

Bass Coast Shire Council

Municipal Flood and Storm Plan

A Sub-Plan of the Municipal Emergency Management Plan

For the Bass Coast Shire Council
And
VICSES Units San Remo, Phillip Island,
Wonthaggi & Inverloch

Version 7.6
Reviewed May 2025



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Acknowledgment of Traditional Owners

The Bass Coast Shire Council Municipal Emergency Management Planning Committee respectfully acknowledges the Traditional Owners of the land and waters of the Bunurong people. We pay our respects to Elders past, present and emerging, and are committed to working with Aboriginal and Torres Strait Islander communities to achieve a shared vision of safer and more resilient communities.

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 Gippsland 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 2026

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Distribution of MFSSP

Once endorsed and signed the, MFSSP should be distributed to all MFSSP committee members, MEMPC Chair, council, MEMO, Deputy MEMO, Representatives from; BoM, CMA, DEECA, Parks Victoria, Ambulance Victoria, Department of Transport and Planning (VicRoads), DFFH, relevant utilities, MERC, RERC, Police station, VICSES Units, VICSES Regional office, FRV district office, FRV stations, CFA brigades, CFA regional office.

The master copy of the plan will be on the Community Support portal of the Bass Coast Council website <https://www.basscoast.vic.gov.au/community-support-services/emergency-information/prepare/council-information>

Document Transmittal Form / Amendment Certificate

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

Suggestions for amendments to this Plan should be forwarded to VICSES Mulgrave Regional Office - Unit 6, 3-5 Gilda Court, Mulgrave VIC 3170

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

Amendment Number	Date of Amendment	Amendment Entered By	Summary of Amendment
1	29 August 2014	Rose Thomas	Minor amendments identified by Bass Coast Flood and Storm Sub Committee members at their February 2014 meeting during a review of the Plan and appendices
2	25 May 2016	Corin Spencer	Storm Risk added to plan to create combined Municipal Storm & Flood Emergency Plan
3	25 May 2016	Corin Spencer	Amendment of State Government Department names (DEDJTR, DELWP, DHHS)
4	14 November 2016	James Bremner	Additional information re storm surge and information on trees and sandbags
5	4 December 2016	Rose Thomas	Amendment to update State Government Department names and websites 3.3.3 Incident Control Centre – amended to include the Control Agency as able to determine the location of an ICC Include Lang Lang Caravan Park as susceptible to storm surge events and Jetty Road, Lang Lang in list of Minor Road Closures
6	25 June 2018	Ross Butler	Update of Appendices A, B, C, F and addition of Appendix G
7	25 June 2021	Ross Butler	Application of new template. Updated parts of the body as well as Appendices A, B, C & F based on flood modelling made available since previous version. Addition of Appendix G
7.5	May 2025	Dimity Lynch	New template applied Amendment to update State Government Department names and websites Updated VICSES regulations & Policies
7.6	September 2025	Ross Butler	Updates to Appendix A, B, C and F. Addition of Appendix C4 Westernport Bay Coastal Inundation.

This Plan will be published on the VICSES website at www.ses.vic.gov.au/get-ready/your-local-flood-information located with the associated local flood guides, and the Bass Coast Shire Council website.

List of Abbreviations & Acronyms

The following abbreviations and acronyms are used in the Plan:

The following abbreviations and acronyms are used in the Plan			
AAR	After Action Review	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	MFSSP	Municipal Flood & Storm Sub-Plan
CEO	Chief Executive Officer	MFSPC	Municipal Flood & Storm Planning Committee
CERA	Community Emergency Risk Assessment	MRM	Municipal Recovery Manager
CFA	Country Fire Authority	PMF	Probable Maximum Flood
CMA	Catchment Management Authority	RAC	Regional Agency Commander
DEECA	Department of Energy, Environment and Climate Action	RCC	Regional Control Centre
DFFH	Department of Families, Fairness and Housing	RDO	Regional Duty Officer
DH	Department of Health	RERC	Regional Emergency Response Coordinator
DJSIR	Department of Jobs, Skills, Industry and Regions	RERCC	Regional Emergency Response Coordination Centre
DTP	Department of Transport and Planning	REMP	Regional Emergency Management Plan
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. Natural systems greater than 60 ha are typically 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 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.
Stormwater Runoff	The amount of rainfall that enters the stormwater drainage system, (via pits, pipes, retarding basins, water sensitive structures, harvesting tanks and overland flow paths) after water which is not absorbed into the ground has been taken into account.

Part 1. INTRODUCTION

1.1 Approval and Endorsement

The Bass Coast Shire Municipal Emergency Management Planning Committee (MEMPC) is the owner of this Flood and Storm Sub-Plan (MFSSP), pursuant to Part 6A of the Emergency Management Act 2013 (as amended). If the certificate of assurance is signed and dated, then the Gippsland REMPC has approved this plan.

In accordance with its roles and responsibilities set out in the [State Emergency Management Plan \(SEMP\)](#), the Victoria State Emergency Service (VICSES) has prepared this plan in collaboration with the Municipal Flood & Storm Planning Committee (MFSPC) if applicable.

This MFSSP is a sub plan to the Bass Coast Shire Council Municipal Emergency Management Plan (MEMPC). It is consistent with the [SEMP](#) and the [Victorian Floodplain Management Strategy \(2016\)](#).

The plan is also consistent with and subordinate to:

- [SEMP Flood Sub-Plan](#), [SEMP Storm Sub-Plan](#)
- The Gippsland Region Emergency Management Plan
- The Gippsland Region Flood Sub-Plan, Regional Storm Sub-Plan

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

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

This Plan requires the approval of the Gippsland Regional Emergency Management Planning Committee.

This Plan is endorsed by the Bass Coast Shire Council MEMPC as a sub-plan to the MEMPC.

1.2 Certificate of Assurance

Certificate of Assurance for the Bass Coast Shire Council.

Flood and storm emergency management sub-plan.

Plan Preparer: The Victoria State Emergency Service prepared this sub-plan on behalf of the Municipal Emergency Management Planning Committee.

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 on Monday 1st December, 2025.

On behalf of the Municipal Emergency Management Planning Committee: Chair, Municipal Emergency Management Planning Committee 17/03/2026	Nominated representative of preparer: Assistant Chief Officer VICSES 19/05/2026
The Southern Metro Regional Emergency Management Planning Committee approves this plan. Chair, Southern Metro REMPC 20/03/2026	

1.3 Purpose and scope of this flood/storm emergency plan

The purpose of this MFSSP is to detail the arrangements for managing a flood emergency before, during and after it occurs or potentially occurs within the Bass Coast Shire Council.

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](#)
- Gippsland REMP
- Bass Coast Shire Council 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 \(JSOPs\)](#).

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)1
- 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)

1.6 Municipal Flood and Storm Planning Committee (MFSPC)

Membership of the Bass Coast Shire Council Flood Planning Committee (MFSPC) comprises of the following representatives from the following agencies and organisations:

- **Chairperson** – Victoria Police (Municipal Emergency Response Coordinator (MERC))
- VICSES Operations Officer Emergency Management
- VICSES Unit Controller/s
- Bass Coast Shire Council, Municipal Emergency Management Officer (MEMO)
- Bass Coast Shire Council, Infrastructure representative
- Melbourne Water
- West Gippsland Catchment Management Authority
- Department of Transport
- Local community representatives, and
- Other agencies and community representatives or consultants as required

1.7 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 MFSSP.

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

The MFSPC will meet at least once per year.

The MEMPC will ensure that the MFSPC review 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 Flooding and Storms

Upon formal adoption by the MEMPC the community will have access to the details of this MFSSP via:

- The [Victoria State Emergency Service \(VICSES\) website](#)
- local media
- any [Be Flood Ready](#) or [Storms - Plan and stay safe](#) engagement initiatives and websites

VICSES with the support of Bass Coast Shire Council and Melbourne Water will coordinate targeted community flood engagement programs within the council area.

Refer to **Appendix G** (LFG and [Be Flood Ready](#) Information)

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 systems¹.

Subject to the provisions of the Bass Coast Planning Scheme, Bass Coast Shire Council encourages residents and business owners / operators in potentially flood prone areas to plan and put in place effective flood protection measures for their dwellings and business premises. This applies to areas subject to flash flooding and overland flows.

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

2.3 Non-structural flood mitigation measures

Non-structural flood mitigation measures¹ 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.

¹ [United Nations Office of Disaster Risk Reduction](#)

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.

Refer to **Appendix A and C** for specific local flood intelligence arrangements.

2.3.3 Storm and Flood warning

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

Specific details on Warnings issued by VICSES through [VicEmergency](#) and VICSES channels are outlined in **Appendix E**.

2.3.4 Local knowledge

Community Flood 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.

Further information on capturing local information is outlined in **Appendix G**.

Previous event history and likely operational considerations are noted in the Flood Intelligence Cards in **Appendix C**. In line with the VICSES Local Knowledge Policy, reviews of this plan will be undertaken with input from multiple local sources to ensure appropriate local knowledge can be captured before, during and after incidents.

Part 3. DURING: RESPONSE / RELIEF ARRANGEMENTS

3.1 Introduction

3.1.1 Activation of Response

VICSES may be notified of flood and storm 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 incident²), 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 Gippsland 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 Bass Coast Shire Council. These agencies will be engaged through the IEMT.

The general roles and responsibilities of supporting agencies are as agreed within the Bass Coast Shire MEMP, the SEMP, VICSES Gippsland Region Flood Emergency Plan and State Flood and Storm Emergency Plans.

3.1.3 Municipal Emergency Coordination Centre or equivalent

If an MCC is established for a flood or storm event, VICSES will log on to Crisisworks and monitor activities. The VICSES RDO / ICC will liaise with the MCC directly. If an Incident EMT is established, Bass Coast Shire Council will also maintain involvement in the Incident EMT.

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

3.1.4 Escalation

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

Resourcing and event escalation arrangements are described in the [SEMP](#)

² For a detailed definition of the levels of incidents, refer to Table 3 Levels of Incidents within the [State Emergency Management Plan](#).

3.2 State emergency management priorities

The [State Emergency Management Priorities](#) shall form the basis of incident action planning processes. This includes:

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

3.2.1 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 Bass Coast Shire 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.

3.2.2 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.

3.2.3 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 Incident Control Centre locations are:

- Dandenong ICC
- Ferntree Gully ICC
- Sunshine ICC
- Woori Yallock ICC

3.2.4 Divisions and Sectors

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

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

3.2.5 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 (IMs).

3.2.6 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 Bass Coast Shire 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.

For more detail refer to the [SEMP](#) for guidance on IEMTs.

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

VICSES [SOP008 Severe Weather Notification and Activation Process](#) and VICSES [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.

The following are links to the current VICSES readiness:

[VICSES Readiness and Activation Levels - Flood](#)

[VICSES Readiness and Activation Levels - Severe Weather](#)

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.

3.2.8 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.

3.3 Community information and warnings including media communication

Guidelines for the distribution of community/public information and warnings are contained in the VICSES Gippsland flood and storm emergency sub-plans and state [flood](#) and [storm](#) emergency sub-plans.

Refer to **Appendix E** 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 Bass Coast Shire 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.

3.4 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.

3.5 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 and relief centres, in line with the Bass Coast MEMP.

3.6 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 limited³. 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 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).
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 Bass Coast Shire Council MERC and MEMO at the earliest opportunity to allow for relief preparation to commence.

³ [AFAC Emergency Planning and Response to Protect Life in Flash Flood Events – Guideline v2.0](#)

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.

3.7 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 floodwater⁴.

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 Victoria⁵. 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:

- Registering persons who intend not to evacuate ([refer to appendix D](#)).
- Providing additional information that may assist them in making a decision to evacuate.
- Identifying vulnerable people who may be willing to evacuate if assisted.

⁴ [AUSTRALIAN DISASTER RESILIENCE HANDBOOK COLLECTION Flood Emergency Planning for Disaster Resilience - First edition 2020](#)

⁵ 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.

3.8 Flood rescue

Under the SEMP Response table 9 the control agency for rescue from land and water is Victoria Police (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.

3.9 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 may request aircraft support through the State Air Desk located at the SCC. The Air Desk Supervisor will establish priorities. The IC controls the conduct of Air support operations.

3.10 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.

3.11 Essential community infrastructure and property protection

Essential community infrastructure and property such as residences, businesses, roads and utilities may be affected in the event of a flood and/or storm.

The Bass Coast Shire Council maintains a small stock of sandbags, and back-up supplies are available through the VICSES Regional Headquarters. The IC will determine the priorities related the use of sandbags, which will be consistent with the strategic priorities.

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 [Sandbag filling and collection point guide](#) and VICSES [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.

3.12 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 Bass Coast Shire Council.

3.13 Road closures

Bass Coast Shire Council, the Department of Transport and Planning (DTP), VicPol and VicRoads will carry out their formal functions of road closures including observation and placement of warning signs, and roadblocks to its designated local and regional roads, bridges, walking/bike/shared trails. VicPol may liaise with and advise Bass Coast Shire Council and the relevant authority of the need or advisability of erecting warning signs and/or of closing roads and bridges under its jurisdiction. VicRoads are responsible for designated main roads and highways and councils are responsible for the designated local and regional road network.

VicRoads, VicPol and Bass Coast Shire Council will provide community information direct to the public regarding road closures as outlined in the Bass Coast MEMP. Information may also be updated on the VIC Traffic website: <https://traffic.vicroads.vic.gov.au/>

3.14 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.

Major dams with potential to cause structural and community damage within the municipality are described in **Appendix A**. Refer to DEECA Dam Safety Plan within the Bass Coast MEMP. In addition, Melbourne Water also have Dam Safety Emergency Plans for their operated Dams.

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

The responsible agency for critical sewage assets in the municipality is Yarra Valley Water.

It is the responsibility of the Bass Coast Shire Council Environmental Health Team and/or EPA to inspect and report to the MEMO and the ICC (if operating) on any water quality issues relating to flooding on Council and/or privately owned land.

3.16 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.

3.17 Relief

Relief is the provision of assistance to meet the essential 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.

3.18 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 and/or storm 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 are detailed in the Bass Coast MEMP. Details of the relief arrangements are available in the Bass Coast MEMP.

3.19 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 to be referred to DEECA who has developed the [Victorian Emergency Animal Welfare Plan](#), alongside notification to Bass Coast Council.

Refer to the State Emergency Animal Welfare Plan and Eastern Metro Councils Animal Welfare Plan for detailed arrangements.

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 Bass Coast Shire Council is detailed in the Bass Coast Shire Council MEMP – Relief and Recovery Sub-Plan.

4.2 Transition from Response to Recovery

The [State Emergency Management Plan](#) sets out the transition to recovery arrangements. VICSES as the Control Agency is responsible for ensuring effective transition from response to recovery. During the response phase, the IC will ensure they develop a plan for transition from response to recovery. Transition should occur led by the IC in consultation with emergency management teams (including IEMT and MRM), as it marks the end of the response phase which the Controller leads and manages.

Where the Bass Coast MECC has been activated, council will lead municipal recovery activity as outlined in the 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 and/or storm 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 AND STORM THREATS

General

Bass Coast is located about 80 km southeast of Melbourne, with frontages to both Western Port Bay and Bass Strait coastlines and encompasses an area of approximately 800 km².

In 2021 Bass Coast Shire had a resident population of 40,789 (Australian Bureau of Statistics). During peak holiday periods, the population exceeds 70,000. Wonthaggi is the largest town within the Bass Coast Shire and has its origin in coal mining. Other major towns include Inverloch, Grantville and Cowes on Phillip Island. Smaller towns include Bass, Coronet Bay, Dalyston, Cape Paterson, Corinella, Kilcunda, Newhaven, Rhyll and San Remo.

The main waterways in Bass Coast Shire are the Bass River, approximately 50 km in length (managed by Melbourne Water) and the Powlett River, 42 km in length (managed by WGCMA). There are however many small creeks and watercourses. Only minor creeks and drainage overflow paths are located in major townships. As a result, flooding in major townships is generally experienced only when overland flow paths or underground drainage systems are blocked or stormwater flows exceed the design capacity of the piped drainage system.

Riverine Flooding

There is little recognised riverine flooding risk in Bass Coast with the majority of impact being too low-lying rural land and roads. Riverine flooding can cause isolation when access/egress roads are cut by flood waters.

Prolonged moderate to heavy rain often leads to flooding within the Shire and generally occur as a result of:

- Moist warm airflow from northern Australia bringing moderate to heavy rainfall over a period of 12 hours or more following a prolonged period of general rainfall. The period of general rainfall “wets up” the catchments and (partially) fills both the on-stream dams and the natural floodplain storage. These combine to increase the runoff generated during the subsequent period of heavy rainfall.
- Successive cold fronts, often during winter and spring, that bring periods of rain that wet up the catchments and prime them for flooding from a further front or complex low-pressure system that is perhaps slower moving and / or brings heavier rainfall.
- A low-pressure system (often intense and known as an ‘east coast low’) that develops within eastern Bass Strait or over the Tasman Sea and directs moist air for a period of 12 hours or more onto West Gippsland. The lifting that occurs as it travels inland results in heavy rain and possible flooding. The earlier stages of an east coast low, as a low-pressure system moves from the west and deepens over Bass Strait, tends to result in the heaviest rainfall over the catchments of the streams that flow through Bass Coast.

Flash Flooding and Overland Flows

Short Duration, high intensity rainfall (usually associated with thunderstorms) can also cause localised flooding within the municipality along overland flow paths when the local urban drainage system

surcharges. Such events, which are mainly confined to the summer months, do not generally create widespread flooding since they only last for a short time and affect limited areas. Flooding from these storms occurs with little warning and localised damage can be severe.

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

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

Tidal Flooding and Storm Surges (Coastal Inundation)

High tides on top of storm surge associated with an extra low-pressure system and on-shore winds, can exacerbate flooding within the coastal areas of the Shire or create areas of flooding in and around the drainage network. Due to the proximity of Bass Strait to the coast and Western Port, rises in coastal ocean levels may reduce the capacity of the waterways and storm-water drains to discharge runoff, while extreme storm events can cause backflow to the point where water surcharges back above ground around the drainage pits and channels. Sea level rise is expected to exacerbate this situation. Areas expected to be vulnerable to sea level rise include:

Suburb/s / Towns		
Bass	Coronet Bay	Pioneer Bay
Cowes	Grantville	Queensferry
Corinella	Jam Jerrup	Silverleaves

Table A0 – Areas expected to be vulnerable to sea level rise and storm surges.

Lang Lang Foreshore Caravan Park may need to be evacuated as access will be cut off in the event of catchment or coastal storm surge events.

