Hobsons Bay

Flood and Storm Emergency Plan

A Sub-Plan of the Municipal Emergency Management Plan

For the Municipality of Hobsons Bay
And
VICSES Hobsons Bay Unit

Version 4.0
Reviewed July 2024

VICTORIA
State Government

SES

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Acknowledgment of Traditional Owners

Hobsons Bay Municipal Emergency Management Planning Committee respectfully acknowledges the Traditional Custodians of the land, the Bunurong People of the Eastern Kulin Nation and pay respect to their Elders past, present and emerging. We are committed to our reconciliation journey, because at its heart, reconciliation is about strengthening relationships between Aboriginal and non-Aboriginal peoples, for the benefit of all Victorians

Authority

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

Authorised and published by

Authorised and published by the Victorian Government Melbourne August 2024.

If you would like to receive this publication in an accessible format please email *emergencyplanning@emv.vic.gov.au.* This document is also available in PDF format at emv.vic.gov.au

Document information

Date of MEMPC approval July 2024

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Distribution of MFSEP

Once endorsed and signed the, MFSEP should be distributed to all MFSEP committee members, MEMPC Chair, council, MEMO, Deputy MEMO, Representatives from; BoM, CMA, DEECA, Parks Victoria, Ambulance Victoria, Department of Transport and Planning, DFFH, DH, ERV, Greater Western Water, Melbourne Water, relevant utilities, MERC, RERC, Police station, VICSES Units, VICSES Regional office, FRV district office, FRV stations.

Document Transmittal Form / Amendment Certificate

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

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

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

Amendment Number	Date of Amendment	Amendment Entered By	Summary of Amendment
Issue date of Flood Emergency Plan Version 1.0 – 15 May 2013			
2.0	Jun 2016	R. Butler	Update of Appendix A, B, C, F and addition of Appendix G.
2.1	Feb 2018	M. Taranto	Included Storm Appendix
3.0	Feb 2019	R. Butler	Update of Appendices A, B, C, F, G & H
3.1	Oct 2020	M Patton	MEMPC endorsement
4.0	May 2024	R. Butler J. Kegg	Application of new template. Update of Appendices A, B, C & F

This Plan will be published on the VICSES website at https://www.ses.vic.gov.au/plan-and-stay-safe/flood-guides/hobsons-bay-city-council located with the associated local flood guides and linked via Hobsons Bay City Council website.

List of Abbreviations & Acronyms

The following abbreviations and acronyms are used in the Plan:

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

Glossary

Below are terms defined for the purpose of this plan:

Term	Definition
Annual Recurrence Interval (ARI)	The average, or expected value of the period between exceedances of a given rainfall or flow total accumulated over a given duration
Annual Exceedance Probability (AEP)	The probability that a given total rainfall or flow is accumulated over a given duration will be exceeded in any one year
Flash flooding	Sudden unexpected flooding caused by local heavy rainfall or rainfall in another area. Often defined as flooding which occurs within six hours of the rain which causes flooding.
Flood mapping	The process where the extent of flooding is documented in mapping software based on flood studies and surface elevations
Floodplain	Area of land adjacent to a creek, river, estuary, lake, dam or artificial channel, which is subject to inundation.
Hot spot	A known flood problem area which has a history of repeat flooding of a road, crossing or property, often highlighted through anecdotal information and customer complaints. It is a localised issue which will vary from council to council.
Natural drainage system	Flow paths which are largely undeveloped by human sources, these include rivers, streams, natural depressions and wetlands. All-natural systems greater than 60 ha are managed by Melbourne Water.
Overland flooding	Flooding by local runoff caused by heavier than usual rainfall. Overland flooding can be caused by local flow exceeding the capacity of an urban stormwater drainage system or by the backwater effects of mainstream flooding causing urban stormwater drainage system to overflow. For local government areas this is over the 5-year ARI in residential or over 10yr ARI in commercial/industrial. For Melbourne Water catchment areas this is for all other ARIs up to the 100yr ARI.
Retarding Basin	A Retarding Basin is a large, open, free draining basin that temporarily stores collected stormwater runoff. These basins are normally maintained in a dry condition between storm events.
Stormwater drainage system	A series of drains and waterways into which surface and stormwater flows. Features of a stormwater drainage system can include underground pipe drains, open channels, retarding basins, floodways, waterway improvements, water sensitive urban design, integrated water management systems and environment protection measures. All drainage under 60 ha is maintained and operated by Hobsons Bay City 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 considered.

Part 1. INTRODUCTION

1.1 Approval and Endorsement

The Hobsons Bay City Council Municipal Emergency Management Planning Committee (MEMPC) is the owner of this Municipal Flood and Storm Emergency Plan (MFSEP), pursuant to Part 6A of the Emergency Management Act 2013 (as amended).

In accordance with its roles and responsibilities set out in the State Emergency Management Plan (SEMP), the Victoria State Emergency Service (VICSES) has prepared this plan in collaboration with the Hobsons Bay City Council MEMPC.

This MFSEP is a sub plan to the Hobsons Bay Municipal Emergency Management Plan (MEMP). It is consistent with the:

- SEMP
- Victorian Floodplain Management Strategy (2016).

The plan is also consistent with and subordinate to:

- SEMP Flood Sub-Plan,
- SEMP Storm Sub-Plan
- North West Metro Regional Emergency Management Plan
- North West Metro Regional Flood and Storm Sub-Plans

This MEMPC prepared this plan in alignment with the Guidelines for Preparing State, Regional and Municipal Emergency Management Plans, including formal consultations and statement of assurance.

The plan considers the outcomes of the Community Emergency Risk Assessment (CERA) process undertaken by the MEMPC.

This MFSEP has been reviewed and endorsed by the Hobsons Bay City Council MEMPC and requires approval by the North West Metro Regional Emergency Management Planning Committee (REMPC).

1.2 Certificate of Assurance

Certificate of Assurance for the Hobsons Bay City Council Municipal Flood and Storm Emergency Sub-plan.

Plan Preparer: This sub-plan has been prepared by the Victoria State Emergency Service (VICSES) in collaboration with the Hobsons Bay City Council Municipal Emergency Management Planning Committee (MEMPC).

I certify that the attached Sub-Plan complies with the requirements of the *Emergency Management Act 2013,* including having regard to any relevant guidelines issued under section 77 of that Act, to the extent outlined in the attached checklist.

The MEMPC last conducted a review of the plan in July 2024.

(For MEMP and MEMP sub-plans) **On behalf of the Municipal Emergency Management Planning Committee:** Signed by: Diane Eyckens 6A87F5BCC02C43B... Diane Eyckens Chair, Hobsons Bay Municipal Emergency Management Planning Committee 29.08.2024	*(For sub-plans only, if prepared by an agency on behalf of the MEMPC)* **Nominated representative of preparer:**  Chris Longmore Operations Manager VICSES 26/08/2024

1.3 Purpose and scope of this flood/storm emergency plan

The purpose of this MFSEP is to detail the arrangements for managing a flood emergency before, during and after it occurs or potentially occurs within the municipality of Hobsons Bay.

As such, the scope of the Plan is to:

- identify the local flood and storm risk.
- support the implementation of mitigation and planning measures to minimise the causes and impacts of flooding.
- detail emergency management arrangements.
- identify linkages with local, regional and state emergency planning arrangements with a specific emphasis on those relevant to flood.

1.4 How to read this plan

This is a Sub-Plan and therefore should be read in conjunction with the:

- SEMP
- SEMP flood Sub-Plan and SEMP Storm Sub-Plan
- North West Metro REMP
- Hobsons Bay MEMP

1.4.1 Linkages and hyperlinks

This plan refers to a range of existing resources relating to floods/storms, including documents and websites. This plan does not seek to duplicate the information contained in these resources and instead provides links to where the reader can obtain further information.

For more operational or sensitive information, a log-in may be required, such as for documents saved on the Emergency Management Common Operating Picture (EM-COP), including Joint Standard Operating Procedures (JSOPs) or on VICSES intranet.

Documents or resources that are referred to frequently throughout this plan (such as the SEMP) may not be hyperlinked in each instance.

All hyperlinks were accurate at time of publication and currency of the linked content remains the responsibility of the host agency.

1.5 Requirements of EMP guidelines

Emergency Management Victoria has published guidelines for preparing emergency management plans including municipal plans. In accordance with section 3.1 (Requirements) this plan has been:

- prepared collaboratively, efficiently and effectively (section 60AA(1))
- is consistent with other existing in force EMPs and where possible not duplicate or conflict with those plans (section 60AC)
- has adopted an integrated, coordinated and comprehensive approach to emergency management (sections 60AD, 60ADA and 60ADB)

- contain arrangements for mitigation, response, and recovery plus roles and responsibilities (section 60AE)
- Has been assured, approved and published every three years, or more frequently if required (sections 60AG, 60AH, and 60AI).

Membership of the Hobsons Bay MEMPC who contributed to this plan comprises of the following representatives from the following agencies and organisations:

- VICSES (Operations Officers; Unit Controller)
- Hobsons Bay City Council (Risk and Emergency Management Advisor)
- Hobsons Bay Victoria Police (Municipal Emergency Response Coordinator)
- Melbourne Water
- Department of Families, Fairness and Housing
- Department of Health
- Fire Rescue Victoria
- Department of Energy, Environment and Climate Action

1.6 Responsibility for planning, review & maintenance of this plan

To remain effective and to place the community at centre of its planning, the MEMPC must ensure it maintains the MFSEP.

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

The MEMPC will ensure a review of the plan following:

- a new flood study
- a significant change in flood mitigation measures
- after the occurrence of a significant flood event within the municipality
- three years elapsing after the last review.

Part 2. BEFORE: PREVENTION / PREPAREDNESS ARRANGEMENTS

2.1 Community Awareness for all Types of Storm and Flooding

Upon formal adoption by the MEMPC the community will have access to the details of this MFSEP and further flood and storm information via:

- The Victora State Emergency Service (VICSES) website
- Flood - Plan and stay safe or Storms - Plan and stay safe engagement initiatives
- Flood Emergency – Plan and Prepare (Hobsons Bay City Council website)

VICSES with the support of Hobsons Bay City Council and Port Phillip and Westernport Catchment Management Authority (Melbourne Water) will coordinate targeted community flood engagement programs within the council area.

Refer to **Appendix H** for Altona & Seaholme Local Flood Guide (LFG).

2.2 Structural flood mitigation measures

Structural flood mitigation measures are any physical construction to reduce or avoid possible impacts of flood hazards, or the application of engineering techniques or technology to achieve flood hazard resistance and resilience in structures or systems[1]. The following is a summary of structural flood mitigation measures that exist within the Council area:

- levees (location, owner, condition, maintenance responsibility and protection levels).
- retarding basins (location, owner, condition, maintenance responsibility and protection levels) etc.
- dams
- ocean wave barriers/sea walls/groins

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

[1] United Nations Office of Disaster Risk Reduction

2.3 Non-structural flood mitigation measures

Non-structural flood mitigation measures[1] are measures not involving physical construction which use knowledge, practice or agreement to reduce disaster risks and impacts, in particular through policies and laws, public awareness raising, training and education. The following are a summary of non-structural flood mitigation measures in the municipality:

2.3.1 Exercising the plan

The MEMPC is responsible for arranging for the exercising of this plan, which should occur annually. Ideally, the MEMPC will schedule the exercise shortly prior to the highest risk period for flooding, which is generally during winter and spring.

2.3.2 Flood intelligence

Flood intelligence supports decision making and planning for flooding by providing reliable and accurate information relating to:

- the expected level, depth, and velocity of floodwater and its consequences
- determination of actions to be undertaken in response to the identified consequences.

DEECA maintains the FloodZoom flood intelligence platform. Inquiries regarding FloodZoom access should be directed to accounts@floodzoom.vic.gov.au.

2.3.3 Flood warning

The SEMP Flood Sub Plan (www.ses.vic.gov.au/em-sector/vicses-emergency-plans) and the Bureau of Meteorology (BoM) website www.bom.gov.au, detail the arrangements for BoM issued Flood Watch and Flood Warning products.

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

2.3.4 Local knowledge

Local knowledge is a critical element of planning. The community and other organisations can provide valuable local information about hazards, incidents and how they may evolve. This information is commonly referred to as local knowledge. This plan aims to ensure that planners and responders capture appropriate local knowledge before, during and after incidents.[2]

[2] VICSES Policy 10.02 Local Knowledge V4.0

People with experience of historic flood or storm events that have affected the municipality are a source of information. Events that have affected the municipality include:

Event Name/location	Date	summary
Kororoit Creek Rd	January 2020	Kororoit Creek Road flooded due to heavy rain
Merton St	June 2019	Rescues of people from cars due to flooding
Yarra St	2019	Flooding to private residents due to low lying roads. Drains since upgraded and pipes installed to rectify the issue
Racecourse Drive	December 2017	Rescues of people from cars due to flooding
The Esplanade and Beach St	2010	Underground residential car parks flooded due to heavy rain

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

As an incident escalates from local control to a larger incident management structure, it is essential that local knowledge capability is retained within the overall structure. This should include how local subject matter experts are embedded in to divisional and sector command structures.

Refer to **Appendix G – Local knowledge arrangements** for details of the local knowledge arrangements for the municipality.

Part 3. DURING: RESPONSE / RELIEF ARRANGEMENTS

3.1 Introduction

3.1.1 Activation of Response

VICSES may be notified of storm and flood incidents through several sources, but the most common source is calls received via 132 500 or if the emergency is life threatening, Triple Zero (000). Other sources are via other emergency management agencies and local government. In most cases, these events are of a small scale (a level 1 incident[3]), which local VICSES units manage without significant outside support.

In the case of more significant level 2 (regional level) or level 3 (an incident that has high complexity and may have statewide implications) Flood and storm response arrangements may be activated by the Regional Duty Officer (RDO) VICSES North West Metro Region or Regional Agency Commander (RAC).

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

3.1.2 Responsibilities

There are a number of agencies with specific roles that will act in support of VICSES and provide support to the community in the event of a serious flood or storm within the municipality of Hobsons Bay City Council. These agencies will be engaged through the IEMT.

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

Appendix I2 lists the roles and capabilities of other agencies when assisting VICSES to respond to either flood or storm events.

3.1.3 Municipal Emergency Coordination Centre or equivalent

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

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

[3] For a detailed definition of the levels of incidents, refer to Table 3 Levels of Incidents within the State Emergency Management Plan.

3.1.4 Escalation

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

Resourcing and event escalation arrangements are described in the SEMP.

3.2 State emergency management priorities

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

3.3 Command, control, coordination, consequences, communication, and community

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

3.3.1 Control

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

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

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

3.3.2 Incident Controller (IC)

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

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

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

3.3.3 Incident Control Centre (ICC)

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

VICSES readiness and activation levels - flood

VICSES readiness and activation levels – severe weather

Pre-determined ICC locations:

Incident Level	Location	ICC Location	Facility owner	Key contact
Level 3	Sunshine	239 Proximity Drive, Sunshine	VICSES	1800 045 939 iccsunses.all@icc.vic.gov.au
Level 3	Burnley (redundancy to Sunshine)	450 Burnley St, Richmond	FRV	(03) 9665 4545 (24/7) iccbur.all@icc.vic.gov.au

3.3.4 Divisions and Sectors

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

The location of Divisions and Sectors are chosen based on their suitability for maintaining operations during a flood and may differ from those used in other types of emergencies. The IC may establish Divisions and Sectors at the following locations to assist with the management of flooding within the Municipality:

Division	Sector
VICSES Essendon Unit LHQ, 9 Rutherford St, Aberfeldie	Sector command locations are to be allocated on an as needs basis.
VICSES Sunbury Unit LHQ, 21 McDougall Rd, Sunbury	
VICSES Wyndham West LHQ, 418 Ballan Rd, Wyndham West	

3.3.5 Incident Management Team (IMT)

The Incident Controller will form an Incident Management Team (IMT) to support the IC in managing the incident-tier operational response to the emergency. This includes the functional areas of planning, intelligence, public information, operations, investigation, logistics and finance functions. Where possible, the IMT will be joint-agency, pre-planned and include personnel with relevant local knowledge.

For more detail, refer to the SEMP on IMTs and Incident Management Systems (IMSs).

3.3.6 Incident Emergency Management Team (IEMT)

The IC will establish a multi-agency Incident Emergency Management Team (IEMT) to support the IC in managing the effects and consequences of the flood or storm emergency.

The IEMT consists of key personnel (with appropriate authority) from stakeholder agencies and relevant organisations who need to be informed of strategic issues related to incident control. They can provide the IC with high level strategic guidance and policy advice for consideration in developing incident management strategies.

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

An after-hours handbook, containing details related to the EMLO role, is available. However, due to the sensitive information included, it is not made publicly accessible. For additional EMLO arrangements, please refer to the MEMP.

For more detail refer to the SEMP for guidance on IEMTs.

3.3.7 On Receipt of a Flood Watch / Severe Weather Warning

SES SOP008 Severe Weather Notification and Activation Process and SES SOP009 Flood Notification and Activation Process outline in detail the actions that VICSES will undertake upon receipt of a Severe Weather Warning or Flood Watch/Flood Warning.

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

- Review flood intelligence to assess likely flood consequences.
- Monitor weather and flood information using the range of intelligence tools including– www.bom.gov.au and Melbourne Water Rainfall and river levels.
- Assess Command and Control requirements.
- Review local resources and consider needs for further resources regarding personnel, property protection, flood rescue and air support. Keeping in mind geographic extent of warning area and the potential for resource constraints if there may be wide-ranging effects across the region or state.
- Notify and brief appropriate officers. This includes Regional Control Centre (RCC) (if established), State Control Centre (SCC) (if established), Council, other emergency services through the EMT.
- Assess ICC readiness (including staffing of IMT and IEMT) and open if required.
- Ensure flood warnings and community information is prepared and issued to the community where required.
- Flood (Riverine and flash) Warnings are managed by the RDO/RAC.
- Severe Weather/ Thunderstorm warnings are managed by SDO/SAC.
- Develop media and public information management strategy.
- Monitor watercourses and undertake reconnaissance of low-lying areas (consider Field Observers).
- Ensure flood mitigation works are being checked by owners.
- Develop and issue incident action plan, if required.
- Develop and issue situation report, if required.

3.3.8 On Receipt of the First and Subsequent Flood Warnings

VICSES RDO (until an incident controller is appointed) or IC will undertake actions as defined within the flood intelligence cards **(Appendix C).** The IC/VICSES RDO will have general regard for the following considerations:

- Develop an appreciation of current flood levels and predicted levels. Are floodwaters rising, steady, peaking or falling?
- Review flood intelligence to assess likely flood consequences.

Consider What areas may be at risk of:

- inundation
- isolation
- indirect affects as a consequence of
  - power
  - gas
  - water
  - telephone
  - internet
  - sewerage
  - health
  - transport
  - emergency service infrastructure interruption.

Consider 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 (such as water, power utilities, telecommunications)

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.

Liaise with relevant flood mitigation infrastructure managers.

3.4 Community information and warnings including media comms

Guidelines for the distribution of community/public information and warnings are contained in the VICSES North West Region Storm and Flood Emergency Sub-Plans and State Storm and Flood Emergency Sub-Plans.

Refer to **Appendix J** for more details on public information and warnings for the municipality.

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

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

3.5 Initial Impact assessment

In accordance with the SEMP and SEMP Flood Sub-Plan (3.6.11 Initial Impact Assessment) the IC should initiate an initial impact assessment during the first 48 hours of an emergency. It should capture the nature and scale of the flood impact on people, community infrastructure, and the economic, natural, and built environments, in order that emergency relief and early recovery activities can commence. This information may then be used to provide the basis for further needs assessment and recovery planning by Emergency Recovery Victoria (ERV) and recovery agencies.

Agencies that typically support initial impact assessment in the municipality are:

- Red cross

3.6 Preliminary deployments to flooding

When flooding is expected to be severe enough to cut access to towns, suburbs and/or communities the IC will consult with relevant agencies to ensure that resources are in place if required to provide emergency response. These resources may include but not limited to emergency service personnel, food items and non-food items such as medical supplies, shelter, assembly areas, relief centres.

3.7 Response to flash flooding

Flash flooding can be defined as flooding that occurs within six hours or less of the flood-producing rainfall within the affected catchment. This may result in isolation of individuals and communities as time to warn and respond to flash flooding is limited[4]. The safest place to be in a flash flood is well away from the affected area. Accordingly, pre-event planning for flash floods should commence with an assumption that evacuation is the most effective strategy, provided evacuation can be safely implemented.

Emergency management response to flash flooding should be consistent with the SEMP Storm Sub-Plan.

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

1. Determine if there are barriers to evacuation by considering warning time, safe routes and resources available.
2. If evacuation is possible, then evacuation should be the adopted strategy and it must be supported by a public information capability and a rescue contingency plan.
3. Where it is likely people will become trapped by floodwaters due to limited evacuation time or options the IC needs to ensure they provide safety advice to people at risk. This advice should advise people not to attempt to flee by entering floodwater. If people become trapped, it may be safer to seek the highest point within the building and to telephone 000 if they require rescue.
4. Where this plan has identified buildings that are known to be structurally unsuitable, the plan needs to provide for an earlier evacuation trigger (return to step 1 of this cycle).

[4] AFAC Emergency Planning and Response to Protect Life in Flash Flood Events – Guideline v2.0

5. If an earlier evacuation is not possible then the IC must make specific preparations to rescue occupants trapped in structurally unsuitable buildings either pre-emptively or as occupants call for help.
6. Contact the Hobsons Bay MERC and MEMO at the earliest opportunity to allow for relief preparation to commence.

Due to the rapid development of flash flooding it will often be difficult, to establish relief centres ahead of actually triggering the evacuation. While this is normal practice it should not be used as a reason for not adopting evacuation.

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

3.8 Evacuation for all flooding

Where practical, evacuation is the primary strategy for ensuring the safety of at-risk communities. The purpose of evacuation is for people to relocate temporarily from areas at risk of the consequences of flooding, to places of safety. It is essential to assess risks involved in undertaking an evacuation, as evacuation may not always be the most appropriate action. This will ensure that people are not exposed to more hazardous environments because of their evacuation, for example, travelling through deep, fast-flowing floodwater[5].

Under the SEMP, Victoria Police (VicPol) has the responsibility for evacuation (Evacuation Manager) – in consultation with the control agency and other expert advice. EMV has developed a standardised procedure for evacuation under JSOP J03.12.

The IC decides whether to warn people to evacuate within a specified timeframe or whether it is necessary to advise them to evacuate immediately. The IC must make this decision having regard for the requirements of the JSOP.

Once the IC makes a decision to recommend evacuation, VicPol's Evacuation Manager is responsible for the management of the evacuation process where possible. VICSES and other agencies will assist where practical. VICSES is responsible for the development and communication of evacuation warnings.

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

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

Except in limited circumstances, evacuation is not compulsory in Victoria[6]. Recent historic floods that were managed under current legislation and emergency management arrangements, demonstrated that some people will choose not to evacuate. Therefore, this plan must consider arrangements for managing these people in the event they require assistance or rescue.

Considerations include:

[5] AUSTRALIAN DISASTER RESILIENCE HANDBOOK COLLECTION Flood Emergency Planning for Disaster Resilience - **First edition 2020**

[6] Powers to compel evacuation rely on the Minister making a declaration of a State of Disaster under section 23(2)(e) of the Emergency Management Act 1986. However, section 23(7) prevents these powers be used to compel a person to evacuate if they have a pecuniary interest in the land or building or goods or valuables on the land or in the building.

- Providing additional information that may assist them in making a decision to evacuate.
- Identifying vulnerable people who may be willing to evacuate if assisted.

3.9 Flood rescue

Under the SEMP Response table 9 the control agency for rescue from land and water is VicPol, which operates the Rescue Coordination Centre. VICSES is a support agency for search and rescue on land and water evacuations and incidents involving mass casualties.

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

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

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

Victoria Police Rescue Coordination Centre should be notified of any rescues that occur: (03) 9399 7500. On occasion, VicPol may opt to respond a field capability of its rescue coordination centre to a location near the emergency. It may also work with the Triple Zero Victoria to deploy its dispatch capability to the same location to enhance rescue coordination and dispatch. Details in this plan may assist VicPol and Triple Zero Victoria in undertaking this function in the field or from the primary rescue coordination centre.

The following resources are available within the municipality of Hobsons Bay to assist with rescue operations:

Resource type	Unit / resource name	Location
Flood and Swift Water Rescue	Water Police / Search and Rescue – Victoria Police	Williamstown Police Complex
Helicopter	Victoria Police Airwing	Essendon Fields – Police Airwing
VICSES LBSWR	Hobsons Bay Unit / Neighbouring Units	Hobsons Bay VICSES Essendon VICSES Footscray

Known high-risk areas/communities (such as low-lying islands) where rescues might be required include:

High risk areas (LBSWR) most commonly responded to within Hobsons Bay for LBSWR events:

- Merton St (Rail underpass)
- Racecourse Rd/ Altona Rd

3.10 Aircraft management

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

The IC controls the conduct of Air support operations.

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

Airbase name	Type of facility (such as fixed wing/rotary wing capability)	Location
Victoria Police Airwing	Rotary and Fixed wing	Essendon Fields

3.11 Resupply

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

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

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

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

There are no known communities or areas within the municipality that have become isolated or have traditionally required resupply in a prolonged flood.

3.12 Essential community infrastructure and property protection

Essential community infrastructure and property such as residences, businesses, roads and utilities, that may be affected in the event of a flood and require protection are available in Hobsons Bay City Council MEMP.

The Hobsons Bay City Council does not maintain stocks of sandbags. Limited supplies are available through the 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.

For small scale events sandbags can be purchased from some hardware and garden suppliers such as Bunnings. For larger scale events sandbag collection points and filling points will be determined, with the community being informed of these points depending on the nature and proximity of the event

The VICSES Operations Management Manual sets out the principles for sandbag use and allocation to the community. These principles do not apply to the use of sandbags by VICSES to construct and/or alter a levee. Refer to SOP036 Construction, Removal or Altering of Levee and Removal of Debris for further detail.

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

Property may be protected by:

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

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

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

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

3.13 Disruption to services

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

3.14 Road closures

Hobsons Bay City and Department of Transport and Planning (DTP) will carry out their formal functions of road closures including observation and placement of warning signs, road-blocks to its designated local and regional roads, bridges, walking/bike/shared trails. Hobsons Bay City Council staff should also liaise with and advise DTP as to the need or advisability of erecting warning signs and/or of closing roads and bridges under its jurisdiction. DTP are responsible for designated main roads and highways and councils are responsible for the designated local and regional road network.

DTP and Hobsons Bay City Council will provide community information direct to the public regarding road closures. Information will be updated on the VIC Traffic website.

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

3.15 Dam spilling/ failure

The Department of Energy, Environment and Climate Action (DEECA) is the control agency for dam safety incidents. This includes breach, failure or potential breach/failure of a dam. However, VICSES is the control agency for any resultant flooding.

There are no dams of significance that could impact the community within Hobsons Bay.

3.16 Wastewater related public health issues and critical sewerage assets

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

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

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

The responsible agency/s for critical sewage assets in the municipality are Greater Western Water or Melbourne Water depending on the pumping station.

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

3.17 Access to technical specialists

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

3.18 Relief

Relief is the provision of assistance to meet the immediate needs of individuals, families and communities during and in the immediate aftermath of an emergency.

As per the role statement for municipal councils within the SEMP, municipal councils are responsible for municipal relief coordination.

3.19 Activation of emergency relief

The IC is responsible for activating relief arrangements through the Municipal Recovery Manager (MRM). The decision to recommend the opening of an emergency relief centre sits with the IC.

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

Refer to the SEMP Roles and Responsibilities - Relief for more detail of services that may be provided and the responsible coordinating agencies.

Suitable relief facilities identified for use during floods and relief arrangements are detailed in the Hobsons Bay City Council MEMP.

3.20 Animal welfare

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

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

Matters relating to the welfare of wildlife are also to be referred to DEECA who has developed the Victorian Emergency Animal Welfare Plan.

Part 4. AFTER: EMERGENCY RELIEF AND RECOVERY ARRANGEMENTS

4.1 General

As per the role statement for municipal councils within the SEMP, municipal councils are responsible for coordinating local level recovery activities. They are also the lead agency to coordinate post emergency needs assessment to determine long term recovery needs (Post Emergency Needs Assessment).

Arrangements for recovery from a flood and/or storm event within the Hobsons Bay City Council is detailed in Hobsons Bay City Council MEMP.

4.2 Transition from response to recovery

The SEMP sets out the transition to recovery arrangements. During the response phase, the IC will ensure they develop a plan for transition from response to recovery. The IC at the municipal tier should take a lead role in facilitating transition to recovery, working with the MRM, as it marks the end of the response phase which the Controller leads and manages.

Further information about transition is available in the Hobson's Bay City Council MEMP.

4.3 After action review – Lessons management

Lessons management is the critical process of learning from how we worked before and during an event, to improve the system for next time.

Depending on the size and scale of the flood event, VICSES will normally coordinate a debrief or after action review of flood operations as soon as practical following an event. Under the VicPol SEMP role statement, it is the responsibility of the Municipal Emergency Response Coordinator (MERC) to ensure that this occurs.

When the flood is being managed as a level 3 event, it may be that Emergency Management Victoria in consultation with VICSES assumes responsibility for debriefing.

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

Appendix A – Flood Threats for the Municipality of Hobsons Bay

General

The municipality of Hobsons Bay is located in south-west Melbourne, on the northern shore of Port Phillip Bay, between seven and 20 kilometres south-west of the Melbourne CBD. It is approximately 66 square kilometres in area, and includes the suburbs of:

- Altona
- Altona Meadows
- Altona North
- Brooklyn
- Laverton
- Newport
- Seabrook
- Seaholme
- South Kingsville
- Spotswood
- Williamstown and
- Williamstown North.

The municipality has a population of just over 95,000 living in almost 34,000 dwellings. Residential areas are predominately low density, with the majority being separate dwellings, with 12% semi-detached, terrace houses or townhouses and 10% flats, units or apartments. One third of the municipality is zoned industrial. This includes some of the State's most significant industries, including petrochemical and petroleum refining industries. There are 8 individual registered major hazard facility sites within Hobsons Bay.

Within Hobsons Bay there are 4 main natural waterways which generally flow in a north west to south easterly direction discharging into Port Phillip Bay. There are also 3 minor natural water courses.

Key Flooding issues that need to be managed within the municipality include:

- Flash flooding due to pipe blockages from tree roots, broken pipes, debris on grates and runoff unable to enter the pipe network.
- Foreshore flooding and
- Riverine flooding from the Skeleton, Laverton, Cherry and Kororoit Creeks.

Several locations that tend to be impacted when Hobsons Bay experiences heavy rain include:

Location	Type of flooding	Notes
Merton St (Rail Overpass)	Riverine	Area floods, effectively closing this road; traffic is forced to find alternate routes. Council has installed gates to close the road when the area floods, however these gates require to be manually closed and have been subject to vandalism or bypassing. Rescue calls are often received from this location when vehicles become stranded attempting to drive through this flooded area. As rescue calls are generally classed as Inland Water rescues, this elicits a response requiring LBSWR crews and IRB support from Hobsons Bay and neighbouring Units as well as VicPol Search and Rescue / RCC involvement
Racecourse Rd / Altona Rd	Riverine	Area floods, effectively closing this road; traffic is forced to find alternate routes. Council has installed gates to close the road when the area floods, however these gates require to be manually closed and have been subject to vandalism or bypassing. Rescue calls are often received from this location when vehicles become stranded attempting to drive through this flooded area. As rescue calls are generally classed as Inland Water rescues, this elicits a response requiring LBSWR crews and IRB support from Hobsons Bay and neighbouring Units as well as VicPol Search and Rescue / RCC involvement
McIntyre Drive (north end)	Flash / riverine	The north end on McIntyre drive is known to flood when the area receives heavy rain. Flooding is generally along the roadway, however there are some properties that can be affected by water inundation.
Douglas Parade (Between Simcock Ave and Burleigh St)	Flash	Heavy rain sees water rise above the road level and has on many occasions seen vehicles become stranded and resulted in the Unit receiving an Inland Water Rescue call. Flooding of the roadway here is hazardous due to the range of vehicles (Heavy vehicles / trucks, passenger vehicles, bikes, etc) that use this road; significant traffic management is needed if the road needs to be closed due to flooding.
Mason St / Melbourne Rd intersection	Flash	Heavy rain sees water rise above the road level and has on many occasions seen vehicles become stranded and resulted in the Unit receiving an Inland Water Rescue call. One of the main hazards at this location is the traffic volume as it is a major intersection.
Various roads throughout the municipality: • Civic Pde (between Pier and Grieve) • Pier St (between Blyth and Queen) • Maidstone St (between Wren and Blyth) • Blackshaws Rd (Various)	Flash / overflow	Various spots in these locations tend to be affected by flash flooding / drainage overflow / slow drainage, causing waters to bank up on the road and impinge on properties. Water above the road surface can also cause traffic issues in the area.

