clayton 1A, 1/1, 2/1, 3/1, 4/1, 5/1 & 6/1 Donald Street, Clayton 16 Dunstan Street, Clayton 2 Fregon Road, Clayton 43-51 Kanooka Grove, Clayton 27-31 Wright Street, Clayton <p>Clayton Drain</p> <ul style="list-style-type: none"> 8 Alfred Grove, Oakleigh East 4/41, Units 1-4/44, 47 & 49A Alice Street, Clayton 2 & 4 Coane Street, Oakleigh East 1658-1660 & 1662-1664 Dandenong Road, Oakleigh East 1/9, 2/9, 3/9, 11, 13, 15 & 17 Dunstan Street, Clayton 2/55, 1/66, 2/66, 3/66, 4/66 & 5/66 Edinburgh Street, Clayton 2/2, 1/12, 2/12, 14, 15, 16, 17, 4/19 & 23 Faulkner Street, Clayton 1/9 & 2/9 Greta Street, Oakleigh East 64 Margaret Street, Clayton 4/1, 8/1, 3/3, 4/3 & 5 Mcgregor Street, Clayton 2/1409-1411 & 3/1409-1411 North Road, Oakleigh East 2/30 Prince Charles Street, Clayton 3 Roy Street, Oakleigh East 22 Thompson Street, Clayton <p>East Oakleigh Drain</p> <ul style="list-style-type: none"> 1/57 Eva Street, Clayton 46 & 1/48 Ormond Road, Clayton 6 Paula Court, Oakleigh South 2/15, 17, 19 & Units 1-7/21-23 Robinson Street, Clayton 7-15, 17-27, 2/34, 54, 58A & 60 Valley Street, Oakleigh South 1, 2, 3, 4, 5 & 6 Vivian Court, Oakleigh South <p>Essential Infrastructure Impacted</p>	<p>VicSES to respond as per request by request basis.</p> <p>Monash medical centre to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • Monash Medical Centre, Clayton likely flooded with significant depths around the southern car park and loading bay off Wright Street <p>Water Over Road (over 300mm depth)</p> <p>Clayton Drain</p> <ul style="list-style-type: none"> • Dandenong Road, Oakleigh East west of Clayton Road • Alfred Grove, Oakleigh East the length of street • Greta Street, Oakleigh East at Black Street • Manton Road, Clayton near Flora Road roundabout • Alice Street, Clayton near Flora Road roundabout • Carinish Road, Clayton between Price Street and Colin Road and between Flora Road and Mary Street <p>East Oakleigh Drain</p> <ul style="list-style-type: none"> • Hume Street, Huntingdale near Huntingdale Road • Vivian Court, Oakleigh South <p>Burton Avenue Drain</p> <ul style="list-style-type: none"> • Browns Road, Clayton at Atlantic Street 	
2.76m	2% AEP (50yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor)</p> <p>204 Properties in Total</p> <p>Burton Avenue Drain</p> <ul style="list-style-type: none"> • 6B Browns Road, Clayton • 99-121, 125, 127, 129, 131-133, 135, 137, 137A, 139, 141, 143, 145, 147, 149 & Shops 1-3/151 Carinish Road, Clayton • 1/1379 & 1383 Centre Road, Clayton • 224, 1/224-246, 1/246, 2/246, 3/246, 4/246, 5/246, 272, 274, 274A, 284, 286A, 286B, 286, 288, 290, 292, Shops 1-9/309-315, 322, 322A, 324, 328, 328A, 330, 330A, 332, 332A, 334, 334A, 336, 336A, 338, 338A, 340, 340A, 342, 342A, 343, 344, 346, 346A, 348, Shops 1-2/348A-350, 350A, 352, 359-365, 385, 387, 389, 391, 393, 395, 397, 399 & 401 Clayton Road, Clayton • 2 & 9-15 Cooke Street, Clayton • 1A, 1/1, 2/1, 3/1, 4/1, 5/1 & 6/1 Donald Street, Clayton • 16 & 35 Dunstan Street, Clayton • 2 Fregon Road, Clayton • 43-51 Kanooka Grove, Clayton • 101 Madeleine Road, Clayton • 23 & 29 Mary Street, Clayton • 27-31 Wright Street, Clayton <p>Clayton Drain</p> <ul style="list-style-type: none"> • 8 Alfred Grove, Oakleigh East • 4/41, Units 1-4/44, 47 & 49A Alice Street, Clayton • 2 & 4 Coane Street, Oakleigh East • 1658-1660 & 1662-1664 Dandenong Road, Oakleigh East 	<p>VicSES to respond as per request by request basis.</p> <p>Monash medical centre to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • 1/1, 2/1, 3/1, 4/1, 5/1, 6/1, 1/9, 2/9, 3/9, 11, 13, 15, 17, 19 & Units 2-3/21 Dunstan Street, Clayton • 1/55, 2/55, 1/66, 2/66, 3/66, 4/66 & 5/66 Edinburgh Street, Clayton • 1/2, 2/2, 2/6, 8, 10, 1/12, 2/12, 14, 15, 16, 17, 18, 4/19, 1/20, 2/20, 1/21, 22 & 23 Faulkner Street, Clayton • 1/9 & 2/9 Greta Street, Oakleigh East • 1/362, 2/362 & 3/362 Haughton Road, Clayton • 1/59 & 64 Margaret Street, Clayton • 1/1, 2/1, 3/1, 8/1, 9/1, 1/3, 2/3, 3/3, 4/3 & 5 Mcgregor Street, Clayton • 1407, 2/1409-1411 & 3/1409-1411 North Road, Oakleigh East • 2/30 Prince Charles Street, Clayton • 3 Roy Street, Oakleigh East • 22 & 2/23 Thompson Street, Clayton East Oakleigh Drain • 1/57 Eva Street, Clayton • 46 & 1/48 Ormond Road, Clayton • 6 Paula Court, Oakleigh South • 1/9, 2/9, 1/11, 2/11, 1/15, 2/15, 17, 19, Units 1-7/21-23 & 25 Robinson Street, Clayton • 7-15, 17-27, 2/34, 54, 58A & 60 Valley Street, Oakleigh South • 1, 2, 3, 4, 5 & 6 Vivian Court, Oakleigh South Community Infrastructure Flooded • Fregon Reserve Essential Infrastructure Impacted • Monash Medical Centre, Clayton likely flooded with significant depths around the southern car park and loading bay off Wright Street Water Over Road (over 300mm depth) Clayton Drain • Dandenong Road, Oakleigh East west of Clayton Road • Bonham Crescent, Oakleigh East at either end of street • Roy Street, Oakleigh East • Alfred Grove, Oakleigh East the length of street • Greta Street, Oakleigh East at Black Street • Flora Road, Clayton between Manton Road and Fulton Street and near Carinish Road intersection • Fulton Street, Clayton near Flora Road roundabout • Manton Road, Clayton near Flora Road roundabout • Edinburgh Street, Clayton between Flora Road and Banksia Street • Alice Street, Clayton near Flora Road roundabout • Carinish Road, Clayton between Price Street and Colin Road and between Flora Road and Mary Street East Oakleigh Drain • Hume Street, Huntingdale near Huntingdale Road 	

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> Valley Street, Oakleigh South at Huntingdale Road and between Olinda Grove and Paula Court Paula Court, Oakleigh South Vivian Court, Oakleigh South <p>Burton Avenue Drain</p> <ul style="list-style-type: none"> Browns Road, Clayton at Atlantic Street 	
2.90m	1% AEP (100yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor) 304 Properties in Total</p> <p>Burton Avenue Drain</p> <ul style="list-style-type: none"> 6B Browns Road, Clayton 6/2, 1/6, 13, 14-16 & 4/20 Burton Avenue, Clayton 99-121, 125, 127, 129, 131-133, 135, 137, 137A, 139, 141, 143, 145, 147, 149 & Shops 1-3/151 Carinish Road, Clayton 1371, 1/1379, 1383, 1395 & 1397 Centre Road, Clayton 224, 1/224-246, 1/246, 2/246, 3/246, 4/246, 5/246, 272, 274, 274A, 282, 282B, 284, 286A, 286B, 286, 288, 290, 292, Shops 1-9/309-315, 322, 322A, 324, 328, 328A, 330, 330A, 331, 332, 332A, 333, 334, 334A, 335A, 336, 336A, 337, 338, 338A, 339, 340, 340A, 341, 342, 342A, 343, 344, 346, 346A, 348, Shops 1-2/348A-350, 350A, 352, 354, 356, 357, 358, 359-365, 360, 362, 364, 366, 368, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399 & 401 Clayton Road, Clayton 1, 2, 1/5, 2/5, 3/5, 1/7, 2/7, 3/7 & 9-15 Cooke Street, Clayton 1A, 1/1, 2/1, 3/1, 4/1, 5/1 & 6/1 Donald Street, Clayton 16, 35, 37, 39, 41, 43 & 45 Dunstan Street, Clayton 1/1, 2/1, 2B, 1/2, 2/2, 3/2, 4/2, 3, 7, 9 & 2/11 Francis Street, Clayton 2 Fregon Road, Clayton 43-51 Kanooka Grove, Clayton 101 Madeleine Road, Clayton 16, 23, 24, 29 & 32 Mary Street, Clayton 27-31 Wright Street, Clayton <p>Clayton Drain</p> <ul style="list-style-type: none"> 8 Alfred Grove, Oakleigh East 1/36, 2/36, 3/39, 4/39, 3/41, 4/41, 2/43, Units 1-4/44, 4/45, 47 & 49A Alice Street, Clayton 75 Carinish Road, Clayton 2 & 4 Coane Street, Oakleigh East 1658-1660 & 1662-1664 Dandenong Road, Oakleigh East 1/1, 2/1, 3/1, 4/1, 5/1, 6/1, 1/9, 2/9, 3/9, 11, 13, 15, 17, 19 & Units 2-3/21 Dunstan Street, Clayton 1/55, 2/55, 61, 1/66, 2/66, 3/66, 4/66 & 5/66 Edinburgh Street, Clayton 1/2, 2/2, 4, 1/6, 2/6, 8, 10, 1/12, 2/12, 14, 15, 16, 17, 18, 4/19, 1/20, 2/20, 1/21, 22 & 23 Faulkner Street, Clayton 1/9 & 2/9 Greta Street, Oakleigh East 	<p>VicSES to respond as per request by request basis.</p> <p>Child care centre to implement their emergency evacuation plan if required</p> <p>Monash medical centre to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • 1/362, 2/362, 3/362 & 1/364 Haughton Road, Clayton • 4A Lillian Street, Clayton • 1/59 & 64 Margaret Street, Clayton • 1/1, 2/1, 3/1, 4/1, 5/1, 6/1, 7/1, 8/1, 9/1, 1/3, 2/3, 3/3, 4/3 & 5 Mcgregor Street, Clayton • 1407, 1/1409-1411, 2/1409-1411, 3/1409-1411 & 1/1420 North Road, Oakleigh East • 2/30 Prince Charles Street, Clayton • 3 Roy Street, Oakleigh East • 22 & 2/23 Thompson Street, Clayton East Oakleigh Drain • 1/57 Eva Street, Clayton • 11, 1/13, 2/13 & 15 Harlington Street, Clayton • 6 & 8 Kay Court, Clayton • 3 & 13 Monash Place, Clayton • 15-19 Natalia Avenue, Oakleigh South • 1/6, 2/6, 3/6, 4/6, 5/6, 6/6, 7/6 & 8/6 Olinda Grove, Oakleigh South • 46, 1/48 & 50 Ormond Road, Clayton • 6 Paula Court, Oakleigh South • 1, 1/9, 2/9, 1/11, 2/11, 1/15, 2/15, 17, 19, Units 1-7/21-23 & 25 Robinson Street, Clayton • 7-15, 17-27, 2/34, 21/40, 54, 58A & 60 Valley Street, Oakleigh South • 3/18 View Street, Clayton • 1, 2, 3, 4, 5 & 6 Vivian Court, Oakleigh South Community Infrastructure Flooded • Fregon Reserve (northern side of Monash Medical Centre) • Kanooka Child Care Centre on Kanooka Grove, Clayton at risk from over-floor flooding (Eastern side of Monash Medical Centre) Essential Infrastructure Impacted • Monash Medical Centre, Clayton likely flooded with significant depths around the southern car park and loading bay off Wright Street Water Over Road (over 300mm depth) Clayton Drain • Dandenong Road, Oakleigh East west of Clayton Road • Bonham Crescent, Oakleigh East at either end of street • Roy Street, Oakleigh East • Alfred Grove, Oakleigh East the length of street • Greta Street, Oakleigh East at Black Street (residential group of streets) <ul style="list-style-type: none"> ○ Flora Road, Clayton between Manton Road and Fulton Street and near Carinish Road intersection ○ Fulton Street, Clayton near Flora Road roundabout ○ Manton Road, Clayton near Flora Road roundabout 	

Retarding Basin Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> ○ Edinburgh Street, Clayton between Flora Road and Banksia Street ○ Alice Street, Clayton near Flora Road roundabout ○ Thompson Street, Clayton near Flora Road roundabout ● Carinish Road, Clayton between Price Street and Colin Road and between Flora Road and Mary Street ● Faulkner Street, Clayton ● Yarram Crescent, Clayton ● Centre Road, Clayton between Burton Avenue and Cooke Street west of Clayton Road East Oakleigh Drain ● Hume Street, Huntingdale near Huntingdale Road ● Valley Street, Oakleigh South at Huntingdale Road and between Olinda Grove and Paula Court ● Paula Court, Oakleigh South ● Vivian Court, Oakleigh South ● Robinson Street, Oakleigh South near Monash Place ● Coombs Avenue and Monash Place, Oakleigh South ● Kay Court, Oakleigh South Burton Avenue Drain ● Browns Road, Clayton at Atlantic Street ● Rose Street, Clayton 	

Table C4.6 – Breakdown of likely consequences at various retarding basin gauge level heights along the Clayton Drainage System in Monash with operational considerations

APPENDIX C5 – MILE 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 Mile Creek East and West Branches in Monash

Property at risk of flooding over-floor					
Properties	62				
Residential	43				
Commercial	14				
Industrial	5				
Public Land	0				
Rural	0				
Community Infrastructure					
Health Facilities	0		Child Care / Kindergartens	0	
Care Facilities	1	Monash Nursing Home	Community Venues	0	
Retirement Villages	0		Places of Worship	0	
Schools / Colleges	2	Mazenod College Sports Grounds; & Monash University	Prisons	0	
Essential Infrastructure					
Major Roads	3	Blackburn Road; Springvale Road; & Wellington Road	Police Stations	0	
Major Rail	0		Government Buildings	1	CSIRO Australia
Bus Routes	8	703; 737; 802; 804; 862; 885; 900; & 902	Sewerage Facilities	0	
Power Facility	0		Levees	0	
Comms Services	0		Drainage Facilities	3	Retarding Basins
Emergency Services	0		Airports / Airfields	0	
Tourism / Recreation					
Sports Facilities	0		Caravan Parks	0	
Recreation Facilities	1	Freeway Reserve	Camping Grounds	0	
Government Boundaries					
Local Gov't Areas	1	Monash	CMA	1	Port Phillip & Westernport
Adjacent LGAs	1	Greater Dandenong	CFA District	0	
SES Unit Area	1	Monash	MFB District	1	Eastern

Table C5.1 – Consequence Summary of 1% AEP flood along the Mile Creek East and West Branches in Monash

Mile Creek and the adjoining suburbs of Mulgrave, Clayton and Wheelers Hill are located approximately 20km south-east of Melbourne in an area of mixed business precincts and residential areas. Mile Creek East and West Branches are the prominent watercourses in the area, flowing from the north and both exiting the City of Monash at Dandenong Road where the two waterways

converge in the City of Greater Dandenong before discharging into Dandenong Creek. High Intensity, short duration rainfall events are the primary concern and cause flash flooding in and around the area. A number of major arterial roads are at risk from flash flooding including Dandenong, Springvale, Wellington, Ferntree Gully and Blackburn Roads. Monash University may also be affected. See mapping in Appendix F for more insight into flooding in the area.

Warning Times

Neither the Bureau of Meteorology nor Melbourne Water currently provides flood forecasts for Mile Creek East and West Branches. All flood response actions must therefore be driven by rainfall and / or river level observations. A telemetered water level / flood gauge is located at Springvale within the Mile Creek catchment.

Melbourne Water Hydrographic Monitoring Station	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Ref
Mile Creek Parshall Flume at Springvale West	228362A	West Side of Channel at end of Oakdale Court, Springvale	✓	✓	79 K6
Notting Hill	586023	Notting Hill Reservoir, Gardiner Rd, Clayton		✓	70 E8

Table C5.1 – Hydrographic Monitoring Stations within the Mile Creek catchment

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: <http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx>. It is advised that residents monitor the Bureau of Meteorology's website <http://www.bom.gov.au/> and the VicEmergency website <https://emergency.vic.gov.au/> for any thunderstorm, flood or severe weather warnings present for their area.