Description of major waterways and drains

There are two major waterways within Bass Coast, both of which flow in a generally westwards direction into Western Port Bay and Bass Strait respectively:

- The bass River from downstream of the South Gippsland Highway; and
- The Powlett River from downstream of the Outtrim – Inverloch and Scotts Estate Roads

There are also two good-sized reservoirs in Bass Coast which are discussed later in the plan:

- Candowie Reservoir (Bass River)
- Lance Creek Reservoir (Powlett River)

Descriptions of other major waterways can be seen in Table A1. To view these and other major waterway locations within the municipality, see Map B in **Appendix F**.

Melbourne Water Drains & Waterways	Suburb/s	Melbourne Water Drains & Waterways	Suburb/s
Aldermans Creek	Reefton & East Warburton	Little Stringybark Creek	Mount Evelyn & Wandin North
Bass River	Almurta, Bass, Glen Forbes & Woodleigh	Peacock Road Drain	Jam Jerrup & Lang Lang
Bay Road Drain	Jam Jerrup	Red Bluff Creek	Lang Lang & Loch
Blue Gum Drain	Cowes	Red Rocks Drain	Cowes
Blue Mountain Creek	Woolamai	Saltwater Creek	Cowes & Ventnor
Boat Creek	Ventnor	Settlement Road Drain	Cowes & Rhyll
Colbert Creek	Grantville & The Gurdies	Smith's Beach Drain	Cowes, Smiths Beach & Sunset Strip
Coronet Bay Drain	Coronet Bay	Swan Lake Drain	Summerlands & Ventnor
Gorge Creek	Glen Forbes	Telfer Creek	Kernot
Native Dog Creek	Ventnor	Tennant Creek	Almurta
Norsemans Road Drain	Coronet Bay	Wattle Creek	Krowera

Table A1 – Melbourne Water Drains and Waterways within or bordering Bass Coast Shire

Dam spilling or failure

All dams have a risk of failure. Dams within Bass Coast (Candowie – Westernport Water; Lance Creek – South Gippsland Water) are all subject to rigorous dam safety management programs implemented by the managing entity and are the subject of individual Dam Safety Emergency Management Plans (DSEPs). DSEPs identify possible dam failure scenarios and provide direction on the order and detail of the necessary communications and incident management tasks to be initiated. They also refer to intelligence and maximum inundation extent mapping arising from detailed dam break analyses. Intelligence can include travel times to key locations, maximum depths and velocities and the time to reach those maxima at those key locations, as well as other information that would inform the response effort. Close communication with the dam manager is essential in the event of a dam safety incident.

Flooding resulting from failure of the following dams is likely to cause significant structural and community damage within the Bass Coast. See Dam Failure in Section 3 of this plan for more information. Only dams with a storage capacity >100ML have been included in the list. Note that if the storage capacity is reached and water flows over the spillway, this is not to be referred to as a flow release or a storage breach or failure.

Failure of either of the below dams or one of the many farm dams within Bass Coast may pose a threat to life and property depending on the mode of failure and the dam's proximity to downstream roads and buildings.

Dam Name / ID	Location	Owner	Watercourses Impacted	Dam Capacity	Full Supply Level	VicMap Reference
Candowie Reservoir	1.5km east of Almurta along Tennant Creek, discharging into the Bass River	Westernport Water	Tennent Creek Bass River	4,463ML		6920 F3
Lance Creek Reservoir	3km northwest of Kongwak along Lance Creek discharging into Powlett River	South Gippsland Water	Lance Creek Powlett River	4,200ML		6921 E8

Table A2 – Dams that pose a risk to Bass Coast Shire from Dam Failure

Flood Mitigation Systems

There are three flood mitigation levees managed by Melbourne Water within Bass Coast (see table below). Their locations and the connecting waterway/drainage systems can be seen on map B in Appendix F. Other retarding basins, some of which are designed for 1 in 100 year flows, such as Ayr Creek, Marina Place, Surf Estate, Albert Ruttle Road, Broadbeach Resort and Ullathorne Road in Inverloch, Blue Water Circle in Cape Paterson, Seagrove Estate, Kent Haven Estate, Ramada Resort, Shearwater and Seagrove in Cowes, Justice Road Farm and White Sands Estate in Ventnor, Silver Water Resort and Penniwells in San Remo, Crystal Brook Estate in Kilcunda, Grantville-Glen Alvie Road and Grantville Rise Estate in Grantville, Summer Fields Estate, Fuller Road and College Estate in Wonthaggi, Waterdale Estate in Dalyston and Wonthaggi Wetlands on South Dudley Road. A couple of minor basins have been constructed in Wonthaggi at Sussex Court and Grantville opposite Agnes Street.

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)	VicMap Reference
North Norseman	Norsemens Road Drain	2.24 ha	~10 ML	3.50m AHD	Unavailable	~4.0m AHD	Very Low	0	6875 D15
Smith's Beach	Smith's Beach Drain	0.46 ha	~10 ML	~27.2m AHD	~27.2m AHD	~27.5m AHD	High C	Unavailable	6917 J8
Town Oval	Coronet Bay Drain	1.37 ha	11 ML	N/A	Unavailable	~9.0m AHD	Very Low	0	6919 D1

Table A3 – Melbourne Water Retarding Basins within Bass Coast

Levees

There are a number of rural levees along the Powlett River, mainly to provide protection from smaller nuisance flooding. Overtopping of these levees has little consequence for built assets or infrastructure.

Flood Warning System

Along the Bass River & Western Port Catchments, Melbourne Water has three hydrographic monitoring sites which are outlined in the table below. These gauges can be monitored online through Melbourne Water at: <http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx> or through the Bureau of Meteorology at: http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDV60201.html. To view their locations, see mapping in **Appendix F**.

Gauge	Station No.	Location	Owner	Stream Level & Flow Gauge	Rain Gauge	Tide Gauge	VicMap Reference
Bass River at Glen Forbes South	227231A	South bank of the river, west side of McGrath Road, Bass	GRWMP	✓	✓		6920 A4
Bass River at Loch	227219A	South bank of the river, north side of Loch-Poowong Road, Loch	GRWMP	✓	✓		6877 J7
Lang Lang	228209B	North bank of the river, 400m west of Heads Road, Lang Lang	Melbourne Water	✓	✓		6824 A9
Pound Creek	85099	West bank of the creek, 200m south of Inverloch-Venus Bay Road	BoM		✓		6963 G6
Tooradin	228399A	Evans Inlet, Tooradin	Melbourne Water			✓	6821 J6
Upper Lang Lang	586196	North side of Drouin-Korumburra Road, Poowong East between Stabens Road and Main South Road	Melbourne Water		✓		6878 G7
Wonthaggi	86127	South Gippsland Water Authority Depot, Watt Street, Wonthaggi	BoM		✓		8220 G9

Table A4 – Gauges servicing the Bass Coast Shire

The Bureau does not issue formal flood warnings for the Bass River or Coastal areas of Western Port Bay. However, warnings for the region can be monitored on the Bureau's website (<http://www.bom.gov.au/vic/warnings/index.shtml>). While the Bass Coast Shire monitors these warnings in times of high rainfall, there are no specific guidelines to advise how these situations should be responded to.

Historic Storms and Floods

Significant flood events (where high flood gauge levels and/or likely flooding consequences to property and infrastructure to have occurred within Bass Coast Shire are outlined in the table below. It is rare for a single storm to affect all catchments across the municipality, except during the most extreme weather events. In the table, levels in black text indicate events where stream level rises were sufficient to cause waterway (riverine) flooding or rainfall was heavy enough to result in localised flooding. Levels shown in grey text represent events where stream rises or rainfall amounts were unlikely to cause flooding at or near the gauge location. These have been included to help illustrate how different catchments may response during various weather events and to show their relationship to flood-prone areas.

As an example, during the 15th August 2022 event, the Bass River gauge at Loch recorded 86mm of rain was recorded over 48 hours with a river level peak of 2.41m, while at the same time, the Bass River gauge at Glen Forbes South recorded 43mm over 24 hours with a level peak of 5.56m. Similarly, levels are shown for the gauges at Powlett River downstream of Foster Creek. This format helps compare how rainfall and resulting water levels varied across different parts of the catchment during the same event.

Event	Bass River at Loch (227219A)		Bass River at Glen Forbes South (227231A)		Powlett River d/s Foster Creek
	Rainfall at Gauge	River Level	Rainfall at Gauge	River Level	Creek Level
Normal Water Level		0.3m		0.4m	Unavailable
Minor Flood Class	-	-	-	-	-
Moderate Flood Class	-	-	-	-	-
Major Flood Class	-	-	-	-	-
29th June 1980	-	3.15m	-	5.38m	4.96m
5th July 1980	-	1.55m	-	4.84m	4.33m
13th September 1983	-	2.13m	-	4.48m	4.14m
29th July 1985	-	1.70m	-	4.47m	4.41m
18th September 1984	-	2.34m	-	5.14m	4.67m
23rd October 1986	-	1.56m	-	4.26m	4.13m
11th July 1989	-	1.94m	-	4.33m	4.36m
11th October 1990	-	2.62m	-	5.27m	4.67m
18th September 1991	-	1.99m	-	4.93m	4.26m
16th September 1993	-	1.65m	-	4.73m	4.17m
30th July 1996	-	2.35m	-	5.40m	4.85m
14 th April 2011	-	1.65m	-	5.22m	4.01m
26th May 2012	61mm over 15 hrs	2.57m	41mm over 10 hrs	5.52m	4.38m
5 th June 2012	49mm over 24 hrs	2.05m	46mm over 24 hrs	5.57m	4.29m
22nd June 2012	-	2.72m	-	5.81m	4.88m
19th September 2013	51mm over 18 hrs	2.29m	72mm over 19 hrs	5.58m	3.16m
14th November 2013	71mm over 31 hrs	1.86m	79mm over 31 hrs	5.50m	4.28m
10 th August 2019	100mm over 72 hrs	1.91m	57mm over 72 hrs	5.12m	4.12m
2 nd May 2020	62mm over 24 hrs	2.26m	50mm over 48 hrs	5.36m	3.67m
15 th August 2022	86mm over 48 hrs	2.41m	43mm over 24 hrs	5.56m	4.64m

Table A4 – Selection of Historical Flood Events along the Bass and Powlett Rivers

In addition to the above table, see below some information on historical events that had impacts to land and infrastructure:

- **November 1934:**

One of the most prominent recorded historical floods in the region occurred on 29 November 1934. Across the Port Phillip and South Gippsland regions, 350 mm was recorded over a 48-hour period, resulting in landslides, road closures and evacuations.

- **May 1951**

The flood submerged the Wonthaggi to Dalyston road under 2ft: 6in. (750mm) of muddy Powlett River water near Wonthaggi cutting the town off to the north. The river, usually 20 yards (18 metres) wide, was up to half a mile (800 metres) wide. Roads to Wonthaggi from Bass, Loch, and Korumburra, the Woolamai-Glen Forbes Road, and the Bass-Glen Forbes Road were all closed due to flooding.

- **July 2007**

Rain that fell in late June / early July caused the Powlett River to burst its banks and flood the area in the immediate vicinity of the desalination plant. Levels began to drop after excavators opened the mouth of the river to enable water to drain to sea.

- **May 2012**

Heavy rain on 25 May 2012 (e.g. 50mm to 80mm in 10 hours) on wet catchments resulted in widespread flooding across West Gippsland. Water washed over about 40 of the roads Bass Coast Shire Council is responsible for including the Kongwak to Outtrim Road and shutting Heslop Road in Wonthaggi as well as McCraws Road in Wattlebank. The Bass Highway was closed at Kilcunda. SES crews rescued people in cars trapped by floodwater on the Bass Highway at Kilcunda and at Lance Creek. Water overtopped the Bass Highway at Dalyston as well as at Bourne Creek in Kilcunda.

Health and Environmental Risks

There are many septic tanks in the rural areas that may be inundated by floodwaters. There is also risk posed by farm chemicals stored in farm sheds on the floodplain. Runoff from farmland into waterways and acid sulphate soils in coastal areas also provide a health risk.

Disruption to Services

The region's main road transport link, the Bass Highway, is often wetted during heavy rain events due to flows in drainage lines exceeding culvert capacities and / or low spots not draining very well. The Highway is also affected by flooding in the Powlett River as well as on the numerous small creeks within Bass Coast. It is likely that a big flood on the Bass River would also affect the Bass Highway and the South Gippsland Highway. In times past, the railway line has been flooded but current status is unknown.

APPENDIX B - TYPICAL FLOOD PEAK TRAVEL TIMES

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

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

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

Typical travel times

Height Range at Loch Gauge	Location to (Gauge)	Typical Travel Time	Comments
BASS RIVER			
1.30m to 1.70m	Glen Forbes South	Between 8 to 20 hours	Height Ranges based upon Equal Distribution of Historical Flood Peaks Recorded
1.71m to 2.00m	Glen Forbes South	Between 8 to 17 hours	
2.01m to 3.15m	Glen Forbes South	Between 6 to 13 hours	

Table B1 – Typical Flood Travel Times between gauges on the Bass River

Historical travel times

Flood Event	Height At Loch Gauge	Height At Glen Forbes South Gauge	Flood Peak Travel Time
BASS RIVER			
8th July 1974	1.84m	4.19m	13 hours
23rd September 1976	1.30m	4.18m	8 hours
26th July 1977	1.92m	4.86m	10 hours
29th June 1980	3.15m	5.38m	9 hours
5th July 1980	1.55m	4.84m	20 hours
9th September 1983	2.13m	4.48m	13 hours
13th September 1983	1.46m	4.38m	10 hours
29th July 1984	1.70m	4.47m	20 hours
18th September 1984	2.34m	5.14m	9 hours
17th July 1985	1.64m	4.32m	13 hours
23rd October 1986	1.56m	4.26m	14 hours
11th December 1988	1.80m	4.63m	14 hours
11th July 1989	1.94m	4.33m	15 hours
28th October 1989	1.93m	4.45m	17 hours
12th October 1990	2.62m	5.27m	12 hours
18th September 1991	1.99m	4.93m	11 hours

Flood Event	Height At Loch Gauge	Height At Glen Forbes South Gauge	Flood Peak Travel Time
16th September 1993	1.65m	4.73m	14 hours
30th July 1996	2.35m	5.40m	8 hours
12th September 2004	1.43m	4.50m	20 hours
13th November 2004	1.59m	4.56m	13 hours
14th April 2011	1.87m	5.23m	9 hours
11th November 2011	1.77m	5.05m	14 hours
4th May 2012	1.63m	4.90m	14 hours
26th May 2012	2.57m	5.52m	13 hours
4th June 2012	2.02m	5.58m	6 hours
22nd June 2012	2.72m	5.82m	6 hours
19th September 2013	2.29m	5.58m	7 hours
14th November 2013	1.86m	5.50m	8 hours
10 th August 2019	1.91m	5.12m	16 hours
2 nd May 2020	2.26m	5.36m	13 hours
15 th August 2022	2.41m	5.56m	13 hours

Table B2 – Historical Flood Travel Times between gauges on the Bass River

APPENDIX C1 – PHILLIP ISLAND FLOOD EMERGENCY PLAN

Overview of Flooding Consequences

Phillip Island is located approximately 130km south-east of Melbourne. It is connected to the mainland by the Bass Highway at the coastal town of San Remo.

High intensity, short duration rainfall events can cause flash flooding on Phillip Island along the number of stormwater drains or small creeks. The area sees a mixture of moderate to slow water movement due to the presence of rolling hills and flat terrain on the Island. As a result, flood waters may persist for a number of hours or days in areas where the ground is flat. See mapping in Appendix F for more insight into flooding in the area.

Phillip Island Road, which is the only road to the mainland is susceptible to flooding at Newhaven. The road may still be passable, but there is a risk access to San Remo via the bridge would be cut off to all but Cape Woolamai & Newhaven residents on the island. Churchill Island is also at risk of isolation, with Samuel Amess Drive likely flooded during a 1% AEP storm surge (tidal) event.

Storm Surge (tidal) flooding events are a risk to coastal areas of the Island, with residents in Silverleaves and the eastern fringe of Cowes most likely flooded during an event.

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) flash flood around Phillip Island

Property					
Properties	56				
Residential	56				
Commercial	0				
Industrial	0				
Public Land	0				
Rural	0				
Community Infrastructure					
Essential Infrastructure					
Major Roads	4	Back Beach Road; Cowes-Rhyll Road; Phillip Island Road; & Ventnor Road			
Bus Routes	2	Wonthaggi-Cowes; & Foutain Gate-Cowes			
Drainage Facilities	1	Smiths Beach Retarding Basin			
Tourism / Recreation					
Government Boundaries					
Local Gov't Areas	1	Bass Coast	CMA	1	Melbourne Water
Adjacent LGAs	0		CFA District	1	District 08
SES Resp' Boundary	1	Phillip Island	FRV District	0	

Table C1.1 – Consequence Summary of 1% AEP flood around Phillip Island

Gauges and Warnings

Whilst there is a hydrographic/telemetry station (gauge) in the Western Port Bay Catchment, Melbourne Water does not provide any flood warning service at this point. No Gauges are currently present on Phillip Island.