Riverine Flooding

Flooding of residential properties in McIntyre Drive occurs as a result of large flows in Cherry Creek/Lake. Civic Parade in the area of McIntyre Drive also floods in heavy flows causing interruption to traffic. Merton Street underpass (ford crossing) floods on a regular basis and while flood gates have been installed to prevent traffic crossing the flooded ford, gates are often cut open and cars are consistently being pulled out of the water.

Altona Road/Racecourse Road Ford can flood as a result of large flows in Kororoit Creek. Tidal waters can also influence flooding in this area. Cars are also consistently removed from the ford during flood events. Flood gates have been installed in an attempt to prevent cars from entering flood water.

Both Merton St and Racecourse Road gates are manually operated by staff at Hobsons Bay City Council, this is triggered by BoM alerts and forecasts, visual observations and/or customer service requests.

Flash Flooding and Overland Flows

Many of the underground drains in Hobsons Bay are under capacity and have generally been designed for 20% AEP storms in residential areas and 10% AEP in Commercial/Industrial areas and are unable to convey run off from larger storms. Some drains, particularly in the area north of Kooringal Golf Club and west of Maidstone Street are influenced by the capacity of the Mulga Street Outfall Drain. Road flooding frequently occurs in heavy rain events. Civic Parade in the vicinity of Sugargum Drive also floods frequently due to grading of the Nellie Street Drain.

Other areas subject to flash flooding are Millers Road just north of Kororoit Creek Bridge, the intersection of Mason Street & Melbourne Road, Douglas Parade north of Burleigh Street and the Strand Williamstown.

Tidal Flooding and Storm Surges

The Esplanade, Altona frequently floods due to storm surges in particular at the end of Sargood Street and Bayview Street with the potential to flood underground parking to some of the properties fronting the Esplanade.

Description of Major Waterways and Drains

Within the municipality of Hobsons Bay, there are four main natural waterways, totalling approximately 30km. These are (from west to east):

Skeleton Creek (7.5 km)

Laverton Creek (5 km)

Cherry Creek, (6 km) and

Kororoit Creek (8 km).

These watercourses generally flow in a north west to south easterly direction, discharging into Port Philip Bay.

Skeleton Creek rises to the south of Truganina, and flows in a largely natural, meandering channel, through the Cheetham wetlands and into Altona Bay south of Altona Meadows.

Laverton Creek rises to the west of Derrimut and is largely natural in form until it reaches the municipality, when it becomes heavily modified and channelised through Truganina Swamp and then flows into Altona Bay at Altona South.

Cherry Creek rises near Laverton North and flows in a heavily modified channel in southerly direction through the municipality of Hobsons Bay and into Cherry Lake before discharging to Altona Bay near Altona Sports Club.

Kororoit Creek rises near Sunbury and flows in a southerly direction through the municipality, via Altona Coastal Park, discharging into Altona Bay.

Detailed schematics of these waterways can be found at **Appendix G**.

There are also several minor natural watercourses within the municipality. They are:

- Kayes Drain
- Laverton East Main drain and
- Paisley Drain.

Lower Stony Creek also flows along Council's eastern border of for approximately 3 km.

Melbourne Water Drains & Waterways	Suburb/s	Melbourne Water Drains & Waterways	Suburb/s
Blenheim Road Drain	Altona North & Newport	Laverton East Main Drain	Altona & Altona Meadows
Burgess Street Drain	Altona North & Brooklyn	Laverton Main Drain	Altona, Altona Meadows & Laverton
Burleigh Street Drain	Spotswood	Millers Rd Drain	Altona & Altona North
Challis St Main Drain	Newport, Williamstown & Williamstown North	Mulga Ave Drain	Altona
Chambers Rd Drain	Altona North	Nellie St Main Drain	Altona & Seaholme
Cherrys Main Drain	Altona, Altona North & Seaholme	Newport Workshops Drain	Williamstown & Williamstown North
Francis St Main Drain	Brooklyn	Notla Estate Main Drain	Altona
Galvin Diversion Drain	Altona	Paisley Drain	Altona North, Williamstown & Williamstown North
Humes Main Drain	Altona North	Schutts Estate Main Drain	Spotswood
Kayes Drain	Altona, Altona North & Laverton North	Skeleton Creek	Altona Meadows & Seabrook
Kororoit Creek	Altona & Altona North	Stony Creek	Spotswood

Table A1 – Melbourne Water Drains and Waterways within or bordering the municipality of Hobsons Bay.

Historical Floods

Significant floods (with high flood gauge levels and/or likely flooding consequences to property and infrastructure) to have occurred within the municipality of Hobsons Bay are as follows in the table below. It is rare that a storm will affect all catchments in the municipality in the one event except in the most extreme situations. Results below highlighted in black indicate when either stream level rise was significant enough to cause riverine flooding or when rainfall was significant enough to cause flash flooding; while results in grey indicate either stream level rise or rainfall that was unlikely enough to contribute to flooding at or around the gauge location. These results have been included however to show the relationship between these catchments and others that were recorded to indicate flooding.

Event	Kororoit Creek at Deer Park (231104A)		Kororoit Creek at Brooklyn (231107A)		Stony Creek at Spotswood (230112A)		Altona (587047)	Skeleton Creek at Hoppers Crossing (231110A)	
	Rainfall at Gauge	Creek Height	Rainfall at Gauge	Creek Height	Rainfall at Gauge	Creek Height	Rainfall at Gauge	Rainfall at Gauge	Creek Height
Normal Water Level	-	0.75m	-	0.22m	-	0.13m	-	-	1.17m
Minor Flood Class		3.6m							
Moderate Flood Class		4.0m							
Major Flood Class		4.5m							
7th March 1919	-	-	-	**5.67m**	-	-	-	-	-
29th January 1963	-	-	-	3.77m	-	-	-	-	-
15th May 1974	-	-	-	3.66m	-	-	-	-	-
7th April 1977	-	-	-	4.12m	-	2.74m	-	-	-
15th October 1983	98mm / 33 hrs	4.90m	88mm / 33 hrs	4.02m	-	-	-	86mm / 32 hrs	2.55m
10th December 1985	36mm / 30 hrs	3.88m	29mm / 32 hrs	2.46m	-	-	-	23mm / 33 hrs	2.43m
3rd February 2005	**170mm / 31 hrs**	**5.32m**	135mm / 31 hrs	4.01m	148mm / 30 hrs	1.80m	119mm / 31 hrs	**130mm / 31 hrs**	**3.47m**
5th February 2011	49mm / 32 hrs	2.17m	87mm / 32 hrs	1.61m	90mm / 32 hrs	2.22m	**139mm / 32 hrs**	113mm / 31 hrs	3.30m
2nd December 2017	-	1.74m	60mm / 41 hrs	1.42m	65mm / 39 hrs	1.41m	-	43mm / 38 hrs	2.20m
6th November 2018	30mm / 2 hrs	2.52m	30mm / 2 hrs	1.78m	27mm / 2 hrs	2.09m	18mm / 3 hrs	18mm / 3 hrs	2.22m
14th December 2018	2mm / 2 hrs	1.92m	10mm / 1 hr	1.24m	25mm / 1 hr	1.90m	47mm / 1 hr	13mm / 2 hrs	2.13m
1st December 2021	3mm / 1 hr	1.34m	27mm / 1 hr	1.06m	39mm / 3 hrs	1.27m	9mm / 3 hrs	4mm / 1 hr	1.64m
7th January 2022	10mm 1 hr	1.75m	8mm / 1 hr	1.10m	14mm / 1 hr	0.77m	43mm / 8 hrs	45mm / 8 hrs	2.80m
22nd October 2022	53mm / 14 hrs	2.13m	34mm / 14 hrs	1.57m	32mm / 14 hrs	1.06m	39mm / 14 hrs	30mm / 14 hrs	2.45m

Table A2 – Selection of Historical Flood Events along Kororoit Creek, Stony Creek and Skeleton Creek

February 2005 Event

Kororoit Creek upstream of Kororoit Creek Road

Melway Ref: 54-J-3 (looking south)

Kororoit Creek upstream of railway

Melway Ref: 54-J-3 (looking south)

Kororoit Creek at Port Phillip Bay

Melway Ref: 55-D-8 (looking south west)

Laverton Creek Truganina Swamp

Melway Ref: 53-K-12 (looking north)

Laverton Creek & Kayes Drain

Melway Ref: 53-H-10 (looking north)

Skelton Creek Sanctuary Lakes Development

Melway Ref: 208-D-3 (looking south west)

Dam Spilling or Failure

No dams, either in or upstream of the municipality of Hobsons Bay are expected to affect the Municipality from flooding. See Dam Failure in Section 3 of this plan for more information. A number of Service Reservoirs are located within the Municipality however and are listed below.

Melbourne Water Service Reservoir	Location	Owner	Material	Reservoir Capacity	Melway Reference
Greater Western Water No.1	Western No.2 Waste Purification Plant, Queen Street, Altona	Greater Western Water	Unavailable	Unavailable	53 J12
Greater Western Water No.2	Western No.2 Waste Purification Plant, Queen Street, Altona	Greater Western Water	Unavailable	Unavailable	53 J12
Greater Western Water No.3	Western No.2 Waste Purification Plant, Queen Street, Altona	Greater Western Water	Unavailable	Unavailable	53 J12

Table A3 – Service Reservoirs in the municipality of Hobsons Bay

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 (i.e. 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.

Typical Travel Times

Location From (gauge)	Location To (gauge)	Typical Travel Time	Comments
KORORROIT CREEK			
Diggers Rest	Brooklyn	Between 1 hour to 10 hours	Inflows from tributaries likely to impact on travel times.
Deer Park		Between 1 min to 4 hours	Inflows from tributaries likely to impact on travel times.

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

Historical Travel Times

Flood Event	Location From (gauge)	Location To (gauge)	Flood Peak Travel Time	Flood Class at
KORORROIT CREEK				**Deer Park**
15th October1983	Diggers Rest	Deer Park	6 hours	Major
10th December 1985	Diggers Rest	Brooklyn	6 hours	Minor
	Deer Park		3 hours	
15th September 1993	Diggers Rest	Brooklyn	Less than 1 hour	Moderate
3rd February 2005	Diggers Rest	Brooklyn	3 hours	Major
	Deer Park		1 hour	

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

Appendix C1 – Kororoit Creek & Stormwater Tributaries 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 who 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 Kororoit Creek					
Property					
Properties	**0**				
Residential	0				
Commercial	0				
Industrial	0				
Public Land	0				
Rural	0				
Community Infrastructure					
Essential Infrastructure					
Major Roads	1	Racecourse Road			
Major Rail	1	Werribee Railway Line via Altona			
Sewerage Facilities	1	Emergency Relief Point			
Levees	5	West of Millers Road to Maddox Street			
Tourism / Recreation					
Recreation Facilities	1	Kororoit Creek Trail			
Government Boundaries					
Local Gov't Areas	1	Hobsons Bay	CMA	1	Port Phillip & Westernport
Adjacent LGAs	2	Brimbank and Wyndham	CFA District	0	
SES Unit Area	1	Hobsons Bay	FRV District	1	Western

Table C1.1 – Consequence Summary of 1% AEP flood along Kororoit Creek

Brooklyn, Altona North, Altona & Williamstown North are located approximately 12km southwest of Melbourne in a mixed residential and industrial area. Kororoit Creek is the prominent watercourse in the area, flowing from the north through the Municipalities of Melton and Brimbank. High Intensity, short duration rainfall events can cause flash flooding in and around the stormwater drains that connect to Kororoit Creek, while prolonged rainfall may see Kororoit Creek flood. See mapping in **Appendix F** for more insight into flooding in the area.

Warnings and Gauges

Melbourne Water currently provides flood forecasts for Kororoit Creek.

Warnings are available for flooding expected along Kororoit Creek which include areas adjacent to the river between Laverton North/Brooklyn and Altona/Williamstown in Hobsons Bay. Flood class levels for the Deer Park gauges are detailed in table C1.2 and are used in the issuing of a flood warning for Kororoit Creek. These and other gauge details within the Kororoit Creek catchment are contained within table C1.3.

Gauge	River / Creek Flood Class Level		
	Minor	Moderate	Major
Kororoit Creek at Deer Park	3.6m	4.0m	4.5m

Table C1.2 – Gauges with established Flood Class Levels for Kororoit Creek

At these sites within the Kororoit Creek catchment, the Bureau of Meteorology (the BoM) in consultation with Melbourne Water will issue flood warnings if levels reach those classified above. Warnings will be placed on the Bureau's website (bom.gov.au/vic/warnings/index.shtml?ref=hdr) and the VicEmergency website emergency.vic.gov.au.

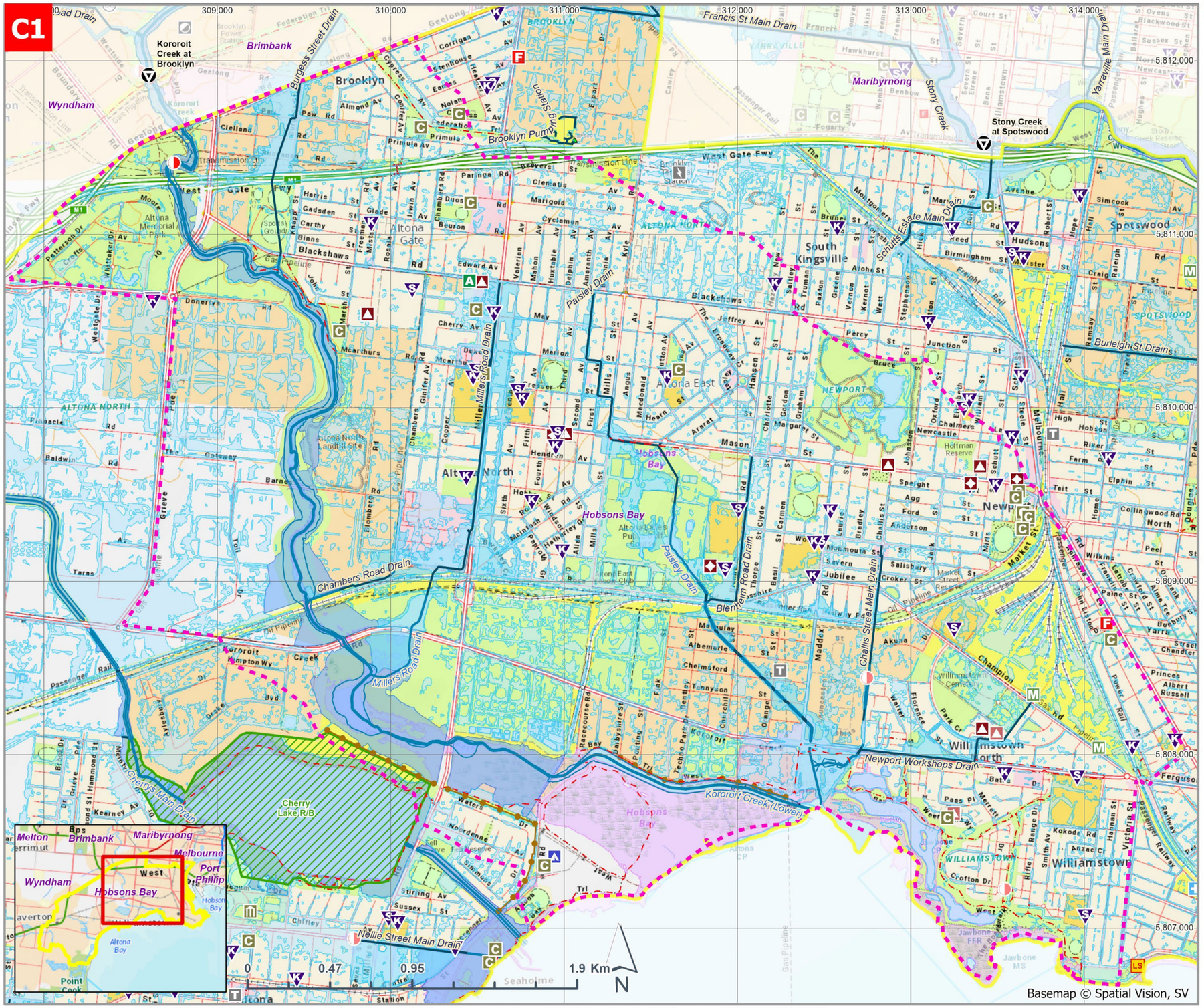
For other gauges within the catchment, Melbourne Water does not provide any flood warning service at this point, due to the generally short warning times available.

Gauge	Station No.	Location	Owner	Gauge Type	Melway Ref
Kororoit Creek at Diggers Rest	231106A	West bank of the creek, north side of Holden Road	Melbourne Water	Stream Level & Rain	332 H8
Kororoit Creek at Rockbank	231105B	North bank of the creek, east side of Leakes Road	Melbourne Water	Stream Level & Rain	344 J1
Kororoit Creek at Deer Park	231104A	North side of the creek along Millbank Drive, near Wandsworth Ave	Melbourne Water	Stream Level & Rain	25 C7
Kororoit Creek at Brooklyn	231107A	West bank of the creek, north side of the Federation Bicycle Trail bridge	Melbourne Water	Stream Level & Rain	40 G10

Table C1.3 – Gauges within the Kororoit Creek catchment monitoring flood levels for the City of Hobsons

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

Area Map of Flood Risk within the Kororoit Creek catchment



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.

Hobsons Bay flood modelling completed by Cardno, 2017. Cherrys Main Drain flood modelling completed by J Morgan, June 2008. Kororoit Creek flood modelling completed by Melbourne Water, May 2011. Map produced by VICSES 29/04/2024 12:53 PM

Figure C1 – Areas of flood risk around Kororoit Creek and its tributaries in municipality of Hobsons Bay and area covered by this appendix

Properties at Flood Risk

Properties listed in the table below are at risk from flooding along Kororoit Creek 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 Kororoit Creek Lower (Melbourne Water, May 2011) flood mapping and risk assessment program. *This Property Flood Risk Table is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the Victoria State Emergency Service. No liability is accepted for any damage, loss or injury caused by errors or omissions in this information or for any action taken by any person in reliance upon it.*

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
-				

Total
0

Table C1.4 – Properties at risk of flooding along Kororoit Creek in the municipality of Hobsons Bay City.

Properties listed in the table below are at risk from flooding over-floor along Kororoit Creek's stormwater tributaries in Altona North and Williamstown North. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Millers Road Drain (Melbourne Water, April 1998) and the Paisley Drain (Melbourne Water, April 1998) flood mapping and risk assessment programs.

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Properties at risk from Flooding over-floor along Kororoit Creek's stormwater tributaries in Hobsons Bay							
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					
✓	✓	✓	1A Bryan Avenue	Altona North	Millers Road Drain	Flash	
		✓	1B Bryan Avenue	Altona North	Millers Road Drain	Flash	
		✓	731-739 Geelong Road	Brooklyn	Burgess Street Drain	Flash	
		✓	741-743 Geelong Road	Brooklyn	Burgess Street Drain	Flash	
		✓	745-747 Geelong Road	Brooklyn	Burgess Street Drain	Flash	
		✓	749-751 Geelong Road	Brooklyn	Burgess Street Drain	Flash	
✓	✓	✓	1/94 Maddox Road	Newport	Paisley Drain	Flash	
✓	✓	✓	2/94 Maddox Road	Newport	Paisley Drain	Flash	
	✓	✓	143 McIntosh Road	Altona North	Millers Road Drain	Flash	
	✓	✓	221 Millers Road	Altona North	Millers Road Drain	Flash	
	✓	✓	1 Myrtle Street	Williamstown North	Newport Workshops Drain	Flash	
	✓	✓	3 Myrtle Street	Williamstown North	Newport Workshops Drain	Flash	
	✓	✓	5 Myrtle Street	Williamstown North	Newport Workshops Drain	Flash	

Properties at risk from Flooding over-floor along Kororoit Creek's stormwater tributaries in Hobsons Bay						
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				
		✓	83 Park Cres	Williamstown North	Newport Workshops Drain	Flash
		✓	91 Park Cres	Williamstown North	Newport Workshops Drain	Flash
		✓	14 Railway Parade	Newport	Challis Street Main Drain	Flash
✓	✓	✓	15 Railway Parade	Newport	Challis Street Main Drain	Flash
✓	✓	✓	13 Ross Road	Altona North	Millers Road Drain	Flash
✓	✓	✓	15 Ross Road	Altona North	Millers Road Drain	Flash
✓	✓	✓	17A Ross Road	Altona North	Millers Road Drain	Flash
✓	✓	✓	19 Ross Road	Altona North	Millers Road Drain	Flash
✓	✓	✓	21 Ross Road	Altona North	Millers Road Drain	Flash
✓	✓	✓	23 Ross Road	Altona North	Millers Road Drain	Flash
		✓	44 Rosshire Road	Newport	Blenheim Road Drain	Flash
✓	✓	✓	31 Seventh Avenue	Altona North	Millers Road Drain	Flash
Totals						
11	16	25				

Table C1.5 – Properties at risk of flooding along Kororoit Creek's stormwater Tributaries in the municipality of Hobsons Bay.

Assets and Infrastructure at Flood Risk

Werribee Railway Line via Altona at risk of inundation at Kororoit Creek crossing during a 10% AEP event on Kororoit Creek

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 municipality of Hobsons Bay is available via the website at:

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

Roads at Flood Risk

The following roads are subject to closure during flooding around Brooklyn, Altona North, Altona or Williamstown North. Check the VicTraffic website for more details: https://traffic.vicroads.vic.gov.au/

Department of Transport and Planning (DTP) Roads at flood risk in a 1% AEP (100yr ARI) event
• Kororoit Creek Road, Williamstown North at Maddox Road and west of Millers Road, Altona North
• Geelong Road (Princes Highway), Brooklyn at Burgess Street

Table C1.6 – DTP Possible Road Closures during a flooding event

Hobsons Bay City Council Roads at flood risk in a 1% AEP (100yr ARI) event			
ALTONA	• Duke Street	**BROOKLYN**	**WILLIAMSTOWN**
• Racecourse Road	• Lloyd Street	• Buchanan Road	• Techno Park Drive
ALTONA NORTH	• Mason Street	• Burgess Street	**WILLIAMSTOWN NORTH**
• Challis Street	• Ross Road	• Clelland Road	• Maddox Road
• Chambers Road	• Walker Close	• Paw Paw Road	

Table C1.7 – Roads subject to flooding which may require closure

Flood Mitigation

Retarding Basins

Hobsons Bay City Council Retarding Basin	Location	Area	Melway Reference
Paisley Park Golf Course Lakes	Paisley Park, Altona	47.35 ha	55 D4

Table C1.8 – Hobsons Bay City Council Retarding Basins around Kororoit Creek at its Tributaries

Levees

Levee	Reach	Side	Levee Height	Levee Length	Expected Level of Protection	ANCOLD Hazard Rating	Consequences of Failure	Melway Reference
Kororoit Creek, Altona	West of Millers Road	South	1.7m (4.40m AHD)	0.8km	1% AEP flood level with 900mm freeboard	Very Low	Floodwaters flow into Cherry Lake and possibly across Millers Road	55 E8 - 55 C7
Kororoit Creek, Altona	East of Millers Road	South	1.7m (3.55m AHD)	0.6km	1% AEP flood level with 500mm freeboard	Significant	37 residential properties flooded along Waters Drive	55 A8 - 55 B8
Kororoit Creek Floodwall, Seaholme	Waters Drive to Cherry's Drain	South	1.1m	0.6km	Unavailable	High A	77 residential properties flooded along Waters and Simmons Drives	55 B9
Kororoit Creek, Altona	Darbyshire Street to Petroleum Refinery	North	3.2m (2.70m AHD)	0.8km	1% AEP flood level with unknown freeboard	Significant	9 large industrial lots flooded along Seaview Pde and Techno Park Drive	55 C7 - 55 F7
Kororoit Creek, Altona	Petroleum Refinery to Paisley Drain	North	1.0m (1.10m AHD)	0.4km	Unavailable	Low	5 industrial lots flooded along Gray Reserve Road	55 F8 - 55 E8

Table C1.9 – Melbourne Water Levees in the Kororoit Catchment in municipality of Hobsons Bay

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located along Kororoit Creek near the municipality of Hobsons Bay is contained within the following table.

Sewer Emergency Relief Points

On Drain / Waterway	Bank / Side of Waterway	Location	Melway Reference
Kororoit Creek	West	Between Princes Highway and the West Gate Freeway, 120m north of Freeway bridge	40 G11

Table C1.10 – Sewer Emergency Relief Points along Kororoit Creek near the municipality of Hobsons Bay

Flood Impacts and Required Actions

The tables on the following pages provide a breakdown of the possible consequences of flooding along Kororoit Creek and its stormwater tributaries at various creek heights or rain totals within the municipality of Hobsons Bay. 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:

- Brooklyn Gauge, Kororoit Creek
- Kororoit Creek Stormwater Tributaries, Altona North and Williamstown

FLOOD INTELLIGENCE CARD – BROOKLYN GAUGE, KORORoit CREEK

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

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LOCATION:	**West bank of the creek, north side of the Federation Bicycle Trail bridge**
CURRENT LEVEL:	**https://www.melbournewater.com.au/water-and-environment/water-management/rainfall-and-river-levels#/reader/231107A**
STREAM:	**Kororoit Creek**
GAUGE NUMBER:	**231107A**
GAUGE ZERO:	**7.567m AHD**
GAUGE TYPE:	**Stream Level & Rain**

MINOR:	**Not Established**
MODERATE:	**Not Established**
MAJOR	**Not Established**
LEVEE HEIGHTS:	**5.33m to 6.23m**
MELWAY REFERENCE:	**40 G10**
HIGHEST RECORDED FLOOD:	**5.67m (7th March 1919)**

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
3.57m	20% AEP (5yr ARI) Flood Level	**Water Over Road (over 30cm depth)** • Racecourse Road, Altona flooded at Kororoit Creek crossing	Flood gates are located at Racecourse Road, the gates are closed manually by staff at Hobsons Bay City Council, this is triggered by Bureau of Meteorology alerts and forecasts, visual observations, customer service requests.
3.86m	10% AEP (10yr ARI) Flood Level	**Essential Infrastructure Likely Impacted** • Werribee Railway Line via Altona likely flooded at Kororoit Creek crossing	VICSES will provide warnings using EM-COP to Hobson's Bay Council and appropriate agencies as required based on the predictions provided by BoM regarding flood levels and the risk of Flash Flooding. The VICSES Region Duty Officer, in conjunction with the Regional Agency Commander, will maintain operational awareness and form an appropriate response arrangement to suit the level of incident VICSES to respond on a request by request basis.