Areas of Flood Risk

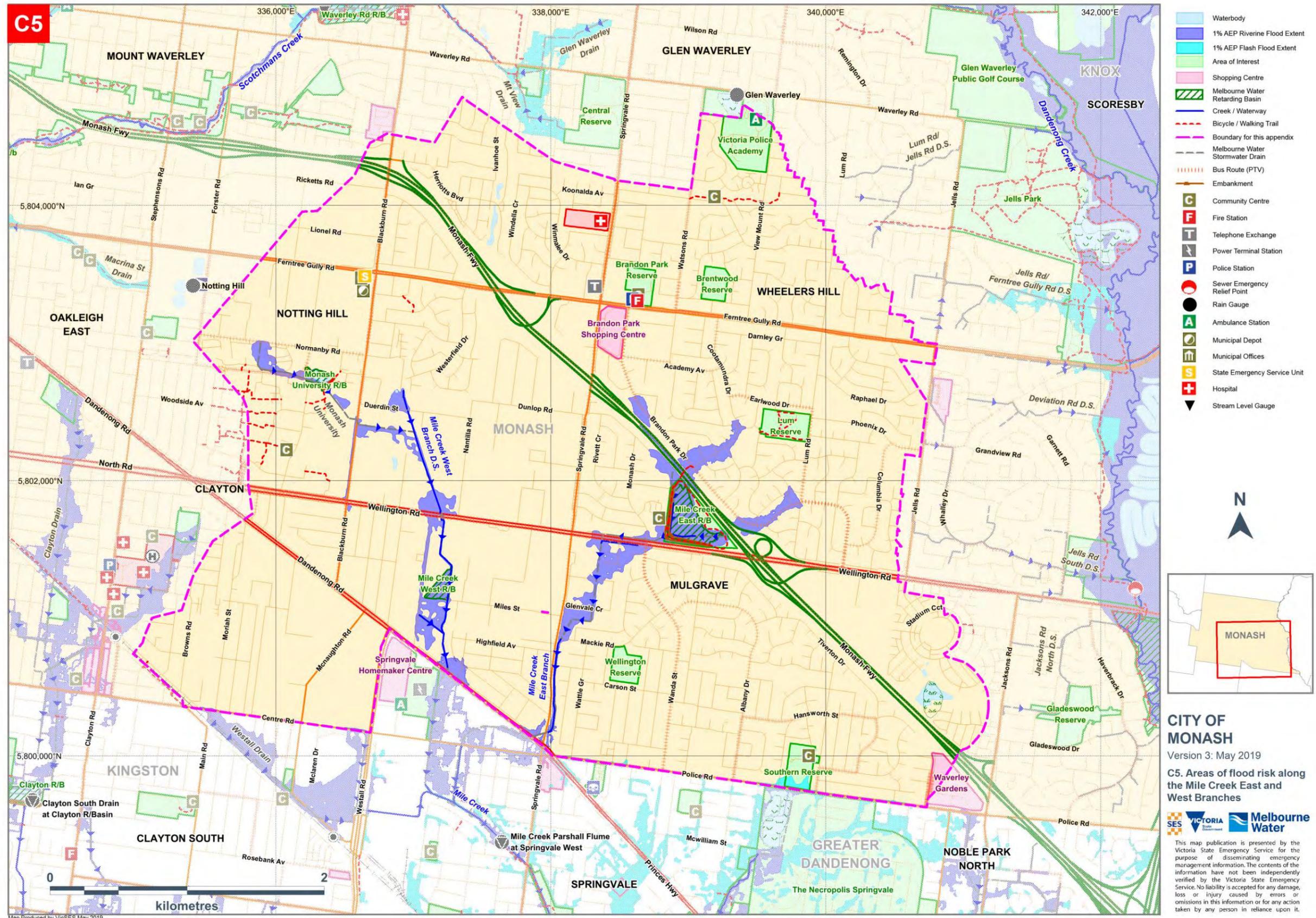


Figure C5 – Areas of flood risk around Mile Creek East and West Branches in the City of Monash

Properties at Flood Risk

Properties listed in the table below are at risk from flooding over-floor along the Mile Creek East and West Branches in Monash. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Mile Creek (WBM-BMT, March 2014) 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 Over-Floor during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
25	Allendale Crescent	Wheelers Hill	Mile Creek East	Riverine
30	Allendale Crescent	Wheelers Hill	Mile Creek East	Riverine
56	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
58	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
60	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
63	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
65	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
67	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
69	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
71	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
73	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
75	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
77	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
79	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
81	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
83	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
131	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
135	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
137	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
158	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
160	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
162	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
164	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
168	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
186	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
192	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
194	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
195	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
196	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
197	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
198	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine

Properties at risk from Flooding Over-Floor during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
199	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
200-204	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
201	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
205	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
206	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
207	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
208	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
209	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
210	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
211	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
212	Brandon Park Drive	Wheelers Hill	Mile Creek East	Riverine
92	Cootamundra Drive	Wheelers Hill	Mile Creek East	Riverine
97	Cootamundra Drive	Wheelers Hill	Mile Creek East	Riverine
2211-2213	Dandenong Road	Mulgrave	Mile Creek West	Riverine
1/2215-2221	Dandenong Road	Mulgrave	Mile Creek West	Riverine
2/2215-2221	Dandenong Road	Mulgrave	Mile Creek West	Riverine
3/2215-2221	Dandenong Road	Mulgrave	Mile Creek West	Riverine
2223-2225	Dandenong Road	Mulgrave	Mile Creek West	Riverine
74-86	Garden Road	Clayton	Mile Creek West	Riverine
18-20	Glenvale Crescent	Mulgrave	Mile Creek East	Riverine
25	Glenvale Crescent	Mulgrave	Mile Creek East	Riverine
27	Glenvale Crescent	Mulgrave	Mile Creek East	Riverine
2	Graduate Crescent	Wheelers Hill	Mile Creek East	Riverine
1-13	Kalimna Avenue	Mulgrave	Mile Creek West	Riverine
32	Ondine Drive	Wheelers Hill	Mile Creek East	Riverine
36	Ondine Drive	Wheelers Hill	Mile Creek East	Riverine
108	Strada Crescent	Wheelers Hill	Mile Creek East	Riverine
1	Truscott Court	Wheelers Hill	Mile Creek East	Riverine
2	Truscott Court	Wheelers Hill	Mile Creek East	Riverine
9	Truscott Court	Wheelers Hill	Mile Creek East	Riverine
10	Truscott Court	Wheelers Hill	Mile Creek East	Riverine
Total				
62				

Table C5.3 – Properties at risk of flooding along the Mile Creek East and West Branches in the City of Monash

Isolation

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

Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. <http://ptv.vic.gov.au/live-travel-updates/>. A map of Public Transport routes within the City of Monash is available via the website at: https://www.ptv.vic.gov.au/assets/default-site/more/maps/Local-area-maps/Metropolitan/c6849f1d8e/33_Monash_LAM.pdf

Apart from the roads outlined below, all other essential infrastructure and services areas around Mulgrave, Clayton & Wheelers Hill 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 Mulgrave, Clayton & Wheelers Hill. Check the VicRoads website for more details: <https://traffic.vicroads.vic.gov.au/>

VicRoads Roads flooded in a 1% AEP (100yr ARI) event
<ul style="list-style-type: none"> Wellington Road, Mulgrave at Wanda Street
<ul style="list-style-type: none"> Springvale Road Southbound Lane, Mulgrave north of Dandenong Road Intersection
<ul style="list-style-type: none"> Blackburn Road, Clayton between Wellington Road and Duerdin Street

Table C5.4 – VicRoads Possible Road Closures during a flooding event

Monash City Council Roads flooded in a 1% AEP (100yr ARI) event		
CLAYTON	MULGRAVE	
<ul style="list-style-type: none"> Bayview Avenue 	<ul style="list-style-type: none"> Tennyson Court 	<ul style="list-style-type: none"> Campus Court
<ul style="list-style-type: none"> Duerdin Street 	<ul style="list-style-type: none"> Enterprise Court 	<ul style="list-style-type: none"> Cootamundra Drive
<ul style="list-style-type: none"> Garden Road 	<ul style="list-style-type: none"> Glenvale Crescent 	<ul style="list-style-type: none"> Truscott Court
<ul style="list-style-type: none"> Roberts Avenue 		<ul style="list-style-type: none"> Boyd Court
<ul style="list-style-type: none"> Kalimna Avenue 	<ul style="list-style-type: none"> Brandon Park Drive 	<ul style="list-style-type: none"> Ondine Drive
		<ul style="list-style-type: none"> Dirigo Drive

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

Flood Mitigation

Retarding Basins

Melbourne Water Retarding Basin	On Drain/ Waterway	Area	Storage Capacity	Spillway Crest Level	Full Supply Level	Embankment Crest Height (Level)	ANCOLD Hazard Rating	Properties In Flow Path (dam breach)	Melway Reference
Mile Creek East	Mile Creek East Branch	8.6 ha	117.2 ML	72.9m AHD	73.4m AHD	4.6m (73.5m AHD)	High A	Unavailable	80 D1
Mile Creek West	Mile Creek West Branch	1.4 ha	66 ML	60.0m AHD	60.6m AHD	3.0m (60.5m AHD)	Low	25 industrial lots	79 J1
Monash University	Monash University Drain	1.7 ha	35 ML	78.6m AHD	79.0m AHD	4.0m (81.5m AHD)	Low	Unavailable	70 G10

Table C5.6 – Melbourne Water Retarding Basins within the Mile Creek catchment in the City of Monash

No formal Pumping Stations or Levees exist around the Mile Creek East and West Branches.

Sewerage Infrastructure

There is no sewerage Infrastructure expected to be within the vicinity of floodwaters during severe flood events around Mulgrave, Clayton & Wheelers Hill.

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 & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along the Mile Creek East and West Branches at various Creek heights within Monash. 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:

- Mile Creek at Springvale

FLOOD INTELLIGENCE CARD – MILE CREEK, SPRINGVALE

Version 3 – June 2019



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.

LOCATION	West Side of Channel at end of Oakdale Court, Springvale
MELWAY REFERENCE:	79 K6
STREAM:	Mile Creek
GAUGE NUMBER:	228362A
GAUGE ZERO:	45.47m AHD
GAUGE TYPE	Stream Level & Rain

MINOR:	Not Established
MODERATE:	Not Established
MAJOR	Not Established
LEVEE HEIGHT:	N/A
TELEMETRIC/MANUAL	Telemetric
HIGHEST RECORDED FLOOD:	2.23m (27th December 1999)

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
2.32m	20% AEP (5yr ARI) Flood Level	<p>Community Infrastructure Flooded</p> <ul style="list-style-type: none"> Freeway Reserve (Mile Creek East Retarding Basin) <p>Water Over Road (over 300mm depth)</p> <p>Mile Creek East Branch</p> <ul style="list-style-type: none"> Brandon Park Drive, Wheelers Hill at Graduate Crescent, Cootamundra Drive and Ondine Drive. Monash freeway acts as a levee. Cootamundra Drive, Wheelers Hill between Brandon Park Drive and Allendale Crescent. Truscott Court, Wheelers Hill Wellington Road Service Road North, Mulgrave at Monash Drive <p>Mile Creek West Branch</p> <ul style="list-style-type: none"> Duerdin Street, Clayton 	<p>VicSES State and Region to provide warnings to the community and other agencies.</p> <p>VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident</p>
3.14m	1% AEP (100yr ARI) Flood Level	<p>Properties at Flood Risk (Over-Floor)</p> <p>62 Properties in Total</p> <p>Mile Creek East Branch</p> <ul style="list-style-type: none"> 25 & 30 Allendale Crescent, Wheelers Hill 56, 58, 60, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 131, 135, 137, 158, 160, 162, 164, 168, 186, 192, 194, 195, 196, 197, 198, 199, 200-204, 201, 205, 206, 207, 208, 209, 210, 211 & 212 Brandon Park Drive, Wheelers Hill 	<p>VicSES to respond as per request by request basis.</p>

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • 92 & 97 Cootamundra Drive, Wheelers Hill • 2 Graduate Crescent, Wheelers Hill • 108 Strada Crescent, Wheelers Hill • 1, 2, 9 & 10 Truscott Court, Wheelers Hill • 18-20, 25 & 27 Glenvale Crescent, Mulgrave • Mile Creek West Branch • 2211-2213, Shops 1-3/2215-2221 & 2223-2225 Dandenong Road, Mulgrave • 74-86 Garden Road, Clayton • 1-13 Kalimna Avenue, Mulgrave • Community Infrastructure Flooded • Mile Creek East Branch • Mazenod College Sports Grounds Inundated • Freeway Reserve (Mile Creek East Retarding Basin) • Monash Nursing Home, Wellington Road, Mulgrave may have access cut to rear driveway and car-park. Access expected to remain open via Monash Drive northbound. • Mile Creek West Branch • Monash University near Intersection of Bayview Avenue and Howleys Road. Also affected CSIRO Australia • Water Over Road (over 300mm depth) • Mile Creek East Branch • Brandon Park Drive, Wheelers Hill at Graduate Crescent, Cootamundra Drive and Ondine Drive. Significant depths at all three locations. Monash freeway acts as a levee. • Campus Court, Wheelers Hill • Cootamundra Drive, Wheelers Hill between Brandon Park Drive and Allendale Crescent. Floodwaters backup caused by Monash Freeway. • Truscott Court, Wheelers Hill • Boyd Court, Wheelers Hill • Ondine Drive and Dirigo Drive intersection, Wheelers Hill • Wellington Road Service Road North, Mulgrave at Monash Drive • Wellington Road, Mulgrave at Wanda Street • Tennyson Court, Mulgrave • Enterprise Court, Mulgrave • Glenvale Crescent, Mulgrave • Springvale Road Service Road East near Mackie Road, Mulgrave • Springvale Road Southbound Lane, Mulgrave north of Dandenong Road Intersection • Mile Creek West Branch • Normanby Road, Clayton at Normanby Business Park • Bayview Avenue, Clayton at Howleys Road • Blackburn Road, Clayton. Northbound lane flooded near Duerdin Street • Duerdin Street, Clayton 	<p>Monash nursing home to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • Wellington Road, Clayton Eastbound lane flooded at Garden Road • Garden Road, Clayton • Kalimna Avenue Clayton 	

Table C5.7 – Breakdown of likely consequences at various Springvale gauge level heights along Mile Creek East and West Branches in Monash with operational considerations

APPENDIX C6 – DANDENONG 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 Dandenong Creek					
Property					
Properties	51				
Residential	48				
Commercial	0				
Industrial	0				
Public Land	3				
Rural	0				
Community Infrastructure					
Health Facilities	0		Child Care / Kindergartens	0	
Care Facilities	0		Community Venues	0	
Retirement Villages	0		Places of Worship	0	
Schools / Colleges	0		Prisons	0	
Essential Infrastructure					
Major Roads	2	Ferntree Gully Road; & Wellington Road	Police Stations	0	
Major Rail	0		Government Buildings	0	
Bus Routes	8	681; 682; 691; 693; 753; 754; 900; & 969	Sewerage Facilities	1	Emergency Relief Point
Power Facility	0		Levees	1	Appletree Drive
Comms Services	0		Drainage Facilities	1	Retarding Basin
Emergency Services	0		Airports / Airfields	0	
Tourism / Recreation					
Sports Facilities	2	Glen Waverley Golf Club; Waverley Baseball Club	Caravan Parks	0	
Recreation Facilities	5	Dandenong Creek Trail; Drummies Bridge Reserve; Jells Park; Mulgrave Reserve; & Shepherds Bush Parkland			
Government Boundaries					
Local Gov't Areas	1	Monash	CMA	1	Port Phillip & Westernport
Adjacent LGAs	3	Greater Dandenong; Knox; & Whitehorse	CFA District	0	
SES Unit Area	1	Monash	MFB District	1	Eastern

Table C6.1 – Consequence Summary of 1% AEP flood along Dandenong Creek

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 Dandenong Creek's Stormwater Tributaries

Property					
Properties	102				
Residential	101				
Commercial	0				
Industrial	0				
Public Land	1				
Rural	0				
Community Infrastructure					
Health Facilities	0		Child Care / Kindergartens	0	
Care Facilities	0		Community Venues	0	
Retirement Villages	1	Highvale Retirement Village	Places of Worship	0	
Schools / Colleges	0		Prisons	0	
Essential Infrastructure					
Major Roads	2	Highbury Road; & High Street Road	Police Stations	0	
Major Rail	0		Government Buildings	0	
Bus Routes	4	736; 737; 742; 754	Sewerage Facilities	0	
Power Facility	0		Levees	0	
Comms Services	0		Drainage Facilities	0	
Emergency Services	0		Airports / Airfields	0	
Tourism / Recreation					
Sports Facilities	1	Waverley Baseball Club	Caravan Parks	0	
Recreation Facilities	2	Capital Reserve; Jells Park South	Camping Grounds	0	
Government Boundaries					
Local Gov't Areas	1	Monash	CMA	1	Port Phillip & Westernport
Adjacent LGAs	1	Whitehorse	CFA District	0	
SES Unit Area	1	Monash	MFB District	1	Eastern

Table C6.2 – Consequence Summary of 1% AEP flood along Dandenong Creek's Stormwater Tributaries

Dandenong Creek and the adjoining suburbs of Glen Waverley, Wheelers Hill & Mulgrave in the City of Monash are located approximately 20km east of Melbourne in an established residential area. Dandenong Creek is the prominent watercourse in the area, flowing from the north out of the Dandenong foothills in the Shire of Yarra Ranges and the Cities of Maroondah and Knox. Dandenong Creek enters the City of Monash at its North Eastern Border and runs along the Municipalities eastern boundary before entering the Cities of Greater Dandenong and Casey. High Intensity, short duration rainfall events can cause flash flooding in and around the tributaries and stormwater drains that feed into Dandenong Creek, while prolonged rainfall may see Dandenong Creek flood. Three major arterial roads cross Dandenong Creek in the City of Monash: High Street Road, Ferntree Gully Road and Wellington Road. These will all be overtopped at various river heights. See mapping in Appendix F for more insight into flooding in the area.

Warning Times

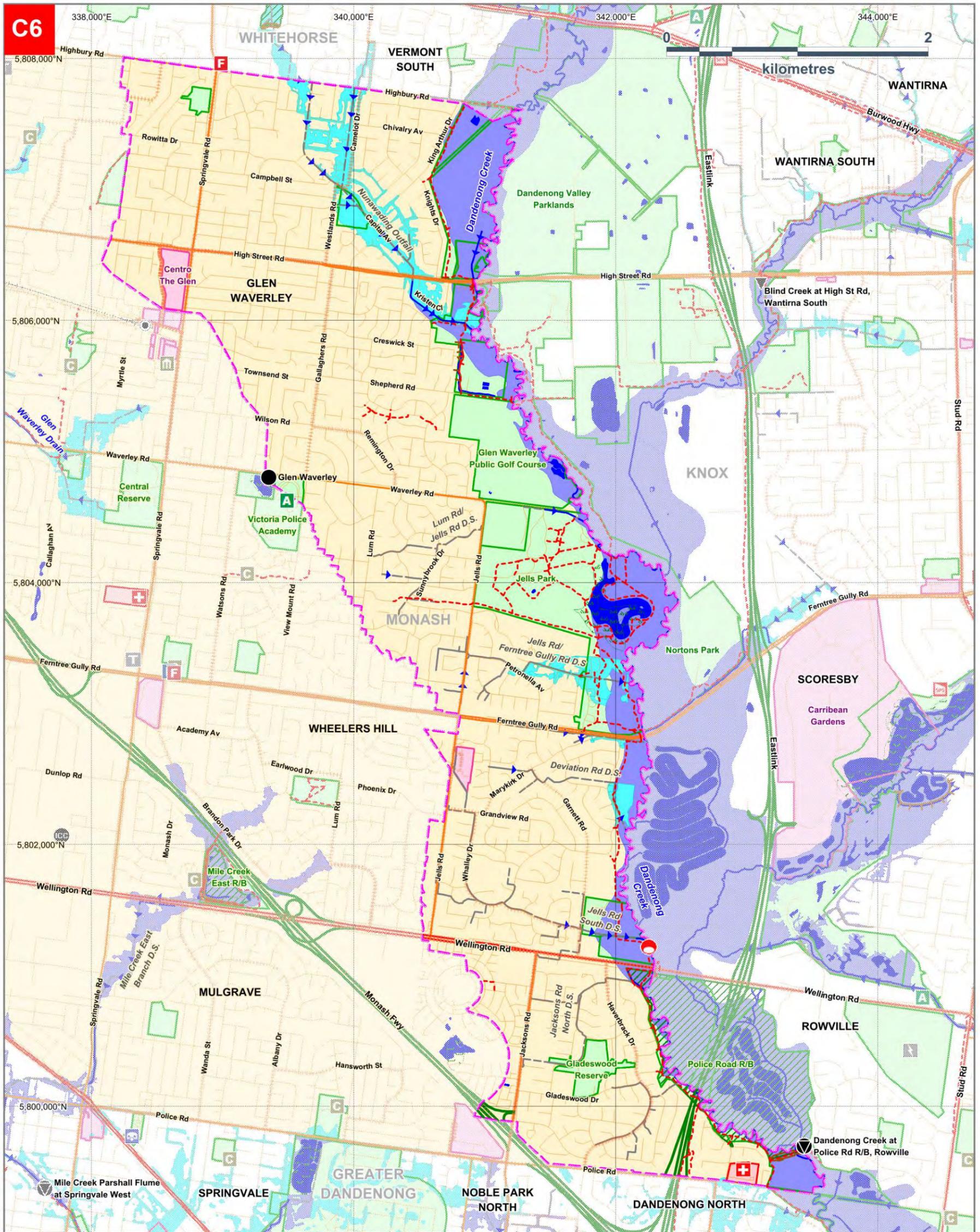
Warnings are available for flooding expected along Dandenong Creek at Police Road Rowville. For other hydrographic/telemetry (river gauges) within the Municipality, Melbourne Water does not provide any flood warning service at this point, due to the generally short warning times available.

Melbourne Water Hydrographic Monitoring Station	Station No.	Location	Stream Level & Flow Gauge	Rain Gauge	Melway Ref
Dandenong Creek at Wantirna Road, Wantirna	228357A	South side of the creek 150m east of Wantirna Road, Wantirna	✓	✓	63 H3
Dandenong Creek at Police Road Retarding Basin, Rowville	228368A	North side of Embankment	✓	✓	81 E6
Blind Creek at High Street Road, Wantirna South	228351A	West side of the creek, South side of High Street Rd, Wantirna South	✓		72 E1
Mount View	586197	Mount View Reservoir, Waverley Rd, Glen Waverley		✓	71 E5

Table C6.3 – Hydrographic Monitoring Stations within the Dandenong Creek catchment

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: <http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx>. It is advised that residents monitor the Bureau of Meteorology's website <http://www.bom.gov.au/> and the VicEmergency website <https://emergency.vic.gov.au/> for any thunderstorm, flood or severe weather warnings present for their area.