Gauge	Station No.	Owner	Tide Gauge	Melway Reference
Tooradin Tide Recorder at Evans Inlet	228399A	Melbourne Water	✓	144 A3

Table C1.2 – Gauges servicing Phillip Island's coastline

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 on Phillip Island



Figure C1 – Areas of flood risk around Phillip Island

Properties at Flood Risk

Properties listed in the table below are at risk from flooding around Phillip Island's stormwater drainage network. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Phillip Island (Melbourne Water and Cardno, June 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 Flooding around Phillip Island's Stormwater Drainage Network					
Residential		Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event		Street	Locality	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	1% AEP				
-	117	Back Beach Road	Smiths Beach	Smiths Beach Drain	Flash
-	9	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
-	11	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
-	14	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
-	16	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
-	17	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
-	21	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
-	23	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
26	26	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
-	32	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
-	47	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
51	51	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
-	1/49	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
-	2/49	Barramundi Avenue	Smiths Beach	Smiths Beach Drain	Flash
-	2	Bernard Court	Smiths Beach	Smiths Beach Drain	Flash
-	4	Bernard Court	Smiths Beach	Smiths Beach Drain	Flash
-	6	Bernard Court	Smiths Beach	Smiths Beach Drain	Flash
-	2	Dolphin Drive	Smiths Beach	Smiths Beach Drain	Flash
-	50	Dolphin Drive	Smiths Beach	Smiths Beach Drain	Flash
-	24	Galleon Crescent	Sunset Strip	Smiths Beach Drain	Flash
26	26	Galleon Crescent	Sunset Strip	Smiths Beach Drain	Flash
-	30	Galleon Crescent	Sunset Strip	Smiths Beach Drain	Flash
-	32	Galleon Crescent	Sunset Strip	Smiths Beach Drain	Flash
-	34	Galleon Crescent	Sunset Strip	Smiths Beach Drain	Flash
36	36	Galleon Crescent	Sunset Strip	Smiths Beach Drain	Flash
38	38	Galleon Crescent	Sunset Strip	Smiths Beach Drain	Flash
-	40	Galleon Crescent	Sunset Strip	Smiths Beach Drain	Flash
-	42	Galleon Crescent	Sunset Strip	Smiths Beach Drain	Flash
-	44	Galleon Crescent	Sunset Strip	Smiths Beach Drain	Flash
-	4	Gilmore Street	Smiths Beach	Smiths Beach Drain	Flash
-	8	Hill Court	Cowes	Red Rocks Drain	Flash
-	37	Hobsons Parade	Cowes	Red Rocks Drain	Flash
-	39	Hobsons Parade	Cowes	Red Rocks Drain	Flash
-	40	Hobsons Parade	Cowes	Red Rocks Drain	Flash
-	41	Hobsons Parade	Cowes	Red Rocks Drain	Flash
-	42	Hobsons Parade	Cowes	Red Rocks Drain	Flash
-	43	Hobsons Parade	Cowes	Red Rocks Drain	Flash
-	45	Hobsons Parade	Cowes	Red Rocks Drain	Flash
-	50	Hobsons Parade	Cowes	Red Rocks Drain	Flash

Properties at risk from Flooding around Phillip Island's Stormwater Drainage Network					
Residential		Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event		Street	Locality	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	1% AEP				
-	52	Hobsons Parade	Cowes	Red Rocks Drain	Flash
-	44-48	Hobsons Parade	Cowes	Red Rocks Drain	Flash
-	3	Kauri Close	Cowes	Blue Gum Drain	Flash
-	5	Kauri Close	Cowes	Blue Gum Drain	Flash
-	5	Marlin Street	Smiths Beach	Smiths Beach Drain	Flash
-	7	Marlin Street	Smiths Beach	Smiths Beach Drain	Flash
-	9	Marlin Street	Smiths Beach	Smiths Beach Drain	Flash
-	12	Marlin Street	Smiths Beach	Smiths Beach Drain	Flash
15	15	Marlin Street	Smiths Beach	Smiths Beach Drain	Flash
2	2	Murray Street	Smiths Beach	Smiths Beach Drain	Flash
4	4	Murray Street	Smiths Beach	Smiths Beach Drain	Flash
-	24	Redwood Drive	Cowes	Blue Gum Drain	Flash
1	1	Rogerson Road	Sunset Strip	Smiths Beach Drain	Flash
1A	1A	Rogerson Road	Sunset Strip	Smiths Beach Drain	Flash
2	2	Rogerson Road	Sunset Strip	Smiths Beach Drain	Flash
2A	2A	Rogerson Road	Sunset Strip	Smiths Beach Drain	Flash
Totals					
12	56				

Table C1.3 – Properties at risk of flooding along the stormwater drainage network on Phillip Island

Isolation

The risk to residents of Phillip Island is if Phillip Island Road were to be flooded at Newhaven. This would restrict access to San Remo, via the only bridge to the mainland. A flood risk along Phillip Island Road at the Phillip Island Airport exists, although the road may still remain passable. Some localised short-duration isolation may also occur due to flash flooding.

Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. <http://ptv.vic.gov.au/live-travel-updates/>. Details of public transport services within Bass Coast are located at: https://www.ptv.vic.gov.au/assets/default-site/more/maps/Local-area-maps/Regional/e0b6516263/Bass-Coast-Bus-Network-inset-v2_FA.pdf

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

Road Closures

The following roads are subject to closure during flooding around Phillip Island due to flash flooding from a storm event. Check the VicTraffic website for more details: <https://traffic.transport.vic.gov.au/>

DTP Roads flooded in a 1% AEP (100yr ARI) Flash Flood event
Back Beach Road, Smiths Beach at Beachcomber Avenue
Cowes-Rhyll Road, Cowes at Coghlan Road
Phillip Island Road, Cowes near St Mary's Catholic Church
Phillip Island Road, Newhaven at Phillip Island Airport between Woolamai Beach Road and Veterans Drive
Phillip Island Road, Surf Beach at Glen Street
Ventnor Road, Cowes at McKenzie Road Intersection

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

Bass Coast Shire Roads flooded in a 1% AEP (100yr ARI) Flash Flood event	
COWES	SMITHS BEACH
Church Street	Bernard Court
Harvey Drive	Murray Street
Hill Court	SUNSET STRIP
Hobsons Parade	Rogerson Road
Kauri Close	VENTNOR
Lions Court	Watts Road
Shorland Way	
Walton Street	

Table C1.5 – Bass Coast Council Possible Road Closures during a flooding event

Flood Mitigation

Retarding Basins

Melbourne Water Retarding Basin	On Drain/ Waterway	Area	Storage Capacity	Spillway Crest Level	Full Supply Level	Embankment Crest Level	ANCOLD Hazard Rating	Houses In Flow Path (dam breach)	VicMap Reference
Smith's Beach	Smith's Beach Drain	0.46 ha	~10 ML	~27.2m AHD	~27.2m AHD	~27.5m AHD	High C	Unavailable	6917 J8

Table C1.6 – Melbourne Water Retarding Basins on Phillip Island

Flood Impacts and Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding around Phillip Island at various bay heights or rain totals. 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 location:

- Phillip Island Stormwater Drains

FLOOD INTELLIGENCE CARD – PHILLIP ISLAND STORMWATER DRAINS (UNGAUGED)

Version 4 – June 2021



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

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

CLOSEST RAIN GAUGE:	Bass River at McGraths Road, Glen Forbes South
LOCATION:	McGraths Road, Glen Forbes
RECENT RAINFALL:	

VICMAP REF:	6920 A4
GAUGE NUMBER	227231A
GAUGE TYPE	Stream Level & Rain

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
10mm in 10 mins; 17mm in 30 mins; 22mm in 1 hour; 29mm in 2 hours; 42mm in 6 hours; or 54mm in 12 hours Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.	20% AEP (5 year ARI)	Properties at Flood Risk 12 Properties in Total - Smith's Beach Drain 26 & 51 Barramundi Avenue, Smiths Beach 2, 4 & 6 Bernard Court, Smiths Beach 2 & 50 Dolphin Drive, Smiths Beach 26, 36 & 38 Galleon Crescent, Sunset Strip 15 Marlin Street, Smiths Beach 2 & 4 Murray Street, Smiths Beach 1, 1A, 2 & 2A Rogerson Road, Sunset Strip Water Over Road (Over 300mm Depth) - Blue Gum Drain - Kauri Close, Cowes - Red Rocks Drain - Hobsons Parade, Cowes - Smith's Beach Drain - Rogerson Road, Sunset Strip - Murray Street, Smiths Beach	
20mm in 10 mins; 32mm in 30 mins; 40mm in 1 hour; 52mm in 2 hours; 75mm in 6 hours; or 95mm in 12 hours	1% AEP (100-year ARI)	Properties at Flood Risk (Over 300mm Depth) 56 Properties in Total - Blue Gum Drain 3 & 5 Kauri Close, Cowes 24 Redwood Drive, Cowes - Red Rocks Drain 8 Hill Court, Cowes	

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.		37, 39, 40, 41, 42, 43, 44-48, 45, 50 & 52 Hobsons Parade, Cowes 550 Settlement Road, Cowes - Smith's Beach Drain 117 Back Beach Road, Smiths Beach 9, 11, 14, 16, 17-19, 21, 23, 26, 32, 47, 1/49, 2/49 & 51 Barramundi Avenue, Smiths Beach 2, 4 & 6 Bernard Court, Smiths Beach 2 & 50 Dolphin Drive, Smiths Beach 24, 26, 30, 32, 34, 36, 38, 40, 42 & 44 Galleon Crescent, Sunset Strip 4 Gilmore Street, Smiths Beach 5, 7, 9, 12 & 15 Marlin Street, Smiths Beach 2 & 4 Murray Street, Smiths Beach 1, 1A, 2 & 2A Rogerson Road, Sunset Strip Water Over Road (Over 300mm Depth) - Blue Gum Drain - Shorland Way, Cowes - Harvey Drive, Cowes - Kauri Close, Cowes - Walton Street, Cowes at Smith Street - Red Rocks Drain - Hobsons Parade, Cowes - Hill Court, Cowes - Smith's Beach Drain - Rogerson Road, Sunset Strip - Murray Street, Smiths Beach - Bernard Court, Smiths Beach - Creek 3261 - Phillip Island Road, Newhaven at Phillip Island Airport between Woolamai Beach Road and Veterans Drive - Creek 3267 - Coghlan & Cowes-Rhyll Road Intersection, Cowes - Creek 3288 - Back Beach Road, Smiths Beach at Beachcomber Avenue - Native Dog Creek & Swan Lake Drain - Watts Road, Ventnor at Kitty Miller Bay Road and Berrys Beach Road Local Drainage - Phillip Island Road, Surf Beach at Glen Street - Phillip Island Road, Cowes near St Mary's Catholic Church - Ventnor Road, Cowes at McKenzie Road Intersection - Church Street, Cowes at Cowes Caravan Park - Lions Court, Cowes	

Table C1.7 – Breakdown of possible consequences at various rainfall intensities around Phillip Island with operational considerations

APPENDIX C2 – BASS RIVER FLOOD EMERGENCY PLAN

Overview of Flooding Consequences

Bass River runs southwest through the towns of Loch, Woodleigh, Kernot, Glen Forbes & Bass. The greatest flood risk exists in the Bass Landing Road area of Bass where the flat terrain and location near the mouth of the Bass River give rise to wide-scale and possibly protracted flooding with tides from Western Port Bay also having an influence.

Other areas of concern are St Helier–Woodleigh Road in Woodleigh and McGraths Road in Glen Forbes South which may be cut by floodwaters, restricting access across the river at these locations.

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Summary of Consequences in a 1% AEP (100yr ARI) flood along the Bass River

Property					
Properties	9				
Residential	0				
Commercial	0				
Industrial	0				
Public Land	0				
Rural	9				
Community Infrastructure					
Essential Infrastructure					
Sewerage Facilities	1	Septic Tanks			
Tourism / Recreation					
Government Boundaries					
Local Gov't Areas	1	Bass Coast	CMA	1	Port Phillip & Westernport
Adjacent LGAs	1	South Gippsland	CFA District	1	District 08
SES Resp' Boundary	1	San Remo	FRV District	0	

Table C2.1 – Consequence Summary of 1% AEP flood along the Bass River

Gauges and Warnings

In general, riverine floods rise and fall quickly within the Bass River catchment. In very general terms, the approximate time between start of heavy rain and maximum flood levels / extents in the lower parts of the Bass River will be of order 6 to 12 hours for big floods and 12 to 18 hours or so for smaller floods. The smaller creeks (the tributaries) will respond a little faster. Levels fall around a half to a third the rate of rise – it takes roughly 2 to 3 times as long to fall as it does to rise. These general guidance timings will be influenced strongly (extended) by storm surge, if present.

Neither the Bureau of Meteorology nor Melbourne Water currently provides flood forecasts for the Bass River. All flood response actions must therefore be driven by rainfall and / or river level observations. Telemetered water level / flood gauges are located at Loch and Glen Forbes within the Bass River catchment. See Appendix B for typical flood travel times for the Bass River.

Gauge	Station No.	Location	Owner	Stream Level & Flow Gauge	Rain Gauge	Tide Gauge	VicMap Reference
Bass River at Glen Forbes South	227231A	South bank of the river, west side of McGrath Road, Bass	GRWMP	✓	✓		6920 A4
Bass River at Loch	227219A	South bank of the river, north side of Loch-Poowong Road, Loch	GRWMP	✓	✓		6877 J7
Upper Lang Lang	586196	North side of Drouin-Korumburra Road, Poowong East between Stabens Road and Main South Road	Melbourne Water		✓		6878 G7

Table C2.2 – Gauges within the Bass River 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/rainfallandriverveldata/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 Bass River catchment in Bass Coast Shire

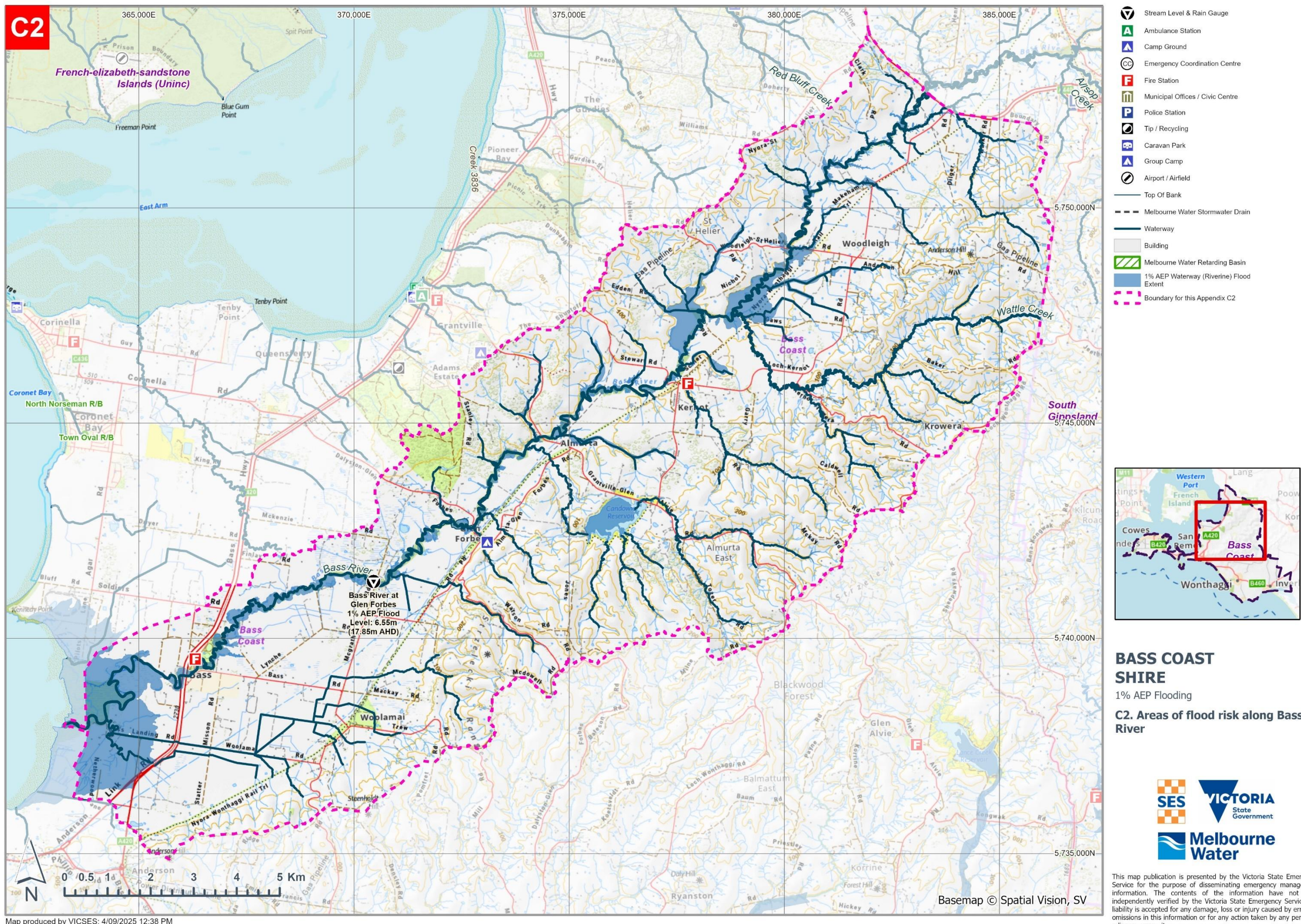


Figure C2 – Areas of flood risk along the Bass River in the Bass Coast Shire

Properties at Flood Risk

Properties listed in the table below are at risk from flooding along the Bass River in Bass Coast. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Bass River (Melbourne Water, June 2009) 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 riverine flood event along the Bass River				
Residential	Commercial	Industrial	Rural	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
100	Bass Landing Road	Bass	Bass River	Riverine
125	Bass Landing Road	Bass	Bass River	Riverine
165	Bass Landing Road	Bass	Bass River	Riverine
190	Bass Landing Road	Bass	Bass River	Riverine
230	Gaws Road	Woodleigh	Bass River	Riverine
109	Netherwood Lane	Bass	Bass River	Riverine
51	Pilots Lane	Bass	Bass River	Riverine
120	Pilots Lane	Bass	Bass River	Riverine
125	Woodleigh St Helier Road	Woodleigh	Bass River	Riverine
Totals				
9				

Table C2.3 – Properties at risk of flooding along the Bass River in Bass Coast Shire

Isolation

No major isolation risks exist for areas along the Bass River during a 1% AEP (100yr ARI) event. Rural properties in the Bass Landing Road area may experience prolonged flooding or isolation due to the flat terrain and tidal influences.

Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. <http://ptv.vic.gov.au/live-travel-updates/>. Details of public transport services within Bass Coast are located at: https://www.ptv.vic.gov.au/assets/default-site/more/maps/Local-area-maps/Regional/e0b6516263/Bass-Coast-Bus-Network-inset-v2_FA.pdf

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

Road Closures

The following roads are subject to closure during flooding along the Bass River area in Bass Coast. Check the V website for more details: <https://traffic.transport.vic.gov.au/>

DTP Roads flooded in a 1% AEP (100yr ARI) event	
Nil Expected	

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

Bass Coast Shire Roads flooded in a 1% AEP (100yr ARI) event	
BASS	GLEN FORBES
Bass Landing Road	McGraths Road
Mapleson Road	WOODLEIGH
Pilots Lane	Woodleigh – St Helier Road

Table C2.5 – Bass Coast Shire Council Possible Road Closures during a flooding event

Flood Mitigation

No formal Retarding Basins, Pumping Stations or Levees exist along the Bass River in Bass Coast Shire.

Sewerage Infrastructure

There are many septic tanks in the rural areas that may be inundated by floodwaters.