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
			Council and DTP (as appropriate) to provide road closure signage under predetermined arrangements
4.01m	February 2005 Flood Level	**Event Summary** • Racecourse Road, Altona flooded at Kororoit Creek crossing • Werribee Railway Line via Altona flooded at Kororoit Creek crossing • Disused trestle bridge between Barnes Road and Geelong Railway Line flooded	
4.33m	5% AEP (20yr ARI) Flood Level	**Community Infrastructure Likely Flooded** • Kororoit Creek Trail flooded at various locations **Water Over Road (over 30cm depth)** • Disused trestle bridge between Barnes Road and Geelong Railway Line flooded	
4.90m	2% AEP (50yr ARI) Flood Level		
5.33m	1% AEP (100yr ARI) Flood Level	**Essential Infrastructure Likely Impacted** • Levees along Kororoit Creek around Millers Road and the Petroleum Refinery approaching Crest Level minus their specific freeboards	

Table C1.11 – Breakdown of likely consequences at various Brooklyn gauge level heights along Kororoit Creek with operational considerations

FLOOD INTELLIGENCE CARD – MILLERS ROAD & PAISLEY DRAINS, ALTONA NORTH (UNGAUGED)

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

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CLOSEST RAIN GAUGE:	**Kororoit Creek at Brooklyn**
LOCATION:	**West bank of the creek, north side of the Federation Bicycle Trail bridge**
RECENT RAINFALL:	**https://www.melbournewater.com.au/water-and-environment/water-management/rainfall-and-river-levels#/reader/231107A**

GAUGE NUMBER:	**231107A**
GAUGE TYPE:	**Stream Level & Rain**
MELWAY REFERENCE:	**40 G10**

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	**Annual Exceedance Probability (% AEP)**	**Consequence / Impact**	**Operational Considerations**
16mm in 10 mins; 26mm in 30 mins; 33mm in 1 hour; 42mm in 2 hours; 47mm in 3 hours; or 59mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	5% AEP (20 year ARI)	**Properties at Flood Risk (Over-Floor)** **11 Properties in Total** **Millers Road Drain** • 1A Bryan Avenue, Altona North • 13, 15, 17A, 19, 21 & 23 Ross Road, Altona North • 31 Seventh Avenue, Altona North **Paisley Drain** • 1/94 & 2/94 Maddox Road, Williamstown • 15 Railway Parade, Newport **Community Infrastructure Likely Flooded** **Paisley Drain** • Altona Lakes Public Golf Course flooded in parts **Water Over Road** **Millers Road Drain** • Millers Road, Altona North at points between Blackshaws Road and Railway bridge overpass • Ross Road, Altona North west of Millers Road **Paisley Drain** • Mason Street, Altona North at Mills Street • Ross Road, Altona North at Altona Miniature Railway	VICSES will provide warnings using VicEmergency to Hobson's Bay Council and appropriate agencies as required based on the predictions provided by BoM regarding flood levels and the risk of Flash Flooding. The VICSES RDO, in conjunction with the Regional Agency Commander, will maintain operational awareness and form an appropriate response arrangement to suit the level of incident VICSES to respond on a request by request basis. Council and DTP (as appropriate) to provide road closure signage under predetermined arrangements
20mm in 10 mins;	2% AEP (50 year ARI)	**Properties at Flood Risk (Over-Floor)** **16 Properties in Total**	

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
32mm in 30 mins; 41mm in 1 hour; 51mm in 2 hours; 58mm in 3 hours; or 73mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.		**Millers Road Drain** • 1A Bryan Avenue, Altona North • 143 McIntosh Road, Altona North • 221 Millers Road, Altona North • 13, 15, 17A, 19, 21 & 23 Ross Road, Altona North • 31 Seventh Avenue, Altona North **Paisley Drain** • 1/94, 2/94 & 124 Maddox Road, Newport • 1, 3 & 5 Myrtle Street, Williamstown North • 15 Railway Parade, Newport **Community Infrastructure Likely Flooded** **Millers Road Drain** • Altona Gate Kindergarten, Walker Close, Altona North may experience minor property flooding **Water Over Road** **Millers Road Drain** • Walker Close, Altona North • Ross Road, Altona North west of Millers Road • Chambers Road, Altona North near Ross Road **Paisley Drain** • Mason Street, Altona North at Mills Street • Ross Road, Altona North at Altona Miniature Railway • Lloyd Street, Altona North • Maddox Road, Williamstown North at Kororoit Creek Road • Kororoit Creek Road, Williamstown North at Maddox Road	
23mm in 10 mins; 37mm in 30 mins; 48mm in 1 hour; 60mm in 2 hours; 68mm in 3 hours; or 85mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungauged nature of the catchment. This should be used as a guide only.	1% AEP (100 year ARI)	**Properties at Flood Risk (Over-Floor)** **25 Properties in Total** **Burgess Street Drain** • 731-739, 741-743, 745-747 & 749-751 Geelong Road, Brooklyn **Millers Road Drain** • 1A & 1B Bryan Avenue, Altona North • 143 McIntosh Road, Altona North • 221 Millers Road, Altona North • 13, 15, 17A, 19, 21 & 23 Ross Road, Altona North • 31 Seventh Avenue, Altona North **Paisley Drain** • 1/94 & 2/94 Maddox Road, Williamstown • 1, 3 & 5 Myrtle Street, Williamstown • 83 & 91 Park Crescent, Williamstown • 14 & 15 Railway Parade, Newport • 44 Rosshire Road, Newport	

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		Community Infrastructure Likely Flooded **Millers Road Drain** • Altona Gate Kindergarten, Millers Road, Altona North may experience minor property flooding • Altona North Primary School, Cresser Street, Altona North may experience minor property flooding **Paisley Drain** • Altona Lakes Public Golf Course inundated in parts • The Kororoit Creek and Brunswick City Anglers Clubs may experience some property flooding • Altona Miniature Railway on Blenheim Road, Newport **Water Over Road (over 30cm depth) (Roads in red are DTP operated roads)** **Burgess Street Drain** • Buchanan Road, Brooklyn • Burgess Street, Brooklyn • Clelland Road, Brooklyn • Geelong Road, (Princes Highway), Brooklyn at Burgess Street • Paw Paw Road, Brooklyn **Millers Road Drain** • Walker Close, Altona North • Duke Street, Altona North • Ross Road, Altona North west of Millers Road • Chambers Road, Altona North near Ross Road • Kororoit Creek Road, Altona North, floodwaters level with road **Paisley Drain** • Mason Street, Altona North at Mills Street • Ross Road, Altona North at Altona Miniature Railway • Lloyd Street, Altona North • Challis Street, Altona North at Market Street • Maddox Road, Williamstown North at Kororoit Creek Road • Kororoit Creek Road, Williamstown North at Maddox Road	

Table C1.12 – Breakdown of possible consequences at various rainfall intensities around Altona North and Williamstown North with operational considerations

Appendix C2 – Stony 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 Stony Creek and its stormwater tributaries					
Property					
Properties	**9**				
Residential	1				
Commercial	0				
Industrial	8				
Public Land	0				
Rural	0				
Community Infrastructure					
Essential Infrastructure					
Major Roads	5	Blackshaws Road; Douglas Pde; Melbourne Road; Westgate Fwy city bound on-ramp at Williamstown Rd; and Williamstown Rd			
Bus Routes	4	232; 432; 472; & 944			
Sewerage Facilities	1	Emergency Relief Point			
Drainage Facilities	1	HBCC Retarding Basin			
Tourism / Recreation					
Government Boundaries					
Local Gov't Areas	1	Hobsons Bay	CMA	1	Port Phillip & Westernport
Adjacent LGAs	2	Brimbank & Maribyrnong	CFA District	0	
SES Unit Area	1	Hobsons Bay	FRV District	1	Western

Table C2.1 – Consequence Summary of 1% AEP flood along Stony Creek and its stormwater tributaries

The Stony Creek catchment in municipality of Hobsons Bay and the adjoining suburbs of Brooklyn, Spotswood & South Kingsville are located approximately 5km west of Melbourne in a mixed residential and industrial area. Stony Creek is the prominent watercourse in the area, flowing from the northwest through the Municipalities of Brimbank and Maribyrnong. Two large stormwater drains connect to Stony Creek in or near municipality of Hobsons Bay: the Francis Street and Schutts Estate Main Drains. High Intensity, short duration rainfall events can cause flash flooding in and around these stormwater drains, while prolonged rainfall may see Stony Creek flood. See mapping in **Appendix F** for more insight into flooding in the area.

Warnings and Gauges

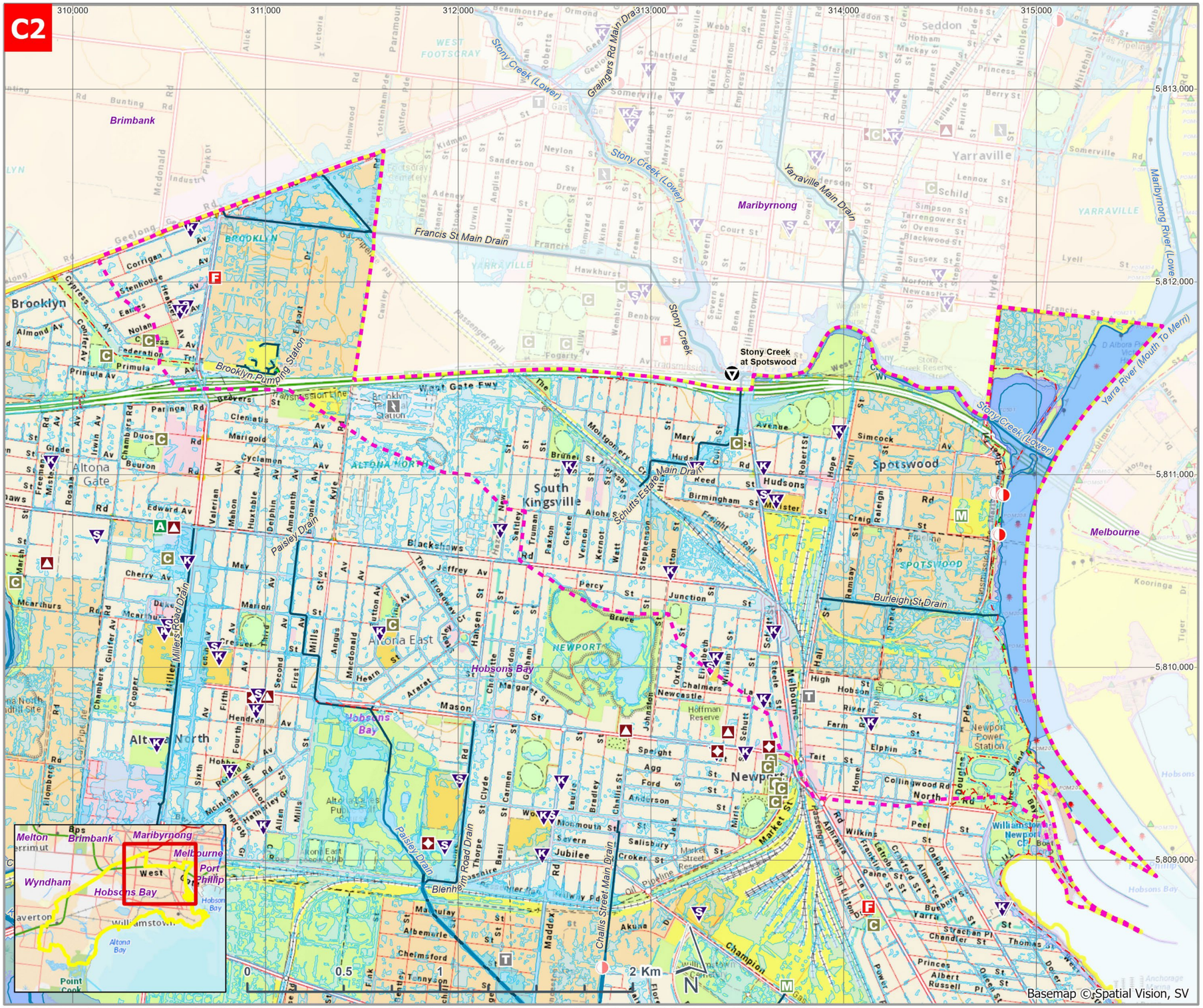
Neither the Bureau of Meteorology nor Melbourne Water currently provides flood forecasts for Stony Creek. All flood response actions must therefore be driven by rainfall and / or river level observations. A telemetered water level / flood gauge is located at Spotswood within the Stony Creek catchment.

Gauge	Station No.	Location	Owner	Gauge Type	Melway Ref
Stony Creek at Spotswood	230112A	South side of the creek, west of Williamstown Road bridge	Melbourne Water	Stream Level & Rain	53 H12

Table C2.2 – Gauges within the Stony Creek catchment

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

Area Map of Flood Risk within the Stony Creek catchment



Hobsons Bay flood modelling completed by Cardno, 2017. Cherrys Main Drain flood modelling completed by J Morgan, June 2008. Kororoit Creek flood modelling completed by Melbourne Water, May 2011. Map produced by VICSES 1/05/2024 1:05 PM

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

C2. Area of flood risk in Brooklyn, South Kingsville and Spotswood

SES VICTORIA State Government

Melbourne Water

Figure C2 – Areas of flood risk around Stony Creek in the municipality of Hobsons Bay and area covered by this appendix

Properties at Flood Risk

Properties listed in the table below are at risk from flooding along Stony Creek in the municipality of Hobsons Bay. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Stony Creek (Water Technology, May 2013) flood mapping and risk assessment program.

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Properties at risk from Flooding along Stony Creek in Hobsons Bay during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
-				

Total
0

Table C2.3 – Properties at risk of flooding along Stony Creek in the municipality of Hobsons Bay Hobsons Bay City Council

Properties listed in the table below are at risk from flooding over-floor around Stony Creek's stormwater tributaries. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Francis Street Main Drain (Water Technology, May 2013) and the Schutts Estate Main Drain (Water Technology, 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.

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Properties at risk from Flooding over-floor along Stony Creek's stormwater tributaries in Hobsons Bay						
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				
		✓	410-422 Francis Street	Brooklyn	Francis Street Main Drain	Flash
✓	✓	✓	424-430 Francis Street	Brooklyn	Francis Street Main Drain	Flash
	✓	✓	432 Francis Street	Brooklyn	Francis Street Main Drain	Flash
✓	✓	✓	434 Francis Street	Brooklyn	Francis Street Main Drain	Flash
✓	✓	✓	521 Geelong Road	Brooklyn	Francis Street Main Drain	Flash
		✓	525 Geelong Road	Brooklyn	Francis Street Main Drain	Flash
	✓	✓	531-533 Geelong Road	Brooklyn	Francis Street Main Drain	Flash
	✓	✓	535 Geelong Road	Brooklyn	Francis Street Main Drain	Flash
	✓	✓	27 Mary Street	Spotswood	Schutts Estate Main Drain	Flash

Totals		
3	7	9

Table C2.4 – Properties at risk of flooding within the Stony Creek catchment in the municipality of Hobsons Bay Hobsons Bay City Council

Assets and Infrastructure at Flood Risk

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 municipality of Hobsons Bay is available via the website at:

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

Roads at Flood Risk

The following roads are subject to closure during flooding around Spotswood, Brooklyn & South Kingsville. Check the VicTraffic website for more details: https://traffic.vicroads.vic.gov.au/

Department of Transport and Planning (DTP) Roads at flood risk in a 1% AEP (100yr ARI) event
• Blackshaws Road, Newport at Melbourne Road underpass
• Douglas Parade, Spotswood at Scienceworks Museum
• Melbourne Road, Newport at Mason Street
• Westgate Freeway city-bound on-ramp at Williamstown Road
• Williamstown Road, Spotswood at the Westgate Freeway underpass

Table C2.4 – DTP roads subject to flooding possibly requiring closure during a flood event

Hobsons Bay City Council Roads at flood risk in a 1% AEP (100yr ARI) event	
BROOKLYN	**SPOTSWOOD**
• Hardie Road	• Burleigh Street
SOUTH KINGSVILLE	• Cullen Court
• Moresby Street	• Hudsons Road
• Stephenson Street	• The Avenue

Table C2.5 – Hobsons Bay City Council roads subject to flooding possibly requiring closure during a flood event

Flood Mitigation

Retarding Basins

Hobsons Bay City Council Retarding Basin	Location	Area	Melway Reference
Private Property	Off Link Court, Brooklyn	0.35 ha	41 C10

Table C2.6 – Hobsons Bay City Council Retarding Basins within the Stony Creek catchment

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located around Spotswood, Brooklyn & South Kingsville is contained within the following table.

Sewer Emergency Relief Points

On Drain / Waterway	Bank / Side of Waterway	Location	Melway Reference
Yarra River (near Stony Creek mouth)	West	Riverside Park north of the Scienceworks Jetty	56 B1

Table C2.7 – Sewer Emergency Relief Points in the Stony Creek Catchment in the municipality of Hobsons Bay

Flood Impacts and Required Actions

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

- Stony Creek at Spotswood
- Stony Creek's stormwater tributaries in Brooklyn, Spotswood and South Kingsville

FLOOD INTELLIGENCE CARD – SPOTSWOOD GAUGE, STONY CREEK

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

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

LOCATION:	**South side of the creek, west of Williamstown Road bridge**
CURRENT LEVEL:	**https://www.melbournewater.com.au/water-and-environment/water-management/rainfall-and-river-levels#/reader/230112A**
STREAM:	**Stony Creek**
GAUGE NUMBER:	**230112A**
GAUGE ZERO:	**0.82m AHD**
GAUGE TYPE:	**Stream Level & Rain**

MINOR:	**Not Established**
MODERATE:	**Not Established**
MAJOR:	**Not Established**
LEVEE HEIGHT:	**N/A**
MELWAY REFERENCE:	**41 J11**
HIGHEST RECORDED FLOOD:	**2.74m (7th April 1977)**

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
2.9m	20% AEP (5yr ARI) Flood Level	• Nil expected in Hobsons Bay	
3.1m	10% AEP (10yr ARI) Flood Level	• Nil expected in Hobsons Bay	
3.32m	5% AEP (20yr ARI) Flood Level	• Nil expected in Hobsons Bay	
3.58m	2% AEP (50yr ARI) Flood Level	• Nil expected in Hobsons Bay	
4.62m	1% AEP (100yr ARI) Flood Level	**Water Over Road (over 30cm depth) (Roads in red are DTP operated roads)** • Westgate Freeway city-bound on-ramp at Williamstown Road, Spotswood	VICSES will provide warnings using VicEmergency to Hobson's Bay Council and appropriate agencies as required based on the predictions provided by BoM regarding flood levels and the risk of Flash Flooding. The VICSES RDO, in conjunction with the Regional Agency Commander, will maintain operational awareness and form an appropriate response arrangement to suit the level of incident

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
			VICSES to respond on a request by request basis. Council and DTP (as appropriate) to provide road closure signage under predetermined arrangements

Table C2.8 – Breakdown of likely consequences at various Spotswood gauge level heights along Stony Creek in Hobsons Bay with operational considerations

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

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

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CLOSEST RAIN GAUGE:	**Stony Creek at Spotswood**
LOCATION:	**South side of the creek, west of Williamstown Road bridge**
RECENT RAINFALL:	**https://www.melbournewater.com.au/water-and-environment/water-management/rainfall-and-river-levels#/reader/230112A**

GAUGE NUMBER:	**230112A**
GAUGE TYPE:	**Stream Level & Rain**
MELWAY REFERENCE:	**41 J11**

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
11mm in 10 mins; 18mm in 30 mins; 23mm in 1 hour; 29mm in 2 hours; 33mm in 3 hours; or 42mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	20% AEP (5 year ARI)	• Nil Expected in Hobsons Bay	
13mm in 10 mins; 22mm in 30 mins; 28mm in 1 hour; 35mm in 2 hours; 40mm in 3 hours; or 50mm in 6 hours	10% AEP (10 year ARI)	**Properties at Flood Risk (Over-Floor)** **3 Properties in Total** **Francis Street Main Drain** • 424-430 & 434 Francis Street, Brooklyn • 521 Geelong Road, Brooklyn **Water Over Road (over 30cm depth)** **Schutts Estate Main Drain** • Hudsons Road, Spotswood • Cullen Court, Spotswood	VICSES will provide warnings using VicEmergency to Hobson's Bay Council and appropriate agencies as required based on the predictions provided by BoM regarding flood levels and the risk of Flash Flooding. The VICSES RDO, in conjunction with the Regional Agency Commander, will maintain operational

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
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.		• The Avenue, Spotswood	awareness and form an appropriate response arrangement to suit the level of incident VICSES to respond on a request by request basis. Council and DTP (as appropriate) to provide road closure signage under predetermined arrangements
16mm in 10 mins; 26mm in 30 mins; 33mm in 1 hour; 42mm in 2 hours; 47mm in 3 hours; or 59mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	5% AEP (20 year ARI)	**Properties at Flood Risk (Over-Floor)** **7 Properties in Total** **Francis Street Main Drain** • 424-430, 432 & 434 Francis Street, Brooklyn • 521, 531-533 & 535 Geelong Road, Brooklyn **Schutts Estate Main Drain** • 27 Mary Street, Spotswood **Water Over Road (over 30cm depth) (Roads in red are DTP operated roads)** **Schutts Estate Main Drain** • Moresby Street, South Kingsville • Stephenson Street, South Kingsville near Morseby Street • Hudsons Road, Spotswood • Cullen Court, Spotswood • Williamstown Road, Spotswood at the Westgate Freeway underpass • The Avenue, Spotswood	
20mm in 10 mins; 32mm in 30 mins; 41mm in 1 hour; 51mm in 2 hours; 58mm in 3 hours; or 73mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	2% AEP (50 year ARI)	**Properties at Flood Risk (Over-Floor)** **8 Properties in Total** **Francis Street Main Drain** • 424-430, 432 & 434 Francis Street, Brooklyn • 521, 525, 531-533 & 535 Geelong Road, Brooklyn **Schutts Estate Main Drain** • 27 Mary Street, Spotswood **Water Over Road (over 30cm depth) (Roads in red are DTP operated roads)** **Francis Street Main Drain** • Hardie Road, Brooklyn **Schutts Estate Main Drain** • Moresby Street, South Kingsville • Stephenson Street, South Kingsville near Morseby Street • Hudsons Road, Spotswood • Cullen Court, Spotswood • Williamstown Road, Spotswood at the Westgate Freeway underpass • The Avenue, Spotswood	

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
23mm in 10 mins; 37mm in 30 mins; 48mm in 1 hour; 59mm in 2 hours; 67mm in 3 hours; or 84mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	1% AEP (100 year ARI)	**Properties at Flood Risk (Over-Floor)** **9 Properties in Total** **Francis Street Main Drain** • 410-422, 424-430, 432 & 434 Francis Street, Brooklyn • 521, 525, 531-533 & 535 Geelong Road, Brooklyn **Schutts Estate Main Drain** • 27 Mary Street, Spotswood **Water Over Road (over 30cm depth) (Roads in red are DTP operated roads)** **Francis Street Main Drain** • Hardie Road, Brooklyn **Local Drainage** • Blackshaws Road, Newport at Melbourne Road underpass • Douglas Parade, Spotswood at Scienceworks Museum • Melbourne Road, Newport at Mason Street **Schutts Estate Main Drain** • Moresby Street, South Kingsville • Stephenson Street, South Kingsville near Morseby Street • Hudsons Road, Spotswood • Cullen Court, Spotswood • Williamstown Road, Spotswood at the Westgate Freeway underpass • The Avenue, Spotswood	

Table C2.9 – Breakdown of possible consequences at various rainfall intensities around Brooklyn, Spotswood and South Kingsville with operational considerations

Appendix C3 – Altona & Seaholme 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 in Altona and Seaholme					
Property					
Properties	**450**				
Residential	437				
Commercial	13				
Industrial	0				
Public Land	0				
Rural	0				
Community Infrastructure					
Essential Infrastructure					
Major Roads	3	Civic Parade; Grieve Pde; Kororoit Creek Rd			
Bus Routes	5	411, 412, 415, 903 & 944			
Sewerage Facilities	2	Emergency Relief Points			
Levees	1	Sea Wall			
Drainage Facilities	1	Cheery Lake Retarding Basin			
Tourism / Recreation					
Government Boundaries					
Local Gov't Areas	1	Hobsons Bay	CMA	1	Port Phillip & Westernport
Adjacent LGAs	1	Wyndham	CFA District	0	
SES Unit Area	1	Hobsons Bay	FRV District	1	Western

Table C3.1 – Consequence Summary of 1% AEP flood in Altona and Seaholme

Altona & Seaholme are located approximately 13km south-west of Melbourne in a predominantly residential area. The area is bordered by the Laverton and Kororoit Creeks flowing from the west and north respectively before draining into Port Phillip Bay.

Altona & Seaholme are coastal suburbs situated along a stretch of relatively flat terrain. As such, the area directly adjacent to the Bay is susceptible to Storm Surge flooding during high intensity rainfall events. A flood wall is in development along this stretch of coastline.

High Intensity, short duration rainfall events can also cause flash flooding in and around the area because of the flat terrain. See mapping in **Appendix F** for more insight into flooding in the area.

Please note there are minor differences between Melbourne Water's surge flood mapping and the Hobsons Bay City Council data.

Warnings and Gauges

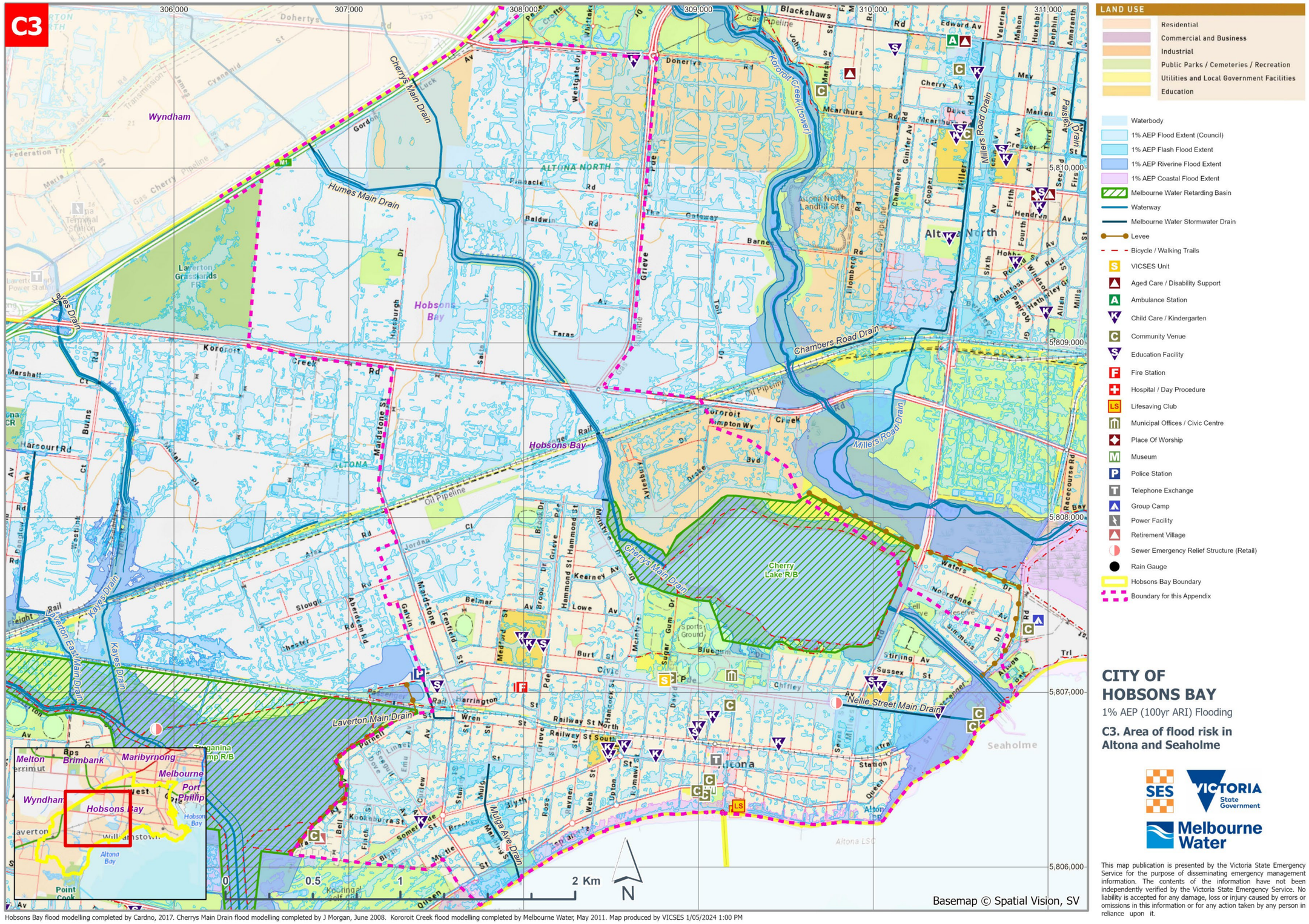
Neither the Bureau of Meteorology nor Melbourne Water currently provides flood forecasts for the Laverton Main Drain, Cherrys Main Drain or for Port Phillip Bay Storm Surge. All flood response actions must therefore be driven by rainfall / stream or tide level observations. Telemetered gauges are located at Altona, Laverton and Williamstown.

Gauge	Station No.	Location	Owner	Gauge Type	Melway Ref
Altona	587047	Greater Western Water Western No.2 Waste Purification Plant on Queen Street	Melbourne Water	Rain	53 H12
Laverton RAAF AWS	87031	RAAF Williams Laverton Base, off Roland Road	Bureau of Meteorology	Rain	53 A8
Williamstown	230118A	Royal Yacht Club of Victoria, Nelson Place	Port of Melbourne	Tide Level	56 E9

Table C3.2 – Gauges around Altona

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

Area Map of Flood Risk for Altona and Seaholme



LAND USE

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

- Waterbody
- 1% AEP Flood Extent (Council)
- 1% AEP Flash Flood Extent
- 1% AEP Riverine Flood Extent
- 1% AEP Coastal Flood Extent
- Melbourne Water Retarding Basin
- Waterway
- Melbourne Water Stormwater Drain
- Levee
- Bicycle / Walking Trails
- VICSES Unit
- Aged Care / Disability Support
- Ambulance Station
- Child Care / Kindergarten
- Community Venue
- Education Facility
- Fire Station
- Hospital / Day Procedure
- Lifesaving Club
- Municipal Offices / Civic Centre
- Place Of Worship
- Museum
- Police Station
- Telephone Exchange
- Group Camp
- Power Facility
- Retirement Village
- Sewer Emergency Relief Structure (Retail)
- Rain Gauge
- Hobsons Bay Boundary
- Boundary for this Appendix

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

C3. Area of flood risk in Altona and Seaholme

Hobsons Bay flood modelling completed by Cardno, 2017. Cherrys Main Drain flood modelling completed by J Morgan, June 2008. Kororoit Creek flood modelling completed by Melbourne Water, May 2011. Map produced by VICSES 1/05/2024 1:00 PM

Figure C3 – Areas of flood risk around Altona & Seaholme in the municipality of Hobsons Bay and area covered by this appendix

Properties at Flood Risk

Properties listed in the table below are at risk from flash flooding around Altona and Seaholme. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Hobsons Bay (Cardno, 2017), the Nellie St Main Drain (CMPS&F, 1998) and the Mulga Avenue Drain (CMPS&F, 1998) flood mapping and risk assessment programs.