Areas of Flood Risk



Map Produced by VICSES May 2019

CITY OF MONASH

Version 3. May 2019

C6. Areas of flood risk along Dandenong Creek & Its Tributaries

- | | | |
|---------------------------------|----------------------------------|-------------------------------|
| Waterbody | Boundary for this Appendix | Telephone Exchange |
| 1% AEP Riverine Flood Extent | Melbourne Water Stormwater Drain | Emergency Coordination Centre |
| 1% AEP Flash Flood Extent | Creek / Channel | Community Centre |
| Reserve / Park | Bicycle / Walking Trail | Power Terminal Station |
| Commercial Precinct | Sewer Emergency Relief Point | Rain Gauge |
| Melbourne Water Retarding Basin | Fire Station | Stream Level Gauge |
| Bus Route (PTV) | Ambulance Station | Municipal Offices |
| Embankment | Caravan Park | |
| Levee | Hospital | |



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.

Figure C6 – Areas of flood risk around Dandenong Creek in the City of Monash

Properties at Flood Risk

Properties listed in the table below are at risk from flooding along Dandenong Creek in Monash during a 1% AEP Flood Event. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Dandenong Creek (Melbourne Water) 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 Dandenong Creek in Monash during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
15	Almray Place	Glen Waverley	Dandenong Creek	Riverine
16	Almray Place	Glen Waverley	Dandenong Creek	Riverine
2	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
2A	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
4	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
6	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
8	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
10	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
16	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
18	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
20	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
22	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
24	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
26	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
28	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
40	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
42	Elmstead Drive	Wheelers Hill	Dandenong Creek	Riverine
49	Haversham Avenue	Wheelers Hill	Dandenong Creek	Riverine
958-966	High Street Road	Glen Waverley	Dandenong Creek	Riverine
988-990	High Street Road	Glen Waverley	Dandenong Creek	Riverine
996	High Street Road	Glen Waverley	Dandenong Creek	Riverine
1021	High Street Road	Glen Waverley	Dandenong Creek	Riverine
16	Holmbury Boulevard	Mulgrave	Dandenong Creek	Riverine
18	Holmbury Boulevard	Mulgrave	Dandenong Creek	Riverine
7	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
9	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
11	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
13	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
15	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
17	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
19	Kristen Close	Glen Waverley	Dandenong Creek	Riverine

Properties at risk from Flooding along Dandenong Creek in Monash during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
21	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
23	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
25	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
27	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
29	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
31	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
33	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
35	Kristen Close	Glen Waverley	Dandenong Creek	Riverine
7	Torwood Avenue	Glen Waverley	Dandenong Creek	Riverine
9	Torwood Avenue	Glen Waverley	Dandenong Creek	Riverine
11	Torwood Avenue	Glen Waverley	Dandenong Creek	Riverine
13	Torwood Avenue	Glen Waverley	Dandenong Creek	Riverine
15	Torwood Avenue	Glen Waverley	Dandenong Creek	Riverine
17	Torwood Avenue	Glen Waverley	Dandenong Creek	Riverine
19	Torwood Avenue	Glen Waverley	Dandenong Creek	Riverine
21	Torwood Avenue	Glen Waverley	Dandenong Creek	Riverine
703	Wellington Road	Wheelers Hill	Dandenong Creek	Riverine
720	Wellington Road	Mulgrave	Dandenong Creek	Riverine
722	Wellington Road	Mulgrave	Dandenong Creek	Riverine
724	Wellington Road	Mulgrave	Dandenong Creek	Riverine
Total				
51				

Table C6.4 – Properties at risk of flooding along Dandenong Creek in the City of Monash

Properties listed in the table below are at risk from flooding over-floor along Dandenong Creek's Stormwater Tributaries in Monash. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Nunawading Outfall (Cardno, December 2009) and the Jells Road / Ferntree Gully Road D.S. (WBM, October 1999) 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. 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 over-floor along Dandenong Creek's Stormwater Tributaries in Monash						
Residential	Commercial	Industrial	Rural	Public Use		
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
5% AEP	2% AEP	1% AEP				
		✓	12 Almray Place	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	60 Amelia Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	62 Amelia Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash

Properties at risk from Flooding over-floor along Dandenong Creek's Stormwater Tributaries in Monash

Properties at risk from Flooding over-floor along Dandenong Creek's Stormwater Tributaries in Monash						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
5% AEP	2% AEP	1% AEP				
✓	✓	✓	64 Amelia Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	66 Amelia Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
		✓	55 Annandale Crescent	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	59 Annandale Crescent	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	2 Ayr Court	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	3 Ayr Court	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	4 Ayr Court	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	5 Ayr Court	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	1 Basil Crescent	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	2 Basil Crescent	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
	✓	✓	3 Basil Crescent	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
		✓	29 Browning Drive	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	3 Camelot Drive	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	1/11 Camelot Drive	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	43 Camelot Drive	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	75 Camelot Drive	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	77 Camelot Drive	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	78 Camelot Drive	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	26 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	3/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	4/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	5/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	6/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	7/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	8/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	9/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	10/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	11/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	12/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	13/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	14/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	15/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	16/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	18/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	19/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	20/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	21/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	23/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	28/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	29/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	31/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	32/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	33/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash

Properties at risk from Flooding over-floor along Dandenong Creek's Stormwater Tributaries in Monash

Properties at risk from Flooding over-floor along Dandenong Creek's Stormwater Tributaries in Monash						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
5% AEP	2% AEP	1% AEP				
✓	✓	✓	34/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	35/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	36/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	37/42-60 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	83-95 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	92 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	94 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	97 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	98 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	99 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	101 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	103 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	105 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	107 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	132 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	141 Capital Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	3 Danielle Close	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	4 Danielle Close	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	5 Danielle Close	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	6 Danielle Close	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	38 Elmstead Drive	Wheelers Hill	Deviation Road Drain System	Flash
		✓	12 Ferres Court	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	29 Ferres Court	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	958-964 High Street Road	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	977 High Street Road	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	979 High Street Road	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	981 High Street Road	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	985 High Street Road	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	105 King Arthur Drive	Glen Waverley	Nunawading Outfall Drain	Flash
	✓	✓	13 Kristen Close	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	17 Kristen Close	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	21 Kristen Close	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	29 Kristen Close	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	35 Kristen Close	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	2 Leon Street	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	4 Leon Street	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	6 Leon Street	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	59 Mary Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	61 Mary Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	70 Mary Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	78 Mary Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	88 Mary Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash

Properties at risk from Flooding over-floor along Dandenong Creek's Stormwater Tributaries in Monash						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
5% AEP	2% AEP	1% AEP				
✓	✓	✓	90 Mary Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	92 Mary Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	104 Mary Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	6 Marykirk Drive	Wheelers Hill	Deviation Road Drain System	Flash
✓	✓	✓	23 Parsons Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	25 Parsons Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	51 Petronella Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
		✓	53 Petronella Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	55 Petronella Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
		✓	57 Petronella Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
✓	✓	✓	59 Petronella Avenue	Wheelers Hill	Jells Road / Ferntree Gully Drain	Flash
		✓	3 Tweed Court	Glen Waverley	Nunawading Outfall Drain	Flash
✓	✓	✓	4 Tweed Court	Glen Waverley	Nunawading Outfall Drain	Flash
		✓	11 Vigil Avenue	Glen Waverley	Nunawading Outfall Drain	Flash
Totals						
40	70	102				

Table C6.5 – Properties at risk of flooding along Dandenong Creek's stormwater tributaries in the City of Monash

Isolation

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

Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. <http://ptv.vic.gov.au/live-travel-updates/>. A map of Public Transport routes within the City of Monash is available via the website at: https://www.ptv.vic.gov.au/assets/default-site/more/maps/Local-area-maps/Metropolitan/c6849f1d8e/33_Monash_LAM.pdf

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

Road Closures

The following roads are subject to closure during flooding around Glen Waverley, Wheelers Hill & Mulgrave. Check the VicRoads website for more details: <https://traffic.vicroads.vic.gov.au/>

VicRoads Roads flooded in a 1% AEP (100yr ARI) event
• Ferntree Gully Road, Wheelers Hill at Dandenong Creek
• Highbury Road, Glen Waverley at Licola Street (flash flooding)
• High Street Road, Glen Waverley west of Dandenong Creek (flash flooding)
• Wellington Road, Wheelers Hill at Dandenong Creek

Table C6.6 – VicRoads Possible Road Closures during a flooding event

Monash City Council Roads flooded in a 1% AEP (100yr ARI) event			
GLEN WAVERLEY	• Edinburgh Avenue	• Kymme Court	• Danielle Close
• Annandale Crescent	• Excalibur Avenue	• Olympic Court	• Elmstead Drive
• Ayr Court	• Ferris Court	• Parsons Avenue	• Haversham Avenue
• Banner Court	• Garwain Parade	• Troy Street	• Leon Street
• Brighton Street	• Gaynor Crescent	• Tweed Court	• Mary Avenue
• Cairn Grove	• Hector Court	• Vigil Avenue	• Petronella Avenue
• Camelot Drive	• Herald Court	WHEELERS HILL	• Redleaf Way
• Capital Avenue	• King Arthur Drive	• Amelia Avenue	• Stockade Drive
• Champion Crescent	• Kristen Close	• Basil Crescent	• Strickland Drive

Table C6.7 – Monash City Council Possible Road Closures during a flooding event

Flood Mitigation

Retarding Basins

Melbourne Water Retarding Basin	On Drain/ Waterway	Area	Storage Capacity	Spillway Crest Level	Full Supply Level	Embankment Crest Height (Level)	ANCOLD Hazard Rating	Properties In Flow Path (dam breach)	Melway Reference
Police Road, Rowville	Dandenong Creek	118.1 ha	660 ML	39.6m AHD	42.0m AHD	4.9m (42.7m AHD)	Very Low	0	81 E5

Table C6.8 – Melbourne Water Retarding Basins within the Dandenong Creek catchment in the City of Monash

Levees

Melbourne Water Levee	Reach	Side	Levee Height	Levee Length	Expected Level of Protection	ANCOLD Hazard Rating	Houses at risk behind Levee	Melway Reference
Appletree Drive Levee, Dandenong Creek	Appletree Drive to Shepherd Road, Glen Waverley	West	1.4m to 1.75m	420m	400mm above the 1% AEP Flood Level	Unavailable	Residential properties at risk of flooding	71 J2 to J3

Table C6.9 – Melbourne Water Levees in the Dandenong Creek Catchment in the City of Monash

No formal Pumping Stations exist along Dandenong Creek in the City of Monash.

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located along Dandenong Creek and its stormwater tributaries in Monash is contained within the following table.

Sewer Emergency Relief Points

There are Sewer Emergency Relief Points along Dandenong Creek that will likely affect floodwater conditions should they be activated. Contact the Infrastructure Operator EMLO/Duty Officer for information on any recent or planned releases at a Sewer Emergency Relief Point as part of a Dynamic Risk Assessment (DRA) if work is to be conducted at or downstream of the outlet.

On Drain / Waterway	Bank / Side of Waterway	Operator	Location	Melway Reference
Dandenong Creek	West	Yarra Valley Water	Mulgrave Reserve, Wheelers Hill	81 B2

Table C6.10 – Sewer Emergency Relief Points in the Dandenong Creek Catchment in the City of Monash

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 & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding within the Dandenong Creek catchment at various creek heights or rain totals within Monash. 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:

- Dandenong Creek at Wantirna
- Dandenong Creek at Rowville
- Dandenong Creek's Stormwater Tributaries in Monash

FLOOD INTELLIGENCE CARD – WANTIRNA GAUGE, DANDENONG CREEK

Version 3 – June 2019



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.

LOCATION	South side of the creek 150m east of Wantirna Road, Wantirna
MELWAY REFERENCE:	63 H3
STREAM:	Dandenong Creek
GAUGE NUMBER:	228357A
GAUGE ZERO:	79.30m AHD
GAUGE TYPE	Stream Level & Rain

MINOR:	Not Established
MODERATE:	Not Established
MAJOR	Not Established
LEVEE HEIGHT:	N/A
TELEMETRIC/MANUAL	Telemetric
HIGHEST RECORDED FLOOD:	2.77m (5 th February 2011)

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
2.5m		<ul style="list-style-type: none"> Spillway at Police Road Retarding Basin starts operating 	
4.9m	1% AEP (100yr ARI) Flood Level	<p>Properties at Flood Risk 29 Properties in Total</p> <ul style="list-style-type: none"> 958-966, 988-990, 996 & 1021 High Street Road, Glen Waverley 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33 & 35 Kristen Close, Glen Waverley flooded from backup flows from Dandenong Creek 7, 9, 11, 13, 15, 17, 19 & 21 Torwood Avenue, Glen Waverley flooded from backup flows from Dandenong Creek 15 & 16 Almray Place, Glen Waverley <p>Community Infrastructure Flooded</p> <ul style="list-style-type: none"> Dandenong Creek trail flooded at various sections Drummies Bridge Reserve Waverley Baseball Club Shepherds Bush Parkland, Glen Waverley Sections of Glen Waverley Golf Course Parts of Jells Park, Wheelers Hill <p>Water Over Road</p> <ul style="list-style-type: none"> Kristen Close, Glen Waverley 	<p>VicSES State and Region to provide warnings to the community and other agencies.</p> <p>VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident</p> <p>VicSES to respond as per request by request basis.</p> <p>Council to provide road closure signage if required.</p>

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
5.8m		Water Over Road <ul style="list-style-type: none"> High Street Road, Glen Waverley at Dandenong Creek 	Council to provide road closure signage if required.

Table C6.11 – Breakdown of likely consequences in Monash at various Wantirna gauge level heights along Dandenong Creek with operational considerations

FLOOD INTELLIGENCE CARD – ROWVILLE GAUGE, DANDENONG CREEK

Version 3 – June 2019



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

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LOCATION	North Side of Police Road Retarding Basin Embankment, Illawarra Road, Rowville
MELWAY REFERENCE:	81 E6
STREAM:	Dandenong Creek
GAUGE NUMBER:	228368A
GAUGE ZERO:	35.31m AHD
GAUGE TYPE	Stream Level & Rain

MINOR:	4.6m
MODERATE:	5.0m
MAJOR	5.5m
EMBANKMENT HEIGHT:	7.39m (42.7m AHD)
TELEMETRIC/MANUAL	Telemetric
HIGHEST RECORDED FLOOD:	5.69m (18 th September 1984)

Creek Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
4.29m		<ul style="list-style-type: none"> Spillway Level of Police Road Retarding Basin reached 	
4.6m	MINOR FLOOD LEVEL	Community Infrastructure Flooded <ul style="list-style-type: none"> Dandenong Creek Trail flooded in parts 	
5.0m	MODERATE FLOOD LEVEL	Water Over Road <ul style="list-style-type: none"> Ferntree Gully Road, Scoresby at Dandenong Creek 	
5.5m	MAJOR FLOOD LEVEL 1% AEP (100yr ARI) Flood Level	Properties at Flood Risk 22 Properties in Total <ul style="list-style-type: none"> 2, 2A, 4, 6, 8 10, 16, 18, 20, 22, 24, 26, 28, 40 & 42 Elmstead Drive, Wheelers Hill 49 Haversham Avenue, Wheelers Hill 703, 720, 722 & 724 Wellington Road, Wheelers Hill 16 & 18 Hombury Boulevard, Mulgrave Community Infrastructure Flooded <ul style="list-style-type: none"> Mulgrave Reserve, Mulgrave Water Over Road <ul style="list-style-type: none"> Elmstead Drive, Wheelers Hill Haversham Avenue, Wheelers Hill 	

Creek Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> Wellington Road, Rowville at Dandenong Creek 	
5.56m	3 rd February 2005 Flood Level Peak		
5.69m	18 th September 1984 Flood Level Peak		
6.69m		<ul style="list-style-type: none"> Full Supply Level of Police Road Retarding Basin reached 	
7.39m		<ul style="list-style-type: none"> Embankment Level of Police Road Retarding Basin reached 	

Table C6.12 – Breakdown of likely consequences in Monash at various Rowville gauge level heights along Dandenong Creek with operational considerations

FLOOD INTELLIGENCE CARD – DANDENONG CREEK’S STORMWATER TRIBUTARIES, GLEN WAVERLEY (UNGAUGED)

Version 3 – June 2019



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.

CLOSEST RAIN GAUGE	Mount View, Glen Waverley
LOCATION	Mount View Reservoir, Waverley Rd, Glen Waverley
MELWAY REF:	71 E5

GAUGE NUMBER	586197
GAUGE TYPE	Rain
TELEMETRIC/MANUAL	Telemetric

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
11mm in 10 mins; 19mm in 30 mins; 24mm in 1 hour; 30mm in 2 hours; 34mm in 3 hours; or 43mm 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.	20% AEP (5 year ARI)	Community Infrastructure Flooded Nunawading Outfall Drain <ul style="list-style-type: none"> Highvale Retirement Village affected by flooding along main drive way Capital Reserve, Glen Waverley Inundated Water Over Road (above 300mm depth) Nunawading Outfall Drain <ul style="list-style-type: none"> Capital Avenue, Glen near High Street Road Ferris Court, Glen Waverley south of Tanner Street Parsons Avenue, Glen Waverley High Street Road, Glen Waverley at Capital Avenue Kristen Close, Glen Waverley 	VicSES State and Region to provide warnings to the community and other agencies. VicSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Controller will maintain operational awareness and form an appropriate response arrangement to suit the level of incident
14mm in 10 mins; 23mm in 30 mins; 29mm in 1 hour; 35mm in 2 hours; 40mm in 3 hours; or	10% AEP (10 year ARI)	Properties at Flood Risk (Over-Floor) 2 Properties in Total Nunawading Outfall Drain <ul style="list-style-type: none"> Units 34-35/42-60 Capital Avenue, Glen Waverley Community Infrastructure Flooded Nunawading Outfall Drain	VicSES to respond as per request by request basis. Retire village to implement their emergency evacuation plan if required