Flood Impacts and Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along the Bass River at various river heights or rain totals within Bass Coast Shire. 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:

- Bass River at Loch
- Bass River at Glen Forbes South

FLOOD INTELLIGENCE CARD – LOCH GAUGE, BASS RIVER

Version 4 – June 2021



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

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



LOCATION:	South bank of the river, north side of Loch-Poowong Road, Loch
CURRENT LEVEL:	https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/227219A
STREAM:	Bass River
GAUGE NUMBER:	227219A (GRWMP Site)
GAUGE ZERO:	Unavailable
GAUGE TYPE:	Stream Level & Rain

VICMAP REFERENCE:	Central 6877 J7
MINOR:	Not Established
MODERATE:	Not Established
MAJOR	Not Established
LEVEE HEIGHT:	N/A
HIGHEST RECORDED FLOOD:	3.20m (21st March 1970)

River Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
4.0m		Bank Full Level at gauge location	
6.0m		Water Over Road McGraths Road, Glen Forbes	

Table C2.6 – Breakdown of likely consequences at various Loch gauge level heights along the Bass River in Bass Coast with operational considerations

FLOOD INTELLIGENCE CARD – GLEN FORBES SOUTH GAUGE, BASS RIVER

Version 4 – June 2021



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

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LOCATION:	Bass River at McGraths Road, Glen Forbes South
CURRENT LEVEL:	https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/227231A
STREAM:	Bass River
GAUGE NUMBER:	227231A
GAUGE ZERO:	11.30m AHD
GAUGE TYPE:	Stream Level & Rain

VICMAP REFERENCE:	Central 6920 A4
MINOR:	Not Established
MODERATE:	Not Established
MAJOR:	Not Established
LEVEE HEIGHT:	N/A
HIGHEST RECORDED FLOOD:	5.82m (22nd June 2012)

River Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
4.0m		Approximate Bank Full Level at gauge location	
6.0m		Water Over Road McGraths Road, Glen Forbes	
6.55m	1% AEP (100yr ARI) Flood Level	Properties at Flood Risk 9 Properties in Total 125 Woodleigh – St Helier Road, Woodleigh 230 Gaws Road, Woodleigh 100, 125, 165 & 190 Bass Landing Road, Bass 79 Netherwood Lane, Bass 51 & 120 Pilots Lane, Bass Water Over Road - Woodleigh – St Helier Road Road, Woodleigh at river crossing and to the east - Mapleson Road, Bass - Bass Landing Road, Bass - Pilots Lane, Bass	

Table C2.7 – Breakdown of likely consequences at various Glen Forbes South gauge level heights along Bass River in Bass Coast with operational considerations

APPENDIX C3 - SOUTH GIPPSLAND BASIN & POWLETT RIVER (INDICATIVE FLOOD / NO FLOOD GUIDANCE TOOL)

Introduction

The BoM does not currently provide flood forecasts for the South Gippsland Basin and the Powlett River. All flood response actions must therefore be driven by rainfall and / or river level observations.

Water level / flood gauges within the South Gippsland Basin are listed in **Appendix A**.

Rainfall data is available from a number of gauges within the South Gippsland Basin. Automatic weather stations (AWS') are operated by the Bureau at Wilsons Promontory and Pound Creek. Data from these two stations are available from the BoM website at half hourly intervals.

Indicative Flood Behaviours

In general, riverine floods rise and fall quickly in the South Gippsland Basin. In very general terms, in the lower floodplain areas of the Powlett River, levels begin to rise around 18 to 24 hours after the start of heavy rainfall and peak within 30 to 36 hours for big floods and 2 or so days for smaller floods. Levels fall around a third the rate of rise – it takes roughly 3 times as long to fall as it does to rise. These general guidance timings will be influenced strongly (extended) by storm surge, if present.

Using the tool during an event

If rainfall is from any event other than an East Coast Low, it is suggested that rainfall data from the Pound Creek site (or alternative locations closer to areas considered likely to experience the heaviest rainfall) should be used to determine an appropriate rainfall depth for use in the Indicative Flood / No Flood guidance tool provided below. If rainfall is from an East Coast Low, it is suggested that an average of the Wilsons Promontory and Pound Creek rainfalls should be used for all periods for which the Wilsons Promontory rainfall is higher. Again, alternative locations closer to areas considered likely to experience the heaviest rainfall could be used if available. Care should be exercised however, as it must be remembered that runoff from headwater as well as low land areas contribute to flooding.

Two approaches can be used during a rainfall event to determine an indication of the likelihood and severity of flooding in the Powlett River catchment. Both approaches can be used simultaneously using the same copy of the tool. **Unless there are unusual circumstances, actions as per the appropriate Flood Intelligence Card should be initiated as soon as the tool suggests flooding is likely.** Response can be escalated if the tool indicates an increase in the expected severity of flooding.

Approach 1: Using the total rainfall depth obtained from the start of the event (discount early drizzle or very light rain), plot the rainfall depth against elapsed time on a copy of the tool. Assess the likelihood and expected severity of flooding from the curves with due regard for included notes.

Approach 2: Discount the early lighter rain from consideration (i.e. begin calculating rainfall depth from start of heavy rain) and plot depth against time on a copy of the tool. Assess the likelihood and expected severity of flooding from the curves with due regard for included notes.

CAUTION. The tool is based on a number of gross assumptions and generalisations. It is indicative only and while it will not always indicate flooding / no flooding correctly, it will usually give a heads up to severe flooding. The tool is not location specific and does not enable accurate predictions of expected flooding, peak flood heights, the time of flood peak, the severity of expected flooding or the likely consequences.

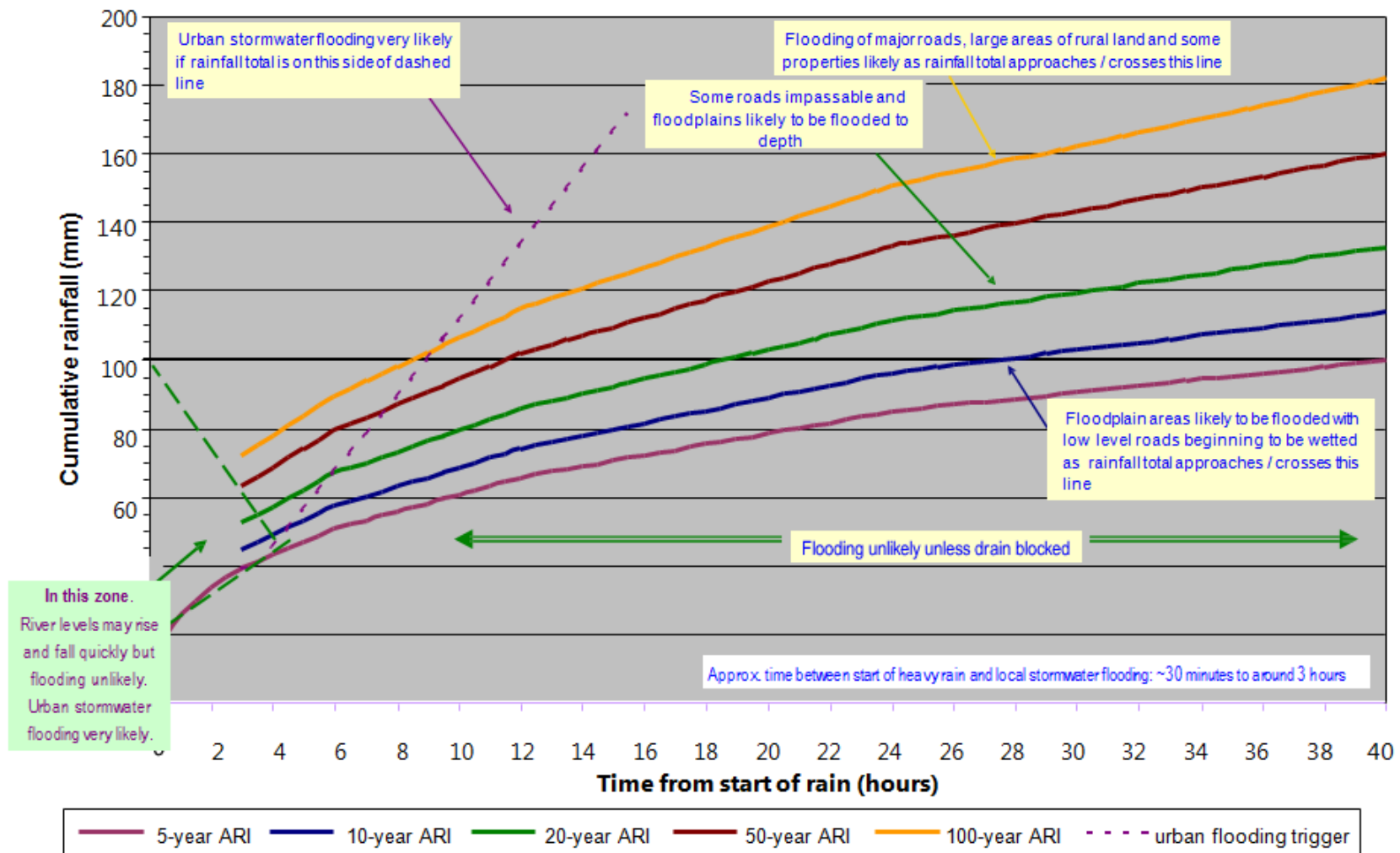
After a Flood Event

After a flood event, plot the event rainfall depth (with date) on the tool and include an overview of the event, including antecedent conditions, in **Appendix A** of this MSFEP. Relevant information should also be added to **Appendix C3**.

Indicative guidance for likelihood of flooding in South Gippsland based on rainfall

This guide assumes that rainfall affects the whole catchment and is not localised heavy falls.

For very wet rural catchments, move up one level. For example, if rainfall is on the 10-year curve and the catchment is very wet, refer to the 20-year consequences.



APPENDIX C4 – WESTERNPORT BAY COASTAL INUNDATION FLOOD EMERGENCY PLAN

Overview of Flooding Consequences

Storm Surge (tidal) flooding events are a risk to coastal areas of the mainland and Phillip Island, with residents in Jam Jerrup, Pioneer Bay, Grantville, Queensferry, Silverleaves and the eastern fringe of Cowes most likely flooded during an event. The Lang Lang Foreshore Caravan Park is at risk of flooding. The Caravan Park most recently flooded on the 8th July 2023 when the Tooradin Tide Level gauge recorded a tide level peak of 2.13m this is below the 10% AEP flood level of 2.64m.

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) Westernport Bay coastal Inundation (storm surge) tidal flood

Property					
Properties	256				
Residential	203				
Commercial	0				
Industrial	0				
Public Land	10				
Rural	43				
Community Infrastructure					
Caravan Park	1	Lang Lang Foreshore Caravan Park			
Maritime	4	Newhaven Jetty; Newhaven Marina; Rhyll Jetty; Anderson Road Boat Ramp			
Essential Infrastructure					
Public Transport	1	Cowes Jetty Ferry Services			
Sewerage Facilities		There are many septic tanks in the rural areas that may be inundated by floodwaters			
Tourism / Recreation					
Sports Facilities	1	Cowes Golf Club			
Recreation Facilities	1	Penguin Parade			
Government Boundaries					
Local Gov't Areas	1	Bass Coast	CMA	1	Melbourne Water
Adjacent LGAs	0		CFA District	1	District 08
SES Resp' Boundary	1	Phillip Island	FRV District	0	

Table C4.1 – Consequence Summary of 1% AEP coastal inundation (storm surge) flood around Bass Coast

Gauges and Warnings

Whilst there is a hydrographic/telemetry station (gauge) in the Western Port Bay Catchment, Melbourne Water does not provide any flood warning service at this point.

Gauge	Station No.	Owner	Tide Gauge	Melway Reference
Tooradin Tide Recorder at Evans Inlet	228399A	Melbourne Water	✓	144 A3

Table C4.2 – Gauges servicing Westernport Bay

This gauge 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 around Westernport Bay

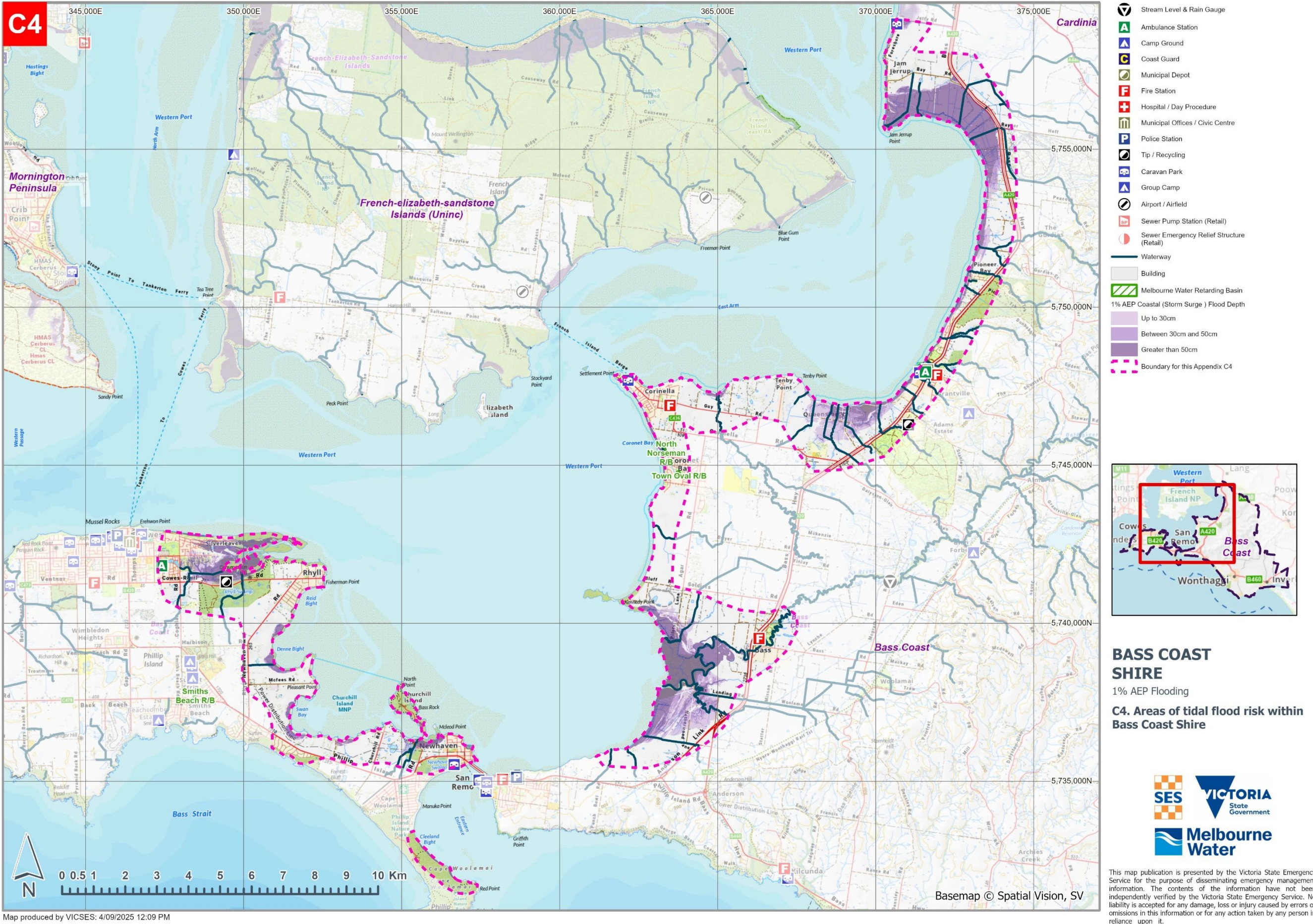


Figure C4 – Areas of flood risk around Westernport Bay

Properties at Flood Risk

Properties listed in the table below are at risk from flooding around the Western Port Bay coastline. As more intelligence becomes available, this list may change.

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 Coastal Inundation (Storm Surge) on Phillip Island					
Residential		Commercial	Industrial	Rural	Public Use
Property at flood risk in AEP Event		Street	Locality	Flood Risk Type	
10% AEP	1% AEP				
✓	✓	40 ALBERT ROAD	CORINELLA	COASTAL INUNDATION	
✓	✓	460 BASS HIGHWAY	JAM JERRUP	COASTAL INUNDATION	
	✓	530 BASS HIGHWAY	JAM JERRUP	COASTAL INUNDATION	
✓	✓	600 BASS HIGHWAY	JAM JERRUP	COASTAL INUNDATION	
✓	✓	640 BASS HIGHWAY	JAM JERRUP	COASTAL INUNDATION	
✓	✓	660 BASS HIGHWAY	JAM JERRUP	COASTAL INUNDATION	
	✓	700 BASS HIGHWAY	JAM JERRUP	COASTAL INUNDATION	
✓	✓	BASS HIGHWAY	GRANTVILLE	COASTAL INUNDATION	
	✓	125 BASS LANDING ROAD	BASS	COASTAL INUNDATION	
✓	✓	130 BASS LANDING ROAD	BASS	COASTAL INUNDATION	
✓	✓	151 BASS LANDING ROAD	BASS	COASTAL INUNDATION	
	✓	165 BASS LANDING ROAD	BASS	COASTAL INUNDATION	
	✓	190 BASS LANDING ROAD	BASS	COASTAL INUNDATION	
✓	✓	5 BAY ROAD	JAM JERRUP	COASTAL INUNDATION	
	✓	8 BAY ROAD	JAM JERRUP	COASTAL INUNDATION	
✓	✓	9 BAY ROAD	JAM JERRUP	COASTAL INUNDATION	
✓	✓	215 BAY ROAD	JAM JERRUP	COASTAL INUNDATION	
✓	✓	1 BEACH BOULEVARD	PIONEER BAY	COASTAL INUNDATION	
✓	✓	3-7 BEACH BOULEVARD	PIONEER BAY	COASTAL INUNDATION	
✓	✓	9 BEACH BOULEVARD	PIONEER BAY	COASTAL INUNDATION	
✓	✓	11 BEACH BOULEVARD	PIONEER BAY	COASTAL INUNDATION	
✓	✓	13 BEACH BOULEVARD	PIONEER BAY	COASTAL INUNDATION	
✓	✓	15 BEACH BOULEVARD	PIONEER BAY	COASTAL INUNDATION	
✓	✓	17 BEACH BOULEVARD	PIONEER BAY	COASTAL INUNDATION	
✓	✓	19 BEACH BOULEVARD	PIONEER BAY	COASTAL INUNDATION	
✓	✓	BEACH CRESCENT	NEWHAVEN	COASTAL INUNDATION	
	✓	100 BLACKNEY ROAD	THE GURDIES	COASTAL INUNDATION	
✓	✓	15 BLACKWOOD CLOSE	QUEENSFERRY	COASTAL INUNDATION	
✓	✓	21 BLACKWOOD CLOSE	QUEENSFERRY	COASTAL INUNDATION	
	✓	22 BLACKWOOD CLOSE	GRANTVILLE	COASTAL INUNDATION	
	✓	23 BLACKWOOD CLOSE	GRANTVILLE	COASTAL INUNDATION	
✓	✓	1-3 BROOME COURT	GRANTVILLE	COASTAL INUNDATION	
✓	✓	1 BRUCE ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	3 BRUCE ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	5 BRUCE ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	2 CHALE COURT	SILVERLEAVES	COASTAL INUNDATION	
	✓	4 CHALE COURT	SILVERLEAVES	COASTAL INUNDATION	
	✓	6 CHALE COURT	SILVERLEAVES	COASTAL INUNDATION	
	✓	13 CHALE COURT	SILVERLEAVES	COASTAL INUNDATION	
	✓	22 CHALE COURT	SILVERLEAVES	COASTAL INUNDATION	