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

Properties at risk from Flash Flooding during a 1% AEP event

Residential	Commercial	Industrial	Rural	Public Use

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
49	Bayview Street	Altona	Nelle Street Main Drain	Flash
51	Bayview Street	Altona	Nelle Street Main Drain	Flash
25	Central Avenue	Seaholme	Nelle Street Main Drain	Flash
27	Central Avenue	Seaholme	Nelle Street Main Drain	Flash
29	Central Avenue	Seaholme	Nelle Street Main Drain	Flash
31	Central Avenue	Seaholme	Nelle Street Main Drain	Flash
33	Central Avenue	Seaholme	Nelle Street Main Drain	Flash
35	Central Avenue	Seaholme	Nelle Street Main Drain	Flash
1	Chorley Avenue	Altona	Cherrys Main Drain	Flash
3	Chorley Avenue	Altona	Cherrys Main Drain	Flash
4	Chorley Avenue	Altona	Cherrys Main Drain	Flash
5	Chorley Avenue	Altona	Cherrys Main Drain	Flash
6	Chorley Avenue	Altona	Cherrys Main Drain	Flash
7	Chorley Avenue	Altona	Cherrys Main Drain	Flash
8	Chorley Avenue	Altona	Cherrys Main Drain	Flash
9	Chorley Avenue	Altona	Cherrys Main Drain	Flash
37A	Civic Parade	Altona	Nelle Street Main Drain	Flash
38	Civic Parade	Seaholme	Nelle Street Main Drain	Flash
1/39	Civic Parade	Altona	Nelle Street Main Drain	Flash
40	Civic Parade	Seaholme	Nelle Street Main Drain	Flash
41A	Civic Parade	Altona	Nelle Street Main Drain	Flash
1/42	Civic Parade	Seaholme	Nelle Street Main Drain	Flash
2/42	Civic Parade	Seaholme	Nelle Street Main Drain	Flash
3/42	Civic Parade	Seaholme	Nelle Street Main Drain	Flash
43A	Civic Parade	Altona	Nelle Street Main Drain	Flash
44	Civic Parade	Seaholme	Nelle Street Main Drain	Flash
45A	Civic Parade	Altona	Nelle Street Main Drain	Flash
51	Civic Parade	Altona	Nelle Street Main Drain	Flash
53	Civic Parade	Altona	Nelle Street Main Drain	Flash
55	Civic Parade	Altona	Nelle Street Main Drain	Flash
56	Civic Parade	Altona	Nelle Street Main Drain	Flash
57	Civic Parade	Altona	Nelle Street Main Drain	Flash
58	Civic Parade	Altona	Nelle Street Main Drain	Flash
59	Civic Parade	Altona	Nelle Street Main Drain	Flash

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
60	Civic Parade	Altona	Nelle Street Main Drain	Flash
61	Civic Parade	Altona	Nelle Street Main Drain	Flash
62	Civic Parade	Altona	Nelle Street Main Drain	Flash
62A	Civic Parade	Altona	Nelle Street Main Drain	Flash
63	Civic Parade	Altona	Nelle Street Main Drain	Flash
64	Civic Parade	Altona	Nelle Street Main Drain	Flash
65	Civic Parade	Altona	Nelle Street Main Drain	Flash
1/66	Civic Parade	Altona	Nelle Street Main Drain	Flash
2/66	Civic Parade	Altona	Nelle Street Main Drain	Flash
3/66	Civic Parade	Altona	Nelle Street Main Drain	Flash
67	Civic Parade	Altona	Nelle Street Main Drain	Flash
1/68	Civic Parade	Altona	Nelle Street Main Drain	Flash
2/68	Civic Parade	Altona	Nelle Street Main Drain	Flash
69	Civic Parade	Altona	Nelle Street Main Drain	Flash
70	Civic Parade	Altona	Nelle Street Main Drain	Flash
71	Civic Parade	Altona	Nelle Street Main Drain	Flash
1/72	Civic Parade	Altona	Nelle Street Main Drain	Flash
2/72	Civic Parade	Altona	Nelle Street Main Drain	Flash
3/72	Civic Parade	Altona	Nelle Street Main Drain	Flash
4/72	Civic Parade	Altona	Nelle Street Main Drain	Flash
5/72	Civic Parade	Altona	Nelle Street Main Drain	Flash
6/72	Civic Parade	Altona	Nelle Street Main Drain	Flash
73	Civic Parade	Altona	Nelle Street Main Drain	Flash
75	Civic Parade	Altona	Nelle Street Main Drain	Flash
76	Civic Parade	Altona	Nelle Street Main Drain	Flash
77	Civic Parade	Altona	Nelle Street Main Drain	Flash
78	Civic Parade	Altona	Nelle Street Main Drain	Flash
79	Civic Parade	Altona	Nelle Street Main Drain	Flash
1/80	Civic Parade	Altona	Nelle Street Main Drain	Flash
2/80	Civic Parade	Altona	Nelle Street Main Drain	Flash
81	Civic Parade	Altona	Nelle Street Main Drain	Flash
82	Civic Parade	Altona	Nelle Street Main Drain	Flash
83	Civic Parade	Altona	Nelle Street Main Drain	Flash
1/84	Civic Parade	Altona	Nelle Street Main Drain	Flash
2/84	Civic Parade	Altona	Nelle Street Main Drain	Flash
3/84	Civic Parade	Altona	Nelle Street Main Drain	Flash
4/84	Civic Parade	Altona	Nelle Street Main Drain	Flash
85	Civic Parade	Altona	Nelle Street Main Drain	Flash
1/86	Civic Parade	Altona	Nelle Street Main Drain	Flash
2/86	Civic Parade	Altona	Nelle Street Main Drain	Flash
87	Civic Parade	Altona	Nelle Street Main Drain	Flash
88	Civic Parade	Altona	Nelle Street Main Drain	Flash
89	Civic Parade	Altona	Nelle Street Main Drain	Flash
90	Civic Parade	Altona	Nelle Street Main Drain	Flash

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
91	Civic Parade	Altona	Nelle Street Main Drain	Flash
92	Civic Parade	Altona	Nelle Street Main Drain	Flash
93	Civic Parade	Altona	Nelle Street Main Drain	Flash
94	Civic Parade	Altona	Nelle Street Main Drain	Flash
95	Civic Parade	Altona	Nelle Street Main Drain	Flash
96	Civic Parade	Altona	Nelle Street Main Drain	Flash
97	Civic Parade	Altona	Nelle Street Main Drain	Flash
98	Civic Parade	Altona	Nelle Street Main Drain	Flash
99	Civic Parade	Altona	Nelle Street Main Drain	Flash
100	Civic Parade	Altona	Nelle Street Main Drain	Flash
101	Civic Parade	Altona	Nelle Street Main Drain	Flash
102	Civic Parade	Altona	Nelle Street Main Drain	Flash
103	Civic Parade	Altona	Nelle Street Main Drain	Flash
104	Civic Parade	Altona	Nelle Street Main Drain	Flash
105	Civic Parade	Altona	Nelle Street Main Drain	Flash
1/106	Civic Parade	Altona	Nelle Street Main Drain	Flash
2/106	Civic Parade	Altona	Nelle Street Main Drain	Flash
107	Civic Parade	Altona	Nelle Street Main Drain	Flash
108	Civic Parade	Altona	Nelle Street Main Drain	Flash
109	Civic Parade	Altona	Nelle Street Main Drain	Flash
110	Civic Parade	Altona	Nelle Street Main Drain	Flash
111	Civic Parade	Altona	Nelle Street Main Drain	Flash
112	Civic Parade	Altona	Nelle Street Main Drain	Flash
114	Civic Parade	Altona	Nelle Street Main Drain	Flash
130	Civic Parade	Altona	Nelle Street Main Drain	Flash
132	Civic Parade	Altona	Nelle Street Main Drain	Flash
1/134	Civic Parade	Altona	Nelle Street Main Drain	Flash
2/134	Civic Parade	Altona	Nelle Street Main Drain	Flash
136	Civic Parade	Altona	Nelle Street Main Drain	Flash
138	Civic Parade	Altona	Nelle Street Main Drain	Flash
140	Civic Parade	Altona	Nelle Street Main Drain	Flash
142A	Civic Parade	Altona	Nelle Street Main Drain	Flash
144	Civic Parade	Altona	Nelle Street Main Drain	Flash
144A	Civic Parade	Altona	Nelle Street Main Drain	Flash
146	Civic Parade	Altona	Nelle Street Main Drain	Flash
1/148	Civic Parade	Altona	Nelle Street Main Drain	Flash
2/148	Civic Parade	Altona	Nelle Street Main Drain	Flash
3/148	Civic Parade	Altona	Nelle Street Main Drain	Flash
156	Civic Parade	Altona	Nelle Street Main Drain	Flash
157	Civic Parade	Altona	Nelle Street Main Drain	Flash
158	Civic Parade	Altona	Nelle Street Main Drain	Flash
159	Civic Parade	Altona	Nelle Street Main Drain	Flash
160	Civic Parade	Altona	Nelle Street Main Drain	Flash
161	Civic Parade	Altona	Nelle Street Main Drain	Flash

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
162	Civic Parade	Altona	Nelle Street Main Drain	Flash
162B	Civic Parade	Altona	Nelle Street Main Drain	Flash
163	Civic Parade	Altona	Nelle Street Main Drain	Flash
164	Civic Parade	Altona	Nelle Street Main Drain	Flash
165	Civic Parade	Altona	Nelle Street Main Drain	Flash
166	Civic Parade	Altona	Nelle Street Main Drain	Flash
167	Civic Parade	Altona	Nelle Street Main Drain	Flash
168	Civic Parade	Altona	Nelle Street Main Drain	Flash
169	Civic Parade	Altona	Nelle Street Main Drain	Flash
170	Civic Parade	Altona	Nelle Street Main Drain	Flash
171	Civic Parade	Altona	Nelle Street Main Drain	Flash
172	Civic Parade	Altona	Nelle Street Main Drain	Flash
173	Civic Parade	Altona	Nelle Street Main Drain	Flash
175	Civic Parade	Altona	Nelle Street Main Drain	Flash
177	Civic Parade	Altona	Nelle Street Main Drain	Flash
179B	Civic Parade	Altona	Nelle Street Main Drain	Flash
181A	Civic Parade	Altona	Nelle Street Main Drain	Flash
181B	Civic Parade	Altona	Nelle Street Main Drain	Flash
183	Civic Parade	Altona	Nelle Street Main Drain	Flash
27	Curlew Avenue	Altona	Mulga Avenue Main Drain	Flash
29	Curlew Avenue	Altona	Mulga Avenue Main Drain	Flash
30	Curlew Avenue	Altona	Mulga Avenue Main Drain	Flash
32	Curlew Avenue	Altona	Mulga Avenue Main Drain	Flash
34	Curlew Avenue	Altona	Mulga Avenue Main Drain	Flash
62	David Street	Altona	Nelle Street Main Drain	Flash
64	David Street	Altona	Nelle Street Main Drain	Flash
69	David Street	Altona	Nelle Street Main Drain	Flash
71	David Street	Altona	Nelle Street Main Drain	Flash
73	David Street	Altona	Nelle Street Main Drain	Flash
56	Davies Street	Altona	Nelle Street Main Drain	Flash
19B	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
21A	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
21	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
23	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
29	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
1/31	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
2/31	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
3/31	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
33	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
1/35	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
2/35	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
36	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
37	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
38	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
40	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
42	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
44	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
46	Dove Avenue	Altona	Mulga Avenue Main Drain	Flash
1	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
3	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
5A	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
5	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
7	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
8	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
9	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
10	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
11	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
12	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
13	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
14	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
16	Emu Avenue	Altona	Mulga Avenue Main Drain	Flash
345	Esplanade	Altona	Mulga Avenue Main Drain	Flash
347	Esplanade	Altona	Mulga Avenue Main Drain	Flash
349	Esplanade	Altona	Mulga Avenue Main Drain	Flash
351	Esplanade	Altona	Mulga Avenue Main Drain	Flash
353	Esplanade	Altona	Mulga Avenue Main Drain	Flash
355	Esplanade	Altona	Mulga Avenue Main Drain	Flash
357	Esplanade	Altona	Mulga Avenue Main Drain	Flash
359	Esplanade	Altona	Mulga Avenue Main Drain	Flash
361	Esplanade	Altona	Mulga Avenue Main Drain	Flash
1	Frazer Avenue	Altona	Cherrys Main Drain	Flash
3	Frazer Avenue	Altona	Cherrys Main Drain	Flash
4	Frazer Avenue	Altona	Cherrys Main Drain	Flash
5	Frazer Avenue	Altona	Cherrys Main Drain	Flash
6	Frazer Avenue	Altona	Cherrys Main Drain	Flash
7	Frazer Avenue	Altona	Cherrys Main Drain	Flash
8	Frazer Avenue	Altona	Cherrys Main Drain	Flash
10	Frazer Avenue	Altona	Cherrys Main Drain	Flash
2A	Fresno Street	Altona	Nelle Street Main Drain	Flash
1/6	Galvin Street	Altona	Mulga Avenue Main Drain	Flash
2/6	Galvin Street	Altona	Mulga Avenue Main Drain	Flash
8	Galvin Street	Altona	Mulga Avenue Main Drain	Flash
10	Galvin Street	Altona	Mulga Avenue Main Drain	Flash
1/38	Grieve Parade	Altona	Mulga Avenue Main Drain	Flash
2/38	Grieve Parade	Altona	Mulga Avenue Main Drain	Flash
3/38	Grieve Parade	Altona	Mulga Avenue Main Drain	Flash
40	Grieve Parade	Altona	Mulga Avenue Main Drain	Flash
53	Grieve Parade	Altona	Mulga Avenue Main Drain	Flash

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
1/55	Grieve Parade	Altona	Mulga Avenue Main Drain	Flash
2/55	Grieve Parade	Altona	Mulga Avenue Main Drain	Flash
57	Grieve Parade	Altona	Mulga Avenue Main Drain	Flash
16	Harrington Street	Altona	Mulga Avenue Main Drain	Flash
26	Harrington Square	Altona	Mulga Avenue Main Drain	Flash
27	Harrington Square	Altona	Mulga Avenue Main Drain	Flash
28	Harrington Square	Altona	Mulga Avenue Main Drain	Flash
29	Harrington Square	Altona	Mulga Avenue Main Drain	Flash
30	Harrington Square	Altona	Mulga Avenue Main Drain	Flash
31	Harrington Square	Altona	Mulga Avenue Main Drain	Flash
1	Kim Court	Altona	Cherrys Main Drain	Flash
2	Kim Court	Altona	Cherrys Main Drain	Flash
3	Kim Court	Altona	Cherrys Main Drain	Flash
4	Kim Court	Altona	Cherrys Main Drain	Flash
9	Kim Court	Altona	Cherrys Main Drain	Flash
10	Kim Court	Altona	Cherrys Main Drain	Flash
1	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
3	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
5	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
7	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
9	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
11	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
13	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
16	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
18	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
20	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
22	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
24	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
26	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
28	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
1/35	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
37	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
38	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
51	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
54	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
56	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
76	Linnet Street	Altona	Mulga Avenue Main Drain	Flash
2	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
2A	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
73	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
75	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
1/77	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
2/77	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
82	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
84	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
1/86	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
2/86	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
3/86	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
116	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
120	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
122	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
124	Maidstone Street	Altona	Mulga Avenue Main Drain	Flash
1/61	Mcbain Street	Altona	Nelle Street Main Drain	Flash
2/61	Mcbain Street	Altona	Nelle Street Main Drain	Flash
3/61	Mcbain Street	Altona	Nelle Street Main Drain	Flash
4/61	Mcbain Street	Altona	Nelle Street Main Drain	Flash
63	Mcbain Street	Altona	Nelle Street Main Drain	Flash
66	Mcbain Street	Altona	Nelle Street Main Drain	Flash
68	Mcbain Street	Altona	Nelle Street Main Drain	Flash
70	Mcbain Street	Altona	Nelle Street Main Drain	Flash
35	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
37	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
54	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
55	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
56	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
57	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
58	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
59	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
61	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
74	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
76	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
78	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
80	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
82	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
84	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
86	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
88	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
90	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
92	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
94	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
96	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
98	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
100	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
102	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
104	Mcintyre Drive	Altona	Cherrys Main Drain	Flash
18A	Millers Road	Seaholme	Nelle Street Main Drain	Flash
1/20	Millers Road	Seaholme	Nelle Street Main Drain	Flash
2/20	Millers Road	Seaholme	Nelle Street Main Drain	Flash

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
22	Millers Road	Seaholme	Nelle Street Main Drain	Flash
24	Millers Road	Seaholme	Nelle Street Main Drain	Flash
26	Millers Road	Seaholme	Nelle Street Main Drain	Flash
28	Millers Road	Seaholme	Nelle Street Main Drain	Flash
30	Millers Road	Seaholme	Nelle Street Main Drain	Flash
32	Millers Road	Seaholme	Nelle Street Main Drain	Flash
32A	Millers Road	Seaholme	Nelle Street Main Drain	Flash
1/34	Millers Road	Seaholme	Nelle Street Main Drain	Flash
2/34	Millers Road	Seaholme	Nelle Street Main Drain	Flash
35	Millers Road	Altona	Nelle Street Main Drain	Flash
36	Millers Road	Seaholme	Nelle Street Main Drain	Flash
37	Millers Road	Altona	Nelle Street Main Drain	Flash
38	Millers Road	Seaholme	Nelle Street Main Drain	Flash
39	Millers Road	Altona	Nelle Street Main Drain	Flash
40	Millers Road	Seaholme	Nelle Street Main Drain	Flash
41	Millers Road	Altona	Nelle Street Main Drain	Flash
1/43	Millers Road	Altona	Nelle Street Main Drain	Flash
2/43	Millers Road	Altona	Nelle Street Main Drain	Flash
3/43	Millers Road	Altona	Nelle Street Main Drain	Flash
1/45	Millers Road	Altona	Nelle Street Main Drain	Flash
2/45	Millers Road	Altona	Nelle Street Main Drain	Flash
3/45	Millers Road	Altona	Nelle Street Main Drain	Flash
47	Millers Road	Altona	Nelle Street Main Drain	Flash
49	Millers Road	Altona	Nelle Street Main Drain	Flash
51	Millers Road	Altona	Nelle Street Main Drain	Flash
1/53	Millers Road	Altona	Nelle Street Main Drain	Flash
2/53	Millers Road	Altona	Nelle Street Main Drain	Flash
55	Millers Road	Altona	Nelle Street Main Drain	Flash
57	Millers Road	Altona	Nelle Street Main Drain	Flash
58A	Millers Road	Seaholme	Nelle Street Main Drain	Flash
59	Millers Road	Altona	Nelle Street Main Drain	Flash
60	Millers Road	Seaholme	Nelle Street Main Drain	Flash
61	Millers Road	Altona	Nelle Street Main Drain	Flash
49	Mount Street	Altona	Nelle Street Main Drain	Flash
51	Mount Street	Altona	Nelle Street Main Drain	Flash
15	Mulga Street	Altona	Mulga Avenue Main Drain	Flash
1/17	Mulga Street	Altona	Mulga Avenue Main Drain	Flash
2/17	Mulga Street	Altona	Mulga Avenue Main Drain	Flash
3/17	Mulga Street	Altona	Mulga Avenue Main Drain	Flash
19	Mulga Street	Altona	Mulga Avenue Main Drain	Flash
1/123	Pier Street	Altona	Nelle Street Main Drain	Flash
2/123	Pier Street	Altona	Nelle Street Main Drain	Flash
3/123	Pier Street	Altona	Nelle Street Main Drain	Flash
125	Pier Street	Altona	Nelle Street Main Drain	Flash

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
240	Queen Street	Altona	Mulga Avenue Main Drain	Flash
1/242	Queen Street	Altona	Mulga Avenue Main Drain	Flash
2/242	Queen Street	Altona	Mulga Avenue Main Drain	Flash
243	Queen Street	Altona	Mulga Avenue Main Drain	Flash
244	Queen Street	Altona	Mulga Avenue Main Drain	Flash
246	Queen Street	Altona	Mulga Avenue Main Drain	Flash
248	Queen Street	Altona	Mulga Avenue Main Drain	Flash
250	Queen Street	Altona	Mulga Avenue Main Drain	Flash
252	Queen Street	Altona	Mulga Avenue Main Drain	Flash
256	Queen Street	Altona	Mulga Avenue Main Drain	Flash
258	Queen Street	Altona	Mulga Avenue Main Drain	Flash
10	Ransom Avenue	Altona	Cherrys Main Drain	Flash
12	Ransom Avenue	Altona	Cherrys Main Drain	Flash
1/29	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
2/29	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
3/29	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
4/29	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
1/31	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
2/31	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
3/31	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
4/31	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
5/31	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
52A	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
52	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
1/54	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
2/54	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
3/54	Rayner Street	Altona	Mulga Avenue Main Drain	Flash
1	Robin Street	Altona	Mulga Avenue Main Drain	Flash
70	Romawi Street	Altona	Nelle Street Main Drain	Flash
37A	Rose Street	Altona	Mulga Avenue Main Drain	Flash
37	Rose Street	Altona	Mulga Avenue Main Drain	Flash
39	Rose Street	Altona	Mulga Avenue Main Drain	Flash
60A	Sargood Street	Altona	Nelle Street Main Drain	Flash
60	Sargood Street	Altona	Nelle Street Main Drain	Flash
62	Sargood Street	Altona	Nelle Street Main Drain	Flash
65	Sargood Street	Altona	Nelle Street Main Drain	Flash
67	Sargood Street	Altona	Nelle Street Main Drain	Flash
1/14	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
1/14	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
16	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
18	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
20	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
22	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
24	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
26	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
28	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
33	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
35	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
37	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
39	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
41	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
43	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
45	Seagull Avenue	Altona	Mulga Avenue Main Drain	Flash
1/28	Seves Street	Altona	Nelle Street Main Drain	Flash
2/28	Seves Street	Altona	Nelle Street Main Drain	Flash
30	Seves Street	Altona	Nelle Street Main Drain	Flash
1/32	Seves Street	Altona	Nelle Street Main Drain	Flash
2/32	Seves Street	Altona	Nelle Street Main Drain	Flash
34	Seves Street	Altona	Nelle Street Main Drain	Flash
35	Seves Street	Altona	Nelle Street Main Drain	Flash
36	Seves Street	Altona	Nelle Street Main Drain	Flash
37	Seves Street	Altona	Nelle Street Main Drain	Flash
38	Seves Street	Altona	Nelle Street Main Drain	Flash
39	Seves Street	Altona	Nelle Street Main Drain	Flash
40	Seves Street	Altona	Nelle Street Main Drain	Flash
41	Seves Street	Altona	Nelle Street Main Drain	Flash
1/42	Seves Street	Altona	Nelle Street Main Drain	Flash
2/42	Seves Street	Altona	Nelle Street Main Drain	Flash
43	Seves Street	Altona	Nelle Street Main Drain	Flash
44	Seves Street	Altona	Nelle Street Main Drain	Flash
45	Seves Street	Altona	Nelle Street Main Drain	Flash
46	Seves Street	Altona	Nelle Street Main Drain	Flash
47	Seves Street	Altona	Nelle Street Main Drain	Flash
48	Seves Street	Altona	Nelle Street Main Drain	Flash
50	Seves Street	Altona	Nelle Street Main Drain	Flash
52	Seves Street	Altona	Nelle Street Main Drain	Flash
53	Seves Street	Altona	Nelle Street Main Drain	Flash
54	Seves Street	Altona	Nelle Street Main Drain	Flash
55	Seves Street	Altona	Nelle Street Main Drain	Flash
20	Stanley Street	Altona	Mulga Avenue Main Drain	Flash
22	Stanley Street	Altona	Mulga Avenue Main Drain	Flash
1/23	Stanley Street	Altona	Mulga Avenue Main Drain	Flash
2/23	Stanley Street	Altona	Mulga Avenue Main Drain	Flash
3/23	Stanley Street	Altona	Mulga Avenue Main Drain	Flash
2A	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
1/2	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
2/2	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
4	Waratah Street	Seaholme	Nelle Street Main Drain	Flash

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
1/6	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
2/6	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
7	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
8	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
9	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
10	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
11	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
12	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
13	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
14	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
15	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
1/16	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
2/16	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
17	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
18	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
19	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
20	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
21	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
23	Waratah Street	Seaholme	Nelle Street Main Drain	Flash
25	Waratah Street	Seaholme	Nelle Street Main Drain	Flash

Total
450

Table C3.3 – Properties at risk of flooding in Altona and Seaholme in the municipality of Hobsons Bay.

Properties listed in the table below are at risk from storm surge flooding along the Port Phillip Bay coastline during a 1% AEP storm surge event. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Port Phillip Bay Coastal Inundation (Cardno, 2015) flood mapping and risk assessment program.

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

Properties at risk from Storm Surge Flooding during a 1% AEP event

Residential	Commercial	Industrial	Rural	Public Use

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
1	Acacia Avenue	Seaholme	Port Phillip Bay	Storm Surge
2	Acacia Avenue	Seaholme	Port Phillip Bay	Storm Surge
3	Acacia Avenue	Seaholme	Port Phillip Bay	Storm Surge
4	Acacia Avenue	Seaholme	Port Phillip Bay	Storm Surge
5	Acacia Avenue	Seaholme	Port Phillip Bay	Storm Surge
1/6	Acacia Avenue	Seaholme	Port Phillip Bay	Storm Surge
2/6	Acacia Avenue	Seaholme	Port Phillip Bay	Storm Surge
3/6	Acacia Avenue	Seaholme	Port Phillip Bay	Storm Surge
8	Acacia Avenue	Seaholme	Port Phillip Bay	Storm Surge
10	Acacia Avenue	Seaholme	Port Phillip Bay	Storm Surge
1	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
3	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
5	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
7	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
9A	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
9	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
10	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
11	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
13	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
15	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
17	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
19A	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
19	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
21	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
23A	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
23B	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
23C	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
25	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
27	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
27A	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
29A	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
29	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
31	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
33	Beach Street	Seaholme	Port Phillip Bay	Storm Surge
35	Beach Street	Seaholme	Port Phillip Bay	Storm Surge

Properties at risk from Storm Surge Flooding during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
1	Central Avenue	Seaholme	Port Phillip Bay	Storm Surge
1/3	Central Avenue	Seaholme	Port Phillip Bay	Storm Surge
2/3	Central Avenue	Seaholme	Port Phillip Bay	Storm Surge
3/3	Central Avenue	Seaholme	Port Phillip Bay	Storm Surge
1/5	Central Avenue	Seaholme	Port Phillip Bay	Storm Surge
2/5	Central Avenue	Seaholme	Port Phillip Bay	Storm Surge
3/5	Central Avenue	Seaholme	Port Phillip Bay	Storm Surge
7	Central Avenue	Seaholme	Port Phillip Bay	Storm Surge
9	Central Avenue	Seaholme	Port Phillip Bay	Storm Surge
2-4	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
6	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
8	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
10A	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
10	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
1/12	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
2/12	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
14	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
16	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
18	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
20	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
22	Civic Parade	Seaholme	Port Phillip Bay	Storm Surge
4	Correa Street	Altona	Port Phillip Bay	Storm Surge
5	Correa Street	Altona	Port Phillip Bay	Storm Surge
7	Correa Street	Altona	Port Phillip Bay	Storm Surge
9	Correa Street	Altona	Port Phillip Bay	Storm Surge
1-3	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
5	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
5A	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
7	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
9	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
11	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
13	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
15	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
17	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
21	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
25	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
27	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
29	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
35	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
47	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
49	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
51	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
61	Esplanade	Seaholme	Port Phillip Bay	Storm Surge
63-71	Esplanade	Seaholme	Port Phillip Bay	Storm Surge

Properties at risk from Storm Surge Flooding during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
73	Esplanade	Altona	Port Phillip Bay	Storm Surge
75	Esplanade	Altona	Port Phillip Bay	Storm Surge
77	Esplanade	Altona	Port Phillip Bay	Storm Surge
79	Esplanade	Altona	Port Phillip Bay	Storm Surge
85	Esplanade	Altona	Port Phillip Bay	Storm Surge
87	Esplanade	Altona	Port Phillip Bay	Storm Surge
91	Esplanade	Altona	Port Phillip Bay	Storm Surge
93	Esplanade	Altona	Port Phillip Bay	Storm Surge
95	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/97	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/97	Esplanade	Altona	Port Phillip Bay	Storm Surge
3/97	Esplanade	Altona	Port Phillip Bay	Storm Surge
103B	Esplanade	Altona	Port Phillip Bay	Storm Surge
103	Esplanade	Altona	Port Phillip Bay	Storm Surge
107	Esplanade	Altona	Port Phillip Bay	Storm Surge
123	Esplanade	Altona	Port Phillip Bay	Storm Surge
125-129	Esplanade	Altona	Port Phillip Bay	Storm Surge
131	Esplanade	Altona	Port Phillip Bay	Storm Surge
133	Esplanade	Altona	Port Phillip Bay	Storm Surge
141-153	Esplanade	Altona	Port Phillip Bay	Storm Surge
155-173	Esplanade	Altona	Port Phillip Bay	Storm Surge
175	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/175	Esplanade	Altona	Port Phillip Bay	Storm Surge
3/175	Esplanade	Altona	Port Phillip Bay	Storm Surge
4/175	Esplanade	Altona	Port Phillip Bay	Storm Surge
5/175	Esplanade	Altona	Port Phillip Bay	Storm Surge
179	Esplanade	Altona	Port Phillip Bay	Storm Surge
181	Esplanade	Altona	Port Phillip Bay	Storm Surge
185	Esplanade	Altona	Port Phillip Bay	Storm Surge
187	Esplanade	Altona	Port Phillip Bay	Storm Surge
187A	Esplanade	Altona	Port Phillip Bay	Storm Surge
189	Esplanade	Altona	Port Phillip Bay	Storm Surge
193	Esplanade	Altona	Port Phillip Bay	Storm Surge
195	Esplanade	Altona	Port Phillip Bay	Storm Surge
197	Esplanade	Altona	Port Phillip Bay	Storm Surge
199	Esplanade	Altona	Port Phillip Bay	Storm Surge
201	Esplanade	Altona	Port Phillip Bay	Storm Surge
203	Esplanade	Altona	Port Phillip Bay	Storm Surge
205	Esplanade	Altona	Port Phillip Bay	Storm Surge
207	Esplanade	Altona	Port Phillip Bay	Storm Surge
209	Esplanade	Altona	Port Phillip Bay	Storm Surge
211	Esplanade	Altona	Port Phillip Bay	Storm Surge
213	Esplanade	Altona	Port Phillip Bay	Storm Surge
215	Esplanade	Altona	Port Phillip Bay	Storm Surge

Properties at risk from Storm Surge Flooding during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
217	Esplanade	Altona	Port Phillip Bay	Storm Surge
219	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/221	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/221	Esplanade	Altona	Port Phillip Bay	Storm Surge
3/221	Esplanade	Altona	Port Phillip Bay	Storm Surge
4/221	Esplanade	Altona	Port Phillip Bay	Storm Surge
5/221	Esplanade	Altona	Port Phillip Bay	Storm Surge
6/221	Esplanade	Altona	Port Phillip Bay	Storm Surge
223	Esplanade	Altona	Port Phillip Bay	Storm Surge
225	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/227	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/227	Esplanade	Altona	Port Phillip Bay	Storm Surge
229	Esplanade	Altona	Port Phillip Bay	Storm Surge
231A	Esplanade	Altona	Port Phillip Bay	Storm Surge
231	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/233	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/233	Esplanade	Altona	Port Phillip Bay	Storm Surge
3/233	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/235	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/235	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/237	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/237	Esplanade	Altona	Port Phillip Bay	Storm Surge
3/237	Esplanade	Altona	Port Phillip Bay	Storm Surge
4/237	Esplanade	Altona	Port Phillip Bay	Storm Surge
5/237	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/239	Esplanade	Altona	Port Phillip Bay	Storm Surge
243	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/245	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/245	Esplanade	Altona	Port Phillip Bay	Storm Surge
3/245	Esplanade	Altona	Port Phillip Bay	Storm Surge
4/245	Esplanade	Altona	Port Phillip Bay	Storm Surge
5/245	Esplanade	Altona	Port Phillip Bay	Storm Surge
6/245	Esplanade	Altona	Port Phillip Bay	Storm Surge
7/245	Esplanade	Altona	Port Phillip Bay	Storm Surge
8/245	Esplanade	Altona	Port Phillip Bay	Storm Surge
9/245	Esplanade	Altona	Port Phillip Bay	Storm Surge
10/245	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/247	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/247	Esplanade	Altona	Port Phillip Bay	Storm Surge
249	Esplanade	Altona	Port Phillip Bay	Storm Surge
251	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/253	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/253	Esplanade	Altona	Port Phillip Bay	Storm Surge
3/253	Esplanade	Altona	Port Phillip Bay	Storm Surge

Properties at risk from Storm Surge Flooding during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
4/253	Esplanade	Altona	Port Phillip Bay	Storm Surge
5/253	Esplanade	Altona	Port Phillip Bay	Storm Surge
6/253	Esplanade	Altona	Port Phillip Bay	Storm Surge
7/253	Esplanade	Altona	Port Phillip Bay	Storm Surge
8/253	Esplanade	Altona	Port Phillip Bay	Storm Surge
255	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/259	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/259	Esplanade	Altona	Port Phillip Bay	Storm Surge
3/259	Esplanade	Altona	Port Phillip Bay	Storm Surge
4/259	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/261	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/261	Esplanade	Altona	Port Phillip Bay	Storm Surge
3/261	Esplanade	Altona	Port Phillip Bay	Storm Surge
4/261	Esplanade	Altona	Port Phillip Bay	Storm Surge
5/261	Esplanade	Altona	Port Phillip Bay	Storm Surge
6/261	Esplanade	Altona	Port Phillip Bay	Storm Surge
7/261	Esplanade	Altona	Port Phillip Bay	Storm Surge
8/261	Esplanade	Altona	Port Phillip Bay	Storm Surge
263B	Esplanade	Altona	Port Phillip Bay	Storm Surge
263A	Esplanade	Altona	Port Phillip Bay	Storm Surge
263	Esplanade	Altona	Port Phillip Bay	Storm Surge
265	Esplanade	Altona	Port Phillip Bay	Storm Surge
267	Esplanade	Altona	Port Phillip Bay	Storm Surge
269	Esplanade	Altona	Port Phillip Bay	Storm Surge
271-273	Esplanade	Altona	Port Phillip Bay	Storm Surge
275	Esplanade	Altona	Port Phillip Bay	Storm Surge
277	Esplanade	Altona	Port Phillip Bay	Storm Surge
345	Esplanade	Altona	Port Phillip Bay	Storm Surge
347	Esplanade	Altona	Port Phillip Bay	Storm Surge
349	Esplanade	Altona	Port Phillip Bay	Storm Surge
351	Esplanade	Altona	Port Phillip Bay	Storm Surge
353	Esplanade	Altona	Port Phillip Bay	Storm Surge
355	Esplanade	Altona	Port Phillip Bay	Storm Surge
357	Esplanade	Altona	Port Phillip Bay	Storm Surge
359	Esplanade	Altona	Port Phillip Bay	Storm Surge
365	Esplanade	Altona	Port Phillip Bay	Storm Surge
367	Esplanade	Altona	Port Phillip Bay	Storm Surge
1/369	Esplanade	Altona	Port Phillip Bay	Storm Surge
2/369	Esplanade	Altona	Port Phillip Bay	Storm Surge
3/369	Esplanade	Altona	Port Phillip Bay	Storm Surge
4/369	Esplanade	Altona	Port Phillip Bay	Storm Surge
5/369	Esplanade	Altona	Port Phillip Bay	Storm Surge
6/369	Esplanade	Altona	Port Phillip Bay	Storm Surge
7/369	Esplanade	Altona	Port Phillip Bay	Storm Surge