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
<p>50mm 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>		<ul style="list-style-type: none"> Highvale Retirement Village likely flooded along main drive way Capital Reserve, Glen Waverley <p>Water Over Road (over 300mm depth)</p> <p>Nunawading Outfall Drain</p> <ul style="list-style-type: none"> Capital Avenue, Glen Waverley at Parsons Avenue and between Camelot Drive and High Street Road Ferris Court, Glen Waverley south of Tanner Street Parsons Avenue, Glen Waverley High Street Road, Glen Waverley at Capital Avenue Kristen Close, Glen Waverley Kymme Court, Glen Waverley 	<p>Council to provide road closure signage if required.</p>
<p>16mm in 10 mins; 27mm in 30 mins; 34mm in 1 hour; 41mm in 2 hours; 46mm in 3 hours; or 57mm 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>5% AEP (20 year ARI)</p>	<p>Properties at Flood Risk (Over-Floor)</p> <p>40 Properties in Total</p> <p>Nunawading Outfall Drain</p> <ul style="list-style-type: none"> 3 & 75 Camelot Drive, Glen Waverley 10/42-60, Units 18-21/42-60, 28/42-60, Units 34-35/42-60, 83-95, 97 & 107 Capital Avenue, Glen Waverley 981 High Street Road, Glen Waverley 23 Parsons Avenue, Glen Waverley 4 Tweed Court, Glen Waverley <p>Jells Road/Ferntree Gully Rd Drain</p> <ul style="list-style-type: none"> 60, 62, 64 & 66 Amelia Avenue, Wheelers Hill 1 & 2 Basil Crescent, Wheelers Hill 3, 4, 5 & 6 Danielle Close, Wheelers Hill 2, 4 & 6 Leon Street, Wheelers Hill 59, 61, 70, 78, 88, 90, 92 & 104 Mary Avenue, Wheelers Hill 55 & 59 Petronella Avenue, Wheelers Hill <p>Deviation Road Drain System</p> <ul style="list-style-type: none"> 38 Elmstead Drive, Wheelers Hill <p>Community Infrastructure Flooded</p> <p>Nunawading Outfall Drain</p> <ul style="list-style-type: none"> Highvale Retirement Village likely flooded along main drive way and affecting some residents along eastern edge to premises Capital Reserve and Tennis Courts, Glen Waverley Parts of Waverley Baseball Club <p>Water Over Road (over 300mm depth)</p> <p>Nunawading Outfall Drain</p> <ul style="list-style-type: none"> Highbury Road, Glen Waverley at Licola Street Capital Avenue, Glen Waverley at Parsons Avenue and between Camelot Drive and High Street Road 	<p>VicSES to respond as per request by request basis.</p> <p>Retirement village to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> Ferris Court, Glen Waverley south of Tanner Street Gaynor Crescent, Glen Waverley Parsons Avenue, Glen Waverley with significant depths at end of court King Arthur Drive, Glen Waverley near Capital Avenue Excalibur Avenue, Glen Waverley High Street Road, Glen Waverley at Capital Avenue with significant depths Kristen Close, Glen Waverley Kymme Court, Glen Waverley 	
<p>20mm in 10 mins; 33mm in 30 mins; 41mm in 1 hour; 49mm in 2 hours; 55mm in 3 hours; or 68mm 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>	2% AEP (50 year ARI)	<p>Properties at Flood Risk (Over-Floor) 69 Properties in Total</p> <p>Nunawading Outfall Drain</p> <ul style="list-style-type: none"> 59 Annandale Crescent, Glen Waverley 4 & 5 Ayr Court, Glen Waverley 29 Browning Drive, Glen Waverley 3, 75 & 77 Camelot Drive, Glen Waverley 3/42-60, Units 5-8/42-60, Units 10-21/42-60, Units 28-29/42-60, Units 32-37/42-60, 83-95, 94, 97, 99, 103, 105, 107 & 141 Capital Avenue, Glen Waverley 977, 979, 981 & 985 High Street Road, Glen Waverley 13 Kristen Close, Glen Waverley 23 Parsons Avenue, Glen Waverley 4 Tweed Court, Glen Waverley <p>Jells Road/Ferntree Gully Rd Drain</p> <ul style="list-style-type: none"> 60, 62, 64 & 66 Amelia Avenue, Wheelers Hill 1, 2 & 3 Basil Crescent, Wheelers Hill 3, 4, 5 & 6 Danielle Close, Wheelers Hill 2, 4 & 6 Leon Street, Wheelers Hill 59, 61, 70, 78, 88, 90, 92 & 104 Mary Avenue, Wheelers Hill 55 & 59 Petronella Avenue, Wheelers Hill <p>Deviation Road Drain System</p> <ul style="list-style-type: none"> 38 Elmstead Drive, Wheelers Hill <p>Community Infrastructure Flooded</p> <p>Nunawading Outfall Drain</p> <ul style="list-style-type: none"> Highvale Retirement Village likely flooded along main drive way and affecting some residents along eastern edge to premises Capital Reserve and Tennis Courts, Glen Waverley Parts of Waverley Baseball Club <p>Water Over Road (over 300mm depth)</p> <p>Nunawading Outfall Drain</p> <ul style="list-style-type: none"> Highbury Road, Glen Waverley at Licola Street Troy Street, Glen Waverley 	<p>VicSES to respond as per request by request basis.</p> <p>Retirement village to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • Capital Avenue, Glen Waverley between Parsons Avenue and Troy Street and between Camelot Drive and High Street Road • Ferris Court, Glen Waverley south of Tanner Street • Gaynor Crescent, Glen Waverley • Parsons Avenue, Glen Waverley with significant depths at end of court • Camelot Drive, Glen Waverley between Vigil Avenue and Capital Avenue • Garwain Parade, Glen Waverley • King Arthur Drive, Glen Waverley near Capital Avenue • Excalibur Avenue, Glen Waverley • Champion Crescent and Hector Court, Glen Waverley • Herald Court, Glen Waverley • Banner Court, Glen Waverley • Cairn Grove, Glen Waverley • Annandale Crescent, Glen Waverley between Ayr Court and High Street Road • Ayr Court, Glen Waverley • Tweed Court, Glen Waverley • High Street Road, Glen Waverley at Capital Avenue with significant depths across both sets of lanes • Kristen Close, Glen Waverley • Kymme Court, Glen Waverley 	
<p>24mm in 10 mins; 39mm in 30 mins; 47mm in 1 hour; 56mm in 2 hours; 62mm in 3 hours; or 77mm 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>	<p>Properties at Flood Risk (Over-Floor)</p> <p>102 Properties in Total</p> <p>Nunawading Outfall Drain</p> <ul style="list-style-type: none"> • 12 Almray Place, Glen Waverley • 55 & 59 Annandale Crescent, Glen Waverley • 2, 3, 4 & 5 Ayr Court, Glen Waverley • 29 Browning Drive, Glen Waverley • 3, 1/11, 43, 75, 77 & 78 Camelot Drive, Glen Waverley • 26, Units 3-23/42-60, Units 28-29/42-60, Units 31-37/42-60, 83-95, 92, 94, 97, 98, 99, 101, 103, 105, 107, 132 & 141 Capital Avenue, Glen Waverley • 12 & 29 Ferres Court, Glen Waverley • 958-964, 977, 979, 981 & 985 High Street Road, Glen Waverley • 105 King Arthur Drive, Glen Waverley • 13, 17, 21, 29 & 35 Kristen Close, Glen Waverley • 23 & 25 Parsons Avenue, Glen Waverley • 3 & 4 Tweed Court, Glen Waverley • 11 Vigil Avenue, Glen Waverley <p>Jells Road/Ferntree Gully Rd Drain</p> <ul style="list-style-type: none"> • 60, 62, 64 & 66 Amelia Avenue, Wheelers Hill 	<p>VicSES to respond as per 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"> • 1, 2 & 3 Basil Crescent, Wheelers Hill • 3, 4, 5 & 6 Danielle Close, Wheelers Hill • 2, 4 & 6 Leon Street, Wheelers Hill • 59, 61, 70, 78, 88, 90, 92 & 104 Mary Avenue, Wheelers Hill • 51, 53, 55, 57 & 59 Petronella Avenue, Wheelers Hill • Deviation Road Drain System • 38 Elmstead Drive, Wheelers Hill • 6 Marykirk Drive, Wheelers Hill • Community Infrastructure Flooded • Nunawading Outfall Drain • Highvale Retirement Village likely flooded along main drive way and affecting some residents along eastern edge to premises • Capital Reserve and Tennis Courts, Glen Waverley • Parts of Waverley Baseball Club are • Jells Road/Ferntree Gully Rd Drain • Jells Park South, Wheelers Hill • Water Over Road (over 300mm depth) • Nunawading Outfall Drain • Highbury Road, Glen Waverley at Licola Street • Troy Street, Glen Waverley • Capital Avenue, Glen Waverley between Parsons Avenue and Troy Street and between Camelot Drive and High Street Road • Ferris Court, Glen Waverley south of Tanner Street • Gaynor Crescent, Glen Waverley • Parsons Avenue, Glen Waverley with significant depths at end of court • Vigil Avenue, Glen Waverley • Camelot Drive, Glen Waverley between Vigil Avenue and Capital Avenue • Garwain Parade, Glen Waverley • King Arthur Drive, Glen Waverley near Capital Avenue • Excalibur Avenue, Glen Waverley • Champion Crescent and Hector Court, Glen Waverley • Herald Court, Glen Waverley • Banner Court, Glen Waverley • Cairn Grove, Glen Waverley • Annandale Crescent, Glen Waverley between Ayr Court and High Street Road • Ayr Court, Glen Waverley • Tweed Court, Glen Waverley • High Street Road, Glen Waverley at Capital Avenue with significant depths across both sets of lanes • Kristen Close, Glen Waverley 	<p>Retirement village centre to implement their emergency evacuation plan if required</p> <p>Council to provide road closure signage if required.</p>

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> • Kymme Court, Glen Waverley • Jells Road/Ferntree Gully Rd Drain • Mary Avenue, Wheelers Hill • Petronella Avenue, Wheelers Hill • Basil Crescent, Wheelers Hill • Amelia Avenue, Wheelers Hill • Ferntree Gully Road Southern Service Road at Marykirk Drive, Wheelers Hill 	

Table C1.13 – Breakdown of possible consequences at various rainfall intensities around Glen Waverley and Wheelers Hill in the Dandenong Creek catchment 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 in consultation with the MERO, MERC, DHHS, Health Commander and other key agencies and expert advice (CMA's and Flood Intelligence specialists).

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 MERO, MERC, DHHS and other key agencies and expert advice (CMA's and Flood Intelligence specialists).

Phase 3 – Withdrawal

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

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

VICPOL will control security of evacuated areas.

Evacuees will be encouraged to move using their own transport where possible. Transport for those without vehicles or other means will be arranged in consultation with the MERO

Special needs groups will be/are identified in Council's 'vulnerable people' register. This can be done through community network organisations. Further information on Council's 'vulnerable people' register can be obtained from the MERO.

Phase 4 – Shelter

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

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

Animal Shelter

Animal shelter compounds may be established for domestic pets and companion animals of evacuees. Efforts will be made to accommodate animals at relief centres

Caravans

There are no established Caravan Parks in the City of Monash. There are privately owned caravan parks in Wantirna and Springvale.

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. This may include road closures affecting school bus routes, water storage and treatment plants affecting potable water supplies etc.

Essential Community Infrastructure and Property Protection

Monash Medical Centre has been identified as a significant item of community infrastructure which may require protection. The medical centre has developed its own emergency plans which will be activated in response to flooding issues.

Rescue

The following resources are available within the City of Monash to assist with rescue operations:

No resources identified.

Known high-risk areas/communities (i.e. low-lying islands) where rescues might be required include:

No areas or communities identified other than flash floods over roadways.

APPENDIX E - FLOOD WARNING SYSTEMS

Flood Warning

Flood 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

No local flood warning systems have been identified

APPENDIX F – MAPS

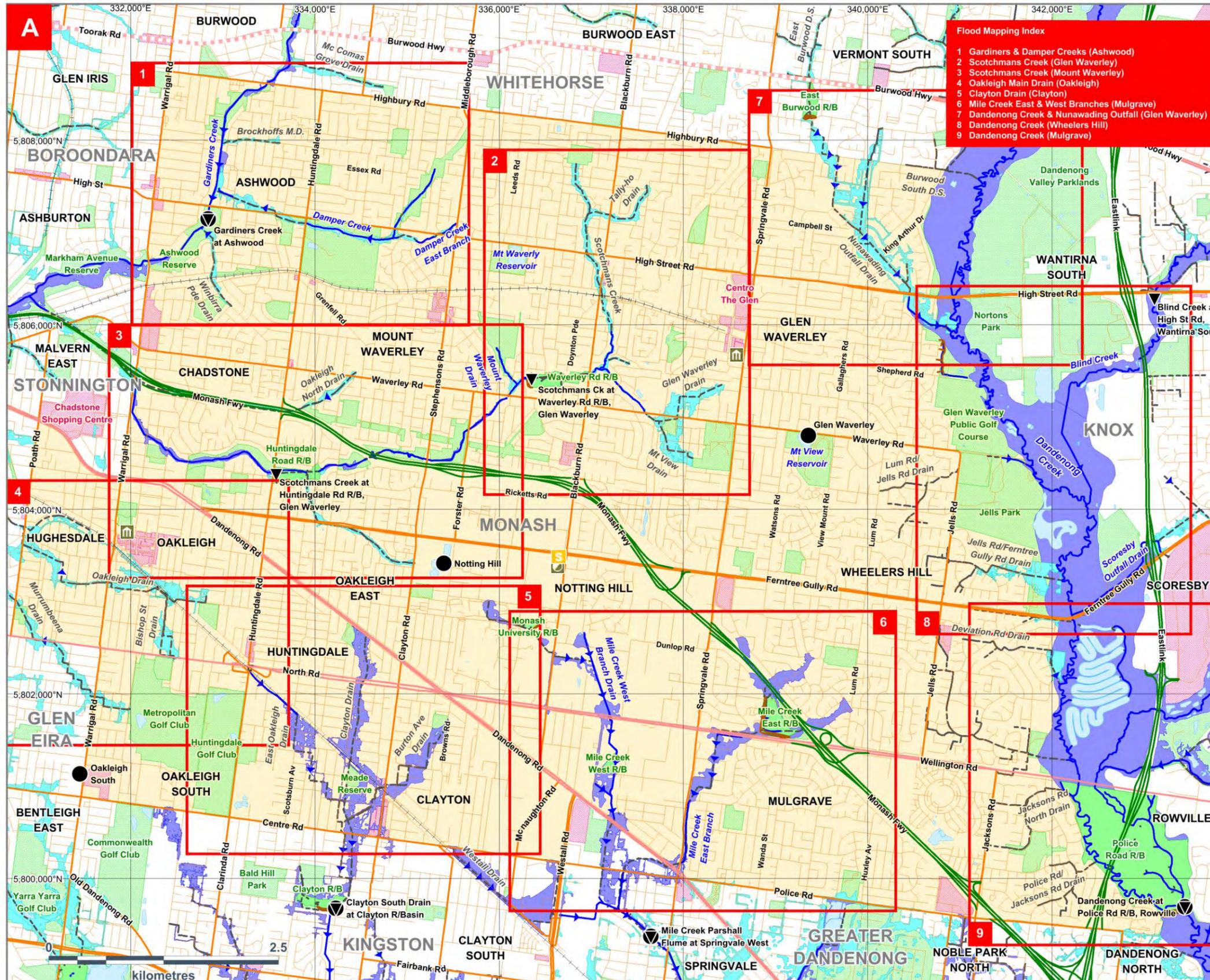
Overview

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

- A map outlining a series of flooding hot spot maps within the City of Monash.
- A map showing the Municipal boundary together with the open waterways and underground stormwater drainage pipe network within the City of Monash and the 1% AEP (100-year ARI) flood extents (sourced from Melbourne Water GIS).
- A set of 9 maps showing flooding hot spots within the City of Monash together with the 1% AEP (100-year ARI) flood extents (sourced from the Melbourne Water GIS).

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 Monash Planning Scheme can be used as a guide to areas that may flood during an event. The maps can be found in hard copy form at the Council's main office or online at the Department of Planning and Community Development website <http://planningschemes.dpcd.vic.gov.au/>.
- Maps showing 1 in 100-year ARI (1% AEP) flood extents and floodway's (together with volume, height and water quality data) are shown at the Victorian Water Resources website <http://mapshare.maps.vic.gov.au/MapShareVic/index.html?viewer=MapShareVic.PublicSite&locale=en-AU>.

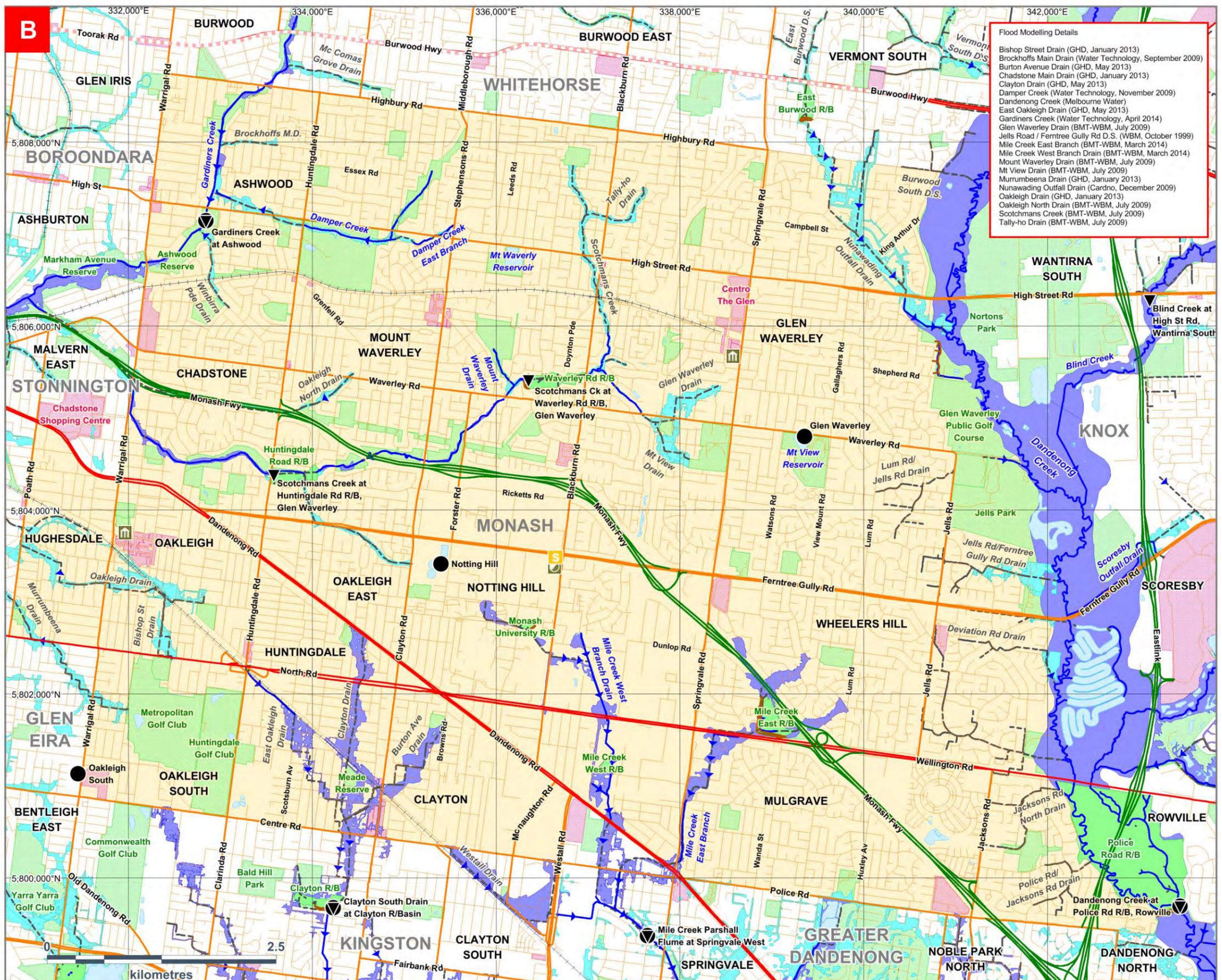


- 1% AEP Riverine Flood Extent
- 1% AEP Flash Flood Extent
- Reserve / Area of Interest
- Waterbody / Reservoir
- Melbourne Water Retarding Basin
- Commercial Precinct
- River / Creek
- Melbourne Water Stormwater Drain
- Embankment
- Levee
- Stream Level Gauge
- Rain Gauge
- Municipal Building
- Municipal Depot
- VICSES Unit

CITY OF MONASH
 Version 3: May 2019
 A - Flood Mapping Index



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Flood Modelling Details

- Bishop Street Drain (GHD, January 2013)
- Brockhoffs Main Drain (Water Technology, September 2009)
- Burton Avenue Drain (GHD, May 2013)
- Chadstone Main Drain (GHD, January 2013)
- Clayton Drain (GHD, May 2013)
- Dampier Creek (Water Technology, November 2009)
- Dandenong Creek (Melbourne Water)
- East Oakleigh Drain (GHD, May 2013)
- Gardiners Creek (Water Technology, April 2014)
- Glen Waverley Drain (BMT-WBM, July 2009)
- Jells Road / Ferntree Gully Rd D.S. (WBM, October 1999)
- Mile Creek East Branch (BMT-WBM, March 2014)
- Mile Creek West Branch Drain (BMT-WBM, March 2014)
- Mount Waverley Drain (BMT-WBM, July 2009)
- Mt View Drain (BMT-WBM, July 2009)
- Murrumbidgee Drain (GHD, January 2013)
- Nunawading Outfall Drain (Cardno, December 2009)
- Oakleigh Drain (GHD, January 2013)
- Oakleigh North Drain (BMT-WBM, July 2009)
- Scotchmans Creek (BMT-WBM, July 2009)
- Tally-ho Drain (BMT-WBM, July 2009)