Properties at risk from Coastal Inundation (Storm Surge) on Phillip Island

Residential		Commercial	Industrial	Rural	Public Use
Property at flood risk in AEP Event		Street		Locality	Flood Risk Type
10% AEP	1% AEP				
✓	✓	24 CHALE COURT		SILVERLEAVES	COASTAL INUNDATION
✓	✓	217 COWES-RHYLL ROAD		RHYLL	COASTAL INUNDATION
✓	✓	COWES-RHYLL ROAD		RHYLL	COASTAL INUNDATION
✓	✓	44-48 HASTINGS STREET		RHYLL	COASTAL INUNDATION
	✓	HONEYEATER DRIVE		SILVERLEAVES	COASTAL INUNDATION
	✓	1 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	2A HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	3 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	4 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	1/5 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	2/5 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	6 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	7 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	8 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	1-2/10 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	11 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	12 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	13 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	14 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	15 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	16-18 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	17 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	19 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	21 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	22-34 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	23 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	25 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	27 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	29 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	31 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	33 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	35 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	36-46 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	37 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	39 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	41-43 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	45 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	47 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	48 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	49 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	50 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	51 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	52 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	53 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	54 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	55 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	56 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
✓	✓	57 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	58 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION
	✓	59 HONEYSUCKLE GROVE		SILVERLEAVES	COASTAL INUNDATION

Properties at risk from Coastal Inundation (Storm Surge) on Phillip Island

Residential		Commercial	Industrial	Rural	Public Use
Property at flood risk in AEP Event		Street	Locality	Flood Risk Type	
10% AEP	1% AEP				
	✓	60 HONEYSUCKLE GROVE	SILVERLEAVES	COASTAL INUNDATION	
	✓	1/61 HONEYSUCKLE GROVE	SILVERLEAVES	COASTAL INUNDATION	
	✓	2/61 HONEYSUCKLE GROVE	SILVERLEAVES	COASTAL INUNDATION	
	✓	3/61 HONEYSUCKLE GROVE	SILVERLEAVES	COASTAL INUNDATION	
	✓	61A HONEYSUCKLE GROVE	SILVERLEAVES	COASTAL INUNDATION	
	✓	63 HONEYSUCKLE GROVE	SILVERLEAVES	COASTAL INUNDATION	
	✓	65 HONEYSUCKLE GROVE	SILVERLEAVES	COASTAL INUNDATION	
	✓	66 HONEYSUCKLE GROVE	SILVERLEAVES	COASTAL INUNDATION	
	✓	68 HONEYSUCKLE GROVE	SILVERLEAVES	COASTAL INUNDATION	
	✓	HONEYSUCKLE GROVE	SILVERLEAVES	COASTAL INUNDATION	
✓	✓	174 JETTY ROAD	JAM JERRUP	COASTAL INUNDATION	
	✓	59 KALLAY DRIVE	PIONEER BAY	COASTAL INUNDATION	
✓	✓	65-67 KALLAY DRIVE	PIONEER BAY	COASTAL INUNDATION	
✓	✓	66 KALLAY DRIVE	PIONEER BAY	COASTAL INUNDATION	
✓	✓	68 KALLAY DRIVE	PIONEER BAY	COASTAL INUNDATION	
✓	✓	69-71 KALLAY DRIVE	PIONEER BAY	COASTAL INUNDATION	
✓	✓	70 KALLAY DRIVE	PIONEER BAY	COASTAL INUNDATION	
✓	✓	72 KALLAY DRIVE	PIONEER BAY	COASTAL INUNDATION	
	✓	24 MALCOLM DRIVE	GRANTVILLE	COASTAL INUNDATION	
	✓	153 NETHERWOOD LANE	BASS	COASTAL INUNDATION	
	✓	NETHERWOOD LANE	BASS	COASTAL INUNDATION	
✓	✓	120 PILOTS LANE	BASS	COASTAL INUNDATION	
	✓	PILOTS LANE	BASS	COASTAL INUNDATION	
✓	✓	146 QUEENSFERRY JETTY ROAD	QUEENSFERRY	COASTAL INUNDATION	
	✓	14 SANDERS ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	16 SANDERS ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	17 SANDERS ROAD	SILVERLEAVES	COASTAL INUNDATION	
✓	✓	24 SEAVIEW STREET	NEWHAVEN	COASTAL INUNDATION	
✓	✓	1-5 SETTLEMENT ROAD	RHYLL	COASTAL INUNDATION	
✓	✓	2 SETTLEMENT ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	8 SETTLEMENT ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	9-11 SETTLEMENT ROAD	RHYLL	COASTAL INUNDATION	
	✓	12B SETTLEMENT ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	13 SETTLEMENT ROAD	RHYLL	COASTAL INUNDATION	
	✓	17 SETTLEMENT ROAD	RHYLL	COASTAL INUNDATION	
	✓	19-23 SETTLEMENT ROAD	RHYLL	COASTAL INUNDATION	
	✓	20 SETTLEMENT ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	22B SETTLEMENT ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	22A SETTLEMENT ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	26 SETTLEMENT ROAD	SILVERLEAVES	COASTAL INUNDATION	
	✓	28 SETTLEMENT ROAD	SILVERLEAVES	COASTAL INUNDATION	
✓	✓	31 SETTLEMENT ROAD	RHYLL	COASTAL INUNDATION	
	✓	SETTLEMENT ROAD	RHYLL	COASTAL INUNDATION	
	✓	SETTLEMENT ROAD	RHYLL	COASTAL INUNDATION	
	✓	5 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION	
	✓	7 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION	
	✓	9 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION	
	✓	11 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION	
✓	✓	13 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION	
✓	✓	15 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION	

Properties at risk from Coastal Inundation (Storm Surge) on Phillip Island

Residential

Commercial

Industrial

Rural

Public Use

Property at flood risk
in AEP Event

Street

Locality

Flood Risk Type

10% AEP

1% AEP

✓	✓	17 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	19 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	21 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	22 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	25 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	27 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	28 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	29 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	30 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	31 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	32 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	33 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	34 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	35 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	36 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	38-40 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	42 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	43 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	44 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	45 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	46 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	48 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	49 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	50 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	52 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	55 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	57 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	59 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	60 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	61 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	62 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	63 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	64 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	65 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	66 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	67 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	68 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	69 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	70 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	71 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	73 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	74-86 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	75 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	77 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	79 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	81 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	83 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	85 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	90 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	92 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION

Properties at risk from Coastal Inundation (Storm Surge) on Phillip Island

Residential

Commercial

Industrial

Rural

Public Use

Property at flood risk
in AEP Event

Street

Locality

Flood Risk Type

10% AEP

1% AEP

✓	✓	94 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	96 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	98 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	100 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	102 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	104 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	106 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	108 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	110 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	112 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	113 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	114 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	115 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	116 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	117 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	118 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	119 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	120 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	121 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	122 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	123 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	124 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	125 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	126 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	127 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	128 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	129 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	130 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	131 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	132-134 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	135 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	136 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	137 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	138 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	140 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	142 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	143-145 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	144 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	146 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	147 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	148 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	149 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	150 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	151 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	1/152 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	153 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
	✓	155 SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	SILVERLEAVES AVENUE	SILVERLEAVES	COASTAL INUNDATION
✓	✓	71 SONIA CRESCENT	PIONEER BAY	COASTAL INUNDATION
	✓	76 STEWART STREET	GRANTVILLE	COASTAL INUNDATION

Properties at risk from Coastal Inundation (Storm Surge) on Phillip Island					
Residential		Commercial	Industrial	Rural	Public Use
Property at flood risk in AEP Event		Street	Locality	Flood Risk Type	
10% AEP	1% AEP				
✓	✓	78 STEWART STREET	GRANTVILLE	COASTAL INUNDATION	
	✓	80 STEWART STREET	GRANTVILLE	COASTAL INUNDATION	
	✓	4 TEDWOOD COURT	SILVERLEAVES	COASTAL INUNDATION	
	✓	5 TEDWOOD COURT	SILVERLEAVES	COASTAL INUNDATION	
✓	✓	THE ESPLANADE	COWES	COASTAL INUNDATION	
	✓	27-29 TUNBRIDGE STREET	RHYLL	COASTAL INUNDATION	
	✓	28 TUNBRIDGE STREET	RHYLL	COASTAL INUNDATION	
✓	✓	30 TUNBRIDGE STREET	RHYLL	COASTAL INUNDATION	
✓	✓	2 WHITING STREET	PIONEER BAY	COASTAL INUNDATION	
✓	✓	4 WHITING STREET	PIONEER BAY	COASTAL INUNDATION	
✓	✓	6 WHITING STREET	PIONEER BAY	COASTAL INUNDATION	
✓	✓	8 WHITING STREET	PIONEER BAY	COASTAL INUNDATION	
✓	✓	10 WHITING STREET	PIONEER BAY	COASTAL INUNDATION	
✓	✓	12 WHITING STREET	PIONEER BAY	COASTAL INUNDATION	
✓	✓	14 WHITING STREET	PIONEER BAY	COASTAL INUNDATION	
✓	✓	16 WHITING STREET	PIONEER BAY	COASTAL INUNDATION	
Totals					
149	256				

Table C4.3 – Properties at risk of storm surge flooding along the Western Port Bay coastline during a 1% AEP event

Isolation

- Churchill Island likely to be inaccessible via Samuel Amess Drive during a 1% AEP Storm Surge / Tidal event and will remain isolated until the road is passable.

Essential Infrastructure

- Cowes Jetty off The Esplanade, Cowes likely flooded during a 1% AEP Storm Surge Event with Ferry Services to Stony Point and French Island (Tankerton) very likely impacted.

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/>. Details of public transport services within Bass Coast are located at: https://www.ptv.vic.gov.au/assets/default-site/more/maps/Local-area-maps/Regional/e0b6516263/Bass-Coast-Bus-Network-inset-v2_FA.pdf

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

Road Closures

The following roads are subject to closure during coastal flooding around Westernport Bay and Phillip Island due to either flash flooding from a storm event or Storm Surge / Tidal flooding. Check the VicTraffic website for more details: <https://traffic.transport.vic.gov.au/>

DTP Roads flooded in a 1% AEP (100yr ARI) Storm Surge event	
Nil expected	

Table C4.4 – DTP Possible Road Closures during a storm surge flooding event in Bass Coast

Bass Coast Shire Roads flooded in a 1% AEP (100yr ARI) Storm Surge event		
BASS	QUEENSFERRY	• Honeysuckle Grove
• Bass Landing Road	• Blackwood Close	• Margo Street
• Netherwood Lane	• Queensferry Jetty Road	• Martin Street
• Pilots Lane	RHYLL	• Moore Street
CORINELLA	• Beach Road	• Robin Road
• Albert Road	SILVERLEAVES	• Sanders Road
PIONEER BAY	• Bayview Road	• Settlement Road
• Beach Boulevard	• Chale Court	• Silvergull Court
• Kallay Drive	• Christopher Street	• Silverleaves Avenue
• Whiting Street	• Dolphin Road	• Tedwood Court
	• Honeyeater Drive	

Table C4.5 – Bass Coast Council Possible Road Closures during a coastal inundation (storm surge) flooding event

Sewerage Infrastructure

There are many septic tanks in the rural areas that may be inundated by floodwaters.

Flood Impacts and Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding around Phillip Island at various bay heights or rain totals. 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:

- Western Port Bay

FLOOD INTELLIGENCE CARD – TOORADIN GAUGE, WESTERN PORT BAY

Version 5 – September 2025



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:	Footbridge adjacent to South Gippsland Highway over Evans Inlet, Tooradin
CURRENT LEVEL:	https://www.melbournewater.com.au/water-and-environment/water-management/rainfall-and-river-levels#/reader/228399A
STREAM:	Western Port Bay
GAUGE NUMBER:	228399A
GAUGE ZERO:	0.00m AHD
GAUGE TYPE:	Tide Level

VICMAP REFERENCE:	6821 J6
MINOR:	N/A
MODERATE:	N/A
MAJOR:	N/A
LEVEE HEIGHT:	N/A
HIGHEST RECORDED FLOOD:	2.39m (31st July 2014)

Bay Level Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
2.64m	10% AEP (10yr ARI) Flood Level	Properties at Flood Risk (Refer to property table in this appendix for more detail) 149 Properties in Total 41 Properties in Total for Mainland Bass Coast 3 properties in Bass 1 property in Corinella 3 properties in Grantville 8 properties in Jam Jerrup 23 properties in Pioneer Bay 3 properties in Queensferry 108 Properties in Total for Phillip Island 2 properties in eastern Rhyll off Rhyll-Newhaven Road 3 coastal infrastructure properties in Newhaven 101 properties in Silverleaves and the western part of Rhyll Community Infrastructure Flooded Mainland Bass Coast Community Infrastructure - Lang Lang Foreshore Caravan Park at 174 Jetty Road, Jam Jerrup Phillip Island Community Infrastructure - Newhaven Jetty, Beach Crescent, Newhaven - Newhaven Marina, Beach Crescent, Newhaven - Rhyll Jetty, Beach Road, Rhyll - Cowes Golf Club on Settlement Road, Cowes & Rhyll - Anderson Road Boat Ramp, Cowes	

Bay Level Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		- The Penguin Parade on Summerland Beach possibly impacted with Summerland Beach at very high tide. Viewing Areas likely to remain relatively dry. Essential Infrastructure Impacted Phillip Island Essential Infrastructure - Cowes Jetty off The Esplanade, Cowes with Ferry Services to Stony Point and French Island (Tankerton) very likely impacted Water Over Road Mainland Bass Coast Roads 2 local road in Bass 1 local road in Corinella 1 local road in Jam Jerrup 2 local roads in Pioneer Bay 2 local roads in Queensferry 1 local road in The Gurdies Phillip Island Roads 1 local road in Rhyll 10 local roads in Silverleaves	
2.94m	1% AEP (100yr ARI) Flood Level	Properties at Flood Risk (Refer to property table in this appendix for more detail) 256 Properties in Total 57 Properties in Total for Mainland Bass Coast 9 properties in Bass 1 property in Corinella 8 properties in Grantville 11 properties in Jam Jerrup 24 properties in Pioneer Bay 3 properties in Queensferry 1 property in The Gurdies 199 Properties in Total for Phillip Island 4 properties in eastern Rhyll off Rhyll-Newhaven Road 3 coastal infrastructure properties in Newhaven 192 properties in Silverleaves and the western part of Rhyll Community Infrastructure Flooded Mainland Bass Coast Community Infrastructure - Lang Lang Foreshore Caravan Park at 174 Jetty Road, Jam Jerrup Phillip Island Community Infrastructure - Newhaven Jetty, Beach Crescent, Newhaven - Newhaven Marina, Beach Crescent, Newhaven - Rhyll Jetty, Beach Road, Rhyll - Cowes Golf Club on Settlement Road, Cowes & Rhyll - Anderson Road Boat Ramp, Cowes - The Penguin Parade on Summerland Beach possibly impacted with Summerland Beach at very high tide. Viewing Areas likely to remain relatively dry. Essential Infrastructure Impacted Phillip Island Essential Infrastructure - Cowes Jetty off The Esplanade, Cowes with Ferry Services to Stony Point and French Island (Tankerton) very likely impacted Water Over Road (Refer to roads table in this appendix for more detail) Mainland Bass Coast Roads 3 local road in Bass 1 local road in Corinella 1 local road in Jam Jerrup	

Bay Level Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		• 3 local roads in Pioneer Bay • 2 local roads in Queensferry • 1 local road in The Gurdies Phillip Island Roads • 1 local road in Rhyll • 15 local roads in Silverleaves	

Table C4.6 – Breakdown of likely consequences at various tide gauge level heights for coastal inundation within Bass Coast Shire with operational considerations

APPENDIX D - EVACUATION ARRANGEMENTS

Phase 1 - Decision to Evacuate

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 the 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.

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

- properties are likely to become inundated
- properties are likely to become isolated and occupants are not suitable for isolated conditions
- public health is at threat because of flooding and the IC considers that evacuation is the most effective risk treatment. The [Health Commander](#) is responsible for supporting the evacuation of vulnerable people. Refer to the [Health Emergency Sub-Plan \(HESP\)](#)
- essential services have been damaged and are not available to a community, therefore the IC considers evacuation is the most effective risk treatment

The following should be considered when planning for evacuation:

- anticipated flood consequences and their timing and reliability of predictions
- size and location of the community to be evacuated
- likely duration of evacuation
- forecast weather
- flood models
- predicted timing of flood consequences
- time required and available to conduct the evacuation
- evacuation priorities and evacuation planning arrangements
- access and egress routes available and their potential flood liability
- current and likely future status of essential infrastructure
- is cross border assistance required or evacuation to another municipality relief centre?

- resources required and available to conduct the evacuation
- shelter including emergency relief centres, assembly areas
- vulnerable people and facilities
- transportation
- registration
- people of cultural or linguistically diverse 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 MERC, MEMO, DFFH, Health Commander and other key agencies and expert advice (CMA's and Flood Intelligence specialists).

When planning evacuation, the IC will consider triggers for evacuation. For example, specific flood heights are predicted or are likely to occur will be considered when planning evacuation.

Phase 2 – Warning

Warnings may include a warning to 'prepare to evacuate' and a warning to 'evacuate now'. Once the IC has made the decision to evacuate, the at-risk community will be warned to evacuate. Evacuation warnings should be disseminated via methods listed in Part 3 and [Appendix E](#) of this plan.

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

VicPol will control security of evacuated areas.

Evacuees will be encouraged to move using their own transport where possible. Transport for those without vehicles or other means will be arranged at the request of the incident controller or via the appointed VicPol evacuation manager.