Properties at risk from Storm Surge Flooding during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
8/369	Esplanade	Altona	Port Phillip Bay	Storm Surge
9/369	Esplanade	Altona	Port Phillip Bay	Storm Surge
10/369	Esplanade	Altona	Port Phillip Bay	Storm Surge
11/369	Esplanade	Altona	Port Phillip Bay	Storm Surge
1A	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
1	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
2A	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
2B	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
2	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
2C	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
3	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
3A	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
4	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
5A	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
5	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
7	Garden Grove	Seaholme	Port Phillip Bay	Storm Surge
1	Maidstone Street	Altona	Port Phillip Bay	Storm Surge
2A	Maidstone Street	Altona	Port Phillip Bay	Storm Surge
2	Maidstone Street	Altona	Port Phillip Bay	Storm Surge
6	Mcbain Street	Altona	Port Phillip Bay	Storm Surge
1	Millers Road	Altona	Port Phillip Bay	Storm Surge
1	Queen Street	Seaholme	Port Phillip Bay	Storm Surge
3	Queen Street	Seaholme	Port Phillip Bay	Storm Surge
52	Queen Street	Altona	Port Phillip Bay	Storm Surge
128	Queen Street	Altona	Port Phillip Bay	Storm Surge
3/206	Queen Street	Altona	Port Phillip Bay	Storm Surge
4/206	Queen Street	Altona	Port Phillip Bay	Storm Surge
3/208	Queen Street	Altona	Port Phillip Bay	Storm Surge
4/208	Queen Street	Altona	Port Phillip Bay	Storm Surge
210	Queen Street	Altona	Port Phillip Bay	Storm Surge
220	Queen Street	Altona	Port Phillip Bay	Storm Surge
240	Queen Street	Altona	Port Phillip Bay	Storm Surge
1/242	Queen Street	Altona	Port Phillip Bay	Storm Surge
2/242	Queen Street	Altona	Port Phillip Bay	Storm Surge
244	Queen Street	Altona	Port Phillip Bay	Storm Surge
246	Queen Street	Altona	Port Phillip Bay	Storm Surge
248	Queen Street	Altona	Port Phillip Bay	Storm Surge
250	Queen Street	Altona	Port Phillip Bay	Storm Surge
252	Queen Street	Altona	Port Phillip Bay	Storm Surge
256	Queen Street	Altona	Port Phillip Bay	Storm Surge
258	Queen Street	Altona	Port Phillip Bay	Storm Surge
260	Queen Street	Altona	Port Phillip Bay	Storm Surge
262	Queen Street	Altona	Port Phillip Bay	Storm Surge
264	Queen Street	Altona	Port Phillip Bay	Storm Surge

Properties at risk from Storm Surge Flooding during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
266	Queen Street	Altona	Port Phillip Bay	Storm Surge
268	Queen Street	Altona	Port Phillip Bay	Storm Surge
1/1	Sargood Street	Altona	Port Phillip Bay	Storm Surge
2/1	Sargood Street	Altona	Port Phillip Bay	Storm Surge
3/1	Sargood Street	Altona	Port Phillip Bay	Storm Surge
2	Sargood Street	Altona	Port Phillip Bay	Storm Surge
3	Sarros Street	Altona	Port Phillip Bay	Storm Surge
1/8	Station Street	Seaholme	Port Phillip Bay	Storm Surge
2/8	Station Street	Seaholme	Port Phillip Bay	Storm Surge
3/8	Station Street	Seaholme	Port Phillip Bay	Storm Surge
4/8	Station Street	Seaholme	Port Phillip Bay	Storm Surge
5/8	Station Street	Seaholme	Port Phillip Bay	Storm Surge
10	Station Street	Seaholme	Port Phillip Bay	Storm Surge
12	Station Street	Seaholme	Port Phillip Bay	Storm Surge
14	Station Street	Seaholme	Port Phillip Bay	Storm Surge
16	Station Street	Seaholme	Port Phillip Bay	Storm Surge
18	Station Street	Seaholme	Port Phillip Bay	Storm Surge
20	Station Street	Seaholme	Port Phillip Bay	Storm Surge
22	Station Street	Seaholme	Port Phillip Bay	Storm Surge
24	Station Street	Seaholme	Port Phillip Bay	Storm Surge
4	Wattle Grove	Seaholme	Port Phillip Bay	Storm Surge
6	Wattle Grove	Seaholme	Port Phillip Bay	Storm Surge
8	Wattle Grove	Seaholme	Port Phillip Bay	Storm Surge
2	Webb Street	Altona	Port Phillip Bay	Storm Surge

Total
279

Table C3.4 – Properties at risk of storm surge flooding along the Port Phillip Bay Coastline in the municipality of Hobsons Bay Assets and Infrastructure at Flood Risk

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 municipality of Hobsons Bay is available via the website at:

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

Roads at Flood Risk

The following roads are subject to closure during flooding around Altona & Seaholme. Check the VicTraffic website for more details: https://traffic.vicroads.vic.gov.au/

Department of Transport and Planning (DTP) Roads at flood risk in a 1% AEP (100yr ARI) event
• Civic Parade, Altona between Millers Road and Grieve Parade
• Grieve Parade, Altona North at Kororoit Creek Road
• Kororoit Creek Road, Altona at Cherry Creek

Table C3.5 – DTP roads subject to flooding possibly requiring closure during a flood event

Hobsons Bay City Council Roads at flood risk in a 1% AEP (100yr ARI) event	
ALTONA	**ALTONA NORTH**
• Dove Avenue	• Taras Avenue
• Esplanade	**SEAHOLME**
• Linnet Street	• Acacia Avenue
• McIntyre Drive	• Central Avenue
• Millers Road (south of Civic Pde)	• Civic Parade (east of Millers Rd)
• Robin Street	• Waratah Street
• Seagull Avenue	• Wattle Grove
• Seves Street	
• Stanley Street	

Table C3.6 – Hobsons Bay City Council roads subject to flooding possibly requiring closure during a flood event

Flood Mitigation

Retarding Basins

Melbourne Water Retarding Basin	On Drain/ Waterway	Area	Storage Capacity	Spillway Crest Level	Full Supply Level	Embankment Crest Level	ANCOLD Hazard Rating	Houses In Flow Path (dam breach)	Melway Reference
Cherry Lake	Cherry's Main Drain	99.8 ha	940 ML	1.2m AHD	Unavailable	0.6m	Low	Unavailable	54 J8
Truganina Swamp	Laverton Main Drain	147.6 ha	1057 ML	N/A	Unavailable	1.1m	Very Low	0	54 B11

Table C3.7 – Melbourne Water Retarding Basins around Altona & Seaholme in the municipality of Hobsons Bay

Levees

Melbourne Water Levees	Reach	Side	Levee Height	Levee Length	Expected Level of Protection	ANCOLD Hazard Rating	Consequences of Failure	Melway Reference
Kororoit Creek Floodwall, Seaholme	Waters Drive to Cherry's Drain	South	1.1m	0.6km	Unavailable	High A	77 residential properties flooded along Waters and Simmons Drives	55 B9
Truganina Swamp, Altona	Park Parade to Lark Street	South	1.5m (2.86m AHD)	1.4km	1% AEP flood level with approx. 1.0m freeboard	High C	53 residential properties flooded along Purnell St and Bell Ave	54 C10 - 54 C9
Truganina Swamp, Altona	Lark Street to Queen Street	South	1.4m (2.86m AHD)	0.5km	1% AEP flood level with approx. 1.0m freeboard	High A	76 residential properties including the Port Phillip Retirement Village along Grant Ave, Stewart Ave and Bell Ave	54 C10 - 54 C12

Table C3.8 – Melbourne Water Levees around Altona & Seaholme in the municipality of Hobsons Bay

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located around Altona and Seaholme is contained within the following table.

Sewer Emergency Relief Points

There are Sewer Emergency Relief Points in Altona that will likely affect floodwater conditions should they be activated. 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	Owner	Location	Melway Reference
Mulga Ave M.D.	Greater Western Water	Manning Street between Myrtle Grove and Queen Street, Altona	54 D12
Nellie Street M.D.	Greater Western Water	Civic Parade and Seves Street, Altona	54 J10

Table C3.9 – Sewer Emergency Relief Points in Altona and Seaholme in the municipality of Hobsons Bay

Flood Impacts and Required Actions

The tables on the following pages provide a breakdown of the possible consequences of flooding around Altona and Seaholme at various rain totals and tide heights. 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:

Altona & Seaholme Stormwater Drains

Altona & Seaholme Coastal Inundation, Williamstown Gauge

FLOOD INTELLIGENCE CARD – STORMWATER DRAINS, ALTONA & SEAHOLME (UNGAUGED)

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

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CLOSEST RAIN GAUGE:	**Altona**
LOCATION:	**Greater Western Water Western No.2 Waste Purification Plant on Queen Street**
CURRENT RAINFALL:	**https://www.melbournewater.com.au/water-and-environment/water-management/rainfall-and-river-levels#/reader/587047**

GAUGE NUMBER:	**587047**
GAUGE TYPE:	**Rain**
MELWAY REFERENCE:	**53 H12**

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
23mm in 10 mins; 37mm in 30 mins; 47mm in 1 hour; 59mm in 2 hours; 67mm in 3 hours; or 83mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	1% AEP (100 year ARI)	• Note: It is not known at what level infrastructure contained below starts being flooded **Properties at Flood Risk** **450 Properties in Total** • **Cherrys Main Drain** • 1, 3, 4, 5, 6, 7, 8 & 9 Chorley Avenue, Altona • 1, 3, 4, 5, 6, 7, 8 & 10 Frazer Avenue, Altona • 1, 2, 3, 4, 9 & 10 Kim Court, Altona • 35, 37, 54, 55, 56, 57, 58, 59, 61, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102 & 104 Mcintyre Drive, Altona • 10 & 12 Ransom Avenue, Altona • **Mulga Avenue Main Drain** • 27, 29, 30, 32 & 34 Curlew Avenue, Altona • 19B, 21A, 21, 23, 29, Units 1-3/31, 33, Units 1-2/35, 36, 37, 38, 40, 42 44 & 46 Dove Avenue, Altona • 1, 3, 5A, 5, 7, 8, 9, 10, 11, 12 & 13 Emu Avenue, Altona • 345, 347, 349, 351, 353, 355, 357, 359 & 361 Esplanade , Altona • 1/6, 2/6, 8 & 10 Galvin Street, Altona • 1/38, 2/38, 3/38, 40, 53, 1/55, 2/55 & 57 Grieve Parade, Altona • 16, 26, 27, 28, 29, 30 & 31 Harrington Street, Altona • 1, 3, 5, 7, 9, 11, 13, 16, 18, 20, 22, 24, 26, 28, 1/35, 37, 38, 51, 54, 56 & 76 Linnet Street, Altona • 2, 2A, 73, 75, 1/77, 2/77, 82, 84, Units 1-3/86, 116, 120, 122 & 124 Maidstone Street, Altona	

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• 15, 1/17, 2/17, 3/17 & 19 Mulga Street, Altona • 240, 1/242, 2/242, 243, 244, 246, 248, 250, 252, 256 & 258 Queen Street, Altona • 1/29, 2/29, 3/29, 4/29, 1/31, 2/31, 3/31, 4/31, 5/31, 52A, 52 & Units 1-3/54 Rayner Street, Altona • 1 Robin Street, Altona • 37A, 37 & 39 Rose Street, Altona • 1/14, 1/14, 16, 18, 20, 22, 24, 26, 28, 33, 35, 37, 39, 41, 43 & 45 Seagull Avenue, Altona • 20, 22, 1/23, 2/23 & 3/23 Stanley Street, Altona • **Nelle Street Main Drain** • 49 & 51 Bayview Street, Altona • 37A, 1/39, 41A, 43A, 45A, 51, 53, 55, 56, 57, 58, 59, 60, 61, 62, 62, 62A, 63, 64, 65, Units 1-3/66, 67, Units 1-2/68, 69, 70, 71, Units 1-6/72, 73, 75, 76, 77, 78, 79, 1/80, 2/80, 81, 82, 83, Units 1-4/84, 85, Units 1-2/86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, Units 1-2/106, 107, 108, 109, 110, 111, 112, 114, 130, 132, Units 1-2/134, 136, 138, 140, 142A, 144, 144A, 146, Units 1-3/148, 156, 157, 158, 159, 160, 161, 162, 162B, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 175, 177, 179B, 181A, 181B & 183 Civic Parade, Altona • 62, 64, 69, 71 & 73 David Street, Altona • 56 Davies Street, Altona • 2A Fresno Street, Altona • 1/61, 2/61, 3/61, 4/61, 63, 66, 68 & 70 Mcbain Street, Altona • 35, 37, 39, 41, 1/43, 2/43, 3/43, 1/45, 2/45, 3/45, 47, 49, 51, 1/53, 2/53, 55, 57, 59 & 61 Millers Road, Altona • 49 & 51 Mount Street, Altona • 1/123, 2/123, 3/123 & 125 Pier Street, Altona • 70 Romawi Street, Altona • 60A, 60, 62, 65 & 67 Sargood Street, Altona • 1/28, 2/28, 30, 1/32, 2/32, 34, 35, 36, 37, 38, 39, 40, 41, Units 1-2/42, 43, 44, 45, 46, 47, 48, 50, 52, 53, 54 & 55 Seves Street, Altona • 25, 27, 29, 31, 33 & 35 Central Avenue, Seaholme • 38, 40, 1/42, 2/42, 3/42 & 44 Civic Parade, Seaholme • 18A, 1/20, 2/20, 22, 24, 26, 28, 30, 32, 32A, 1/34, 2/34, 36, 38, 40, 58A & 60 Millers Road, Seaholme • 2A, 1/2, 2/2, 4, 1/6, 2/6, 7, 8, 9, 10, 11, 12, 13, 14, 15, Units 1-2/16, 17, 18, 19, 20, 21, 23 & 25 Waratah Street, Seaholme **Essential Infrastructure Likely Impacted** • Sewer Emergency Relief Points are located at Civic Pde and Seves Street; and on Manning Street, Altona • Bus Routes 411, 412, 415, 903 & 944 may be impacted by flooding on roads **Water Over Road (over 30cm depth)** **Cherrys Main Drain** • Grieve Parade, Altona North at Kororoit Creek Road • Kororoit Creek Road, Altona at Cherry Creek	

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• Taras Avenue, Altona North **Nellie Street Main Drain** • Acacia Avenue, Seaholme • Central Avenue, Seaholme near Acacia Avenue • Civic Parade, Altona between Millers Road and Grieve Parade • Civic Parade, Altona/Seaholme near Millers Road • McIntyre Drive, Altona • Millers Road, Altona south of Civic Parade intersection • Seves Street, Altona north of the railway line • Waratah Street, Seaholme • Wattle Grove, Seaholme **Mulga Avenue Drain** • Dove Avenue, Altona • Linnet Street, Altona • Robin Street, Altona • Seagull Avenue, Altona • Stanley Street, Altona	

Table C3.8 – Breakdown of possible consequences at various rainfall intensities around Altona and Seaholme with operational considerations

FLOOD INTELLIGENCE CARD – ALTONA & SEAHOLME, PORT PHILLIP BAY

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:	**St Kilda Marina, Marina Parade, St Kilda**
STREAM:	**Port Phillip Bay**
GAUGE NUMBER:	**229670A**
GAUGE ZERO:	**0.00m AHD (Changed from ACD in June 2008)**
GAUGE TYPE:	**Tide Level & Rainfall**
CURRENT TIDE:	**https://www.melbournewater.com.au/water-and-environment/water-management/rainfall-and-river-levels#/reader/229670A**

MINOR:	**Not Established**
MODERATE:	**Not Established**
MAJOR	**Not Established**
FLOOD WALL HEIGHT:	**Unavailable**
MELWAY REFERENCE:	**57 K12**
HIGHEST RECORDED FLOOD:	**1.29m (7th November 1994)**

Bay Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
1.12m	5th July 2011 High Tide Level		
1.19m	26th April 2009 High Tide Level	• Extremely strong W-SW winds and low atmospheric pressure conditions caused high tides.	
1.28m	24th June 2014 High Tide Level		
1.29m	7th November 1994 High Tide Level		
1.50m	1% AEP (100yr ARI) Flood Level	• Note: Information unavailable at what level infrastructure contained below starts being flooded **Properties at Flood Risk** **226 Properties in Total** • 1, 2, 3, 4, 5, 6, 8, & 10 Acacia Avenue, Seaholme • 2-4, 6, 8, 10, 1/12, 2/12, 16, 18, 20 & 22 Civic Parade, Seaholme • 1, 3, Units 1-3/5, 7 & 9 Central Avenue, Seaholme • 4, 6 & 8 Wattle Grove, Seaholme • Units 1-5/8, 10, 12, 14, 16, 18, 20, 22 & 24 Station Street, Seaholme • 1, 3, 5, 7, 9, 9A, 10, 11, 13, 15, 17, 19, 19A, 21, 23A, 23B, 23C, 25, 27, 27A, 29, 29A, 31, 33 & 35 Beach Street, Seaholme • 1, 1A, 2, 2A, 2B, 2C, 3, 4, 5 & 5A Garden Grove, Seaholme	VICSES will provide warnings using VicEmergency to Hobson's Bay Council and appropriate agencies as required based on the predictions provided by BoM regarding flood levels and the risk of Flash Flooding. The VICSES Central Duty Officer, in conjunction with the Regional Agency Commander, will maintain

Bay Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• 1-3, 5, 5A, 7, 9, 11, 13, 15, 17, 21, 25, 27, 29, 35, 47, 49, 51, 61, 63-71, 73, 77, 79, 85, 87, 95, Units 1-3/97, 103, 107, 125-129, 133, 141-153, Units 1-5/175, 179, 181, 185, 187, 187A, 189, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, Units 1-6/211, 223, 225, Units 1-2/227, 229, 231, 231A, Units 1-3/233, Units 1-5/237, 1/239, 243, Units 1-2/247, 249, 251, 253, 261, 263, 263A, 236B, 265, 267, 269, 271, 275, 277, 345, 347, 349, 351, 353, 355, 357, 359, 361, 365, 367 & Units 1-11/369 Esplanade, Altona • 1, 3, 52, 206, Units 3-4/208, 210, 220, 240, Units 1-2/242, 244, 246, 248, 250, 252, 256, 258, 260, 262, 264, 266 & 268 Queen Street, Altona • Units 1-3/1 Sargood Street, Altona • 6 McBain Street, Altona • 3 Sarros Street, Altona • 4, 5, 7 & 9 Correa Street, Altona • 1 Maidstone Street, Altona **Community Infrastructure Likely Flooded** • W G Cresser Reserve, Beach Street, Seaholme • Apex Park, Queen Street, Altona **Essential Infrastructure Likely Impacted** • The Werribee Railway Line via Altona may be inundated between the Kororoit Creek bridge and Seaholme Station **Water Over Road** • Acacia Avenue, Seaholme • Altona Road, Seaholme at Kororoit Creek and at Cherry's Drain • Beach Street, Seaholme • Correa Street, Altona • Esplanade, from Beach Street, Seaholme to Queen Street Roundabout, Altona • Garden Grove, Altona • Station Street, Seaholme	operational awareness and form an appropriate response arrangement to suit the level of incident VICSES to respond on a request by request basis. Council and DTP (as appropriate) to provide road closure signage under predetermined arrangements

Table C3.9 – Breakdown of likely consequences at various Williamstown gauge level heights along the Port Phillip Bay Coastline in Altona and Seaholme with operational considerations

Appendix C4 – Skeleton Creek and Laverton Main 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 Skeleton Creek					
Property					
Properties	**8**				
Residential	8				
Commercial	0				
Industrial	0				
Public Land	0				
Rural	0				
Community Infrastructure					
Essential Infrastructure					
Tourism / Recreation					
Recreation Facilities	1	Skeleton Creek Bicycle Trail			
Government Boundaries					
Local Gov't Areas	1	Hobsons Bay	CMA	1	Port Phillip & Westernport
Adjacent LGAs	1	Wyndham	CFA District	0	
SES Unit Area	1	Hobsons Bay	FRV District	1	Western

Table C4.1 – Consequence Summary of 1% AEP flood along Skeleton Creek

Summary of Consequences in a 1% AEP (100yr ARI) flood along Laverton Main Drain					
Property					
Properties	**18**				
Residential	18				
Commercial	0				
Industrial	0				
Public Land	0				
Rural	0				
Community Infrastructure					
Essential Infrastructure					
Major Roads	1	Merton Street			
Tourism / Recreation					
Recreation Facilities	1	Laverton Creek Trail			
Government Boundaries					
Local Gov't Areas	1	Hobsons Bay	CMA	1	Port Phillip & Westernport
Adjacent LGAs	1	Wyndham	CFA District	0	
SES Unit Area	1	Hobsons Bay	FRV District	1	Western

Table C4.2 – Consequence Summary of 1% AEP flood along Laverton Main Drain

Skeleton Creek flows through the Hobsons Bay suburbs of Seabrook & Altona Meadows, forming the southern border of the Municipality in Altona Meadows where the creek then discharges into Port Phillip Bay. Residential properties line either side of the creek, but with many of this area being new development, few flooding consequences are expected. The exception to this is properties along Carinza Avenue in Altona Meadows and on Ida Place & St Anthony Court in Seabrook where properties may be at risk of flooding from the creek.

Skeleton Creek flows from the northwest starting in the City of Melton, then flowing through Wyndham City. A telemetered stream level gauge is located in Hoppers Crossing.

Warnings and Gauges

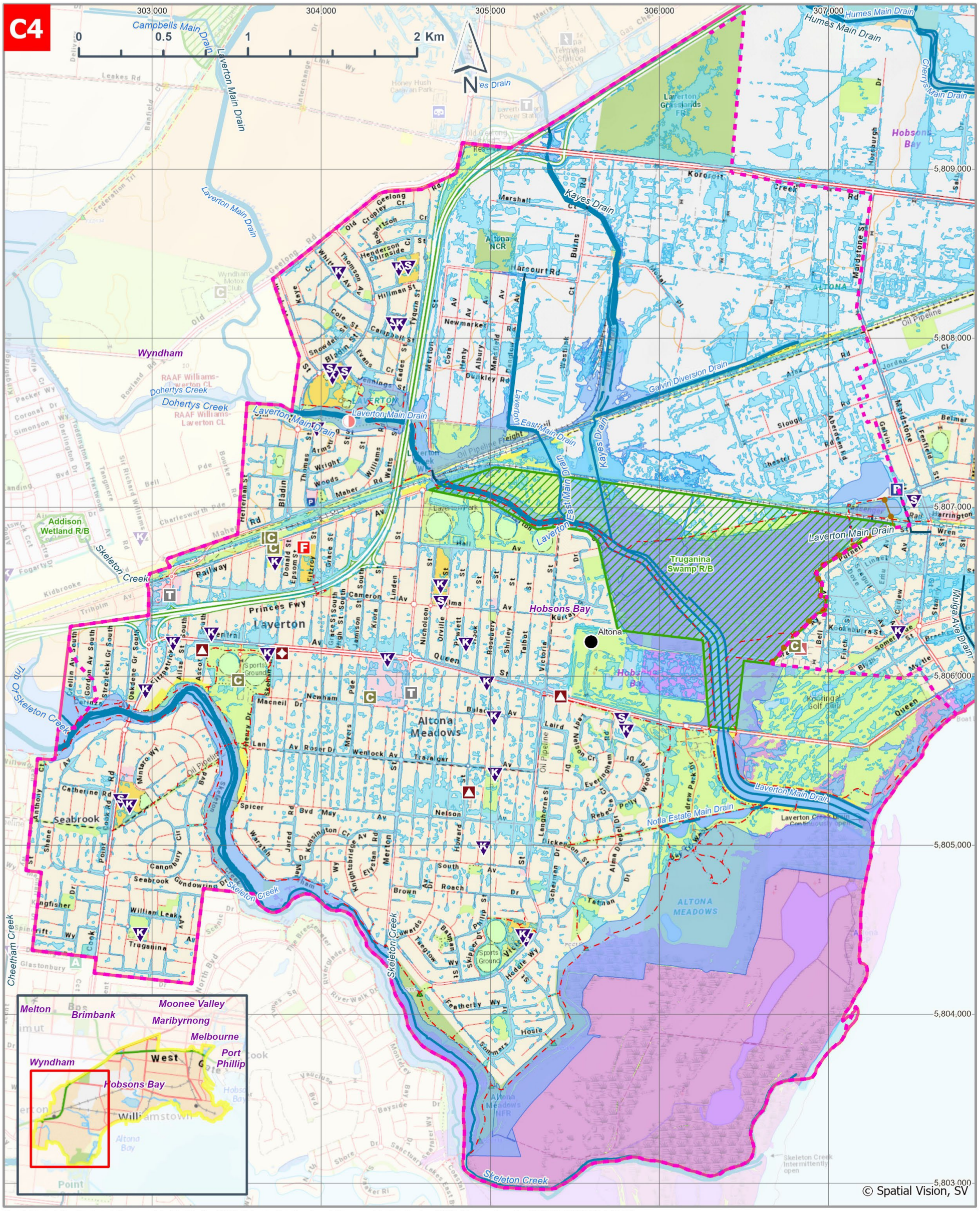
Neither the Bureau of Meteorology nor Melbourne Water currently provides flood forecasts for Skeleton Creek. All flood response actions must therefore be driven by rainfall and / or river level observations. A telemetered water level / flood gauge is located at Hoppers Crossing within the Skeleton Creek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

Gauge	Station No.	Location	Owner	Gauge Type	Melway Ref
Skeleton Creek at Hoppers Crossing	231110A	East side of the creek, south side of Sayers Road bridge	Melbourne Water	Stream Level & Rain	203 A6
Laverton RAAF AWS	87031	RAAF Williams Laverton Base, off Roland Road	Bureau of Meteorology	Rain	53 A8
Altona	587047	Greater Western Water No.2 Waste Purification Plant on Queen Street	Melbourne Water	Rain	53 H12

Table C4.3 – Hydrographic Monitoring Stations within the Skeleton Creek and Laverton Main Drain catchments

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

Area Map of Flood Risk within the Skeleton Creek catchment in Hobsons Bay



Coastal Inundation flood modelling completed by Cardno, 2015. Hobsons Bay flood modelling completed by Cardno, 2017. Map produced by VICSES: 1/05/2024 1:24 PM

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 C4 – Areas of flood risk around Skeleton Creek in the municipality of Hobsons Bay and area covered by this appendix

Properties at Flood Risk

Properties listed in the table below are at risk from flooding along Skeleton Creek and Laverton Main Drain. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Skeleton Creek (Melbourne Water, August 2008) and the Laverton Main Drain (Melbourne Water, June 2012) flood mapping and risk assessment programs.

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

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

Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
1	Anthony Court	Seabrook	Skeleton Creek	Riverine
3	Anthony Court	Seabrook	Skeleton Creek	Riverine
4	Carinza Avenue	Altona Meadows	Skeleton Creek	Riverine
8	Carinza Avenue	Altona Meadows	Skeleton Creek	Riverine
10	Carinza Avenue	Altona Meadows	Skeleton Creek	Riverine
3	Ida Place	Seabrook	Skeleton Creek	Riverine
4	Ida Place	Seabrook	Skeleton Creek	Riverine
5	Ida Place	Seabrook	Skeleton Creek	Riverine
2/18	Charlesworth Street	Laverton	Laverton Main Drain	Riverine
22	Charlesworth Street	Laverton	Laverton Main Drain	Riverine
24	Charlesworth Street	Laverton	Laverton Main Drain	Riverine
26	Eades Street	Laverton	Laverton Main Drain	Riverine
35	Eades Street	Laverton	Laverton Main Drain	Riverine
15	Jennings Street	Laverton	Laverton Main Drain	Riverine
17	Jennings Street	Laverton	Laverton Main Drain	Riverine
19	Jennings Street	Laverton	Laverton Main Drain	Riverine
21	Jennings Street	Laverton	Laverton Main Drain	Riverine
23	Jennings Street	Laverton	Laverton Main Drain	Riverine
25	Jennings Street	Laverton	Laverton Main Drain	Riverine
27	Jennings Street	Laverton	Laverton Main Drain	Riverine
29	Jennings Street	Laverton	Laverton Main Drain	Riverine
31	Jennings Street	Laverton	Laverton Main Drain	Riverine
33	Jennings Street	Laverton	Laverton Main Drain	Riverine
37	Jennings Street	Laverton	Laverton Main Drain	Riverine
2	Watts Street	Laverton	Laverton Main Drain	Riverine
18	Williams Road	Laverton	Laverton Main Drain	Riverine

Total
26

Table C4.4 – Properties at risk of flooding along the Skeleton Creek and Laverton Main Drain in the municipality of Hobsons Bay

Assets and Infrastructure at Flood Risk

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 municipality of Hobsons Bay is available via the website at:

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

Roads at Flood Risk

The following roads are subject to closure during flooding around Seabrook & Altona Meadows. Check the VicTraffic website for more details: https://traffic.vicroads.vic.gov.au/

Department of Transport and Planning (DTP) Roads flooded in a 1% AEP (100yr ARI) event
• Nil

Table C4.5 – DTP roads subject to flooding possibly requiring closure during a flood event

Hobsons Bay City Council Roads flooded in a 1% AEP (100yr ARI) event	
ALTONA MEADOWS	**LAVERTON**
• Carinza Avenue	• Alma Avenue
• Creek Waters Close	• Jennings Street
• Crown Street South	• Williams Road
• Hyde Court	**SEABROOK**
• Markham Way	• Kiata Court
• Merton Street	• The Terrace
• North Avenue	
• Skehan Boulevard	

Table C4.6 – Hobsons Bay City Council roads subject to flooding possibly requiring closure during a flood event

Flood Mitigation

Retarding Basins

Melbourne Water Retarding Basin	On Drain/ Waterway	Area	Storage Capacity	Spillway Crest Level	Full Supply Level	Embankment Crest Level	ANCOLD Hazard Rating	Houses In Flow Path (dam breach)	Melway Reference
Truganina Swamp	Laverton Main Drain	147.6 ha	1057 ML	N/A	Unavailable	1.1m	Very Low	0	54 B11

Table C4.7 – Melbourne Water Retarding Basins within the Skeleton Creek and Laverton Main Drain catchments in Hobsons Bay

Hobsons Bay City Council Retarding Basin	Location	Area	Melway Reference
Drainage Reserve	6-8 Dunnings Road, Seabrook	0.22 ha	208 A4

Table C4.8 – Hobsons Bay City Council Retarding Basins within the Skeleton Creek and Laverton Main Drain catchments in Hobsons Bay

Levees

Levee	Reach	Side	Levee Height	Levee Length	Expected Level of Protection	ANCOLD Hazard Rating	Consequences of Failure	Melway Reference
Truganina Swamp, Altona	Park Parade to Lark Street	South	1.5m (2.86m AHD)	1.4km	1% AEP flood level with approx. 1.0m freeboard	High C	53 residential properties flooded along Purnell St and Bell Ave	54 C10 - 54 C9
Truganina Swamp, Altona	Lark Street to Queen Street	South	1.4m (2.86m AHD)	0.5km	1% AEP flood level with approx. 1.0m freeboard	High A	76 residential properties including the Port Phillip Retirement Village along Grant Ave, Stewart Ave and Bell Ave	54 C10 - 54 C12

Table C4.9 – Levees along the Laverton Main Drain in Hobsons Bay

Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located within the Skeleton Creek and Laverton Main Drain catchments is contained within the following table. To view their locations, view mapping in **Appendix F**.