- 1% AEP Riverine Flood Extent
- 1% AEP Flash Flood Extent
- Reserve / Area of Interest
- Waterbody / Reservoir
- Melbourne Water Retarding Basin
- Commercial Precinct
- River / Creek
- Melbourne Water Stormwater Drain
- Embankment
- Levee
- Stream Level Gauge
- Rain Gauge
- Municipal Building
- Municipal Depot
- VICSES Unit

N

CITY OF MONASH

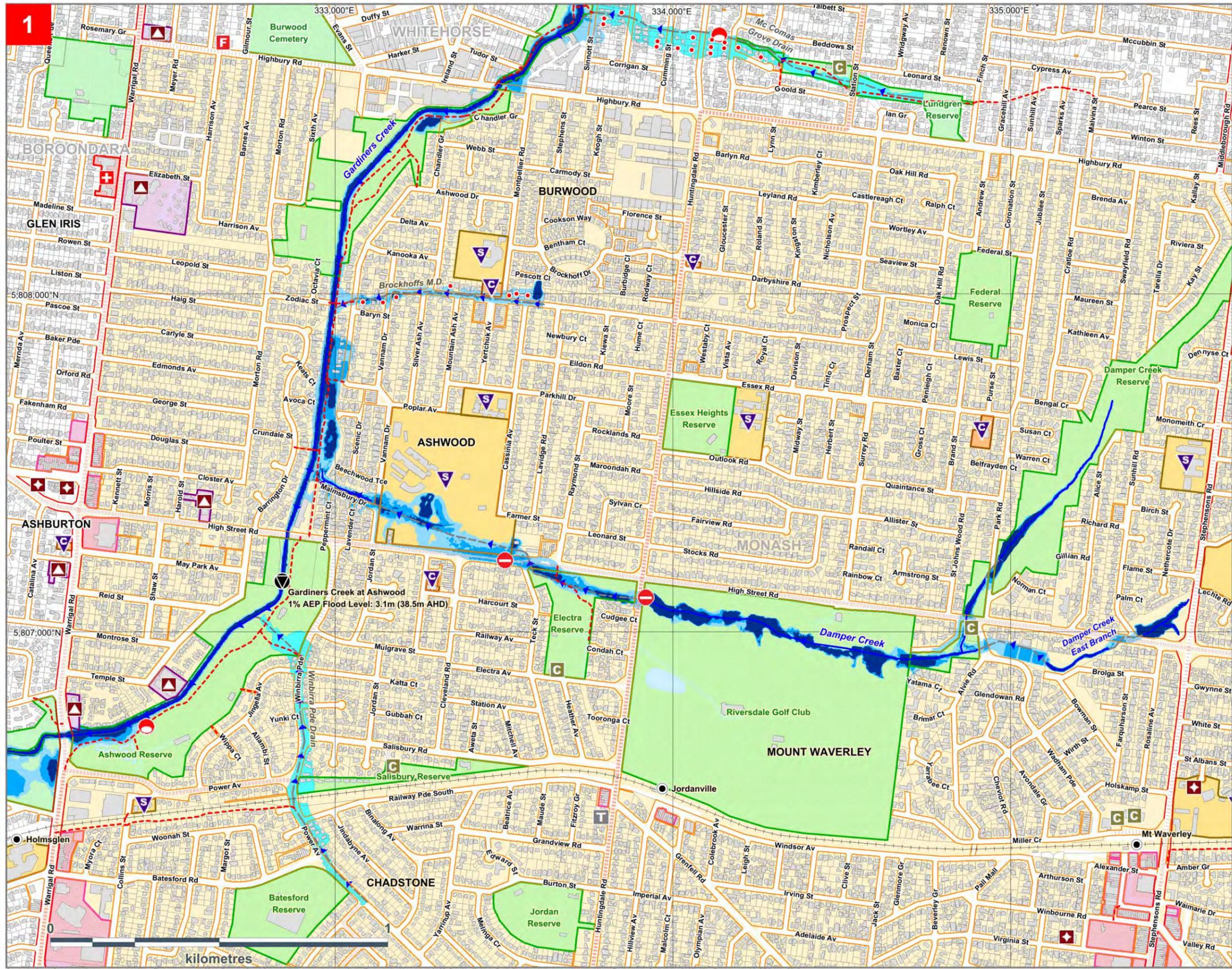
Version 3: May 2019

**B - 1% AEP (100yr ARI)
Flood Extent**



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Flood Extent Maps (sourced Melbourne Water GIS)



- Building
- Area of Interest
- Waterbody
- Shopping Precinct
- 1% AEP Flash Flood Extent (Depth Unavailable)
- 1% AEP Flash Flood Depth**
- Greater than 60cm
- Between 30cm and 60cm
- Up to 30cm
- Creek / Waterway
- Bicycle / Walking Trail
- Bus Routes (PTV)
- Melbourne Water Stormwater Drain
- Aged Care Facility
- Place Of Worship
- School / College
- Kindergarten / Child Care
- 1% AEP Over-Floor Flooding Risk
- Fire Station
- Likely Road Closure
- Sewer Emergency Relief Point
- Community Centre
- Hospital
- Stream Level Gauge & 1% AEP Flood Level
- Rain Gauge



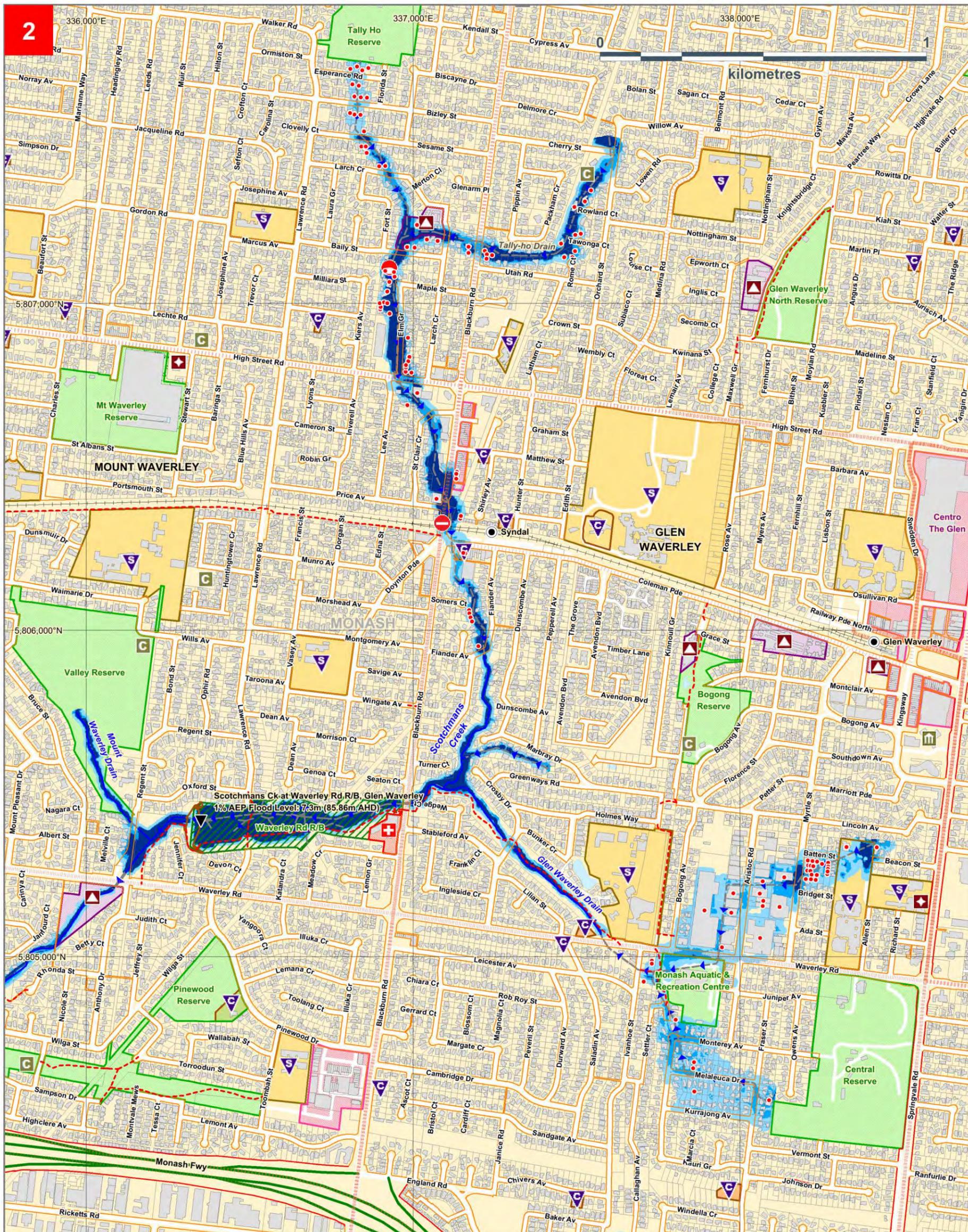
N

CITY OF MONASH
1% AEP (100yr ARI) Flooding
1. Gardiners Creek & Damper Creek (Ashwood)



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Gardiners Creek flood modelling completed by Water Technology, April 2014. Damper Creek flood modelling completed by Water Technology, November, 2009. Brockhoffs Main Drain flood modelling completed by Water Technology, September 2009. Map Produced by VicSES May 2019.



Flood modelling completed by BMT-WBM, July 2009. Map Produced by VICSES May 2019.

CITY OF MONASH

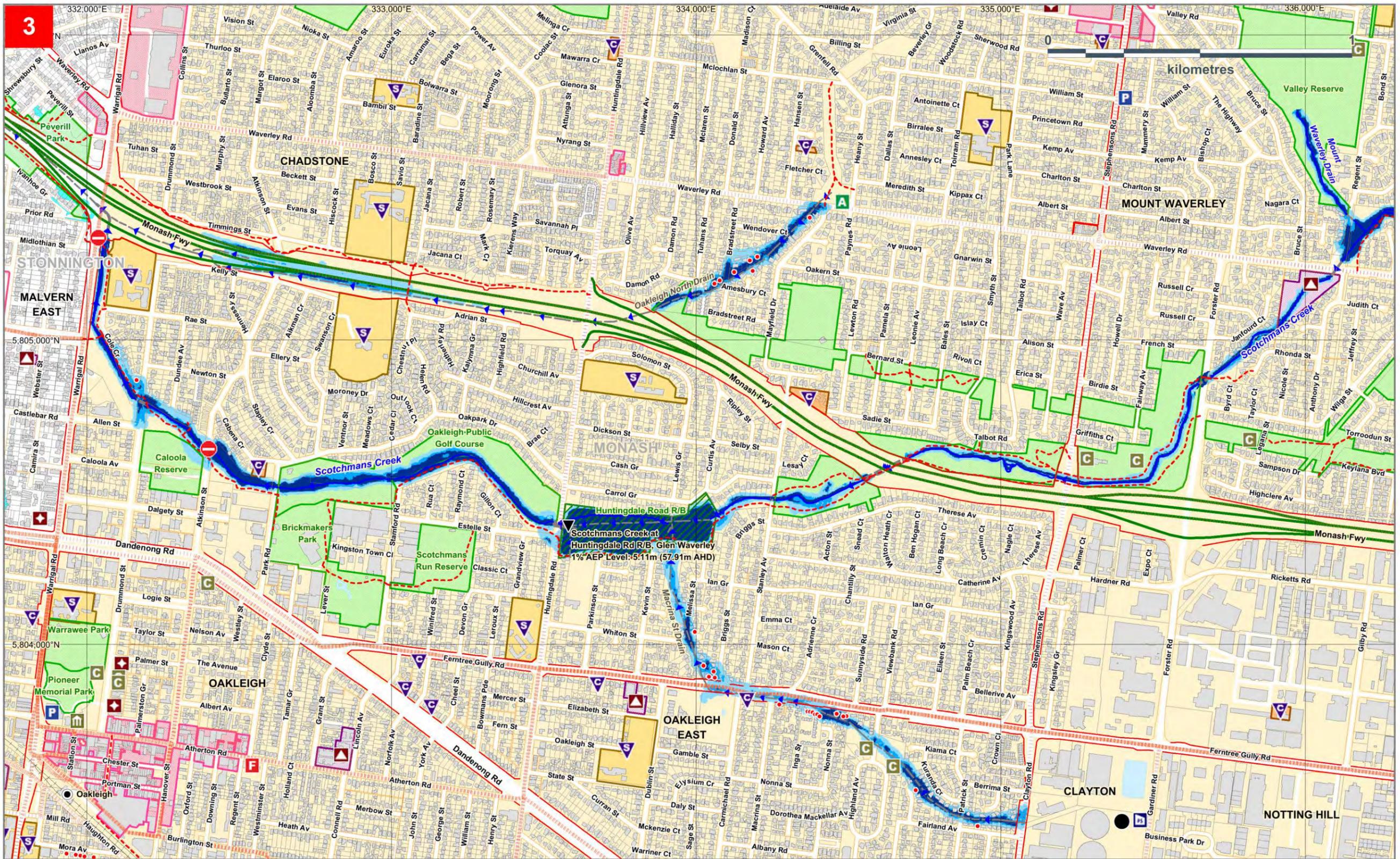
1% AEP (100yr ARI) Flooding 2. Scotchmans Creek (Glen Waverley)

- | | | | | | |
|--|---|--|----------------------------------|--|---|
| | Building | | Creek / Waterway | | Place Of Worship |
| | Waterbody | | Melbourne Water Stormwater Drain | | School / College |
| | Melbourne Water Retarding Basin | | Bicycle / Walking Trail | | Kindergarten / Child Care |
| | 1% AEP Flash Flood Depth Greater than 60cm | | Bus Route (PTV) | | 1% AEP Over-Floor Flooding Risk |
| | 1% AEP Flash Flood Depth Between 30cm to 60cm | | Embankment | | Likely Road Closure |
| | 1% AEP Flash Flood Depth Up to 30cm | | Aged Care Facility | | Stream Level Gauge & 1% AEP Flood Level |
| | Reserve / Park | | Community Centre | | Sewer Emergency Relief Point |
| | Shopping Precinct | | Hospital | | |
| | | | Municipal Offices | | |



VICTORIA
Melbourne Water

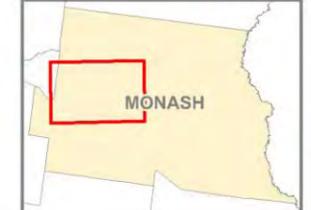
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Flood modelling completed by BMT-WBM, July 2009. Map Produced by VicSES May 2019.

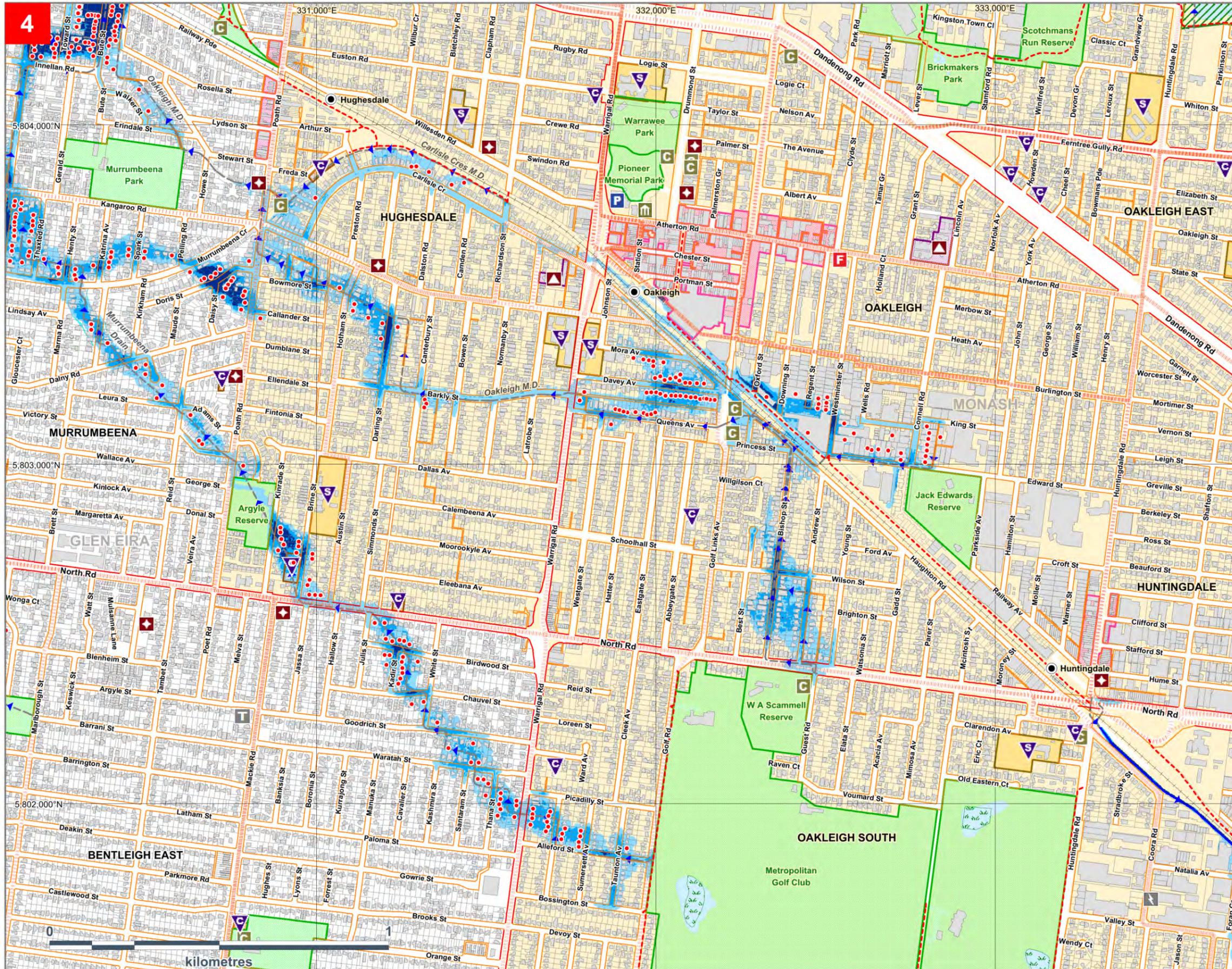
CITY OF MONASH
 1% AEP (100yr ARI) Flooding
3. Scotchmans Creek
 (Mount Waverley)

- | | | | | |
|---------------------------------|---|---------------------------|--------------------------|---------------------------------|
| Building | 1% AEP Flash Flood Extent Greater than 60cm | Bicycle / Walking Trail | Drainage Pumping Station | Police Station |
| Area of Interest | Between 30cm and 60cm | Bus Route (PTV) | Fire Station | Rain Gauge |
| Waterbody | Up to 30cm | Aged Care Facility | Likely Road Closure | School / College |
| Shopping Precinct | Melbourne Water Stormwater Drain | Ambulance Station | Municipal Offices | Stream Level Gauge |
| Melbourne Water Retarding Basin | Creek / Channel | Community Centre | Place Of Worship | 1% AEP Over-Floor Flooding Risk |
| | | Child Care / Kindergarten | | |



SES VICTORIA **Melbourne Water**

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- Building
- Area of Interest
- Waterbody
- Shopping Precinct
- Natural Wetland
- 1% AEP Flash Flood Depth**
- Greater than 60cm
- Between 30cm and 60cm
- Up to 30cm
- Creek / Waterway
- Bicycle / Walking Trail
- Bus Routes (PTV)
- Melbourne Water Stormwater Drain
- Aged Care Facility
- Community Centre
- Place Of Worship
- School / College
- Kindergarten / Child Care
- Police Station
- Telephone Exchange
- 1% AEP Over-Floor Flooding Risk