Landing zones for aircraft will be determined by the following:

- The IC will determine the requirements for airborne resources
- The State Aircraft Desk will deploy and coordinate air resources
- The pilot in command will determine the safest location to land

Vulnerable persons register and people with special needs

The Department of Families Fairness and Housing (DFFH) is responsible for the [Vulnerable Persons Register \(VPR\)](#). It operates across Victoria and provides 24x7 access to data by authorised emergency management agencies. The system can be accessed via most web enabled devices and includes locality aware functions for mobile devices.

DFFH has developed VPRs to store local information about consenting, identified vulnerable people⁶, which will be directly entered by funded agencies and locally overseen by municipal councils⁷. The VPRs are cloud-based and directly accessible to authorised representatives from Victoria Police (without having to contact the council or funded agency) to aid emergency planning and response, including potential evacuation.

The information in the VPR can be filtered, mapped, and where necessary exported to reports for authorised purposes, according to the role and access rights of each organisation.

Additionally, special needs groups are identified in Council's 'residents at risk' register. This can be done through community network organisations. Further information on Council's 'residents at risk' register can be obtained from Councils Emergency Management Co-Ordinator.

Phase 4 – Shelter

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

The emergency relief centres and/or Assembly Areas are listed in the MEMP.

VICPOL will liaise with Local Government and DFFH & DoH (where regional coordination is required) via the relevant control centre to plan for the opening and operation of relief centres. This can be achieved best through the IEMT.

Animal Shelter

Animal shelter compounds will be established for domestic pets and companion animals of evacuees. These facilities may be at locations detailed in the MEMPlan.

Caravans

Caravans may be evacuated. Caravan evacuation will be determined dependent on location and size of event.

Phase 5 – Return

Return will be consistent with the Strategic Plan for the Return of Community. The IC in consultation with VICPOL will determine when it is safe for evacuees to return to their properties and will arrange

⁶ Informed consent will be required before identified vulnerable people can be registered in a VPR. In keeping with the definition of a vulnerable person and the additional considerations the VPR should only list a small number of people, as per Diagram 1. More information about the identification and screening process for VPRs is available in Protocol 1: Emergency planning and screening.

⁷ 64 councils covered by the Vulnerable People in Emergencies Policy, November 2012.

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; and
- Transportation particularly for people without access to transport

Disruption to Services

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

This table will be populated as a more detailed analysis of the flood risk is completed.

Service	Impact	Trigger Point for action	Strategy/Temporary Measures

Essential Infrastructure and Property Protection

Essential Infrastructure and properties (e.g. residences, businesses, roads, power supply etc.) that require protection are:

This table will be populated as a more detailed analysis of the flood risk is completed.

Facility	Impact	Trigger Point for action	Strategy/Temporary Measures

For small scale events sandbags can be purchased from 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.

Rescue

Resources are available within the local SES unit to assist with rescue operations:

Full details of equipment and resources are held by the SES unit. (Consider listing the inventory on Volume 2 "Contacts & Resources Directory")

Known high-risk areas/communities (i.e. low-lying islands) where rescues might be required are detailed in the **Appendix F** flood map

APPENDIX E – FLOOD AND STORM WARNING SYSTEMS

Flood and Storm Warning

Flood and storm warning products and Flood Class Levels can be found on the BoM and VicEmergency websites. Flood and storm 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 Local ABC radio 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 issues 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

No local arrangements currently in place.

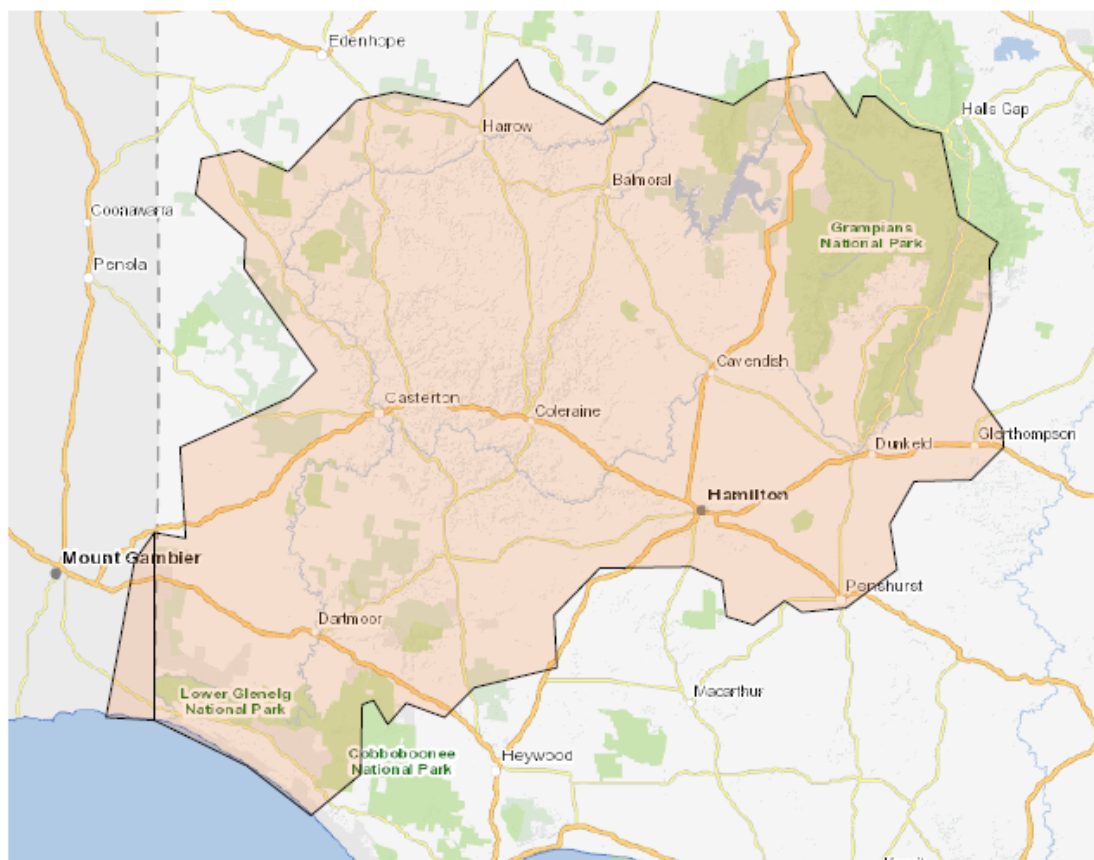
BOM Flood Warning Example

Community Notification Sign-off

WARNING - FLOOD

Incident Location: Glenelg River at Casterton
Incident Name: GlenelgRiverFloodSept2017
Issued: Set at publish time
Next Update Expected:

Map



Message

This **Moderate Flood Warning** is being issued for Glenelg River at Casterton.

- In the 24hrs to 9am Friday up to 50mm of rainfall was recorded in the Glenelg River catchment.
- A further 5mm to 10mm is forecast for the remainder of Friday.
- Glenelg River: Moderate flooding is likely along the Glenelg River.
- The Glenelg River at Dergholm is above the minor flood level (4.0 m) and rising.
- The Glenelg River at Casterton is currently at 4.50 metres (minor flood level 3.8 m) and rising.
- The Glenelg River at Casterton is likely to exceed the moderate flood level (5.20 m) during Friday.

Act now - take actions immediately to protect your life and property.

What you should do:

Decide if you will evacuate if it becomes necessary.

If you choose to leave:

- Remember to take your pets, mobile phone, spare clothes and medications.
- Travel to the home of family or friends who are in a safe location, away from flooding.
- Be aware of any road closures when you leave.

If you are travelling:

- Be aware of road hazards including mud, debris and damaged roads or bridges.
- Floodwater is dangerous - never drive, walk or ride through floodwater.

If you stay or if it is unsafe to leave:

- Make sure you have enough food, drinking water, medications and pet food to survive for 3-5 days in case you become isolated.

You should stay informed by listening to emergency broadcasters and monitoring warnings.

Impacts in your area:

- Flooding above floor level of a single story home is likely to occur in some locations.

This message was issued by State Emergency Service.

The next update is expected by [warning_next_update] or as the situation changes.

Flood information:

- For river heights check www.bom.gov.au (http://www.bom.gov.au/vic/flood/rain_river.shtml) or phone 1300 659 217.
- For urgent animal welfare issues call Agriculture Victoria (<http://agriculture.vic.gov.au/agriculture/emergencies>) on 136 186 or your local vet.

Emergency contacts:

- For life threatening emergencies call Triple Zero (000).
- For flood and storm emergency assistance (<http://www.ses.vic.gov.au/about/ShouldIcalltheSES.pdf>) from the SES call 132 500.

Stay informed:

- Via www.emergency.vic.gov.au (<http://emergency.vic.gov.au/respond/>).
- Tune in to ABC Local Radio, commercial and designated community radio stations, or Sky News TV.
- Call the VicEmergency Hotline (<https://vicemergency.zendesk.com/hc/en-gb/articles/115001055007-What-is-the-VicEmergency-Hotline->) to talk to someone about this warning on freecall 1800 226 226.
- People who are deaf, hard of hearing, or who have a speech/communication impairment can contact VicEmergency Hotline via the National Relay Service (<http://relayservice.gov.au/>) on 1800 555 677.

- For help with English, call the Translating and Interpreting Service (<https://www.tisnational.gov.au/>) on 131 450 (freecall) and ask them to telephone VicEmergency Hotline. If you know someone who cannot speak English, provide them with this number.
- Download the VicEmergency app (<https://vicemergency.zendesk.com/hc/en-gb/articles/230492607-What-is-the-VicEmergency-app->) or follow VicEmergency on Twitter (<https://twitter.com/vicemergency>) (#vicfloods) or Facebook (<https://www.facebook.com/vicemergency>).

Facebook

WARNING - FLOOD

Incident Location: Glenelg River at Casterton

Incident Name: GlenelgRiverFloodSept2017

Issue Date:

Next Update:

This Moderate Flood Warning is being issued for Glenelg River at Casterton.

- In the 24hrs to 9am Friday up to 50mm of rainfall was recorded in the Glenelg River catchment.
- A further 5mm to 10mm is forecast for the remainder of Friday.
- Glenelg River: Moderate flooding is likely along the Glenelg River.
- The Glenelg River at Dergholm is above the minor flood level (4.0 m) and rising.
- The Glenelg River at Casterton is currently at 4.50 metres (minor flood level 3.8 m) and rising.
- The Glenelg River at Casterton is likely to exceed the moderate flood level (5.20 m) during Friday.

Act now - take actions immediately to protect your life and property.

More details at <http://emergency.vic.gov.au/respond/#!/warning/3941/moreinfo>

Twitter

Moderate Flood Warning for Glenelg River at Casterton. For more info: <http://bit.ly/2tfmm6t> #vicfloods

Sign-off

Authorised By:

Authorised Signature:

APPENDIX F – MAPS & SCHEMATICS

Overview

Maps considered useful to flood response are included in this Appendix. Maps are provided detailing likely affected areas including properties, essential community infrastructure, roads, identification of evacuation routes, likely evacuation route closure locations, assembly areas, emergency relief centres etc. under different flood scenarios.

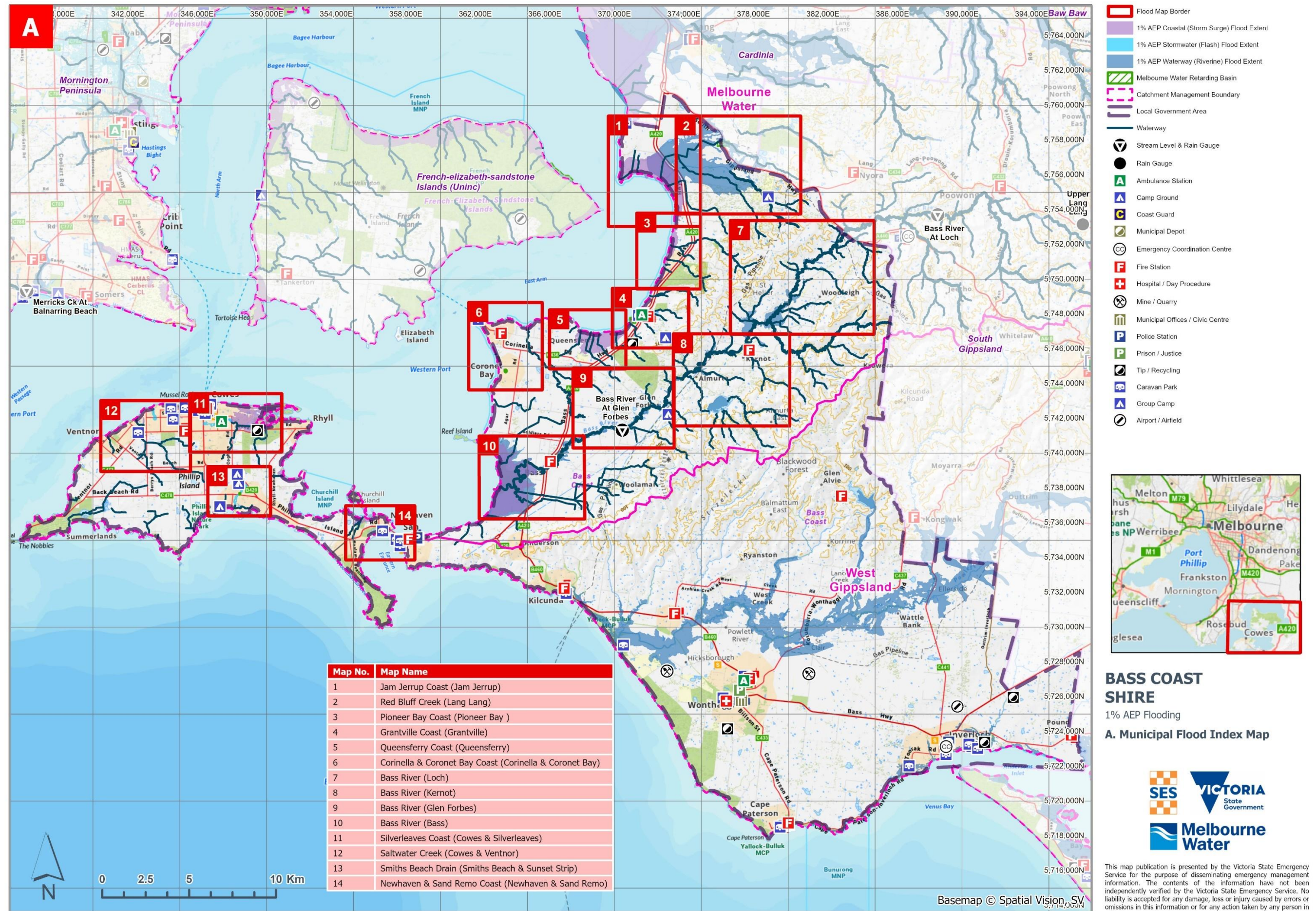
Maps include:

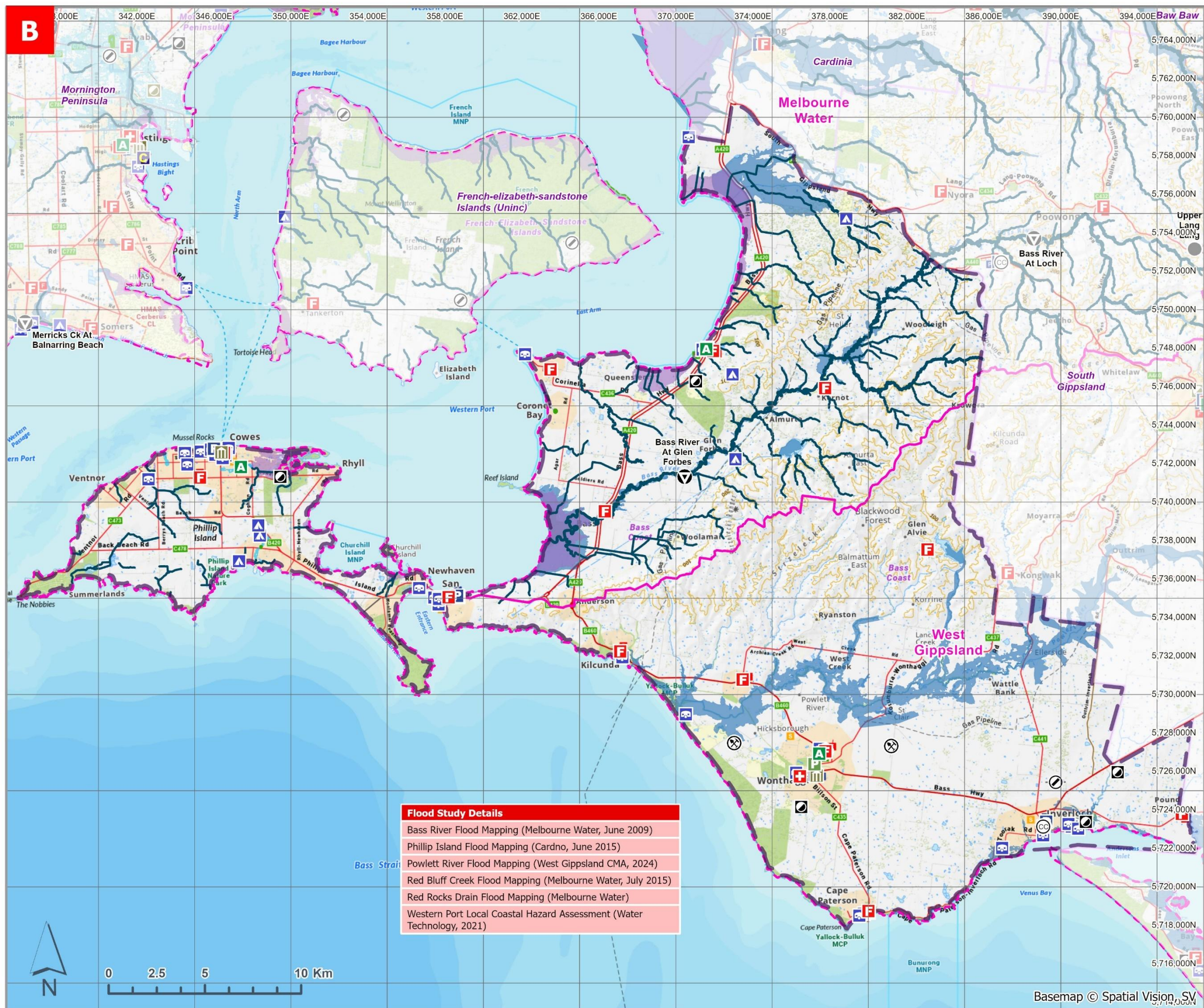
- A map outlining a series of flooding hot spot maps within the Bass Coast Council.
- A map showing the Municipal boundary together with the open waterways and underground stormwater drainage pipe network within the Bass Coast Shire and the 1% AEP (100-year ARI) flood extents (sourced from Melbourne Water GIS).
- A set of 14 maps showing flooding hot spots within the Bass Coast Shire together with the 1% AEP (100-year ARI) flood extents (sourced from the Melbourne Water GIS).
- Schematic 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
 - Details within these Catchment Schematics reflect those contained within either other sections of this Municipal Flood & Storm Sub-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 1 in 100-year ARI (1% AEP) flood extents and floodways (together with volume, height and water quality data) are shown at DEECA's mapshare website <http://mapshare.maps.vic.gov.au/MapShareVic/index.html?viewer=MapShareVic.PublicSite&locale=en-AU>
- Note that not all waterways or drains are included in the schematics, only those that are likely to contribute to flooding further on along the drainage system. Note also the flow direction; the schematics either flow from the top of the page to the bottom, or vice versa.