Sewer Emergency Relief Points

On Drain / Waterway	Bank / Side of Waterway	Location	Melway Reference
Laverton Main Drain	South	Charlesworth Street, Laverton	53 E8

Table C4.10 – Sewer Emergency Relief Points along the Laverton Main Drain in Hobsons Bay

Flood Impacts and Required Actions

The tables on the following pages provide a breakdown of the possible consequences of flooding along Skeleton Creek and the Laverton Main Drain at various creek heights or rain totals within Hobsons Bay. 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:

- Skeleton Creek at Hoppers Crossing
- Laverton Main Drain, Laverton

FLOOD INTELLIGENCE CARD – HOPPERS CROSSING GAUGE, SKELETON CREEK

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

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LOCATION:	**East side of the creek, south side of Sayers Road bridge**
CURRENT LEVEL:	**https://www.melbournewater.com.au/water-and-environment/water-management/rainfall-and-river-levels#/reader/231110A**
STREAM:	**Skeleton Creek**
GAUGE NUMBER:	**231110A**
GAUGE ZERO:	**11.71m AHD**
GAUGE TYPE:	**Stream Level & Rain**

MINOR:	**Not Established**
MODERATE:	**Not Established**
MAJOR	**Not Established**
LEVEE HEIGHT:	**N/A**
MELWAY REFERENCE:	**203 A6**
HIGHEST RECORDED FLOOD:	**3.47m (3rd February 2005)**

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
3.69m	1% AEP (100yr ARI) Flood Level	**Properties at Flood Risk** **8 Properties in Total** • 1 & 3 St Anthony Court, Seabrook • 3, 4 & 5 Ida Place, Seabrook • 4, 8 & 10 Carinza Avenue, Altona Meadows **Community Infrastructure Impacted** • Skeleton Creek Bicycle Trail flooded at various locations • Pedestrian Footbridge at Ravenswood Court flooded **Water Over Road** • Carinza Avenue, Altona Meadows • Kiata Court, Seabrook • The Terrace, Seabrook • Creek Waters Close, Altona Meadows • Markham Way, Altona Meadows	VICSES will provide warnings using VicEmergency to Hobson's Bay Council and appropriate agencies as required based on the predictions provided by BoM regarding flood levels and the risk of Flash Flooding. The VICSES RDO in conjunction with the Regional Agency Commander, will maintain operational awareness and form an appropriate response arrangement to suit the level of incident VICSES to respond on a request by request basis. Council and DTP (as appropriate) to provide road closure signage under predetermined arrangements

Table C4.11 – Breakdown of likely consequences at various Hoppers Crossing gauge level heights along Skeleton Creek for Hobsons Bay with operational considerations

FLOOD INTELLIGENCE CARD – LAVERTON MAIN DRAIN, LAVERTON & ALTONA MEADOWS (UNGAUGED)

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

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CLOSEST RAIN GAUGE:	**Laverton RAAF AWS**
LOCATION:	**RAAF Williams Laverton Base, off Roland Road**
RECENT RAINFALL:	**http://www.bom.gov.au/products/IDV60801/IDV60801.94865.shtml**

GAUGE NUMBER:	**87031**
GAUGE TYPE:	**Rain**
MELWAY REFERENCE:	**53 A8**

Design Rainfall Depths (mm) – *Indication of Possible Flooding*	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
23mm in 10 mins; 37mm in 30 mins; 47mm in 1 hour; 59mm in 2 hours; 67mm in 3 hours; or 83mm in 6 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	1% AEP (100 year ARI)	• Note: It is not known at what level infrastructure contained below starts being flooded **Properties at Flood Risk** **18 Properties in Total** • 2/18, 22 & 24 Charlesworth Street, Laverton • 26 & 35 Eades Street, Laverton • 15, 17, 19, 21, 23, 25, 27, 29, 31, 33 & 37 Jennings Street, Laverton • 2 Watts Street, Laverton • 18 Williams Road, Laverton **Essential Infrastructure Likely Impacted** • Sewer Emergency Relief Point near Charlesworth Street, Laverton **Tourism / Recreation Likely Impacted** • Laverton Creek Trail likely flooded in parts **Water Over Road** • Jennings Street, Laverton • Merton Street, Altona Meadows • Williams Road, Laverton	

Table C4.12 – Breakdown of possible consequences at various rainfall intensities along the Laverton Main Drain in Hobsons Bay 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.
- 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;
- Shelter including Emergency Relief Centres, Assembly Areas etc.;
- Vulnerable people and facilities;
- Transportation;
- Registration
- People of CALD background and transient populations;
- Safety of emergency service personnel;
- Different stages of an evacuation process.

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

Within the municipality of Hobsons Bay there are currently no pre-determined triggers for evacuation.

Phase 2 – Warning

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

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

Phase 3 – Withdrawal

VicPol is the responsible agency for evacuation. In accordance with the JSOP, The VicPol Evacuation Manager will consult with the IC and IEMT on the most appropriate relief options. When preparing the schedule 2 Evacuation Recommendation as per the JSOP, it is important to ensure that the recommended routes and specified relief centres are accessible to the relevant community. This is to ensure a community does not receive advice about a relief centre that may not be accessible to them due to road closures and flooding.

VICSES, FRV, AV and Local Government will provide resources where available to support VicPol 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 at the request of the IC or via the appointed VicPol Evacuation Manager.

Possible Evacuation Routes to be used:

Sector	Evacuation Route	Evacuation route closure point and gauge height of closure
To be assessed at time of incident and communicated		

Vulnerable persons and people with special needs

A Vulnerable Persons Register (VPR) is not relevant to Hobsons Bay as the municipality is not in a CFA district, for more information refer to https://providers.dffh.vic.gov.au/vulnerable-people-in-emergencies-policy.

Phase 4 – Shelter

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

Emergency Relief Centres are detailed in Hobsons Bay City Council's MEMP.

VicPol in consultation with VICSES will liaise with Local Government and DFFH (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 though the Emergency Management Team (EMT)

Animal Shelter

The need for animal shelter compounds will be determined dependant on the location and size of the event.

Details about arrangements for animals are contained in Hobsons Bay City Council's MEMP.

Phase 5 – Return

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

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

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

Considerations for deciding whether to evacuate include:

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

Disruption to Services

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

Service	Impact	Trigger Point for action	Strategy/Temporary Measures
General Transport	General road closures across network	Inundation of road network and associated damage to an extent that it is unsafe for vehicles to use road	Alternate routes via clearly signed detours. Alternate routes to be determined by Council Traffic Engineers. Council works crews to install and monitor detour signage. Council Network Inspectors to monitor road conditions, closure signage and detour signage.
School Bus Services	General road closures across network leading to student pick ups being suspended	Inundation of road network and associated damage to an extent that it is unsafe for vehicles to use road	Alternate routes via clearly signed detours. Alternate routes to be determined by Council Traffic Engineers. Council works crews to install and monitor detour signage. Council Network Inspectors to monitor road conditions, closure signage and detour signage. Alternate student collection points to be established.

Rescue

Requests for Hobson's Bay Council resources to support rescue activities should be forwarded to the MECC or EMLO if an ICC has been established.

Resources are available from the Hobson's Bay SES Unit to assist with rescue operations – specific details of equipment and resources available can be obtained from the VICSES RDO.

No high risk areas/communities (i.e. low-lying islands where rescues might be required) have been identified, other than the occurrence of flash flooding over roadways.

Appendix E – Storm and Flood Warning Systems

Storm and Flood Warning

Flood and storm warning products and Flood Class Levels can be found on the BoM and VicEmergency websites. Storm and flood warning products include Severe Thunderstorm Warnings, Severe Weather Warnings, Flood Watches and Flood Warnings. See next page for an example of a BoM Flood Warning on the VicEmergency page.

VICSES uses VicEmergency EMCOP Public Publishing and Emergency Alert Telephone warnings to distribute riverine and flash flood (and other hazards) warnings in Victoria.

The EMCOP platform enables simultaneous publishing to the VicEmergency app, website, hotline (1800 226 226) and Emergency Broadcasters. Communities can also access this information through EMV and VICSES social media channels (VicEmergency, Victoria State Emergency Service on Facebook and VICSES News on X and so forth) and emergency broadcasters, such as Sky News TV, ABC 774 and various other local emergency broadcaster radio stations (current list available via the EMV website).

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

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

VICSES at the state tier (or SCC Public Information Section) issue all severe weather and thunderstorm warnings as these are rarely confined to a single region or area and also play an important role in sharing riverine and flash flood information via state-based standard communication channels.

During some emergencies, VICSES may alert communities by sounding a local siren (where this exists) or via media broadcasters by the use of SEWS, or by using the Emergency Alert (EA) platform to send an SMS to mobile phones or a voice message to landlines. EMCOP Public Publishing Business Rules for Riverine Flood, Flash Flood and Severe Weather / Thunderstorm are available in the Public Information tab of the IMT Toolbox, providing further guidance on specific triggers, roles and responsibilities. VICSES SOP057 and JSOP 04.01 provide further guidance.

VICSES Flood Warning Products

VICSES distributes flood emergency information to the media through “Flood Watches and Warnings”. Flood watches and warnings provide BoM flood warning information combined with other relevant sources of intelligence to provide communities information regarding possible flood consequences and safety advice, that is not contained in BoM flood warning products.

The relevant VICSES RDO, in conjunction with the RAC, or the established ICC will normally be responsible for drafting, authorising and issuing flood warnings, using the EMCOP to publish these to the VicEmergency channels.

Flood watch and warning products should refer to the warning title within the Bulletin header, for example Flood Bulletin for Major Flood Warning on Yarra River. VICSES Flood Warnings should follow the following structure by describing:

- Critical details: including what the current and predicted flood situation is
- Action Statement: An action statement that is consistent with the Australian Warnings System (AWS) https://www.australianwarningsystem.com.au/
- What you should do: what the community should do in response to flood warnings
- Potential Impacts: what flood consequences are or the likely flood consequences

More Information: including where the community should go to seek further information and who the community should call if they require emergency assistance.

It is important that the description of the predicted flood situation is consistent with and reflects the relevant BoM Flood Warning and is tailored and made relevant to at risk communities using a range of intelligence sources.

In areas covered by a Total Flood Warning System (TFWS) VICSES Flood Watches should be issued for a whole river catchment. Additionally, VICSES flood Warnings should be issued at the pre-determined sub-catchment level focused on specific gauge reference areas. These are the area in which flood consequences specifically relate to the relevant flood gauge.

There may also be a need to issue warnings for areas not covered by the TFWS using available intelligence. The issue of these warnings is guided by the likely or observed impacts of the floodwater with guidance provided in the VICSES Riverine Flood Business Rules.

VICSES Flood Warnings 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 VICSES flood warnings are released in a timely manner much of the relevant information is built into warnings templates in EMCOP, including a range of pre-development statements that can be ‘dragged and dropped’ into messages as relevant.

Local Flood Warning System Arrangements

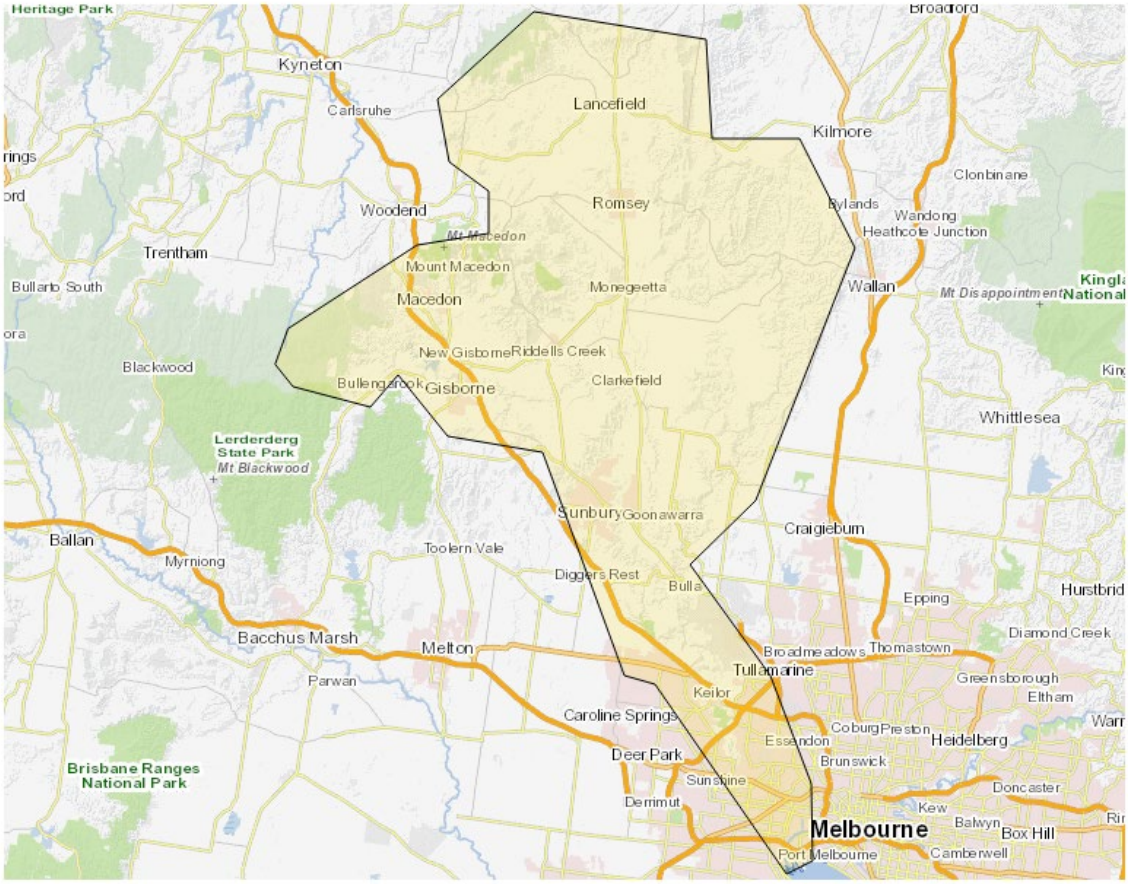
There are no local flood warning systems or arrangements in place in the municipality of Hobsons Bay.

BOM flood warning example

ADVICE - FLOOD

Incident Location: Maribyrnong
Incident Name: MaribyrnongFloodSept2016
Issued: Set at publish time
Next Update Expected:

Map



Message

This **Minor Flood Warning** is being issued for Maribyrnong River.

- The Maribyrnong River catchment has received rainfall averaging about 31mm since 0900am yesterday. Rainfall totals of 5mm have been forecast for the catchment in the next 2 hours.
- Water levels of the Maribyrnong River and its tributaries at various locations are rising in response to the rain.
- The level of the Deep Creek at Darraweit Guim is currently 5.41m and rising. It is expected to peak above the Minor Flood Level (5.50m) this morning.
- Minor flooding in the Deep Creek and Maribyrnong River catchment is expected to affect low lying areas adjacent to the waterway. Minor roads may be closed.

The river heights at 08.14am 14/09/2016 were:

- Deep Creek at Doggetts Bridge, Lancefield: 2.22 metres, rising
- Deep Creek at Darraweit Guim: 5.47 metres, falling
- Deep Creek Creek at Konagaderra: 3.62 metres, falling
- Bolinda Creek at Clarkefield: 1.19 metres, rising
- Deep Creek at Bulla: 2.39 metres, falling
- Rosslynne Reservoir, Head Gauge: 38.52 metres, rising
- Jacksons Creek at Sunbury: 2.13 metres, rising
- Steele Creek at Keilor East: 1.19 metres, rising
- Maribyrnong River at Keilor North: 3.58 metres, rising
- Maribyrnong River at Keilor: 1.84 metres, rising
- Maribyrnong River at Maribyrnong: 0.04 metres, rising

Stay informed - monitor your local conditions and remain alert.

What you should do:

- Be prepared to act if your situation changes.
- You should stay informed by listening to emergency broadcasters and monitoring warnings.
- Monitor weather forecasts and river levels. Go to www.bom.gov.au/vic/warnings.
- Floodwater is dangerous - never drive, walk or ride through floodwater.

Impacts in your area:

- Flooding above floor level of a single story home is likely to occur in some locations.
- Local roads may be closed and low bridges may be underwater.
- Areas around rivers and streams may be flooded.

This message was issued by State Emergency Service.

The next update is expected by 4PM this afternoon or as the situation changes.

Flood information:

- For river heights check www.bom.gov.au or phone 1300 659 217.
- For urgent animal welfare issues call Agriculture Victoria on 136 186 or your local vet.

Appendix F – Maps and Schematics

Overview

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

A map outlining a series of flood risk maps within the municipality of Hobsons Bay.

A map showing the Municipal boundary together with the open waterways and underground stormwater drainage pipe network within the municipality of Hobsons Bay Hobsons Bay and the 1% AEP (100-year ARI) flood extents (sourced from Melbourne Water GIS).

A set of 11 maps showing flood risks within the municipality of Hobsons Bay together with the 1% AEP (100-year ARI) flood extents (sourced from the Melbourne Water GIS).

Schematics detailing the drainage catchments relevant for this municipality.

- Each Schematic outlines the drainage system comprising of rivers, creeks or storm-water drains contained within one of the major catchments in the Port Phillip & Westernport Region.
- Within each Schematic, there are details useful to flood response such as those relating to gauges, towns, rivers, creeks, drains and reservoirs. Historical facts and figures may also be shown.
- The schematics also detail the response boundaries for SES Units and local government, and provide a reference link to the corresponding Municipal Flood Emergency Plan.
- Details within these Catchment Schematics reflect those contained within either other sections of this Municipal Flood Emergency Plan or refer to other Municipal Flood Emergency Plans. These details have been filtered to contain only key facts. For more information on a gauge, drainage system or town consult the corresponding Flood Emergency Plan

Note that:

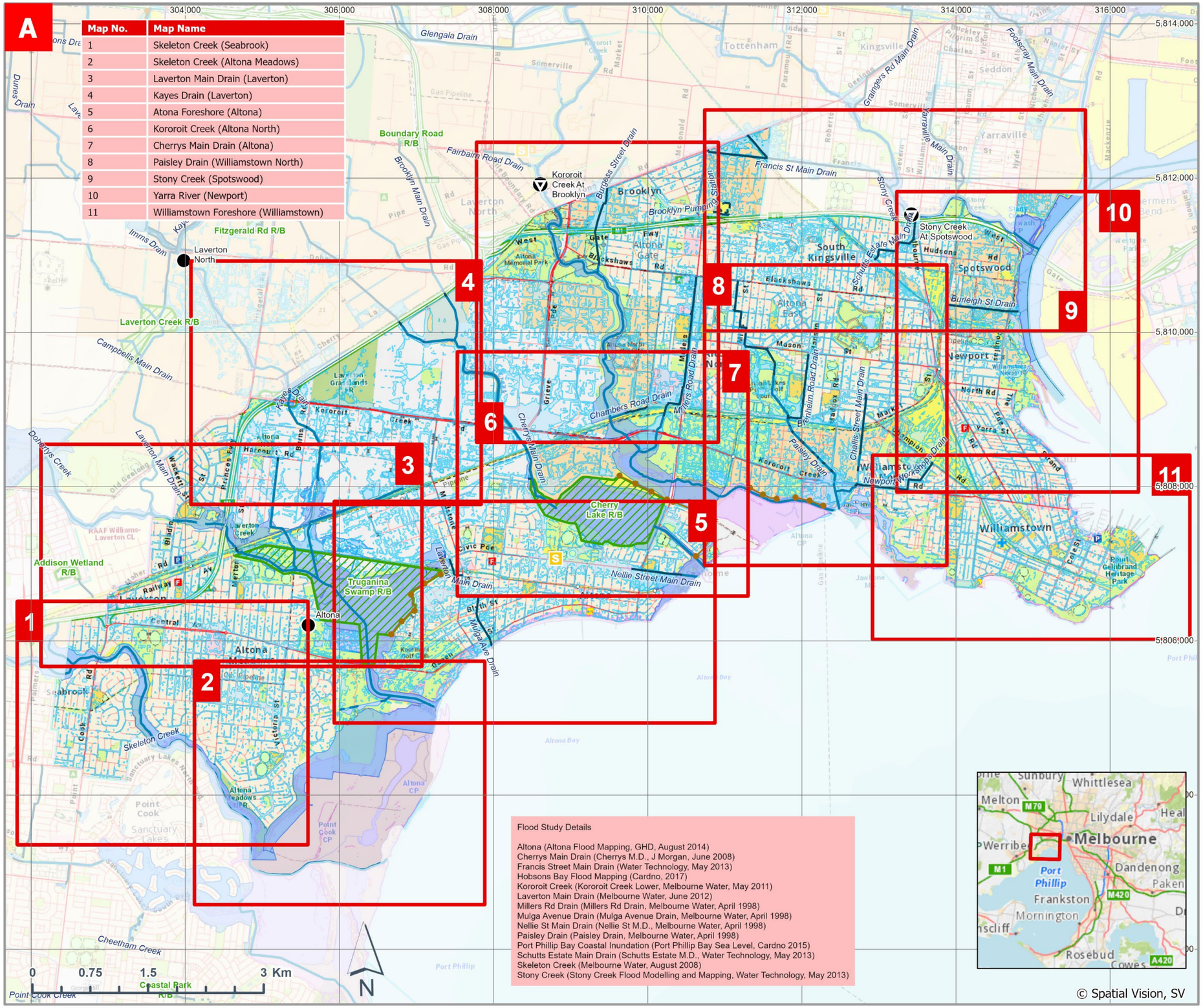
The mapping/data provided in this Appendix has been developed from Melbourne Water and other sources and taken from historical records and flood modelling. It may not include more recent data or local anecdotal information. It is planned that the mapping/data be updated as further studies or modelling is completed and other Information obtained.

Maps showing the Special Building Overlay and Land Subject to Inundation Overlay are included in the Hobsons Bay 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 Transport & Planning website https://mapshare.vic.gov.au/vicplan/.

Maps showing floodways are shown at DEECA's mapshare website: https://mapshare.vic.gov.au/mapsharevic/

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.

Municipality of Hobsons Bay Municipal Maps (sourced Melbourne Water GIS)



CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

A. Municipal Flood Index Map (1% AEP (100yr ARI) Extent)

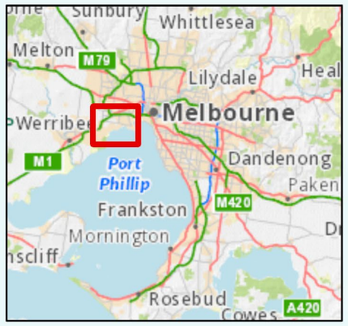
Map produced by VICSES 29/04/2024 12:09 PM

B

Derrimut
Glengala Drain
Robinsons Drain
Dunes Drain
Laverton Main Drain
Imms Drain
Kayes Drain
Cherrys Main Drain
Brimbank
Boundary Road R/B
Fairbairn Road Drain
Brooklyn Main Drain
Kororoit Creek At Brooklyn
Burgess Street Drain
Brooklyn Pumping Station
Francis St Main Drain
Stony Creek
Stony Creek At Spotswood
Schutts Estate Main Drain
Graingers Rd Main Drain
Tarraville Main Drain
Footscray Main Drain
Maribyrnong
Melbourne
Port Phillip
Fitzgerald Rd R/B
Laverton North
Wyndham
Laverton Creek R/B
Campbells Main Drain
Humes Main Drain
Millers Road Drain
Chambers Road Drain
Brennilm Road Drain
Paisley Drain
Challis Street Main Drain
Burleigh St Drain
Newport Workshops Drain
Dohertys Creek
RAAF Williams - Laverton CL
Hobsons Bay
Cherry Lake R/B
Addison Wetland R/B
Truganina Swamp R/B
Laverton Main Drain
Millers Road Drain
Altona
Nellie Street Main Drain
Mulga Ave Drain
Altona Meadows
Skeleton Creek
Altona Bay
Gas Pipeline
Point Gellibrand
Point Cook
Sanctuary Lakes
Cheetham Creek
Coastal Park R/B
0 1 2 4 Km
N

Flood Study Details

Altona (Altona Flood Mapping, GHD, August 2014)
Cherrys Main Drain (Cherrys M.D., J Morgan, June 2008)
Francis Street Main Drain (Water Technology, May 2013)
Hobsons Bay Flood Mapping (Cardno, 2017)
Kororoit Creek (Kororoit Creek Lower, Melbourne Water, May 2011)
Laverton Main Drain (Melbourne Water, June 2012)
Millers Rd Drain (Millers Rd Drain, Melbourne Water, April 1998)
Mulga Avenue Drain (Mulga Avenue Drain, Melbourne Water, April 1998)
Nellie St Main Drain (Nellie St M.D., Melbourne Water, April 1998)
Paisley Drain (Paisley Drain, Melbourne Water, April 1998)
Port Phillip Bay Coastal Inundation (Port Phillip Bay Sea Level, Cardno 2015)
Schutts Estate Main Drain (Schutts Estate M.D., Water Technology, May 2013)
Skeleton Creek (Melbourne Water, August 2008)
Stony Creek (Stony Creek Flood Modelling and Mapping, Water Technology, May 2013)



Map produced by VICSES 22/04/2024 11:28 AM

LAND USE

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

- 1% AEP Flash Flood Extent
- 1% AEP Riverine Flood Extent
- 1% AEP Coastal Flood Extent
- Melbourne Water Retarding Basin
- Waterway
- Melbourne Water Stormwater Drain
- Levee
- Stream Level & Rain Gauge
- Rain Gauge
- Ambulance Station
- Municipal Depot
- Emergency Coordination Centre
- Fire Station
- Hospital (Emergency)
- Hospital / Day Procedure
- Lifesaving Club
- Municipal Offices / Civic Centre
- Police Station
- Prison / Justice
- Tip / Recycling
- Caravan Park
- Group Camp
- Prison
- Helipad
- VICSES Unit
- Hobsons Bay Boundary

CITY OF HOBSONS BAY

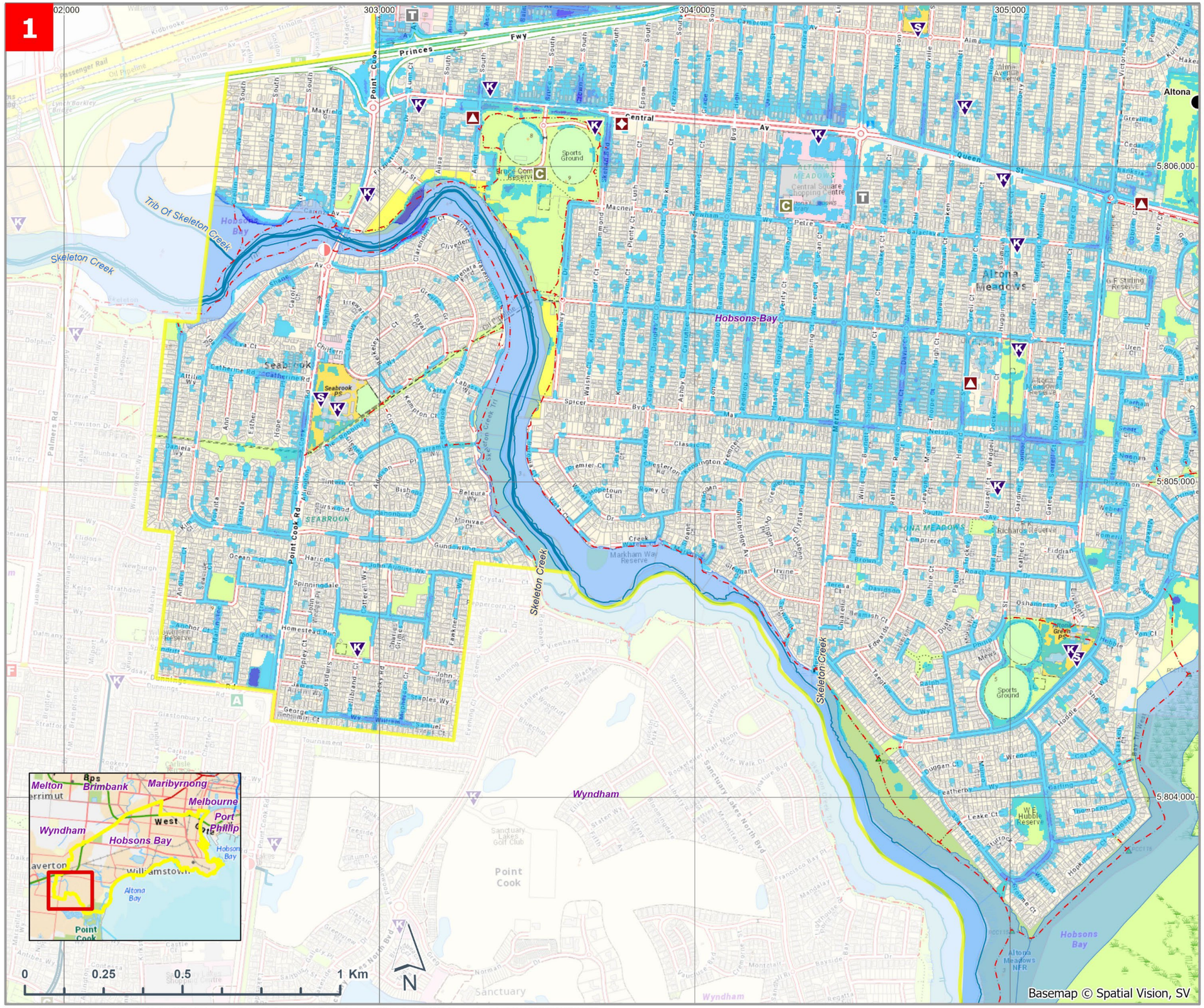
1% AEP (100yr ARI) Flooding

B. Municipal Flood Map (1% AEP (100yr ARI) Extent)

SES VICTORIA State Government

Melbourne Water

Flood Extent Maps (sourced Melbourne Water GIS)



LAND USE

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

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

1% AEP Flood Depth

- Up to 30cm
- Between 30cm and 60cm
- Greater than 60cm
- Waterway
- Melbourne Water Stormwater Drain
- Bicycle / Walking Trails
- Aged Care / Disability Support
- Ambulance Station
- Child Care / Kindergarten
- Community Venue
- Education Facility
- Fire Station
- Place Of Worship
- Telephone Exchange
- Sewer Emergency Relief Structure (Retail)
- Rain Gauge
- Hobsons Bay Boundary

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

1. Skeleton Creek (Seabrook)

SES VICTORIA State Government

Melbourne Water

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Hobsons Bay flood modelling completed by Cardno, 2017. Skeleton Creek flood modelling completed by Melbourne Water, August 2008. Map produced by VICSES 29/04/2024 9:56 AM

2

305,000
306,000
307,000
5,805,000
5,804,000
5,803,000

Altona Meadows
Truganina Swamp R/B
Hobsons Bay
Skeleton Creek
Wyndham
Port Phillip
Point Cook CP
Cheetham Wetlands
Altona Meadow NFR
Altona Sports Centre
Doug Gramp Reserve
H D Graham Reserve
Carlson Reserve
Richards Reserve
Sports Ground
W E Hubble Reserve
Queen Of Peace Ps
Altona Green Ps
G F Stirling Reserve
Andrew Park Dr
Skeleton Creek Intermittently open

0 0.25 0.5 1 Km

N

Basemap © Spatial Vision, SV

LAND USE

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

- Building
- Property
- Waterbody
- 1% AEP Riverine Flood Extent (MWC) (Depth Unavailable)
- 1% AEP Coastal Flood Extent

1% AEP Flood Depth

- Up to 30cm
- Between 30cm and 60cm
- Greater than 60cm
- Melbourne Water Retarding Basin
- Waterway
- Melbourne Water Stormwater Drain
- Bicycle / Walking Trails
- Aged Care / Disability Support
- Child Care / Kindergarten
- Education Facility
- Hobsons Bay Boundary

Hobsons Bay flood modelling completed by Cardno, 2017. Skeleton Creek flood modelling completed by Melbourne Water, August 2008. Map produced by VICSES 29/04/2024 10:07 AM