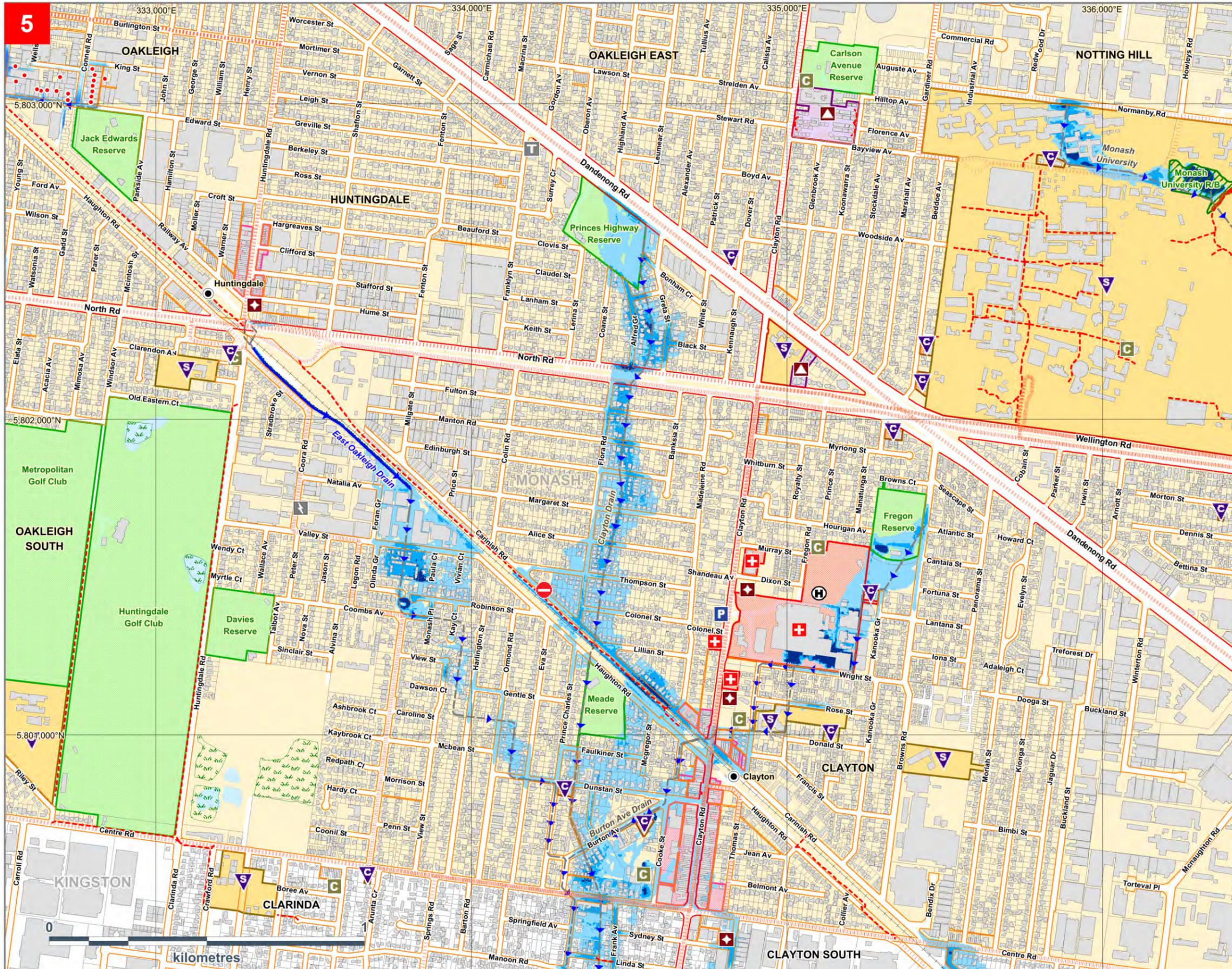
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CITY OF MONASH
1% AEP (100yr ARI) Flooding
4. Oakleigh Main Drain (Oakleigh)



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Flood modelling completed by GHD, January 2013. Map Produced by VicSES May 2019.



- Building
 - Area of Interest
 - Waterbody
 - Shopping Precinct
 - Natural Wetland
- 1% AEP Flash Flood Depth**
- Greater than 60cm
 - Between 30cm and 60cm
 - Up to 30cm
- Creek / Waterway
 - Bicycle / Walking Trail
 - Bus Routes (PTV)
 - Melbourne Water Stormwater Drain
 - Aged Care Facility
 - Community Centre
 - Place Of Worship
 - School / College
 - Kindergarten / Child Care
 - Hospital
 - Power Terminal Station
 - 1% AEP Over-Floor Flooding Risk
 - Road Closure Likely
 - Helipad
 - Police Station

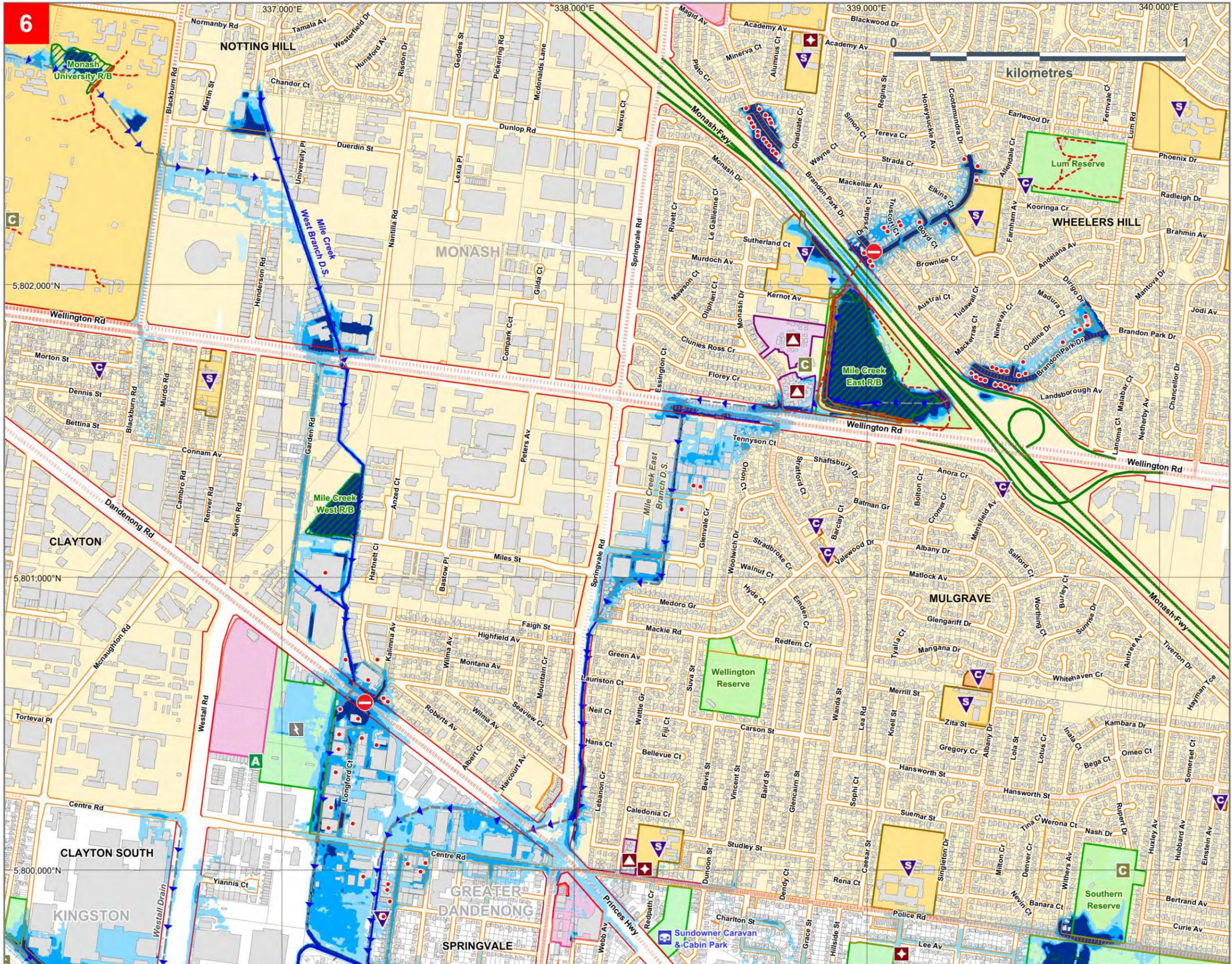


N

CITY OF MONASH
1% AEP (100yr ARI) Flooding
5. Clayton Drain (Clayton)

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Flood modelling completed by GHD, May 2013. Map Produced by VicSES May 2019.



- Building
- Area of Interest
- Waterbody
- Shopping Precinct
- Melbourne Water Retarding Basin
- 1% AEP Flash Flood Depth**
- Greater than 60cm
- Between 30cm and 60cm
- Up to 30cm
- Creek / Waterway
- Bicycle / Walking Trail
- Bus Routes (PTV)
- Melbourne Water Stormwater Drain
- Aged Care Facility
- Community Centre
- Place Of Worship
- School / College
- Kindergarten / Child Care
- Ambulance Station
- Power Terminal Station
- 1% AEP Over-Floor Flooding Risk
- Road Closure Likely
- Caravan Park

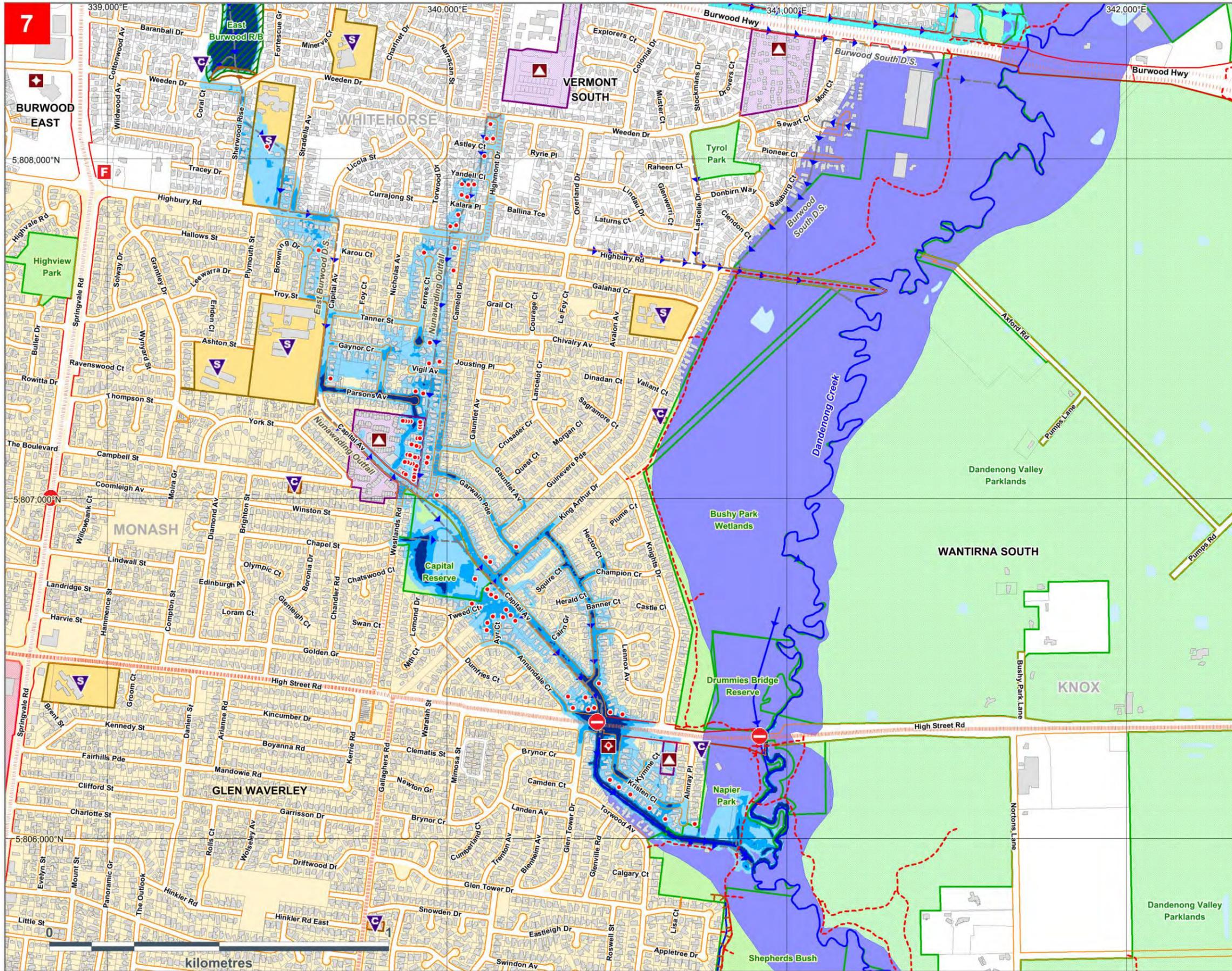


CITY OF MONASH
 1% AEP (100yr ARI) Flooding
6. Mile Creek East & West Branches (Mulgrave)



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Mile Creek flood modelling completed by BMT WBM, March 2014. Map Produced by VicSES March 2019.



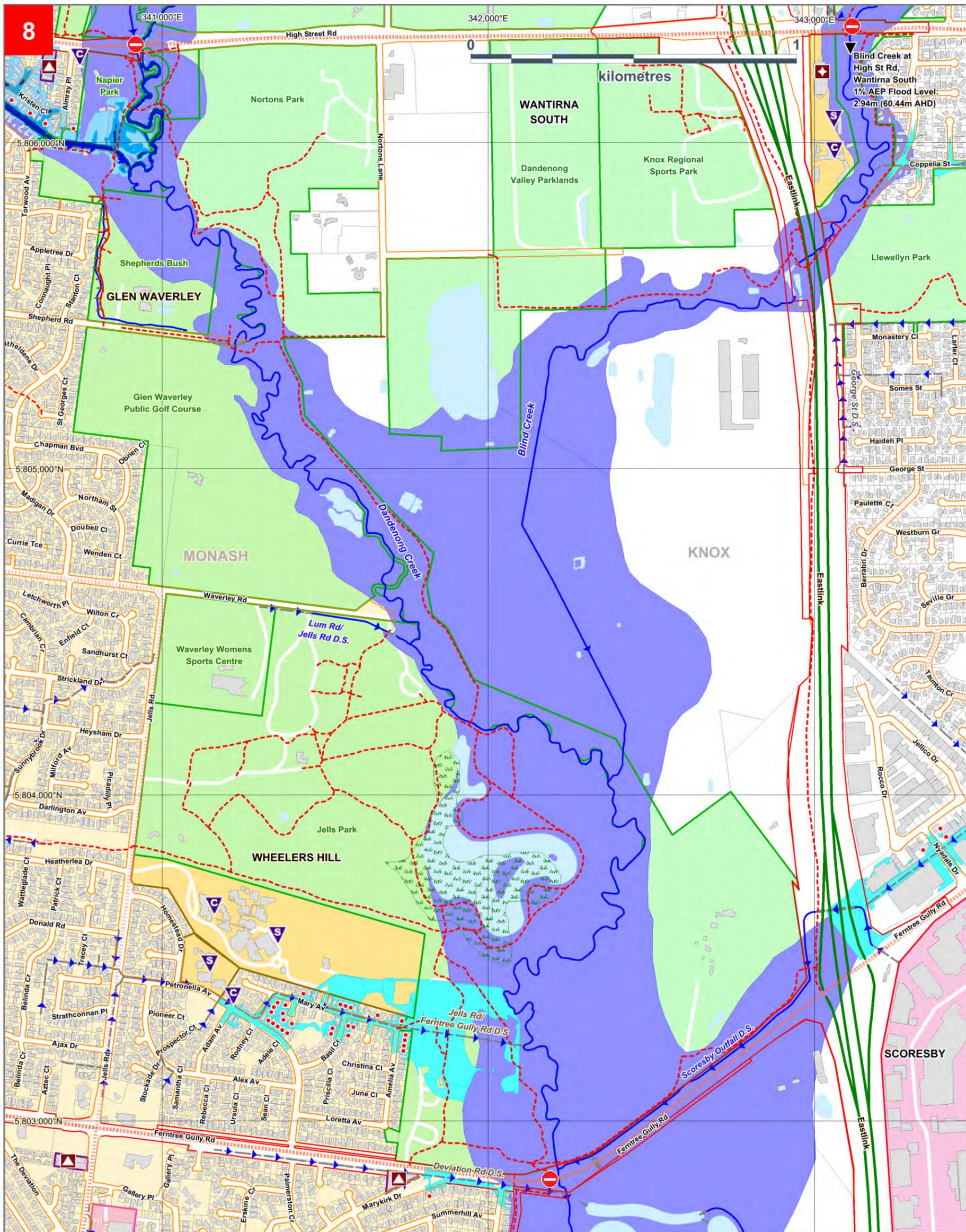
- Building
- Area of Interest
- Waterbody
- Shopping Precinct
- 1% AEP Riverine Flood Extent (Depth Unavailable)
- Melbourne Water Retarding Basin
- 1% AEP Flash Flood Depth**
- Greater than 60cm
- Between 30cm and 60cm
- Up to 30cm
- Creek / Waterway
- Bicycle / Walking Trail
- Bus Routes (PTV)
- Melbourne Water Stormwater Drain Embankment
- Aged Care Facility
- Place Of Worship
- School / College
- Kindergarten / Child Care
- 1% AEP Over-Floor Flooding Risk
- Fire Station
- Likely Road Closure



CITY OF MONASH
 1% AEP (100yr ARI) Flooding
7. Dandenong Creek & Nunawading Outfall Drain (Glen Waverley)

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Dandenong Creek flood modelling completed by Melbourne Water, December 2001. Nunawading Outfall flood modelling completed by Cardno, December 2009. Map Produced by VicSES May 2019.



Dandenong Creek flood modelling completed by Melbourne Water, December 2001. Stormwater Drainage flood modelling completed by WBM, October 1999. Map Produced by VICSES May 2019.