Bass Coast Shire Municipal Maps (sourced Melbourne Water GIS)





- 1% AEP Coastal (Storm Surge) Flood Extent
- 1% AEP Stormwater (Flash) Flood Extent
- 1% AEP Waterway (Riverine) Flood Extent
- Melbourne Water Retarding Basin
- Catchment Management Boundary
- Local Government Area
- Waterway
- Stream Level & Rain Gauge
- Rain Gauge
- Ambulance Station
- Camp Ground
- Coast Guard
- Municipal Depot
- Emergency Coordination Centre
- Fire Station
- Hospital / Day Procedure
- Mine / Quarry
- Municipal Offices / Civic Centre
- Police Station
- Prison / Justice
- Tip / Recycling
- Caravan Park
- Group Camp
- Airport / Airfield



BASS COAST SHIRE

1% AEP Flooding

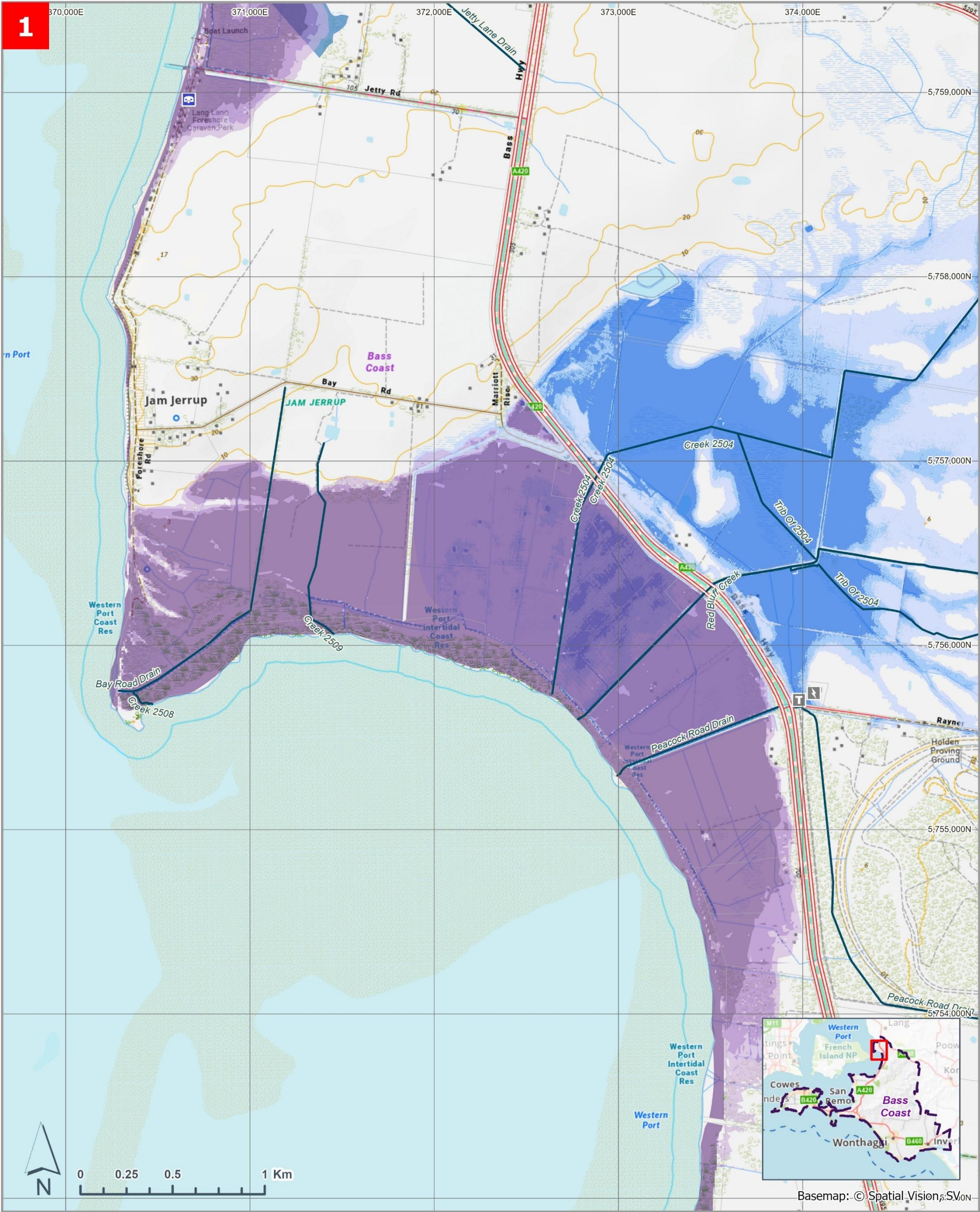
B. Municipal Flood Map



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Map produced by VICSES 2/09/2025 3:56 PM

Flood Extent Maps (sourced Melbourne Water GIS)



Red Bluff Creek Flood Mapping completed by Melbourne Water (July, 2015). Western Port Local Coastal Hazard Assessment completed by Water Technology (January, 2024). Map produced by VICSES: 2/09/2025 10:17 AM

BASS COAST SHIRE
1% AEP Flooding
1. Jam Jerrup Coast (Jam Jerrup)

- T

Telephone Exchange

Caravan Park

Power Facility

Waterway

Building
- Property

1% AEP Waterway (Riverine) Flood Extent (Depth Unavailable)

1% AEP Waterway (Riverine) Flood Depth

Up to 30cm

Between 30cm and 50cm

Greater than 50cm

1% AEP Coastal (Storm Surge) Flood Depth

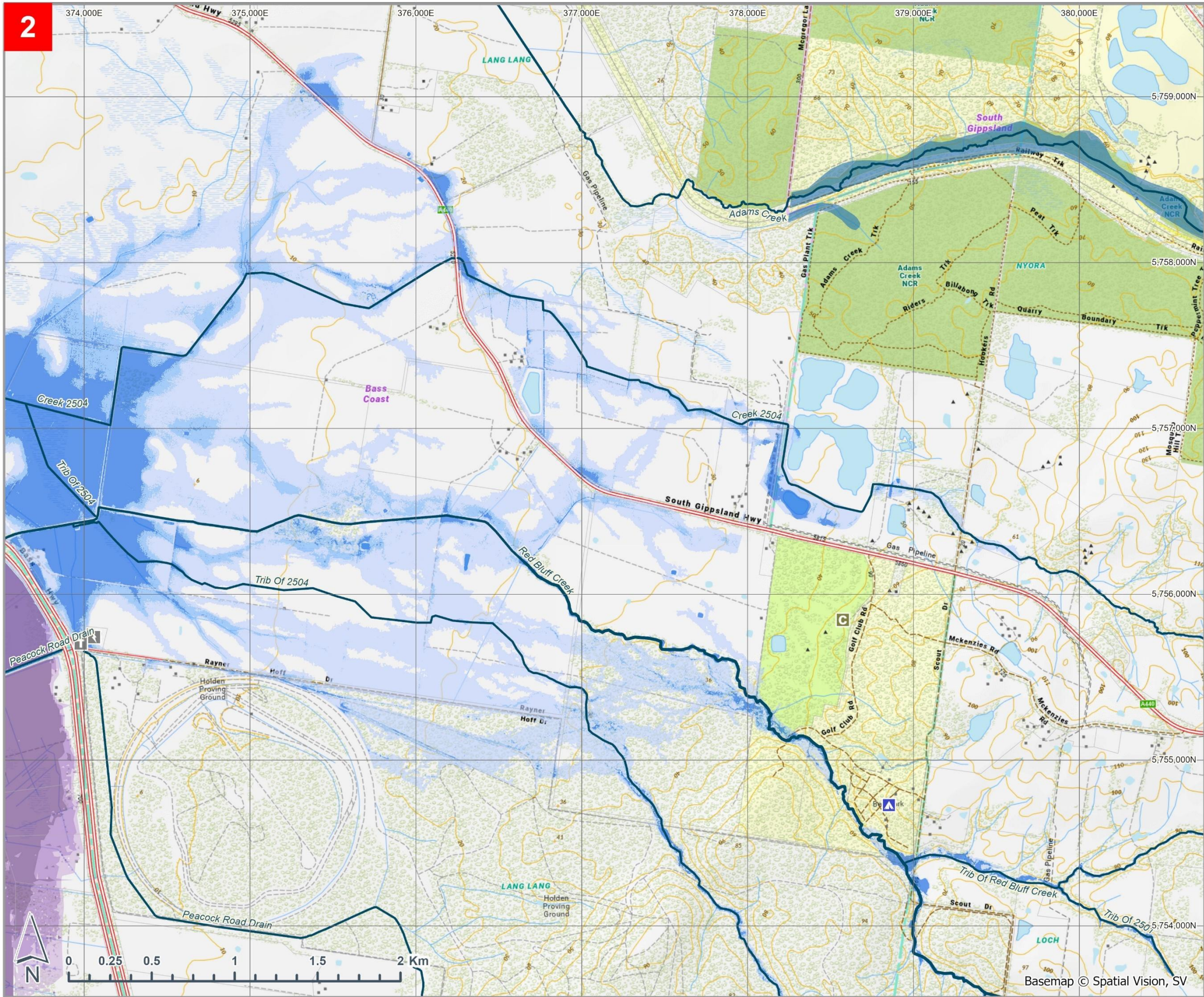
Up to 30cm

Between 30cm and 50cm

Greater than 50cm



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- Community Venue
- Telephone Exchange
- Group Camp
- Power Facility
- Waterway
- Building
- Property
- 1% AEP Waterway (Riverine) Flood Extent (Depth Unavailable)
- 1% AEP Coastal (Storm Surge) Flood Depth
 - Up to 30cm
 - Between 30cm and 50cm
 - Greater than 50cm
- 1% AEP Waterway (Riverine) Flood Depth
 - Up to 30cm
 - Between 30cm and 50cm
 - Greater than 50cm



BASS COAST SHIRE

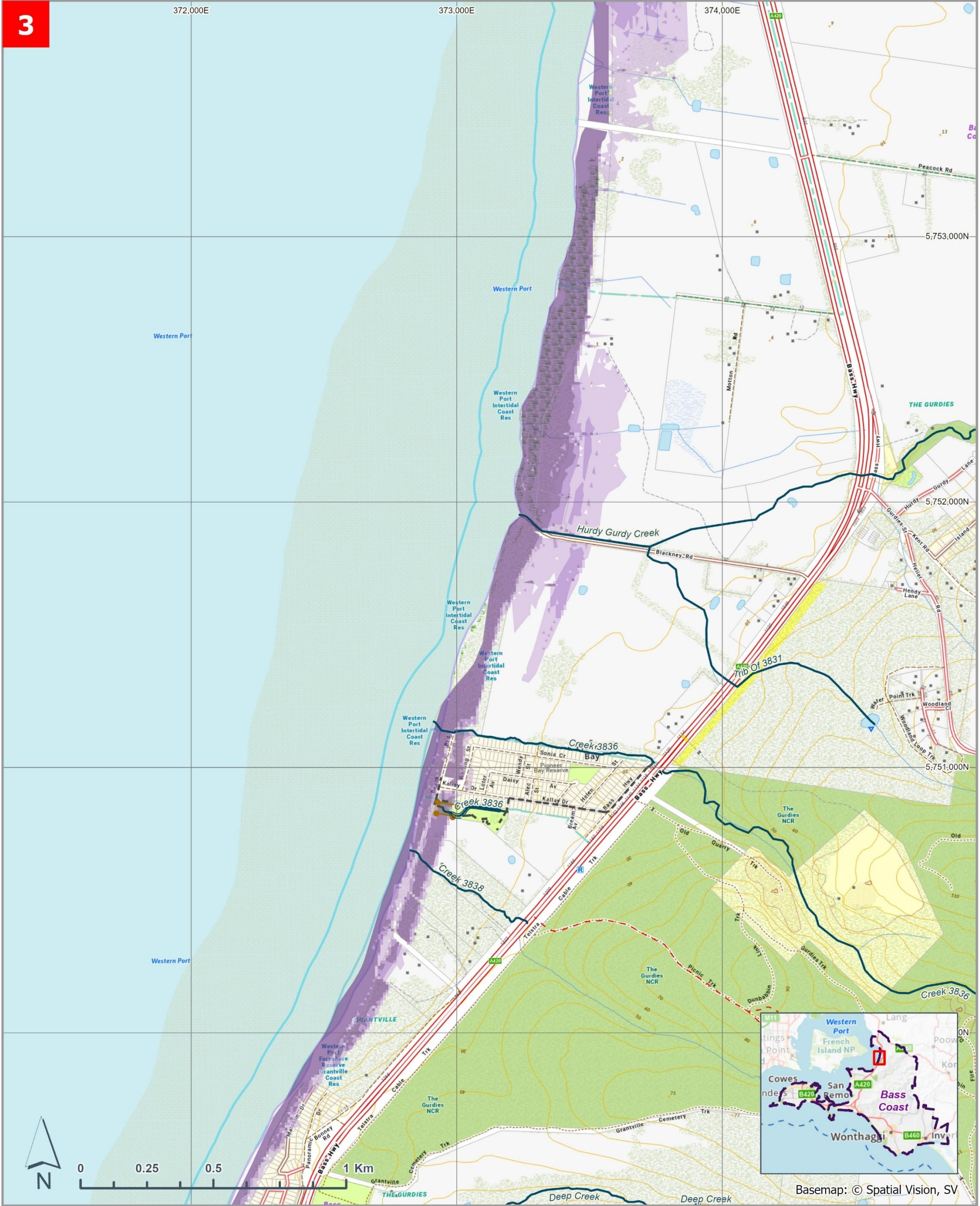
1% AEP Flooding

2. Red Bluff Creek (Lang Lang)



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Red Bluff Creek Flood Mapping completed by Melbourne Water (July, 2015). Western Port Local Coastal Hazard Assessment completed by Water Technology (January, 2024). Map produced by VICSES: 2/09/2025 10:17 AM



Western Port Local Coastal Hazard Assessment completed by Water Technology (January, 2024). Map produced by VICSES: 2/09/2025 11:09 AM

BASS COAST SHIRE

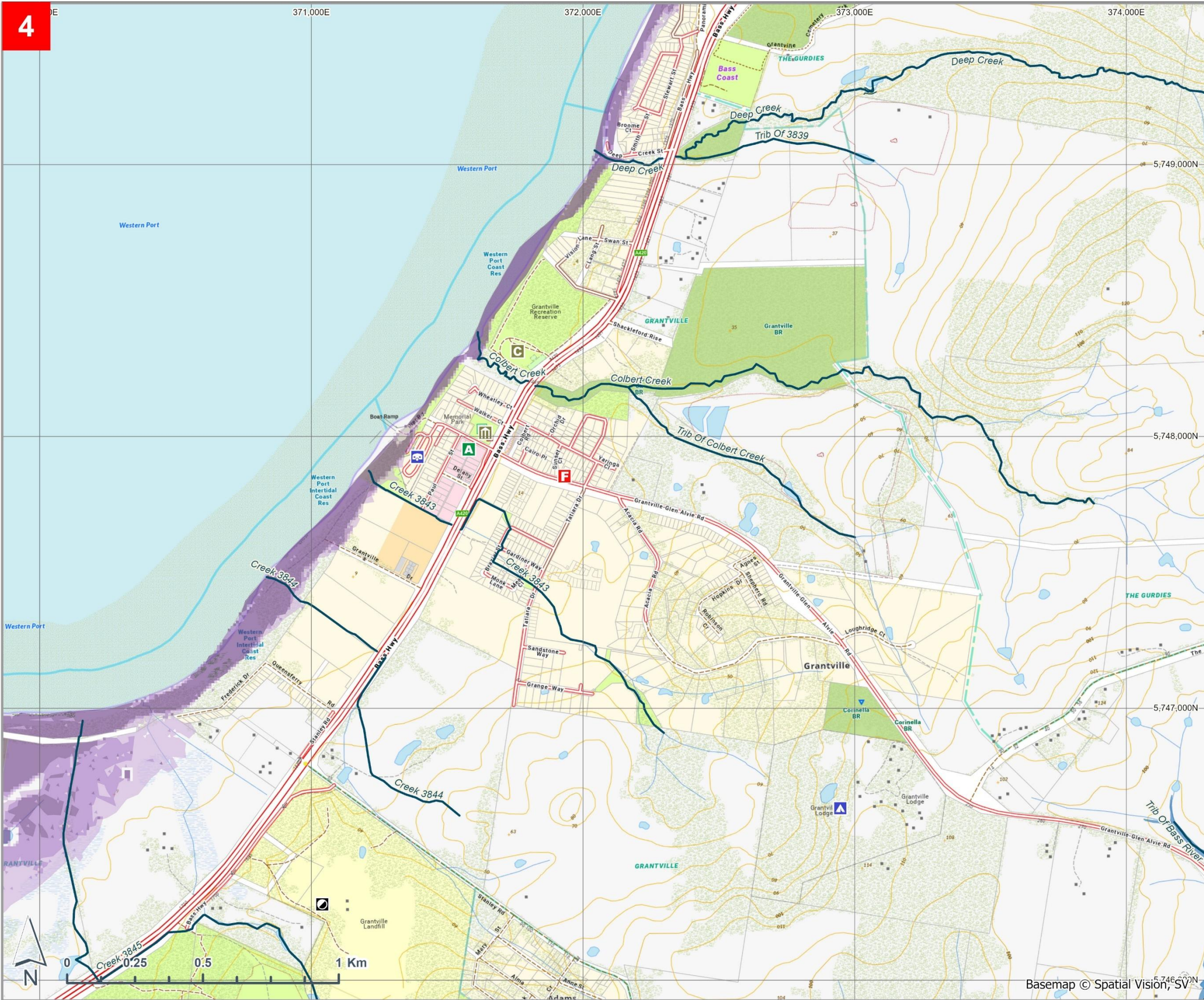
1% AEP Flooding

3. Pioneer Bay Coast (Pioneer Bay)

- - - Bicycle / Walking Trail
- Drainage/DR Top Of Bank
- Levee
- - - Melbourne Water Stormwater Drain
- Waterway (Tributary)
- Building
- Property
- 1% AEP Coastal (Storm Surge) Flood Depth
 - Up to 30cm
 - Between 30cm and 50cm
 - Greater than 50cm