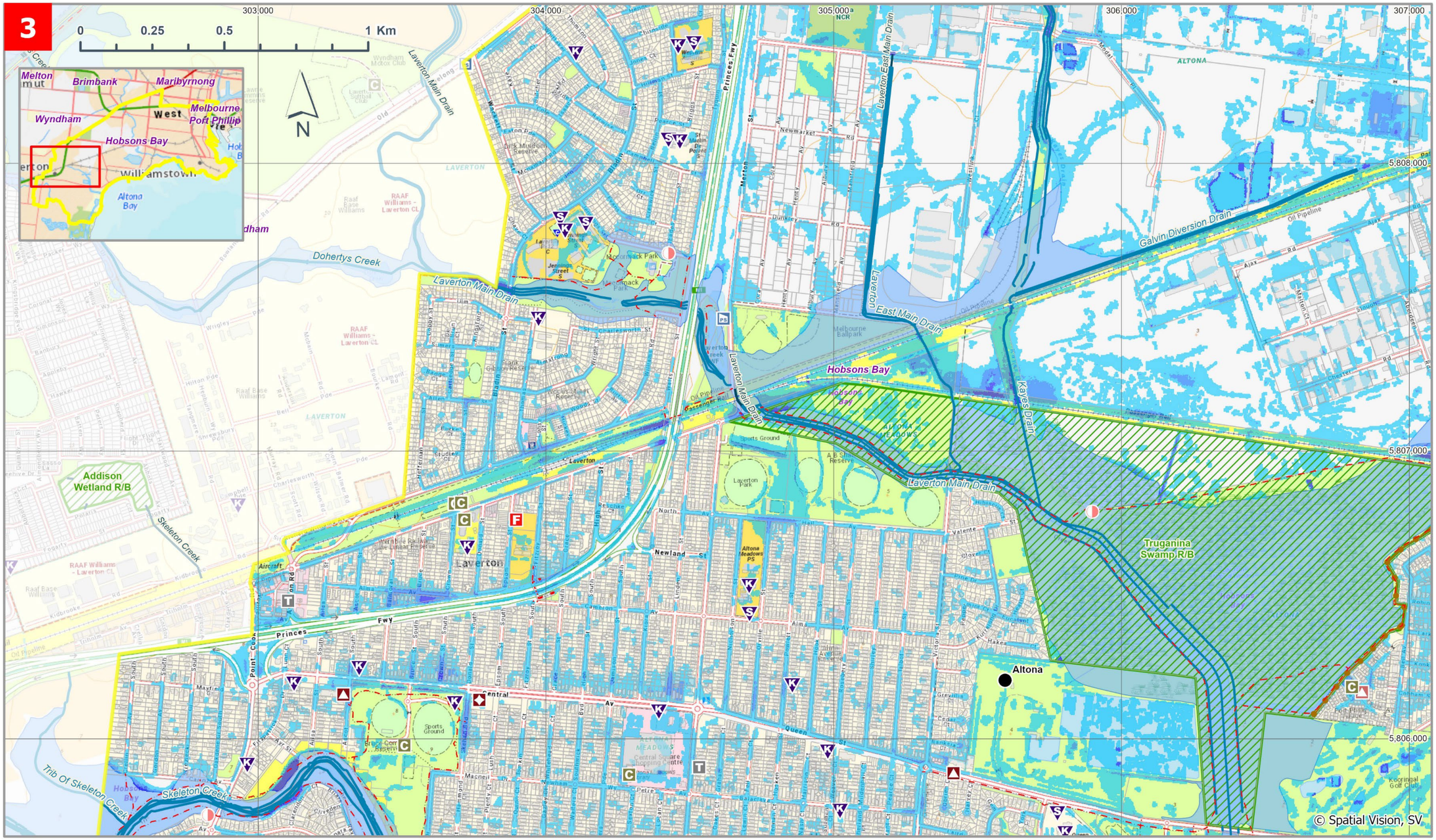
CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

2. Skeleton Creek (Altona Meadows)

SES · VICTORIA State Government · Melbourne Water

3



Hobsons Bay flood modelling completed by Cardno, 2017. Altona flood modelling completed by GHD, August 2014. Laverton Main Drain flood modelling completed by Melbourne Water, June 2012. Map produced by VICSES 26/04/2024 1:44 PM

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

3. Laverton Main Drain (Laverton)

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

1% AEP Flood Depth

- Up to 30cm
- Between 30cm and 60cm
- Greater than 60cm

- Melbourne Water Retarding Basin
- Melbourne Water Levee
- Melbourne Water Stormwater Drain
- Waterway
- Bicycle / Walking Trail
- Rain Gauge

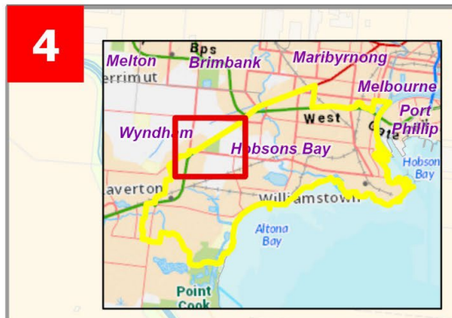
- Aged Care / Disability Support
- Child Care / Kindergarten
- Community Venue
- Education Facility
- Fire Station
- Place Of Worship

- Telephone Exchange
- Retirement Village
- Water Pump Station (Retail)
- Sewer Emergency Relief Structure (Retail)
- Hobsons Bay Boundary

LAND USE

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

4



305,000 306,000 307,000

0 0.25 0.5 1 Km

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5,810,000

5,809,000

5,808,000

Wyndham

Kayes Drain

Humes Main Drain

Brooklyn Main Drain

Cherrys Main Drain

Princes Fwy

Federation Trail Linear Reserve

LAVERTON NORTH

ALTONA NORTH

Laverton Grasslands FR

Old Geelong Road Reserve

Kororoit Creek Rd

Hobsons Bay

Altona NCR

ALTONA

Oil Pipeline

Passenger Rail

Basemap © Spatial Vision, SV

Hobsons Bay flood modelling completed by Cardno, 2017. Map produced by VICSES 29/04/2024 11:25 AM

LAND USE

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

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

1% AEP Flood Depth

- Up to 30cm
- Between 30cm and 60cm
- Greater than 60cm
- Melbourne Water Stormwater Drain
- Bicycle / Walking Trails
- Child Care / Kindergarten
- Education Facility
- Telephone Exchange
- Caravan Park
- Power Facility
- Sewer Emergency Relief Structure (Retail)
- Hobsons Bay Boundary

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

4. Kayes Drain (Laverton)

SES VICTORIA State Government

Melbourne Water

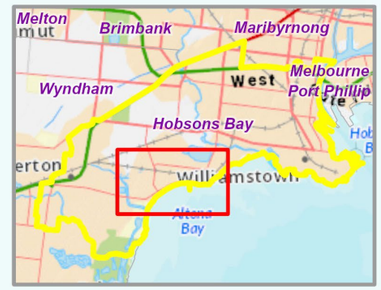
5

307,000
308,000
309,000
310,000
5,807,000
5,806,000
5,805,000

Diversion Drain
Cherry Lake R/B
Cherry's Main Drain
Nellie Street Main Drain
Hobsons Bay
Laverton Main Drain
Truganina Swamp R/B
Mulga Ave Drain
Notla Estate Main Drain
Altona LSC
Shore Based Recreational Fishing Reef
Altona Bay
Port Phillip

0 0.25 0.5 1 Km

N



Hobsons Bay flood modelling completed by Cardno, 2017. Altona flood modelling completed by GHD, August 2014. Coastal Inundation flood modelling completed by Cardno 2015. Map produced by VICSES 26/04/2024 2:00 PM

- Building
- Property
- Waterbody
- 1% AEP Flash Flood Extent (MWC) (Depth Unavailable)
- 1% AEP Riverine Flood Extent (Depth Unavailable)
- 1% AEP Coastal Flood Extent

1% AEP Flood Depth

- Up to 30cm
- Between 30cm and 60cm
- Greater than 60cm
- Melbourne Water Retarding Basin
- Melbourne Water Levee
- Melbourne Water Stormwater Drain
- Waterway
- Bicycle / Walking Trail
- VICSES Unit
- Child Care / Kindergarten
- Community Venue
- Education Facility
- Fire Station
- Hospital / Day Procedure
- Lifesaving Club
- Municipal Offices / Civic Centre
- Museum
- Police Station
- Telephone Exchange
- Group Camp
- Retirement Village
- Sewer Emergency Relief Structure (Retail)
- Hobsons Bay Boundary

LAND USE

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

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

5. Altona Foreshore (Altona)

Millers Rd Drain flood modelling completed by Melbourne Water, April 1998. Kororoit Creek flood modelling completed by Melbourne Water, May 2011. Map produced by VICSES: 26/04/2024 12:39 PM

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

6. Kororoit Creek (Altona North)

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

1% AEP Flood Depth

- Up to 30cm
- Between 30cm and 60cm
- Greater than 60cm
- Waterway
- Melbourne Water Stormwater Main
- Bicycle / Walking Trail
- VICSES Unit
- Aged Care / Disability Support
- Ambulance Station
- Child Care / Kindergarten
- Community Venue
- Education Facility
- Emergency Coordination Centre
- Fire Station
- Place Of Worship
- Tip / Recycling
- MWC Sewer Emergency Relief Point
- MWC Drainage Pump Station
- MWC Sewer Pump Station
- Stream Level & Rain Gauge
- Hobsons Bay Boundary

LAND USE

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

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Melbourne Water

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7

308,000 309,000 310,000 311,000 5,809,000 5,808,000 5,807,000

Chambers Road Drain
Millers Road Drain
Cherrys Main Drain
Kororoit Creek (Lower)
Nellie Street Main Drain
Cherry Lake R/B
Hobsons Bay
ALTONA
Kororoit Creek Rd
Passenger Rail
Oil Pipeline
Gas Pipeline
Melton
Brimbank
Maribyrnong
Melbourne
Port Phillip
Wyndham
West
Point Cook
Altona Bay

0 0.25 0.5 1 Km

Basemap © Spatial Vision, SV

Hobsons Bay flood modelling completed by Cardno, 2017. Cherrys Main Drain flood modelling completed by J Morgan, June 2008. Kororoit Creek flood modelling completed by Melbourne Water, May 2011. Map produced by VICSES 29/04/2024 11:36 AM

LAND USE

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

- Building
- Property
- Waterbody
- 1% AEP Flash Flood Extent (MWC) (Depth Unavailable)
- 1% AEP Riverine Flood Extent (MWC) (Depth Unavailable)
- 1% AEP Coastal Flood Extent

1% AEP Flood Depth

- Up to 30cm
- Between 30cm and 60cm
- Greater than 60cm
- Melbourne Water Retarding Basin
- Waterway
- Melbourne Water Stormwater Drain
- Levee
- Bicycle / Walking Trails
- VICSES Unit
- Child Care / Kindergarten
- Community Venue
- Education Facility
- Fire Station
- Municipal Offices / Civic Centre
- Telephone Exchange
- Group Camp
- Sewer Emergency Relief Structure (Retail)
- Hobsons Bay Boundary

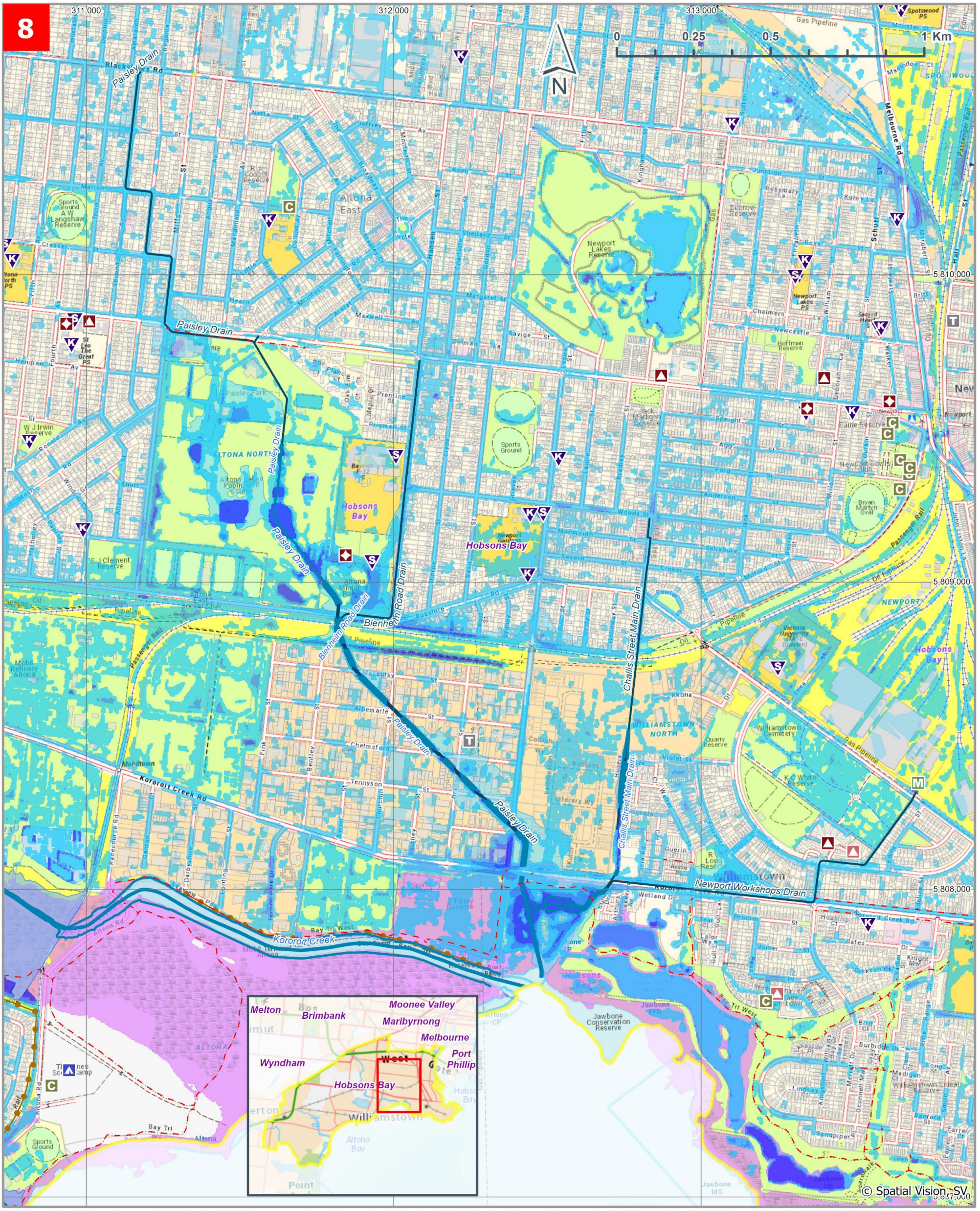
CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

7. Cherrys Main Drain (Altona)

SES VICTORIA State Government Melbourne Water

8



Coastal Inundation flood modelling completed by Cardno, 2015. Hobsons Bay flood modelling completed by Cardno, 2017. Paisley Drain flood modelling completed by Melbourne Water, April 1998. Map produced by VICSES: 26/04/2024 12:57 PM

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

8. Paisley Drain (Williamstown North)

- Building
- Property
- 1% AEP Riverine Flood Extent (Depth Unavailable)
- 1% AEP Flash Flood Extent (MWC) (Depth Unavailable)
- 1% AEP Coastal Flood Extent

1% AEP Flood Depth

- Up to 30cm
- Between 30cm and 60cm
- Greater than 60cm

- Waterway
- Melbourne Water Stormwater Main
- Levee
- Bicycle / Walking Trail
- Aged Care / Disability Support
- Child Care / Kindergarten
- Community Venue
- Education Facility
- Place Of Worship
- Museum
- Telephone Exchange
- Group Camp
- Retirement Village
- MWC Drainage Pump Station
- MWC Sewer Pump Station
- Hobsons Bay Boundary

LAND USE

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

SES VICTORIA State Government

Melbourne Water

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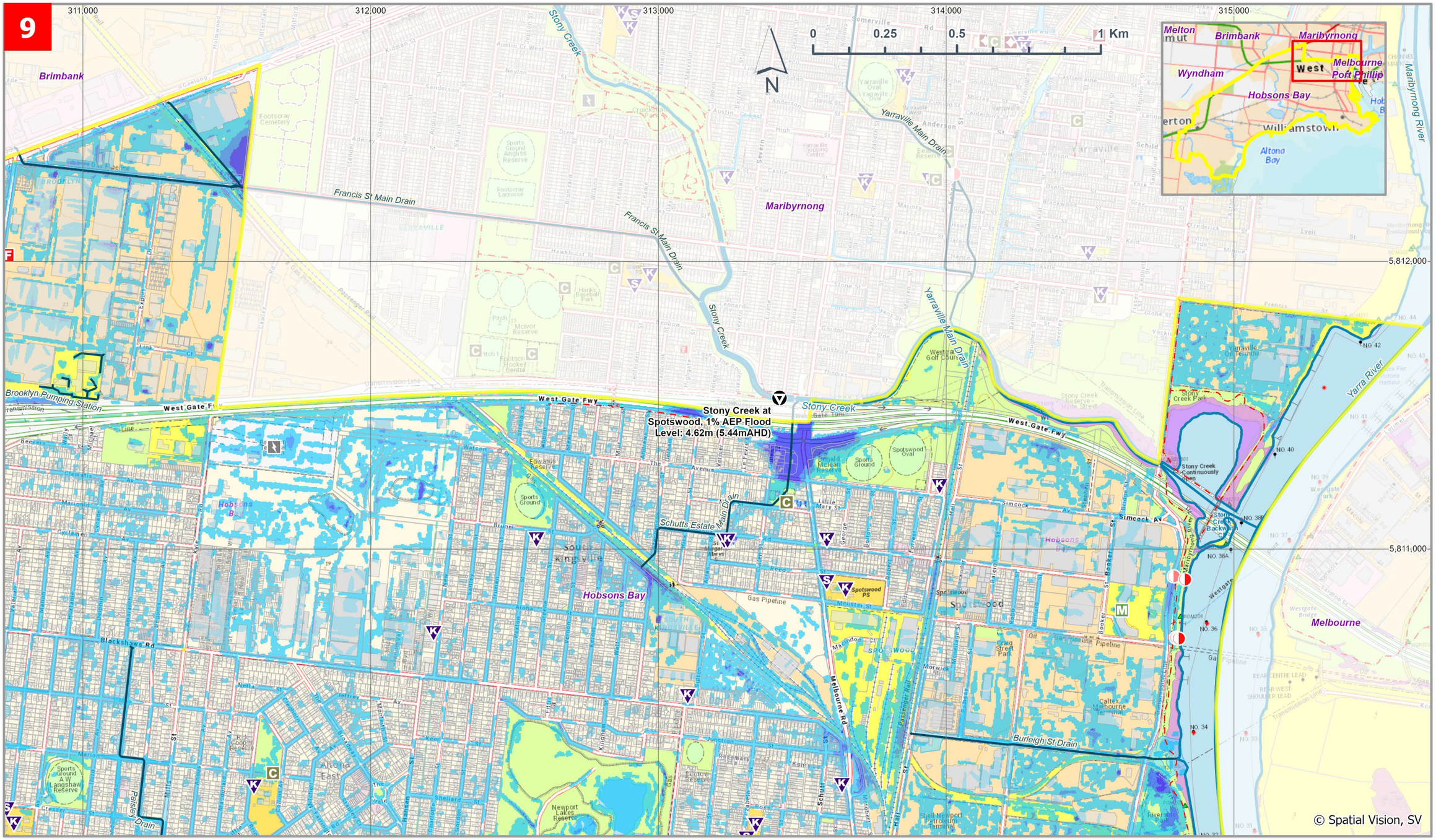
9



Hobsons Bay flood modelling completed by Cardno, 2017. Altona flood modelling completed by GHD, August 2014. Map produced by VICSES 26/04/2024 2:10 PM

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

9. Stony Creek (Spotswood)

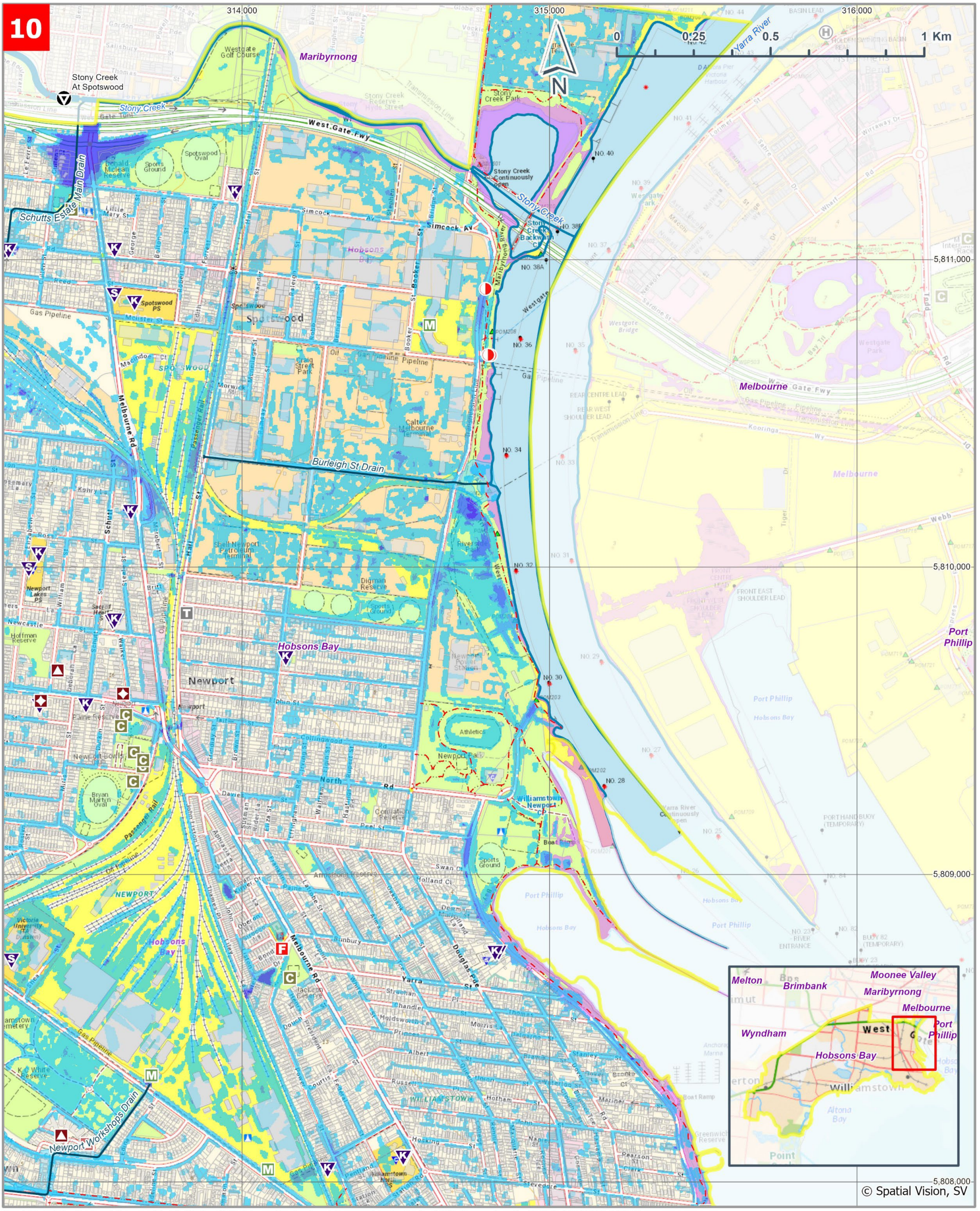
- Building
- Property
- 1% AEP Flash Flood Extent (Council) (Depth Unavailable)
- 1% AEP Flash Flood Extent (MWC) (Depth Unavailable)
- 1% AEP Coastal Flood Extent

1% AEP Flood Depth

- Up to 30cm
- Between 30cm and 60cm
- Greater than 60cm
- Melbourne Water Stormwater Drain
- Waterway
- Bicycle / Walking Trail
- Stream Level & Rain Gauge
- Aged Care / Disability Support
- Child Care / Kindergarten
- Community Venue
- Education Facility
- Fire Station
- Place Of Worship
- Museum
- Power Facility
- Sewer Emergency Relief Structure (MW)
- Sewer Emergency Relief Structure (Retail)
- Hobsons Bay Boundary

LAND USE

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



Coastal Inundation flood modelling completed by Cardno, 2015. Hobsons Bay flood modelling completed by Cardno, 2017. Map produced by VICSES: 26/04/2024 1:06 PM

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

10. Yarra River (Newport)

- Building
- Property
- 1% AEP Flash Flood Extent (MWC) (Depth Unavailable)
- 1% AEP Flash Flood Extent (Council) (Depth Unavailable)
- 1% AEP Coastal Flood Extent

1% AEP Flood Depth

- Up to 30cm
- Between 30cm and 60cm
- Greater than 60cm
- Waterway
- Melbourne Water Stormwater Main
- Bicycle / Walking Trail
- Aged Care / Disability Support
- Child Care / Kindergarten
- Community Venue
- Education Facility
- Fire Station
- Place Of Worship
- Museum
- Telephone Exchange
- Retirement Village
- Helipad
- MWC Sewer Emergency Relief Point
- MWC Drainage Pump Station
- MWC Sewer Pump Station
- Retail Sewer Emergency Relief Point
- Stream Level & Rain Gauge
- Hobsons Bay Boundary

LAND USE

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

SES — VICTORIA State Government — Melbourne Water

11

Hobsons Bay flood modelling completed by Cardno, 2017. Coastal Inundation flood modelling completed by Cardno, 2015. Map produced by VICSES 26/04/2024 2:18 PM

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

11. Williamstown Foreshore (Williamstown)

- Building
- Property
- 1% AEP Flash Flood Extent (MWC) (Depth Unavailable)
- 1% AEP Coastal Flood Extent

1% AEP Flood Depth

- Up to 30cm
- Between 30cm and 60cm
- Greater than 60cm

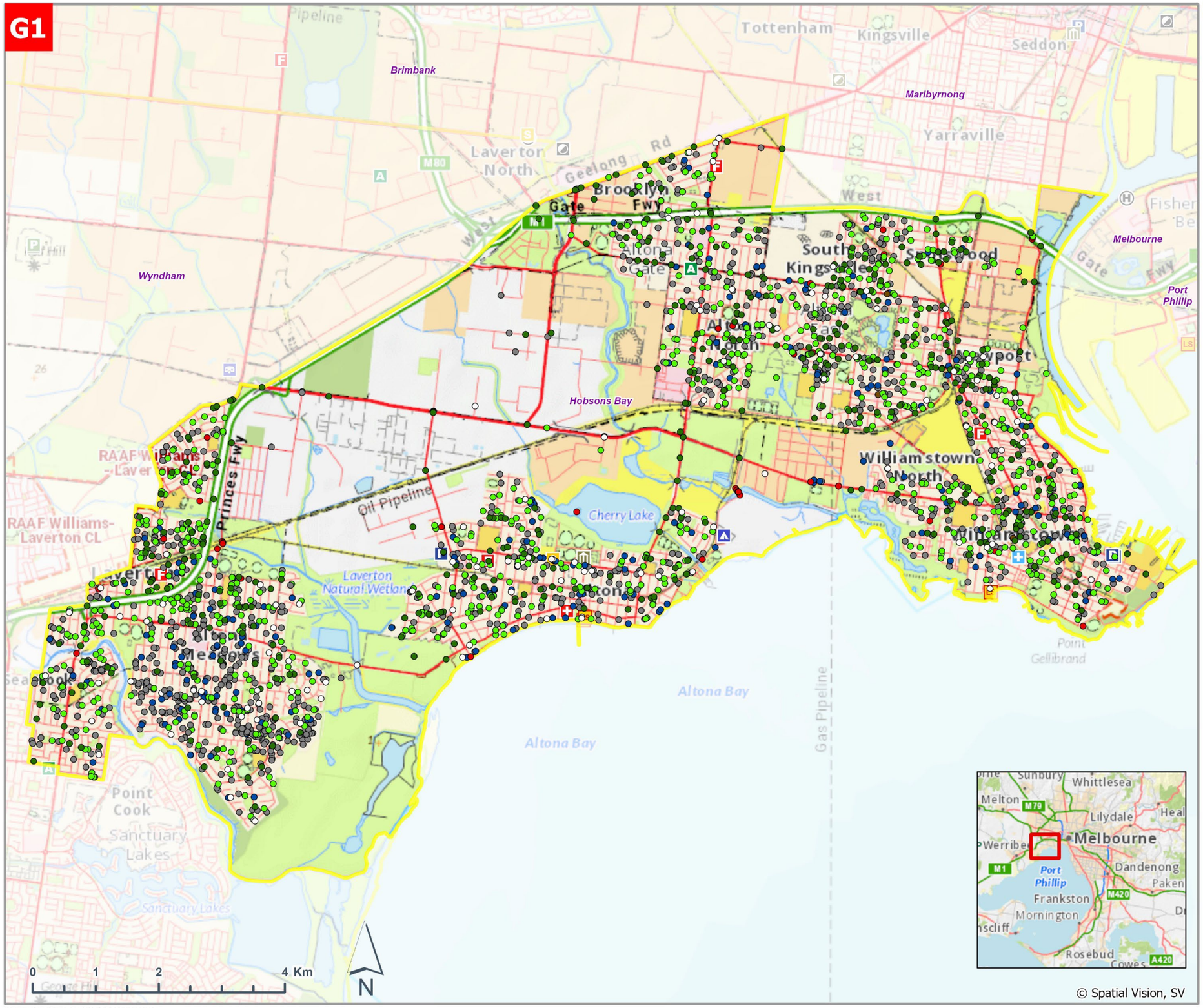
- Melbourne Water Stormwater Drain
- Bicycle / Walking Trail
- Aged Care / Disability Support
- Child Care / Kindergarten
- Community Venue
- Education Facility
- Hospital (Emergency)
- Lifesaving Club
- Place Of Worship
- Museum
- Police Station
- Telephone Exchange
- Retirement Village
- Sewer Emergency Relief Structure (Retail)
- Hobsons Bay Boundary

LAND USE

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

SES Melbourne Water VICTORIA State Government

VICSES Severe Weather Request for Assistance Maps



Map produced by VICSES 22/04/2024 2:38 PM

LAND USE

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

- Ambulance Station
- Municipal Depot
- Emergency Coordination Centre
- Fire Station
- Hospital (Emergency)
- Hospital / Day Procedure
- Lifesaving Club
- Municipal Offices / Civic Centre
- Police Station
- Prison / Justice
- Tip / Recycling
- Caravan Park
- Group Camp
- Prison
- Helipad
- VICSES Unit
- Hobsons Bay Boundary

Severe Weather RFAs (Storm or Flood)