CITY OF MONASH

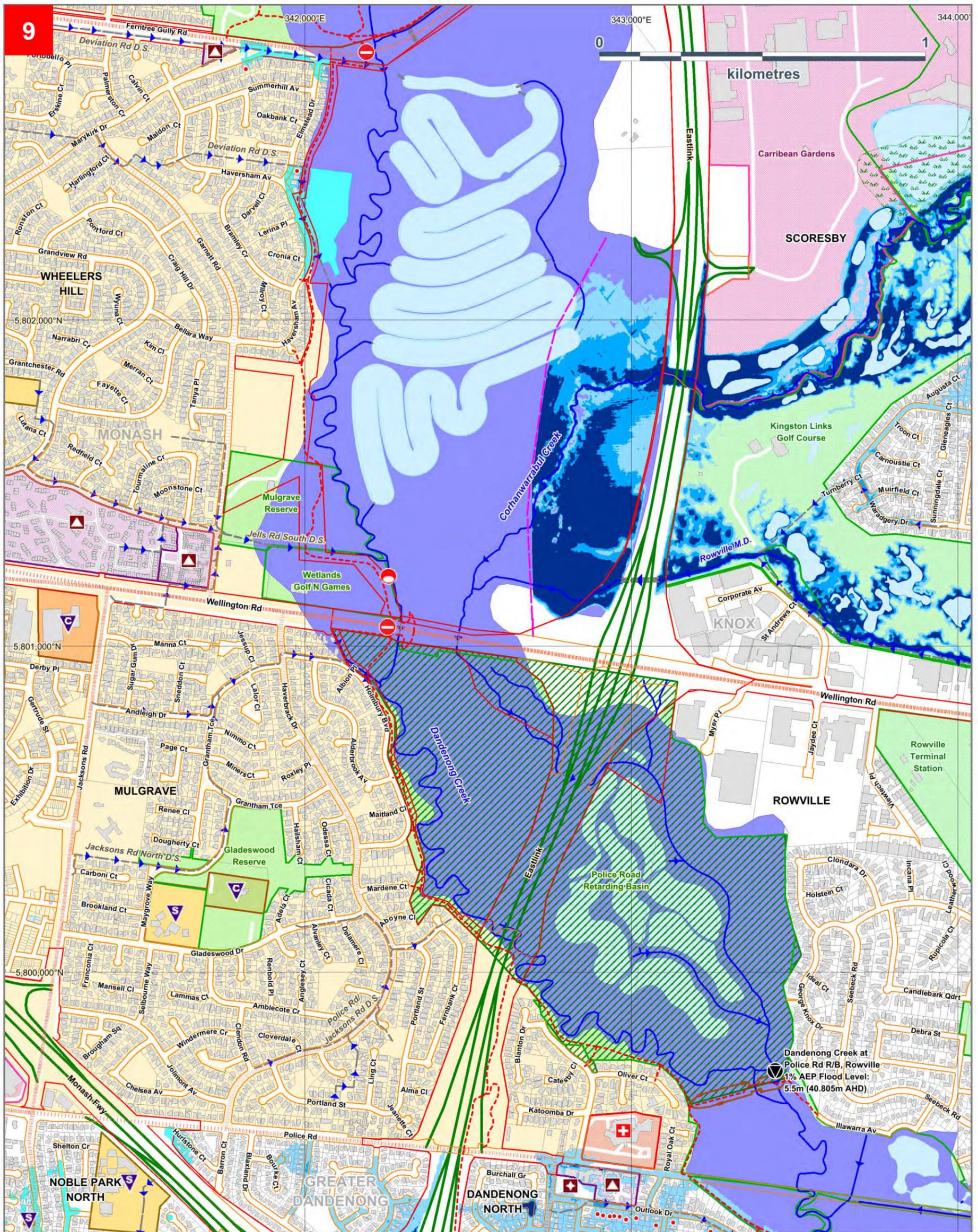
1% AEP (100yr ARI) Flooding
8. Dandenong Creek (Wheeler's Hill)

- | | | | | | |
|--|--|--|----------------------------------|--|---|
| | Building | | Natural Wetland | | Aged Care Facility |
| | Waterbody | | Reserve / Park | | Place Of Worship |
| | 1% AEP Riverine Flood Extent (Depth Unavailable) | | Shopping Precinct | | School / College |
| | 1% AEP Flash Flood Extent (Depth Unavailable) | | Creek / Waterway | | Kindergarten / Child Care |
| | 1% AEP Flash Flood Depth Greater than 60cm | | Melbourne Water Stormwater Drain | | 1% AEP Over-Floor Flooding Risk |
| | 1% AEP Flash Flood Depth Between 30cm and 60cm | | Bicycle / Walking Trail | | Likely Road Closure |
| | 1% AEP Flash Flood Depth Up to 30cm | | Bus Route (PTV) | | Stream Level Gauge & 1% AEP Flood Level |
| | | | Levee | | |



VICTORIA **Melbourne Water**

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Dandenong Creek flood modelling completed by Melbourne Water, December 2001. Stormwater Drainage flood modelling completed by BMT WBM, March 2010. Map Produced by VICSES May 2019.

CITY OF MONASH

1% AEP (100yr ARI) Flooding
9. Dandenong Creek (Mulgrave)

- | | | |
|--|----------------------------------|---|
| Building | Reserve / Park | School / College |
| Waterbody | Creek / Waterway | Kindergarten / Child Care |
| 1% AEP Riverine Flood Extent (Depth Unavailable) | Melbourne Water Stormwater Drain | 1% AEP Over-Floor Flooding Risk |
| 1% AEP Flash Flood Depth Greater than 60cm | Bicycle / Walking Trail | Likely Road Closure |
| 1% AEP Flash Flood Depth Between 30cm and 60cm | Bus Route (PTV) | Sewer Emergency Relief Point |
| 1% AEP Flash Flood Depth Up to 30cm | Embankment | Stream Level Gauge & 1% AEP Flood Level |
| Melbourne Water Retarding Basin | Flood Model Extent | Rain Gauge |
| Shopping Precinct | Aged Care Facility | Place Of Worship |
| Hospital | | |



SES VICTORIA **Melbourne Water**

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APPENDIX G – CATCHMENT SCHEMATICS

Schematics detailing the drainage catchments relevant for this municipality have been included in this Appendix. 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 not all waterways or drains are included in the schematics, only those that are likely to contribute to flooding further on along the drainage system. Note also the flow direction; the schematics either flow from the top of the page to the bottom, or vice versa.



Dandenong Creek Catchment Schematic

Version 6 - June 2019

YARRA RANGES MFEP

Emerald, Lilydale, Healesville & Upper Yarra Units

Mount Dandenong
- Station No. 586090
- Location: GTV9 Tower, Mount Dandenong

Bungalook Creek at Fussell Rd Retarding Basin

- Station No. 228369A
- Location: Fussell Road, Montrose (Melway 51K11)
- Historical Flood Level: 7.23m (18th September 1984)
- Historical Flood Level: 6.19m (30th July 1996)
- Spillway Level: 8.15m
- Embankment Level: 8.4m
- 1% AEP Flood Level: 8.39m

13 properties at risk of flooding over-floor in a 1% AEP event
The Croydon Civic Centre at risk of isolation in a 1% AEP event

CROYDON

Croydon Drain 5 km

Bungalook Creek 7 km

Dandenong Creek 1 km

WANTIRNA

Blind Creek 7 km

UPWEY

Blind Creek at Blind Creek Retarding Basin

Blind Creek at Wantirna South

Glen Waverley

WHEELERS HILL

Corhanwarrabul Creek

Police Road Retarding Basin

Dandenong Creek at Police Rd Retarding Basin

DANDENONG

Dandenong Creek at Keysborough

BANGHOLME

Patterson River at Patterson Lakes

PATTERSON LAKES

Port Phillip Bay

YARRA RANGES MFEP

Emerald, Lilydale, Healesville & Upper Yarra Units

Dandenong Creek at Liverpool Rd Retarding Basin

- Station No. 228373A
- Location: Liverpool Road, The Basin (Melway 65F4)
- Historical Flood Level: 6.43m (22nd January 1994)
- Spillway Level: 5.4m
- Full Supply Level: 6.0m
- Embankment Level: 6.6m

BAYSWATER

Blind Creek 7 km

UPWEY

Blind Creek at Blind Creek Retarding Basin

Blind Creek at Wantirna South

Glen Waverley

WHEELERS HILL

Corhanwarrabul Creek

Police Road Retarding Basin

Dandenong Creek at Police Rd Retarding Basin

DANDENONG

Dandenong Creek at Keysborough

BANGHOLME

Patterson River at Patterson Lakes

PATTERSON LAKES

Port Phillip Bay

Flow Direction ↓

MAROONDAH MFEP

Maroondah Unit

Dandenong Creek at Wantirna

- Station No. 228357A
- Location: Wantirna Road, Wantirna
- Travel Time to Rowville: Between 1-14 hours
- Historical Flood Level: 2.78m (5th February 2011)
- Historical Flood Level: 2.73m (3rd February 2005)
- Significant Level: 2.5m (Spillway at Police Rd Retarding Basin will start operating)
- 1% AEP Flood Level: 4.9m

WHITEHORSE MFEP

Whitehorse Unit

Knox City S.C. Carpark flooding at 4.7m on the Blind Creek RB Gauge - Residential properties and Knox City Shopping Centre at risk of flooding at 6.3m on the Blind Creek RB Gauge

KNOX MFEP

Knox Unit

WANTIRNA

Boronia Rd & Burwood Hwy flooded at 3.5m on the Wantirna Gauge

UPWEY

68 properties at risk of flooding over-floor in a 1% AEP event

Blind Creek at Blind Creek Retarding Basin

- Station No. 228366A
- Location: Rear of Knox City Shopping Centre
- Travel Time to Wantirna South: Between 0-3 hours
- Historical Flood Level: 5.14m (3rd February 2005)
- Spillway Level: 5.59m
- Embankment Level: 6.39m
- 1% AEP Flood Level: 6.4m

UPPER FERNTREE GULLY

Burwood Hwy near Mount Dandenong Tourist Rd at risk of flooding a 5% AEP event

MONASH MFEP

Monash Unit

Blind Creek at Wantirna South

- Station No. 228351B
- Location: High Street Rd, Wantirna South (Melway 72E1)
- Travel Time to Rowville: Between 1-13 hours
- Historical Flood Level: 3.65m (13th December 1993)
- Historical Flood Level: 2.8m (3rd December 2003)

Glen Waverley

Station No. 586197 - Location: Mt View Reservoir, Waverley Rd, Glen Waverley

51 properties at risk of flooding in a 1% AEP event
Ferntree Gully Rd flooded at 5.0m on the Police Rd Gauge
Wellington Rd flooded at 5.5m on the Police Rd Gauge

Police Road Retarding Basin

Dandenong Creek at Police Rd Retarding Basin

- Station No. 228368A
- Location: Police Road, Rowville (Melway 81E6)
- Minor: 4.6m; Moderate: 5.0m; Major: 5.5m
- Travel Time to Dandenong: Between 2-9 hours
- Travel Time to Patterson Lakes: Between 2-17 hours
- Historical Flood Level: 5.69m (18th September 1984)
- Historical Flood Level: 5.56m (3rd February 2005)
- Historical Flood Level: 5.45m (5th February 2011)
- Spillway Level: 4.28m
- Levee Height (Crest) at Heatherton Rd: 5.25m
- 1% AEP Flood Level: 5.5m

DANDENONG

1 property at risk of flooding a 1% AEP event
Heatherton Rd at risk of flooding at 5.4m on the Police Rd RB Gauge

Dandenong Creek at Keysborough

- Station No. 228356B
- Location: Eastlink Crossing, Keysborough (Melway 94H5)
- Historical Flood Level: 3.50m (5th February 2011)
- Levee Height: 5.2m
- 1% AEP Flood Level: 4.5m

GREATER DANDENONG MFEP

Greater Dandenong Unit

BANGHOLME

6 properties at risk of flooding a 1% AEP event
Pillers, Perry & Bangholme Rds flooded in a 1% AEP event

Patterson River at Patterson Lakes

- Station No. 228383A
- Location: Outside Tidal Gates, Patterson Lakes (Melway 97F6)
- Minor: 0.75m
- Historical Flood Level: 1.26m (3rd February 2005)
- Historical Flood Level: 1.26m (5th February 2011)
- Tidal Gate Closure Level: 0.73m
- 1% AEP Flood Level: 1.60m

PATTERSON LAKES

Boats & Jetties may become damaged at 0.8m on the Patterson Lakes Gauge
Local Flood Guide available for Patterson Lakes

KINGSTON MFEP

Chelsea & Moorabbin Units

LEGEND

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

Schematic Not To Scale



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



Gardiners Creek & Scotchmans Creek Catchment Schematic

Version 4 - June 2019

Flow Direction ↓

Gardiners Creek at Kinkora Rd Retarding Basin Blackburn North

- Station No. 229636A
- Location: Kinkora Rd RB, Blackburn North
- Historical Flood Level: 4.02m April 2011
- Historical Flood Level: 4.01m December 2003
- Spillway Level: 3.71m

Gardiners Creek at Middleborough Rd Retarding Basin, Box Hill

- Station No. 229637A
- Location: Middleborough Rd RB, Box Hill
- Historical Flood Level: 5.88m November 1988
- Historical Flood Level: 5.78m September 1984
- Spillway Level: 5.37m

WHITEHORSE MFEP
Whitehorse Unit

- Surrey Hills**
- Station No. 586176
 - Location: Melbourne Water Reservoir, Elgar Rd, Surrey Hills

BURWOOD
27 properties at risk of flooding over-floor along Mc Comas Grove Drain in a 1% AEP event

SURREY HILLS
69 properties at risk of flooding over-floor during a 1% AEP event

ASHWOOD
7 properties at risk of flooding in a 1% AEP event
High Street Rd at risk of flooding along Damper Creek during a 2% AEP event

Gardiners Creek at Ashwood

- Station No. 229625A
- Location: Ashwood Reserve, High Street Rd
- Travel Time to Gardiner: Between 0-2 hours
- Historical Flood Level: 3.17m February 2011
- 1% AEP Flood Level: 3.1m

Kew

- Station No. 586175
- Location: Yarra Valley Water Service Reservoir, Kew

BOROONDARA MFEP
Malvern & Whitehorse Units

Gardiners Creek at Gardiner

- Station No. 229624A
- Location: Great Valley Road, Glen Iris
- Minor: 3.4m
- Moderate: 4.4m
- Major: 4.8m
- Travel Time to Burnley: Between 0-4 hours
- Historical Flood Level: 5.6m February 2011
- Historical Flood Level: 4.77m September 1984
- Historical Flood Level: 4.49m February 2006
- 1% AEP Flood Level: 5.72m

LEGEND

- Stream & Rain Gauge
- Rain Gauge
- Stream 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

Yarra River
See Yarra River (Lower)
Catchment Schematic

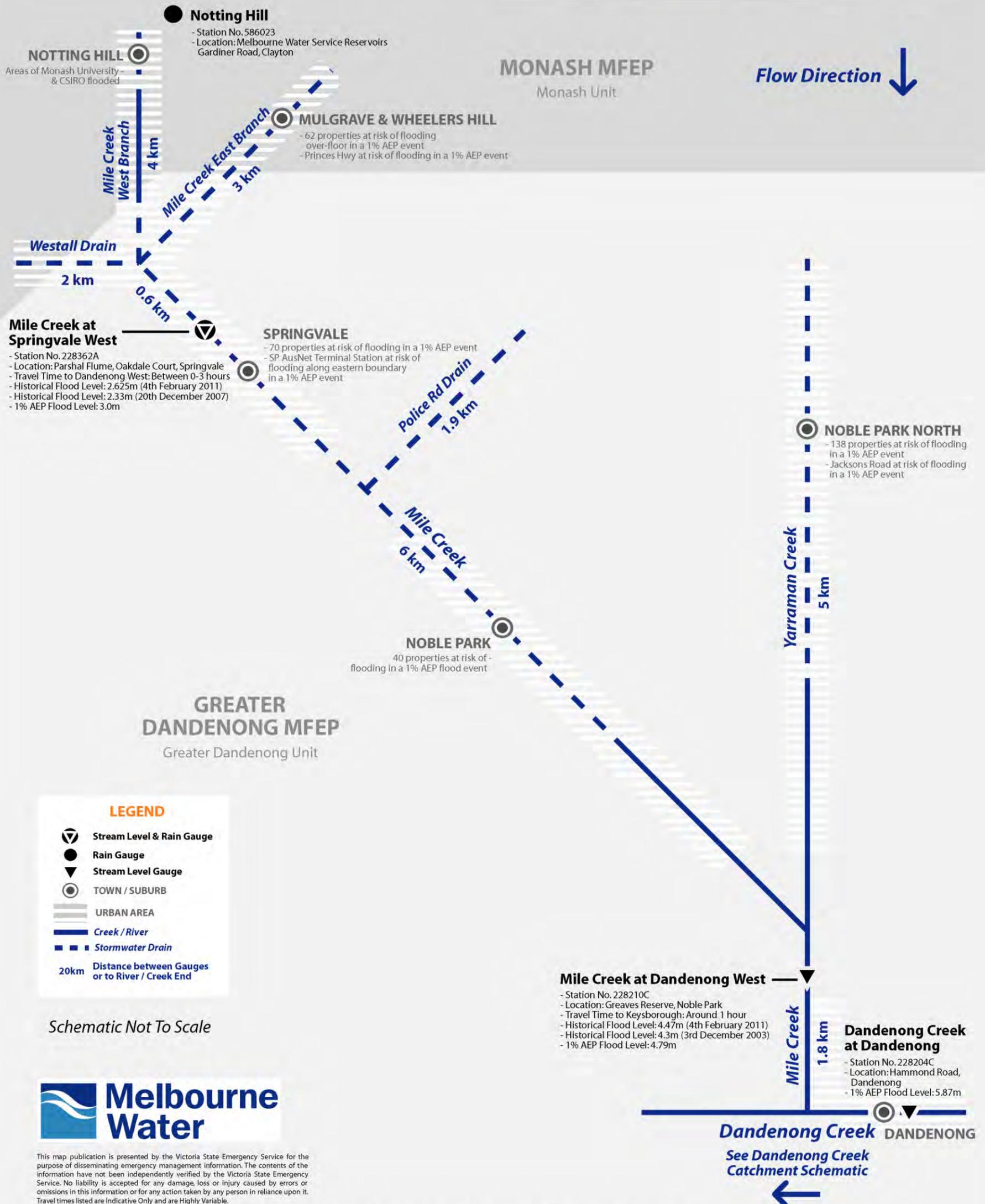


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Mile Creek & Yarraman Creek Catchment Schematic

Version 3 - April 2019



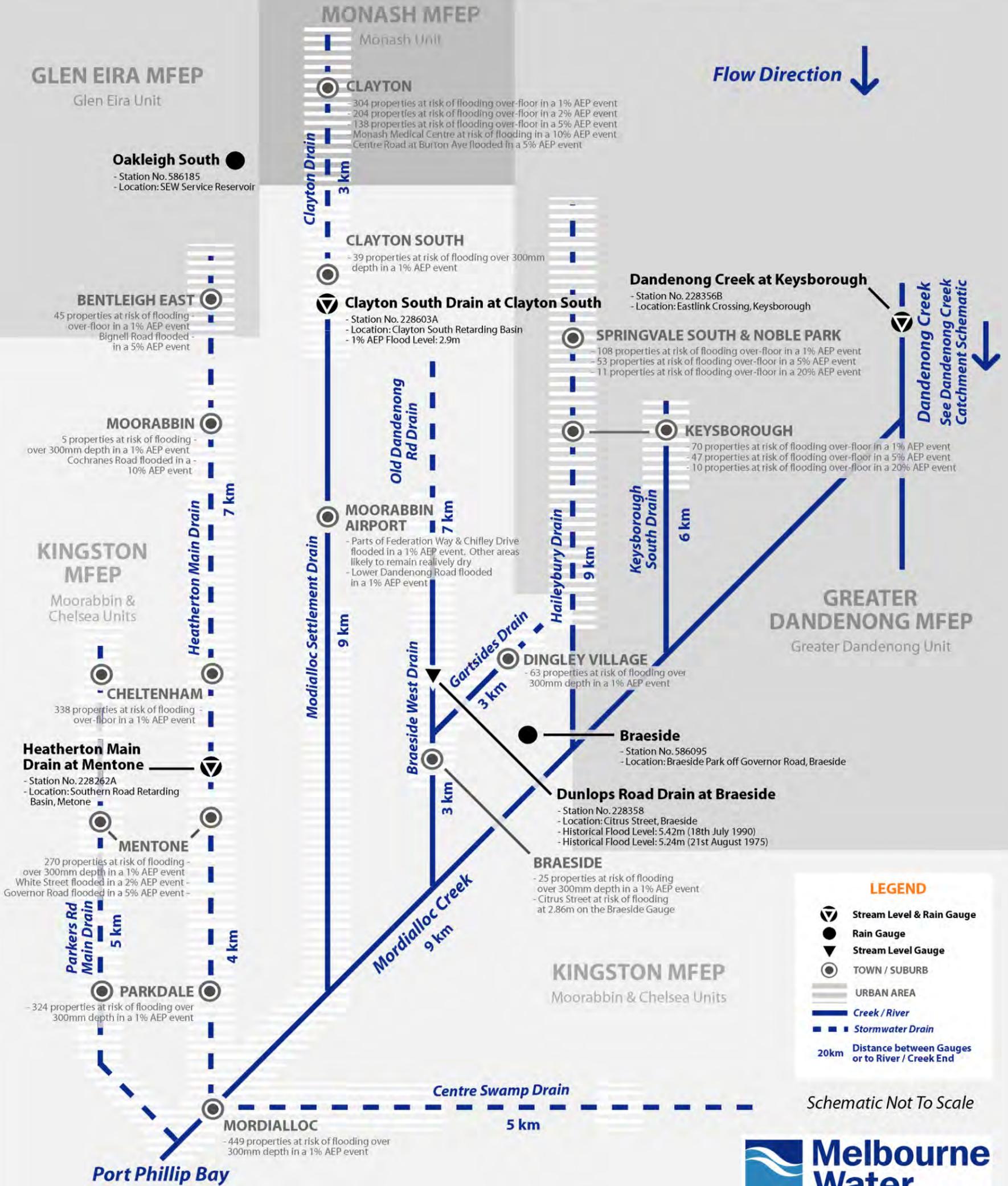
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Information Sources: Melbourne Water Flood Warning Manual; Municipal Flood Emergency Plans; Melbourne Water GIS; Melbourne Water HYDSTRA Database; ABS Census 2016



Mordialloc Creek Catchment Schematic

Version 5 - June 2019



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

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APPENDIX H – SANDBAG ARRANGEMENTS

General

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

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

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

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

Monash Council MERO will liaise with the VicSES Central Region RDO/ IC (as appropriate) to ensure effective coordination of listed resources.

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

<https://www.youtube.com/watch?v=-T--l3b-34&list=PL428FCA686837ADED>

(Sandbagging demonstration- VicSESTv on YouTube).

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

Operational

Sandbag Storage Locations

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

Organisation	Location	Number of Sandbags	Estimated Response Time	Contact
Monash City Council Depot	Depot address	0	0-0.5 hrs business hours 1-2 hrs after hours and weekends	
Monash VicSES Unit	390 Ferntree Gully Road Notting Hill, Victoria 3168	2000	1Hrs	CTDO
Knox VicSES Unit	Unit LHQ	32000	1.5Hrs	CTDO
VicSES Central Region		As Required		
Other				

Table H1- Sandbag storage locations within the City of Monash and adjoining locations

Sand Suppliers

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

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

Organisation	Location	Delivery Capability	Restrictions	Contact
Monash City Council Depot	Depot address	Up to 5m3 only		
Monash Garden & Building Supplies	201 Wellington Rd, Mulgrave VIC 3170	50m3		03 9560 7398
Daisy's Garden Supplies	197 High Street Rd. Ashwood, VIC 3147	20m3		03 9807 9293
Camerons Sand Suppliers	970 Dandenong Road Carnegie VIC 3163	50m3	Not open Saturday	03 9571 5481

Table H2- Sand Suppliers and locations within the City of Monash and adjoining locations

Sandbag Collection Points

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

Location	Address	Sector	Operational Restrictions	Contact
Monash City Council Depot	Ferntree Gully Road			

Table H3- Monash City Council potential Sandbag Collection Points

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

- Bunnings, Masters etc
- Specific local companies known to carry supply

Machinery Supply

Appliances documented below will be required when undertaking sandbagging operations

Organisation	Asset	Location	Estimated deployment time	Contact
Monash City Council	Front End Loader Specification requirements : Min lift height 2.5m, Min Forward reach 60cm, Max bucket width 2.5m	Council Depot		
	Small tipper (3 tonnes)			
	Vehicle/ trailer for sandbag transport			
VICSES Central Region	Sandbag Fill Machine	Pakenham SES	2Hrs	CTDO

Table H4- Machinery/ Vehicles required for Sand Supply in Monash

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

- Backhoe
- Forklift
- Dozer D8

Post Operational

Clean up and Disposal

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

APPENDIX I – SEVERE WEATHER (STORM) EVENTS

Overview

The City of Monash is susceptible to severe weather events because of a combination of its undulating terrain, urban boundary location and wind exposed properties. Storm events in the City of Monash may be subject to include wind storms, hailstorms, and thunderstorms (including lightning activity). There have also been occurrences of atmospheric downbursts/microburst within Monash and adjacent municipalities.

Severe storm activity could result in injuries and increase in road accidents. Damaging wind events will tend to lead to trees down, with damage to the built and natural environment. Obstructions across roads could disrupt services, affect community functioning and have great potential for road traffic delays.

This Appendix uses Request for Assistance (RFA) data from the Victoria State Emergency Service (VICSES) to display areas at risk from severe weather events.

VICSES requests for assistance

The Victoria State Emergency Service records requests for assistance made by the public during severe weather events. Tables I1 & I2 below is a breakdown of requests by suburb and date with damage type during the period July 2009 and December 2018.

VICSES Request for Assistance (July 2009 – December 2018)					
Suburb	Building Damage	Flooding	Other*	Tree Down	Tree Down Traffic Hazard
Ashwood	60	14	1	79	33
Burwood	20	9	0	32	9
Chadstone	126	15	1	90	31
Clayton	90	19	2	78	48
Glen Waverley	436	90	4	428	176
Hughesdale	52	9	0	47	17
Huntingdale	10	1	0	18	4
Mount Waverley	320	64	1	510	200
Mulgrave	138	21	0	162	88
Notting Hill	18	4	0	27	9
Oakleigh	65	14	0	49	22
Oakleigh East	38	8	0	37	26
Oakleigh South	37	8	0	56	20
Wheelers Hill	146	47	1	182	104

Table I1 – Breakdown of severe weather RFAs received by VICSES Greater Dandenong Unit by suburb

* Loose Debris / Object, Rescue Structure Collapse, Rescue Persons Trapped

VICSES Request for Assistance (July 2009 – December 2018)					
Date	Building Damage	Flooding	Other*	Tree Down	Tree Down Traffic Hazard
July 2009	1	0	0	0	1
August 2009	23	0	0	56	16
September 2009	3	0	0	10	2

VICSES Request for Assistance (July 2009 – December 2018)

Date	Building Damage	Flooding	Other*	Tree Down	Tree Down Traffic Hazard
October 2009	5	5	0	4	1
November 2009	14	2	0	21	8
December 2009	2	0	0	4	4
January 2010	12	0	0	10	7
February 2010	4	1	0	13	5
March 2010	190	17	0	14	4
April 2010	14	0	0	7	1
May 2010	5	0	0	3	0
June 2010	35	0	0	41	22
July 2010	5	0	0	4	3
August 2010	12	0	0	21	13
September 2010	13	1	0	30	14
October 2010	24	5	0	5	3
November 2010	16	8	1	15	15
December 2010	33	14	0	30	15
January 2011	14	5	1	19	10
February 2011	69	109	5	43	11
March 2011	5	1	0	3	2
April 2011	11	7	0	2	3
May 2011	3	0	0	3	6
June 2011	2	1	0	16	10
July 2011	4	0	0	3	3
August 2011	3	0	0	3	1
September 2011	9	8	0	12	8
October 2011	3	1	0	3	7
November 2011	9	4	0	14	7
December 2011	9	0	0	9	4
January 2012	17	4	0	27	15
February 2012	13	1	0	74	19
March 2012	11	0	0	29	8
April 2012	18	1	0	13	7
May 2012	5	3	0	7	1
June 2012	8	3	0	12	7
July 2012	2	0	0	2	1
August 2012	10	0	0	5	1
September 2012	42	1	0	58	25
October 2012	2	1	0	9	4
November 2012	7	1	0	3	3
December 2012	3	2	0	16	7
January 2013	4	3	0	8	5
February 2013	4	1	0	6	3
March 2013	10	0	0	28	6
April 2013	2	0	0	2	4
May 2013	9	1	0	3	1
June 2013	9	0	0	1	1
July 2013	19	4	0	17	6
August 2013	22	0	0	45	7
September 2013	20	0	0	40	9
October 2013	50	0	0	107	29
November 2013	5	4	0	9	4
December 2013	4	0	0	13	3
January 2014	17	0	0	41	16
February 2014	10	5	0	14	9
March 2014	0	1	0	4	1
April 2014	3	1	0	4	2
May 2014	3	0	0	5	3
June 2014	40	1	1	52	11

VICSES Request for Assistance (July 2009 – December 2018)					
Date	Building Damage	Flooding	Other*	Tree Down	Tree Down Traffic Hazard
July 2014	13	0	0	15	7
August 2014	4	0	0	11	3
September 2014	37	8	1	30	10
October 2014	6	0	0	18	2
November 2014	0	0	0	2	3
December 2014	8	0	0	15	2
January 2015	5	0	0	18	6
February 2015	13	1	0	12	5
March 2015	6	1	0	27	7
April 2015	2	0	0	2	1
May 2015	4	0	0	1	1
June 2015	1	0	0	4	5
July 2015	9	1	0	7	3
August 2015	0	0	0	0	2
September 2015	0	0	0	4	1
October 2015	4	0	0	8	4
November 2015	12	1	0	26	11
December 2015	9	3	0	12	7
January 2016	14	1	0	16	5
February 2016	0	2	0	4	3
March 2016	17	0	0	18	9
April 2016	6	1	0	1	5
May 2016	125	2	0	50	49
June 2016	4	0	0	2	6
July 2016	12	0	0	9	5
August 2016	3	1	0	3	5
September 2016	6	1	0	0	0
October 2016	54	1	0	111	51
November 2016	5	0	0	13	4
December 2016	16	4	0	21	7
January 2017	6	0	0	6	8
February 2017	19	6	0	3	2
March 2017	33	9	0	12	8
April 2017	10	2	0	9	2
May 2017	2	0	0	2	0
June 2017	0	0	0	2	1
July 2017	8	0	0	7	6
August 2017	7	0	0	4	1
September 2017	1	1	0	5	3
October 2017	2	1	0	4	4
November 2017	1	0	0	7	4
December 2017	44	24	0	17	2
January 2018	6	1	0	16	4
February 2018	21	0	0	54	26
March 2018	3	0	0	24	10
April 2018	13	1	0	18	10
May 2018	2	2	0	4	5
June 2018	4	0	0	3	3
July 2018	9	0	0	18	8
August 2018	6	0	0	10	10
September 2018	1	0	0	2	1
October 2018	1	1	0	1	6
November 2018	28	13	0	17	8
December 2018	13	7	1	18	2

Table I2 – Breakdown of severe weather RFAs received by VICSES Greater Dandenong Unit by month

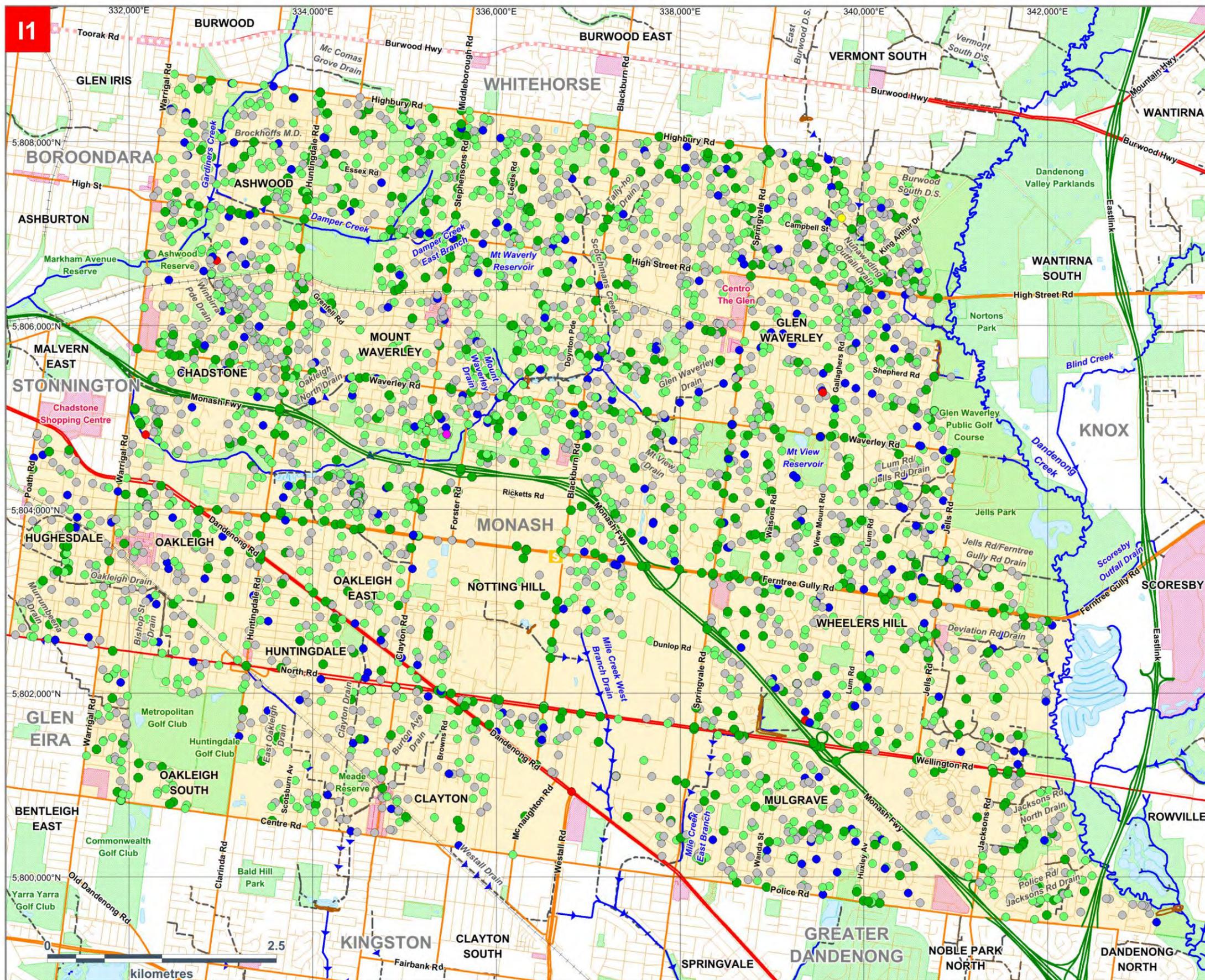
* Dam Incident, Rescue Persons Trapped

Large Storm Events

Typically the Greater Dandenong Unit would expect to be impacted by a large storm event per year (more than 40 RFA's per day).

Since 2010 the following larger storm events have occurred in the Hobsons Bay area:

- 6th March 2010 – Hailstorm event that saw **225 RFA's** received, mainly for building damage to roofs.
- 4th & 5th February 2011 – Rain and storm event that saw **237 RFA's** received mainly for flash flooding and building damage
- 5th & 6th February 2012 – Windstorm event that saw **50 RFA's** received for Trees Down
- 24th & 25th June 2014 – Windstorm that saw **105 RFA's** for Building Damage and Trees Down
- 9th & 10th October 2016 – Windstorm that saw **217 RFA's** for Building Damage and Trees Down



- Reserve / Area of Interest
 - Waterbody / Reservoir
 - Commercial Precinct
 - Creek / Channel
 - Melbourne Water Stormwater Drain
 - S VICSES Unit
- Severe Weather RFAs (Storm or Flood)**
- Building Damage (1556)
 - Flooding (323)
 - Loose Debris / Objects (1)
 - Rescue Persons (8)
 - Trapped (1)
 - Rescue Structure Collapse (1)
 - Tree Down (1795)
 - Tree Down Traffic Hazard (787)



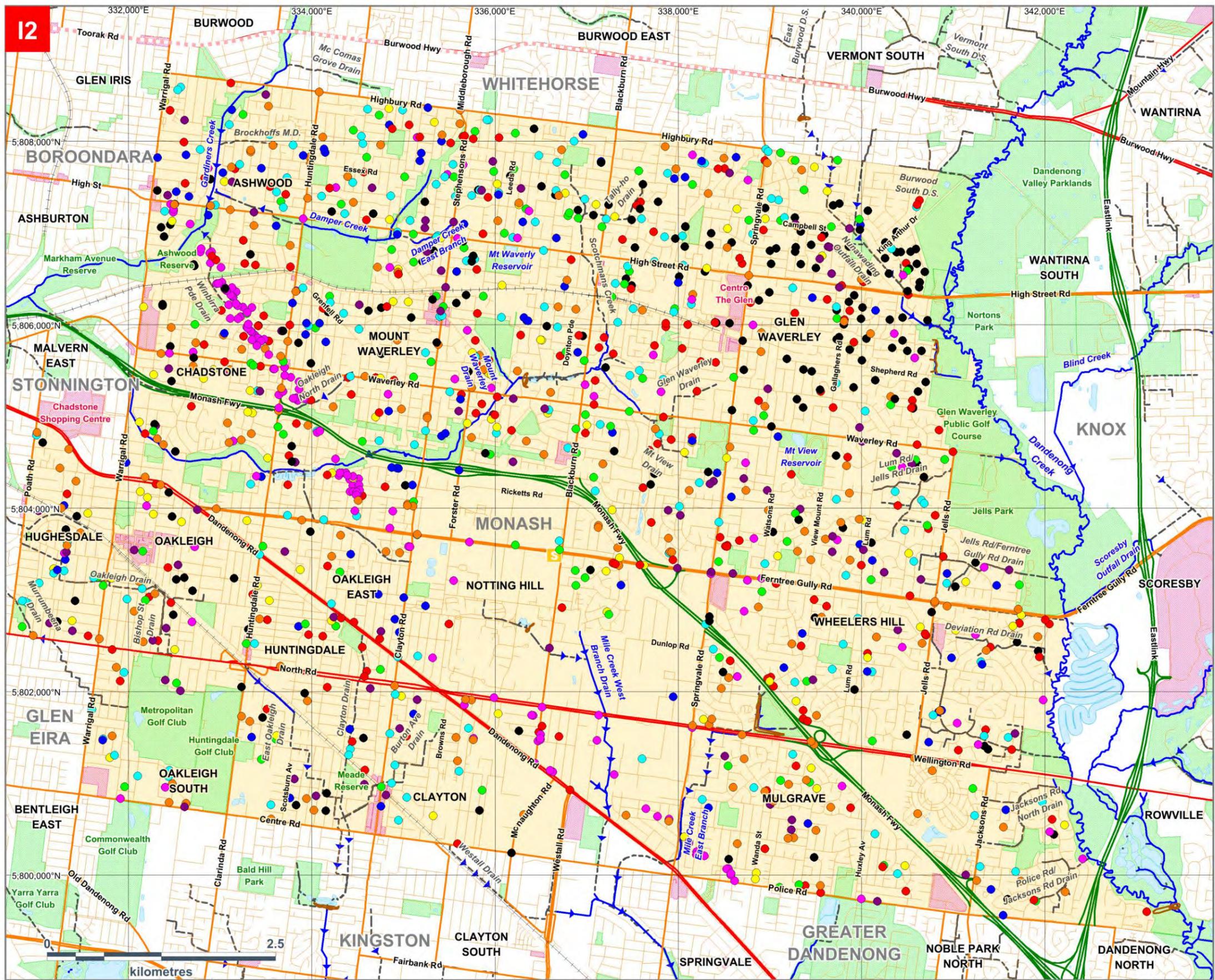
CITY OF MONASH

Version 3: May 2019

I1 - Severe Weather Request for Assistance (RFA) Received by Type (Jul 2009 - Dec 2018)



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■ Reserve / Area of Interest
■ Waterbody / Reservoir
■ Commercial Precinct
— Creek / Channel
- - - Melbourne Water Stormwater Drain
S VICSES Unit

Severe Weather RFAs (Storm or Flood)
(By Month > 100 Requests Received)

●	March 2010	(225)
●	February 2011	(237)
●	February 2012	(107)
●	September 2012	(126)
●	October 2013	(186)
●	June 2014	(105)
●	May 2016	(226)
●	October 2016	(217)
●	February 2018	(101)

N

CITY OF MONASH
Version 3: May 2019
I2 - Severe Weather Request for Assistance (RFA) Received by Month (Jul 2009 - Dec 2018)



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