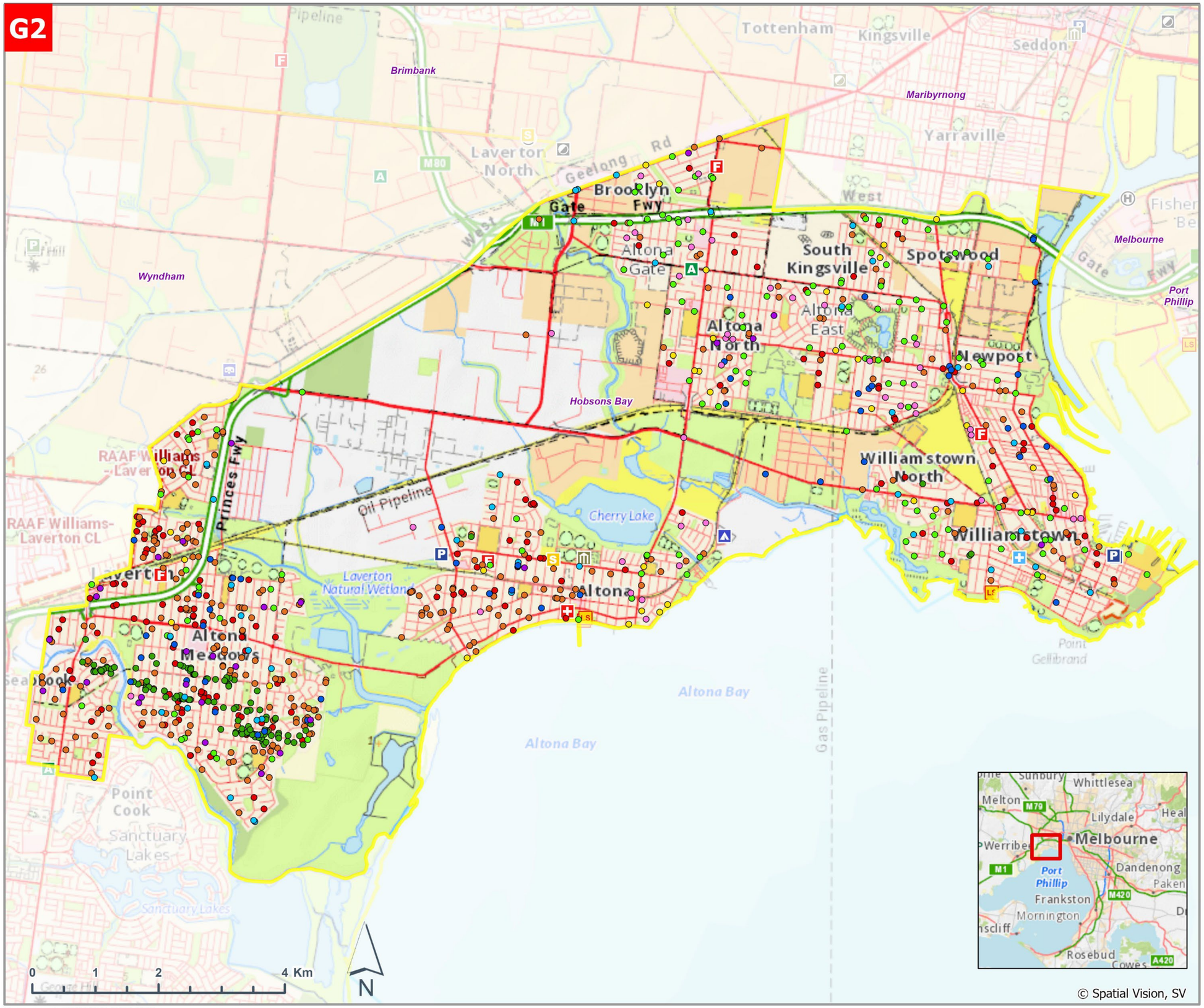
- Building Damage (1233)
- Flood (289)
- Landslide (3)
- Rescue (50)
- Tree Down (832)
- Tree down: Traffic Hazard (530)
- Other (122)

CITY OF HOBSONS BAY

1% AEP (100yr ARI) Flooding

G1. Severe Weather Requests for Assistance (RFA) by Job Type (July 2009 - March 2024)

G2



© Spatial Vision, SV

Map produced by VICSES 22/04/2024 2:35 PM

LAND USE

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

- Ambulance Station
- Municipal Depot
- Emergency Coordination Centre
- Fire Station
- Hospital (Emergency)
- Hospital / Day Procedure
- Lifesaving Club
- Municipal Offices / Civic Centre
- Police Station
- Prison / Justice
- Tip / Recycling
- Caravan Park
- Group Camp
- Prison
- Helipad
- VICSES Unit
- Hobsons Bay Boundary

Severe Weather RFAs
(Storm or Flood when > 40 requests received)

- 5th-6th February 2011 (186)
- 1st-3rd October 2013 (315)
- 24th-25th June 2014 (42)
- 9th-11th October 2016 (141)
- 22nd-23rd November 2016 (143)
- 29th-30th July 2017 (46)
- 15th December 2018 (60)
- 7th-8th January 2022 (64)
- 14th February 2024 (43)

CITY OF HOBSONS BAY

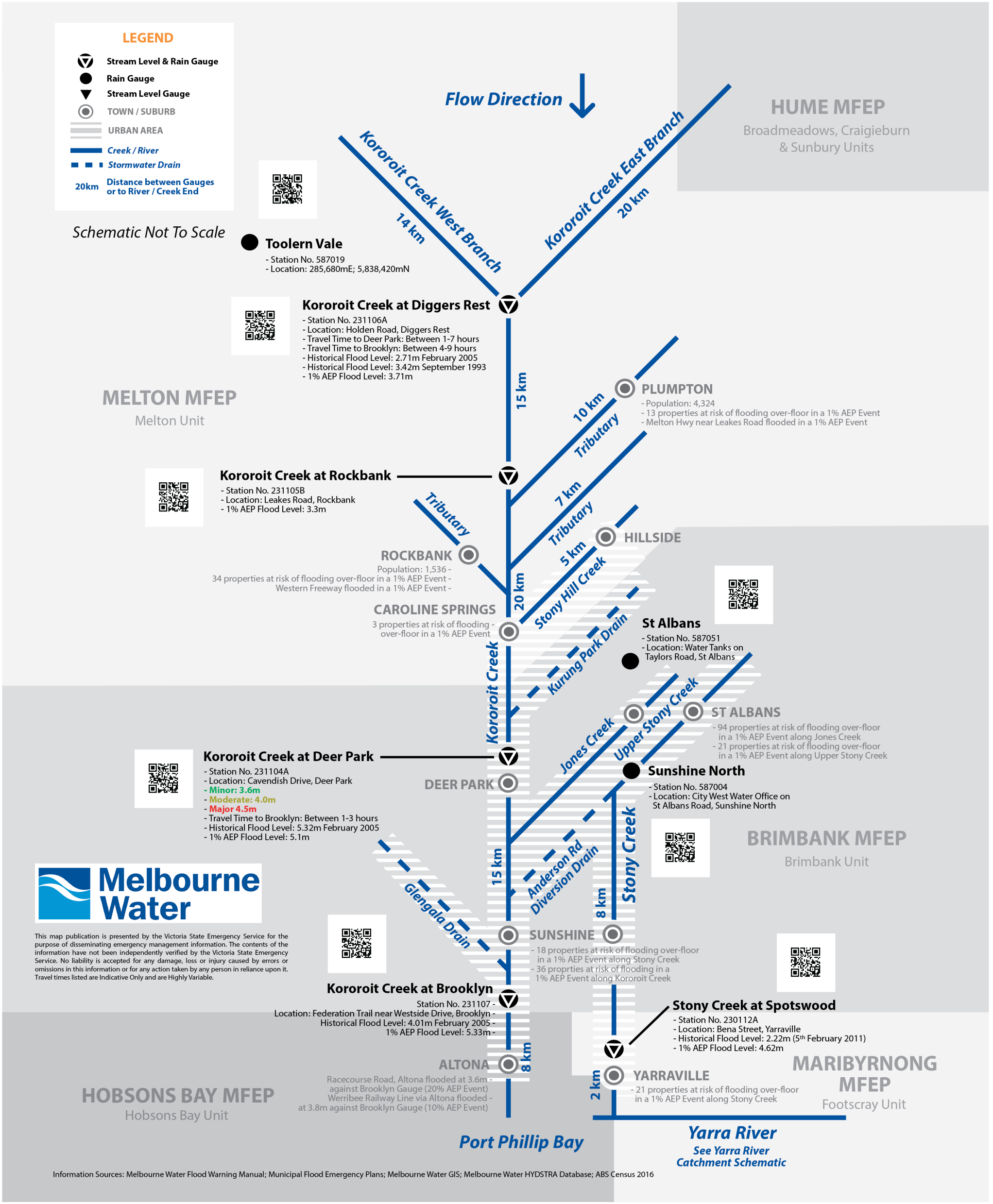
1% AEP (100yr ARI) Flooding

G2. Severe Weather Requests for Assistance (RFA) by Significant Event (July 2009 - March 2024)

SES
VICTORIA State Government
Melbourne Water

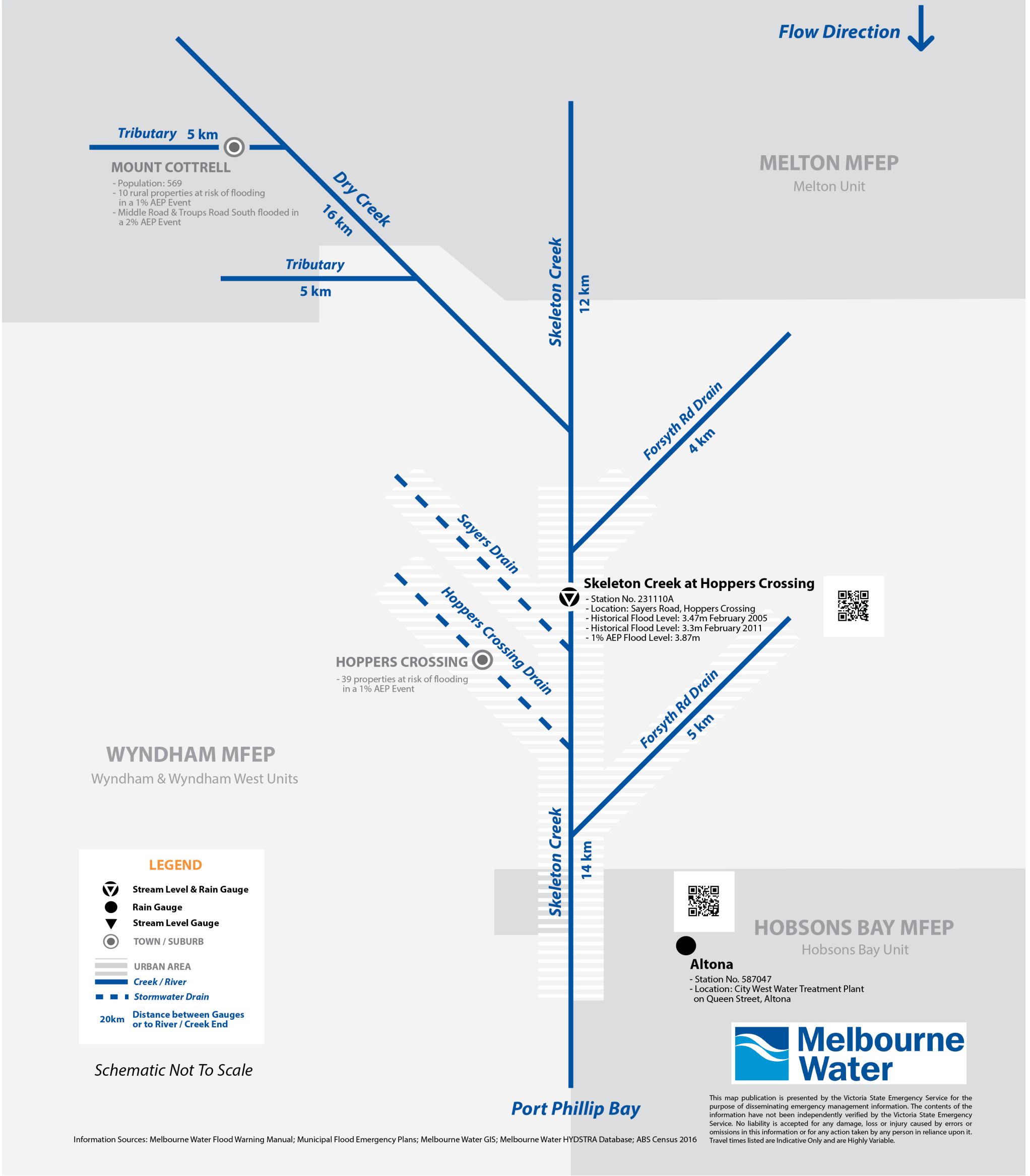
Kororoit Creek & Stony Creek Catchment Schematic

Version 5 - June 2021



Skeleton Creek Catchment Schematic

Version 6 - June 2022



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

Melbourne Water

Appendix G – Local Knowledge Arrangements

As control agency for flood in Victoria, VICSES is committed to ensuring the incorporation of local knowledge in decision making before, during and after incidents. This is guided by the VICSES policy 10.02 Local Knowledge.

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

Field Observers

The role of the Field Observer may support:

- The monitoring and reporting on observations of incidents. For example, during a flood event a Field Observer may be regularly taking photos via mobile app technology of the local stream gauge board if it is safe to do so.
- The provision of local advice regarding the consequences of incidents.
- Establishing linkages with key groups within local communities during emergency management planning and operational response.
- The provision of authorised information to community members where requested.

Intelligence Gathering System - Snap Send Solve

Historically, the gathering of local flood/storm or other VICSES hazard intelligence during an event has been varied and inefficient. It creates a frustrating and difficult environment for intelligence teams in an Incident Management Team (IMT) to sift through relevant information. VICSES has teamed up with Snap Send Solve to create a flood/storm and other VICSES hazard observation App and Portal.

Snap Send Solve is an existing app currently used by the community to notify local councils and other authorities of issues that need addressing such as cracked pavements, parking problems, dumped rubbish and graffiti.

The existing functionality of the smartphone app has been adapted for VICSES in a well presented and user-friendly way. The app is used to capture field observations during an event such as a flood, by filling in a simple form on a smartphone and using the camera to upload photos. This information is then displayed through an administration portal to collate and view the data.

The app component will be made available to trusted Field Observers in the community, and their observations will be visible via EMCOP where Intelligence personnel in Incident Management Teams can access them during events. The intent is that better access to local knowledge will add to information sources in order to maximise public information communications and response efforts.

Trusted Field Observers include both internal and external stakeholders (community members, ESOs such as CFA/VicPol). They can be activated and deployed by the VICSES RDO (VICSES SOP073 provides further guidance) to use the app during an event and to report on valuable information with a level of accuracy.

The portal has been successfully integrated with EMCOP and eMap, both platforms are available to use in an IMT. The Snap Send Solve logo also appears within the intelligence section on the EM-COP desktop for easy access to the portal.

Important Notes

These arrangements do not give Field Observers and existing agency networks any responsibility for operational decisions. Nor does it permit Field Observers and existing agency networks to direct operational activity, including the management of flood levees.

Information provided from sources of local knowledge must be processed and validated before it can become intelligence to inform decision making.

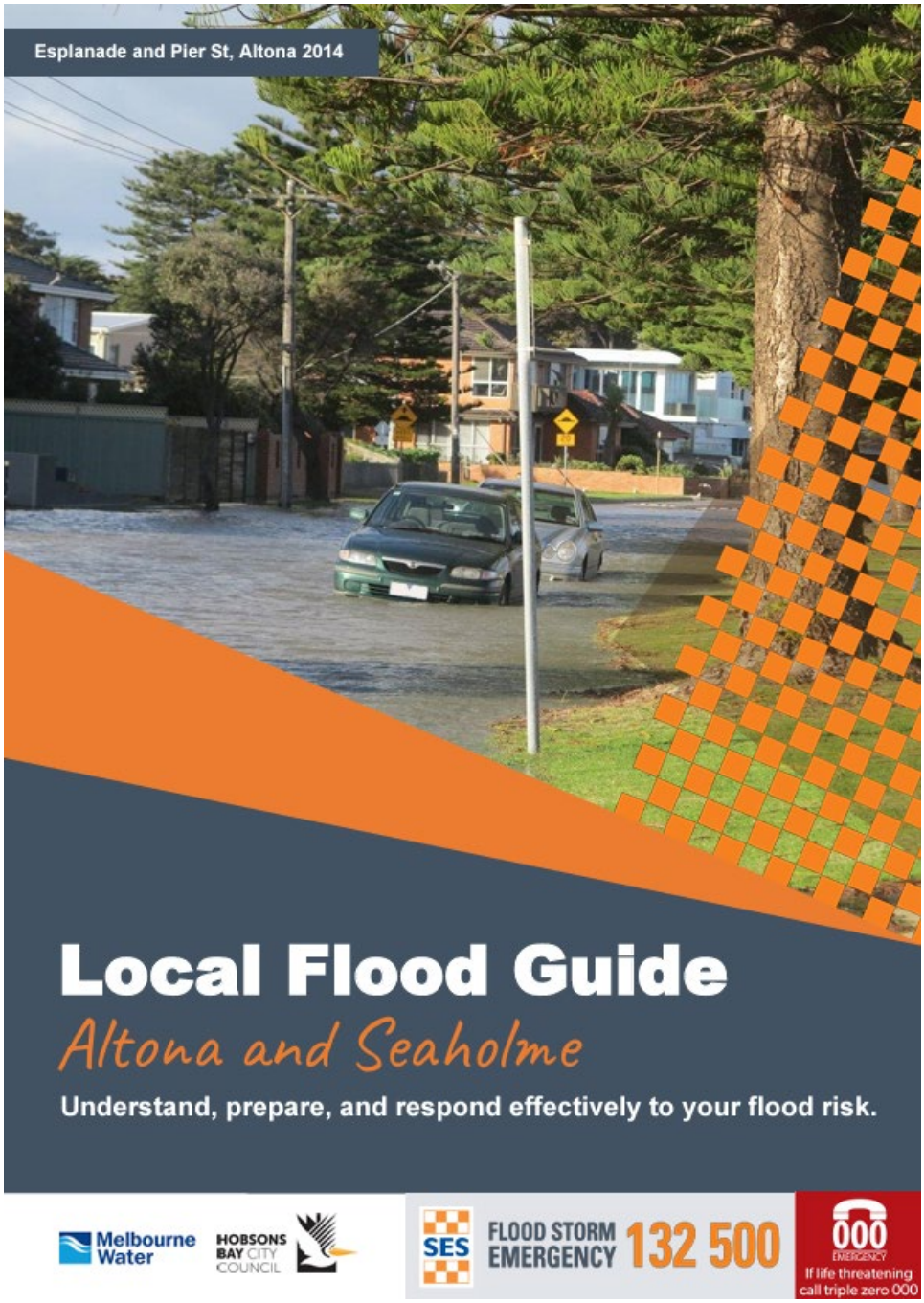
Hobsons Bay Unit Field Observers

- VICSES Hobsons Bay Unit has several members trained as Field Observers to support information gathering using the Snap Send Solve app.

Appendix H: Local Flood Information

Altona & Seaholme Local Flood Guide

https://www.ses.vic.gov.au/plan-and-stay-safe/emergencies/flood



DEECA maintains the FloodZoom flood intelligence platform. Inquiries regarding FloodZoom access should be directed to accounts@floodzoom.vic.gov.au.

Port Phillip and Westernport Catchment Management Authority website

Appendix I1 – Storm Response

Consequences of Severe Thunderstorm

Severe thunderstorms and its associated weather conditions such as a tornado or microburst may have the same effect on the community and the natural environment. The difference is likely to be in terms of the geographic expanse. A severe thunderstorm can move over a large part of the land mass whereas in Victoria, a tornado or microburst is likely to be heavily concentrated in a small geographic area affecting one or two localities.

Consequences of storm damage typically involve the following:

- wind damage to residence and buildings
- fallen trees damaging buildings and blocking roadways
- flooding
- road damage and road closures
- power outages
- telecommunications outages
- impacts on a wide range of critical infrastructure.
- Entrapment of people in vehicles or in homes.

Areas Most Likely to be Affected by Storm Damage

- Hobsons Bay municipality 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 municipality of Hobsons Bay may be subject to include wind storms, hailstorms, and thunderstorms (including lightning activity). There have also been occurrences of atmospheric downbursts/microburst within Hobsons Bay 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.

Locations of Historic Storm Damage

Maps located in **Appendix F** titled 'VICSES Severe Weather Request for Assistance Maps' highlight the areas of previous storm and flood damage impact. Note that while the maps are based on historic data, a severe storm can affect any part of the municipality.

Bureau of Meteorology Weather Districts

The municipality falls within the Central District Forecast.

Storm Specific Community Engagement Programs

VICSES provides standard community awareness material on what to do during a storm on its public website.

Appendix I2 - Storm Damage Specific Response Arrangements

In the initial response phase, managing the response to widespread property damage resulting from a severe thunderstorm involves the coordinated assignment of resources to individual requests for assistance. It is akin to a fire service suddenly having to respond to a widespread outbreak of individual domestic house fires at the same time.

This is different to the approach taken for some other hazards such as riverine flooding or bushfire, where there is more likely to be a need to undertake common tasks around building defensive structures or control lines.

After the initial response phase, and in the most severe cases, relief and recover may take on a more familiar look to other natural hazards. However, there may be unique aspects that vary from planning associated with riverine flooding.

An example of this may be assisting vulnerable people. In a flood, the plans typically identify the areas subject to inundation, whereas in a storm, the damage may occur anywhere. As such, there may be high risk premises such as aged care or medical facilities that need assistance after a severe storm but are not identified as at risk from riverine flooding.

In the example of the 2021 cyclogenesis windstorm event that affected the Dandenong Ranges, parts of Gippsland, Macedon Ranges and other localities, the effect on the community lasted weeks with access and power restoration taking weeks to achieve. In the aftermath of that event the community gained value from the sector establishing early on, relief centres and community hubs, however, their establishment was hindered due to the consequences of the storm and flood event.

In addition, initial welfare calls made to community members by the Department of Families, Fairness and Housing (DFFH) and AusNet due to being listed as a power dependent customer or experiencing prolonged power outages were generally appreciated.

Response Planning and Escalation

In the initial response phase, units will receive requests for assistance (RFA's) direct from Triple Zero Victoria and will typically respond in a business-as-usual mode, typically attending events in order of receipt or priority. This is in accordance with the VICSES Operations Management Manual.

As a unit begins to receive a volume of RFAs, it is important that it shifts focus to efficient use of resources through the application of:

- ensuring it has geographic situational awareness through visualising the location and spread of RFAs via EM-COP situation map or if unable to login, via the public access Emergency.vic.gov.au incidents and warnings page. This will prevent unnecessary travel times and can assist in allocating resources to manage a number of RFAs located in nearby streets.
- Triaging RFAs including call-backs to residents where appropriate to clarify needs and priority
- Seeking support via the RDO and escalation of response arrangements as appropriate (transfer of control from level 1 to level 2 response arrangements).
- Potential deployment of field observers and intelligence gathering via Snap Send Solve to assess areas where the storm impacted as in many cases, there will be unreported cases of damage that requires assistance from the community

Support Arrangements – Other Agencies Assistance

While VICSES units provide the initial response to storm damage, this section details the local arrangements for events where VICSES will require support from local emergency services and government departments/agencies to manage a large number of requests for assistance from the community.

For agencies that are likely to provide regular assistance such as FRV, it is strongly encouraged that these organisations promote to its responders the benefit of completing the E-learn Maintain safety at storm and flood operations. This E-Learn is accessible via the EMV intranet site EM-Learning.

In the municipality, the following agencies typically provide immediate support to assist VICSES units in responding to RFAs.

- Hobsons Bay City Council
- FRV
- VicPol
- DEECA
- DFFH
- Parks Victoria
- DTP
- Neighbouring SES Units
- Panel of contractors

The following provides acquired local agency resources that are typically available within the municipality and operational region within first response distance, and the types of tasks its crews are authorised and trained to be tasked with when supporting VICSES flood and storm operations.

Hobsons Bay City Council

Council can provide the following capability:

- Two trucks and a team of Hobsons Bay City Council contractors activated via the Risk and Emergency Management Advisor (REMA) during business hours or the MEMO after hours.

Fire Rescue Victoria

FRV can provide the following capability during a flood or storm event:

- Rescue 44 located at 30 Mcintyre Rd, North Sunshine and
- Rescue 3, located at 106 Bouverie St, Carlton

  Sandbagging assistance

  Chainsaws for fallen trees

  Submergible pumps for removal of water

  Tarpaulins
- Fire station 39 (marine specialist), located at 448 Graham St, Port Melbourne and Pier 39 for rapid deployment.
- A Water Emergency Response POD that includes x2 inflatable rubber boats with outboard motors, booms, inflatable rescue platforms, PFD's.
- Two Aluminium Stabi Craft Vessels
- Swift Water Rescue Operators.

In addition to the above, FRV also has stations located within the municipality of Hobsons Bay and nearby surrounding locations that, if required, would be there to assist in any way within 10 minutes via Triple000.

Stations within the municipality include:

Altona – 7 Akuna St

Laverton – 5 Epsom St

Newport – 231 Melbourne Rd

FRV also has surrounding stations at Point Cook, Footscray, West Melbourne and Brooklyn.

Parks Victoria

Parks Victoria is the port manager for waters of Port Phillip and land manager for some parcels of land within Hobsons Bay municipality, including Jawbone Flora and Fauna Reserve, Point Gellibrand Coastal Heritage Park, and Stony Creek Backwash.

Office location:

82 Nelson Place
Williamstown VIC 3016
Contact: 03 8427 2139 (business hours)
Contact: 13 19 63 (general information line, ask for Williamstown Office)
Email: northportphillip2@parks.vic.gov.au

Parks Victoria has some capacity for on water response to in port emergencies/ hazards to navigation that may result from flood and storm events, including:

- Intelligence gathering
- Communication to port users via their Notice to Mariners
- Coordination of response of contractors as required to mark or remove hazards from within the port.
- The ability to put in place set asides/ exclusion zones in the interest of public safety within Parks Victoria managed Port Waters under the Port Regulations if required.

Resources:

- 1 x vessel 6m fibreglass Edencraft
- 1 x Variable Messaging Board (VMS)

Contractors

Hobsons Bay City Council can provide contractors that are approved to provide services in emergencies without the need for quote or tender processes including:

- Arborists and tree removal
- Equipment such as front-end loaders, dump trucks and staff for debris clearance, cleaning, blockages.

Power Utilities

In the event of a severe storm, significant loss of mains electricity/power is highly likely. Ensuring there is effective coordination between the power distribution network operators and the Incident Control Centre will enhance community information and assist with elements of relief such as ensuring vulnerable people that require medical / or other life sustaining equipment remains functional.

Early liaison with the distribution networks may assist in establishing priorities for power restoration, identifying areas of outages and matching this with any known vulnerable premises such as aged care, medical facilities.

The local protocols for establishing coordination and liaison between the distribution networks and the ICC are as follows:

- Contact the MEMO who will liaise with the Operations department of Hobsons Bay City Council or directly with contractors.

Considerations for Operating with Other Agencies

As other agencies are deployed to assist, the IC should consider the following actions:

- Establish a communications plan to enable the tasking of other agency resources. This may include:
- Use of other agency portable radios at the Sector/Division command point
- Embedding a FRV Commander in the comms team so that they can page allocated tasks via EAS/VIPER direct to its brigade resources
- Embedding an EMLO from other assisting agencies at the sector/Division command point for comms purposes
- Use of mobile phones or sat phones to communicate
- Determining an agreed response to downed powerlines as this is often a predominant hazard for storm events
- Ensuring other agency personnel who are undertaking EMLO roles have access to EM-COP
- Staging area location and any safety issues with accessing it (closed roads/powerlines down)
- Resources available such as re-supply of consumables (tarps/sandbags)
- Welfare arrangements
- Duty time limitations (these should be consistent with VICSES SOP 003)

Appendix I3 - Activation Triggers

VICSES Flood Readiness and Activation Levels - V6.0 - June 2024

CD/24/164321

Readiness Level	RL 1 - Agency Business as Usual		RL 2 - Moderate	RL 3 - High	RL 4 - Extreme	RL 5 - Catastrophic
Activation Considerations	**Severe Weather Intelligence Briefing (SWIB), issued Monday, Wednesday, and Friday. Warnings issued by the BoM ad hoc.**					
Severe Weather Intelligence Briefing (SWIB) *Issued Monday, Wednesday, and Friday.*	No colour: - Catchments able to absorb predicted rain for consecutive days.	No colour: - Forecast rain. - Catchments able to absorb predicted rain for consecutive days with minor flooding occurring.	No colour: - Forecast rain. - Catchments able to absorb predicted rain for consecutive days with minor/moderate flooding occurring.	Coloured yellow for riverine flood: - Forecast heavy rain. - Catchments are saturated and unable to absorb continued rain.	Coloured orange for riverine flood: - Forecast heavy/intense rain. - Catchments are saturated and unable to absorb continued rain.	Coloured red for riverine flood: - Forecast heavy/intense rain. - Catchments are saturated and unable to absorb continued rain.
				Discussion to be held with the BoM and Hydro at the SWIB meeting to determine final RL based on expected impacts of flooding.		
Riverine flood warning(s) *Issued up to 24hrs before forecast flooding.* **Flood Scenario Product** *Issued ahead of forecast RL3 or higher in consultation with the Flood team*	No active warnings.	Flood watch issued and/or flood warning issued.	Flood warning (minor, moderate) with low consequence.	Flood warning (minor, lower end of moderate) with expected impacts. Flood warning (major) with low or nil consequence.	Flood warning (multiple upper end moderate, major) with expected impacts.	Flood warning (multiple moderate and/or multiple major) with significant consequence.
Expected impacts	Nil impacts or consequences expected.	Low lying areas next to water courses are inundated.	Areas of inundation are more substantial in size but consequence is low.	Areas of inundation are more substantial with increased consequence.	Extensive rural areas and/or urban areas are inundated.	Extensive rural areas and/or urban areas are inundated
		No expected residential flooding impacts.	No expected above floor flooding.	Properties may be isolated and a small number affected above the floor level.	Many properties affected above floor level.	Significant number of properties affected above floor level.
		No isolation of communities.	No isolation of communities.	No isolation of communities.	One to two communities isolated.	Three or more communities isolated.
		No impact to transport routes.	Small number of minor transport routes may be affected.	Small number of transport routes may be affected.	Number of transport routes may be affected, some closed.	Major transport routes closed.
		No evacuation required.	Evacuation not expected to be required.	Planning for possible evacuation.	Evacuation of flood affected areas likely.	Evacuation of large number of people/communities required.
		No impact to utility services.	No impact to utility services.	No impact to utility services.	Utility services may be impacted.	Utility services will be impacted.
		No expected dam failure.	No expected dam failure.	No expected dam failure.	Dam failure possible.	Dam failure considered very likely.
		No relocation of stock and/or equipment.	Possible relocation of stock and/or equipment.	Low number of relocation of stock and/or equipment.	Medium number of relocation of stock and/or equipment.	Large number of relocation of stock and/or equipment.
Readiness	**VICSES - Business As Usual - Operations**			**Multi Agency Operations under JSOP 2.03**		
State Command SAC, SDO, SOCC	SDO/SAC rostered. Standard VICSES on call arrangements.	SDO/SAC rostered. Standard VICSES on call arrangements.	SDO/SAC rostered. Standard VICSES on call arrangements.	SCC SAC - in place. SDO - in place. Night shift on standby or remote. ESTA SOCC - on standby.	SCC SAC - in place. SDO - in place. Night shift on standby. ESTA SOCC - in place. Night shift on standby.	SCC SAC - in place for day and night shifts. SDO - in place for day and night shifts. ESTA SOCC - in place for day and night shifts.
Regional Command RDO, RAC	RDO/RAC rostered. Standard VICSES on call arrangements.	RDO/RAC rostered. Standard VICSES on call arrangements. Consider rostering of additional warnings support for the RDO, dependent on number of active flood warnings.	RDO/RAC rostered. Standard VICSES on call arrangements. Consider rostering of additional warnings support for the RDO, dependent on number of active flood warnings.	RCC RAC - in place. Night shift on standby or remote. ROC RDO - in place. Resources - in place (if required). Logistics - in place (if required). Night shift RDO on standby or remote.	RCC RAC - in place. Night shift on standby or remote. ROC RDO - in place. Resources - in place. Logistics - in place. Night shift RDO on standby or remote.	RCC RAC - in place for day and night shifts. ROC RDO - in place. Resources - in place. Logistics - in place. Night shift RDO on standby or remote. Consider additional management support member if RDO activated for night shift alone.
Unit Command UDO, ICP, SCP, DCP	UDO rostered.	UDO rostered.	UDO rostered.	SCP/DCP activated as per advised command structure.	SCP/DCP activated as per advised command structure.	SCP/DCP activated as per advised command structure.
Incident Control Centre(s)	N/A	N/A	N/A	Activated using JSOP2.03 as guidance. *Where an ICC is not active, consider roles in place at a ROC to support critical functions such as warnings and public info.*	Activated using JSOP2.03 as guidance.	Activated using JSOP2.03 as guidance.

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

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