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- A** Ambulance Station
- C** Community Venue
- F** Fire Station
- M** Municipal Offices / Civic Centre
- T** Tip / Recycling
- Caravan Park**
- Group Camp**
- Top Of Bank**
- Waterway (Tributary)**
- Building**
- Property**
- 1% AEP Waterway (Riverine) Flood Extent (Depth Unavailable)**
- 1% AEP Coastal (Storm Surge) Flood Depth**
- Up to 30cm**
- Between 30cm and 50cm**
- Greater than 50cm**



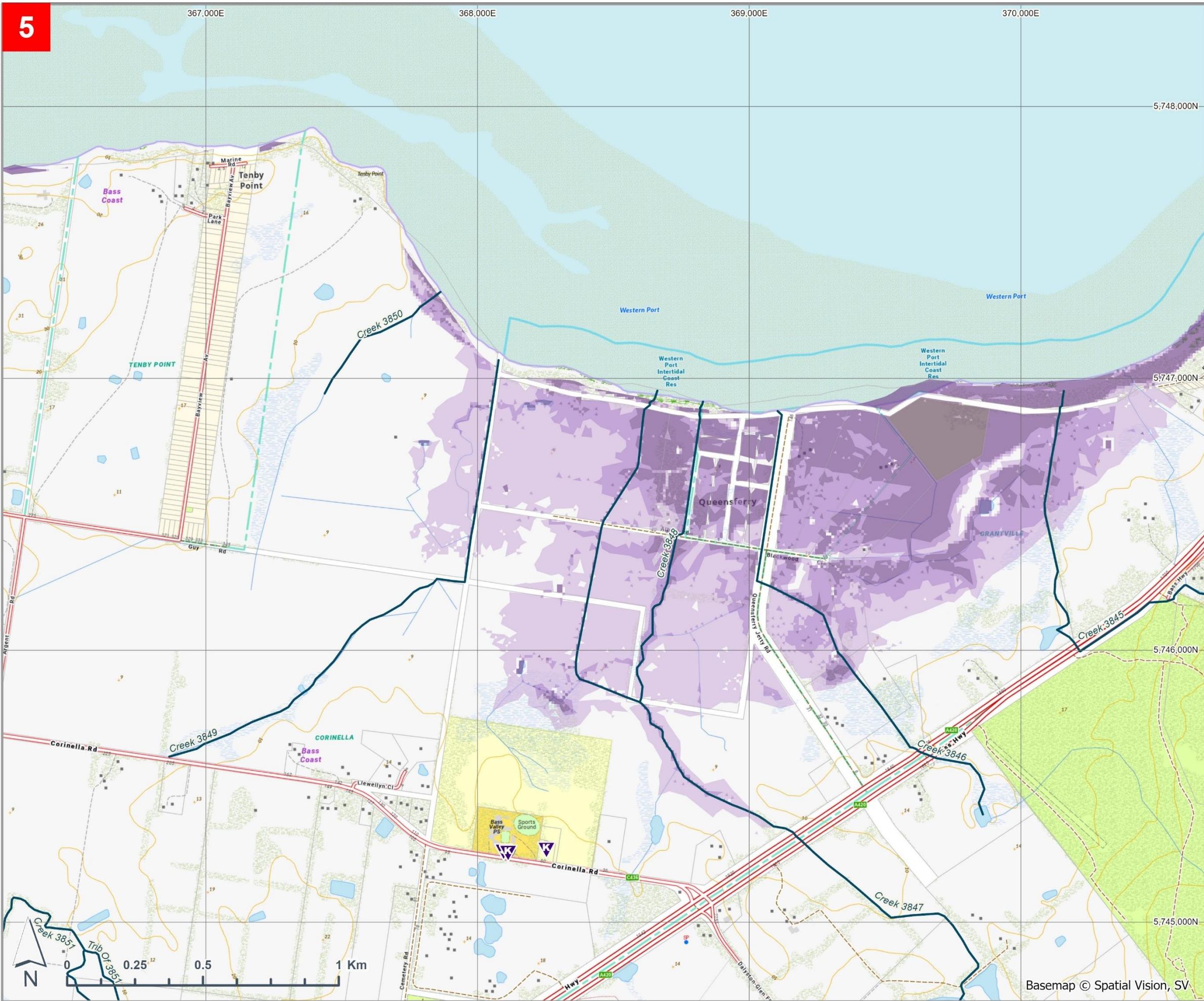
BASS COAST SHIRE

1% AEP Flooding

4. Grantville Coast (Grantville)



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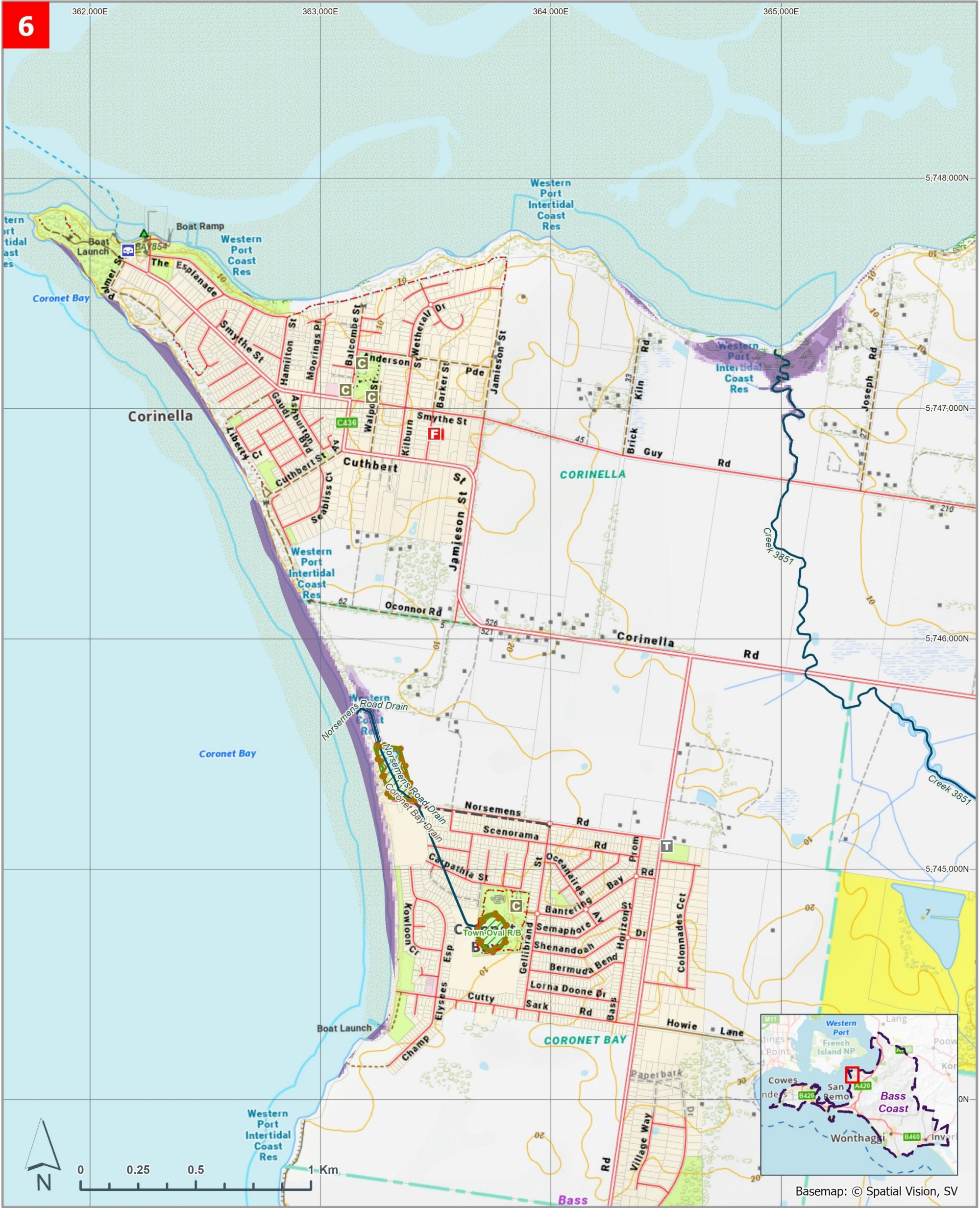
- Child Care / Kindergarten
- Education Facility
- Waterway (Tributary)
- Building
- Property
- 1% AEP Coastal (Storm Surge) Flood Depth
 - Up to 30cm
 - Between 30cm and 50cm
 - Greater than 50cm



BASS COAST SHIRE
 1% AEP Flooding
5. Queensferry Coast (Queensferry)



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Western Port Local Coastal Hazard Assessment completed by Water Technology (January, 2024). Map produced by VICSES: 2/09/2025 11:09 AM

BASS COAST SHIRE

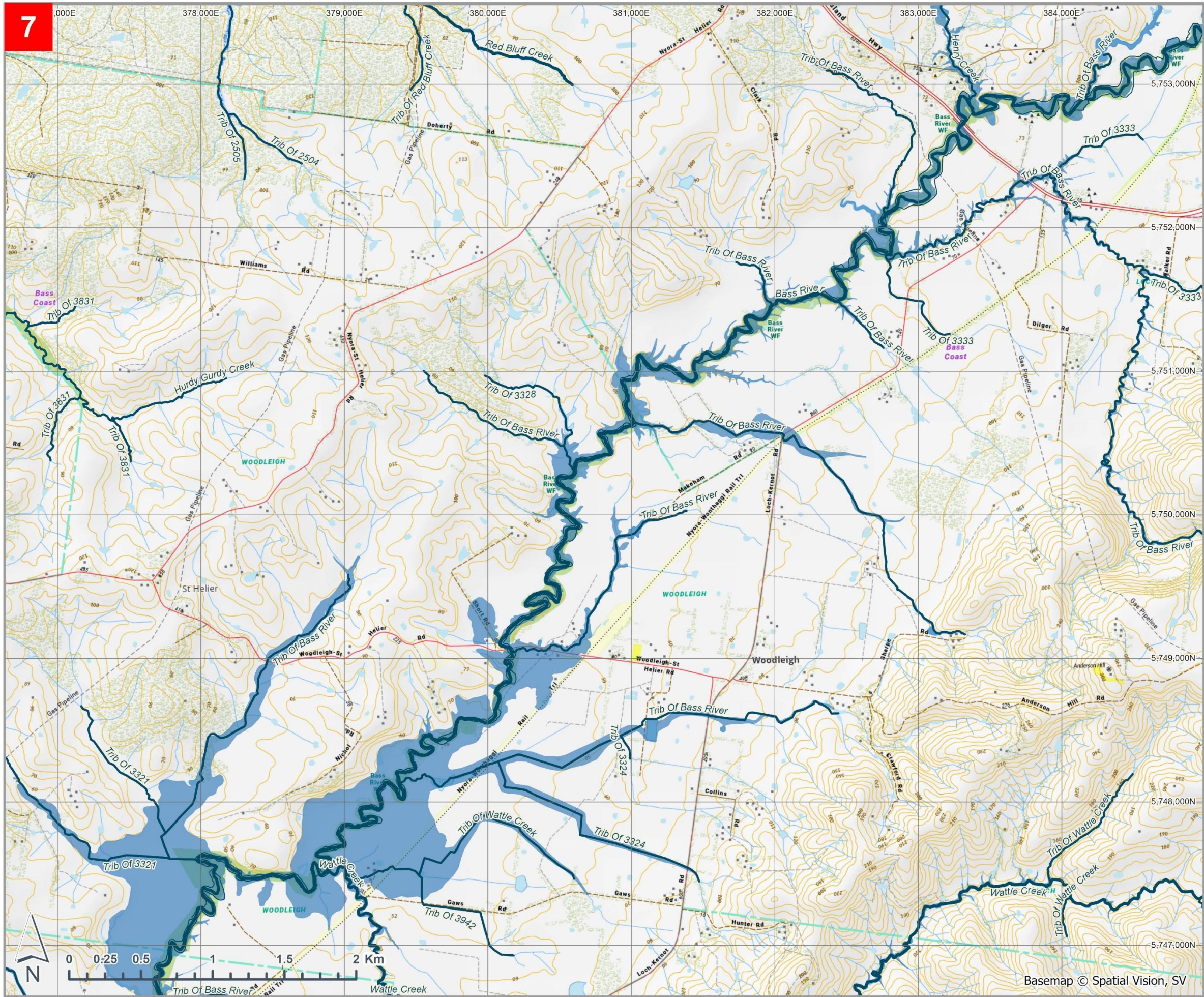
1% AEP Flooding

6. Corinella & Coronet Bay Coast (Corinella & Coronet Bay)

- | | | | | | |
|--|-------------------------|--|----------------------------------|--|--|
| | Community Venue | | Embankment | | Waterbody |
| | Fire Station | | Melbourne Water Stormwater Drain | | 1% AEP Coastal (Storm Surge) Flood Depth |
| | Telephone Exchange | | Waterway | | Up to 30cm |
| | Caravan Park | | Building | | Between 30cm and 50cm |
| | Bicycle / Walking Trail | | Property | | Greater than 50cm |
| | Drainage/DR Top Of Bank | | Melbourne Water Retarding Basin | | |



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- Top Of Bank
- Waterway (Main)
- Waterway (Tributary)
- Building
- 1% AEP Waterway (Riverine) Flood Extent (Depth Unavailable)
- 1% AEP Waterway (Riverine) Flood Depth
 - Up to 30cm
 - Between 30cm and 50cm
 - Greater than 50cm

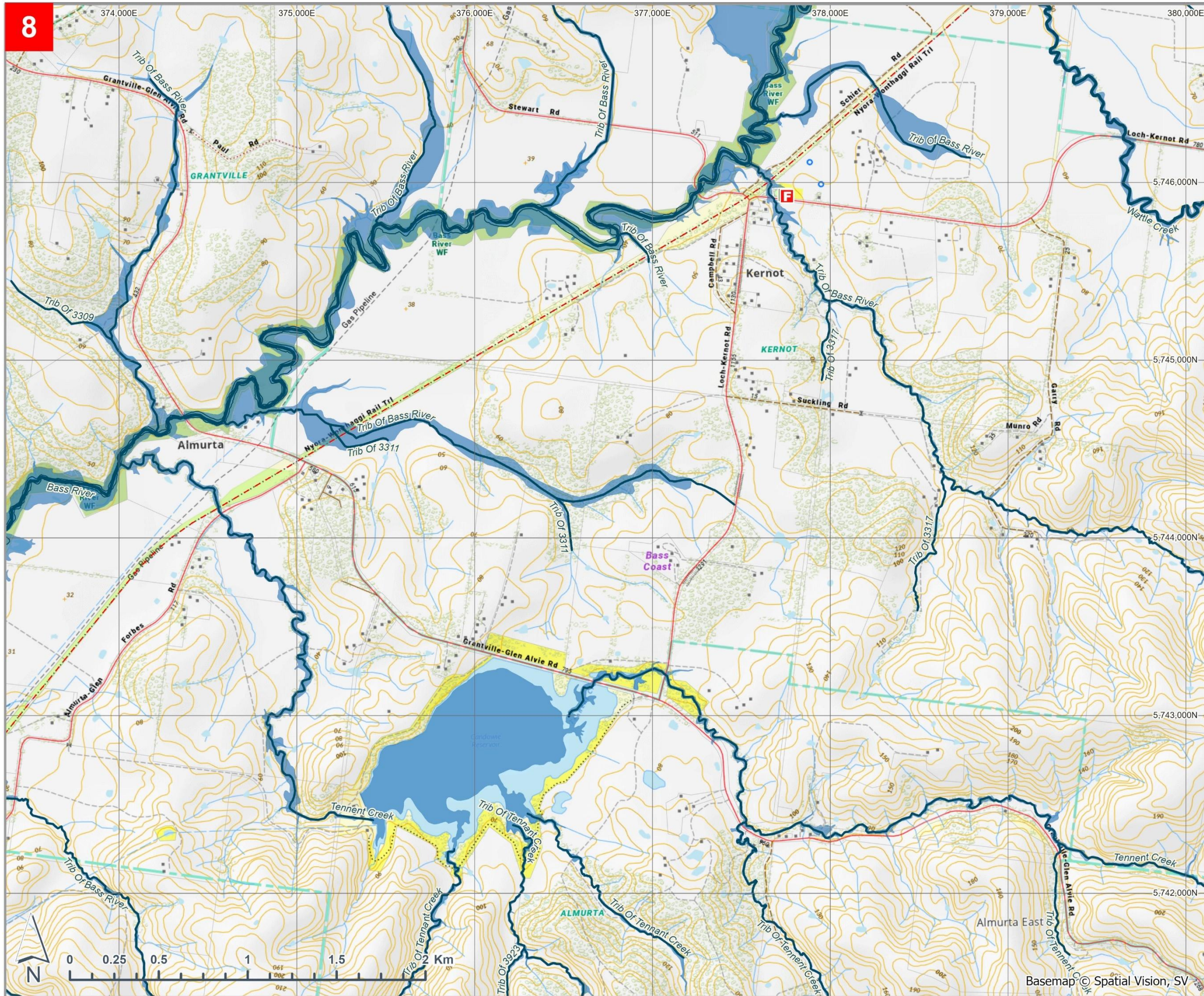


BASS COAST SHIRE
 1% AEP Flooding
7. Bass River (Loch)



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Bass River Flood Mapping completed by Melbourne Water (June, 2009). Red Bluff Creek Flood Mapping completed by Melbourne Water (July, 2015). Map produced by VICSES: 2/09/2025 11:33 AM



- Community Venue
- Fire Station
- Group Camp
- Bicycle / Walking Trail
- Top Of Bank
- Waterway (Main)
- Waterway (Tributary)
- Building
- Property
- Reservoir
- 1% AEP Waterway (Riverine) Flood Extent (Depth Unavailable)

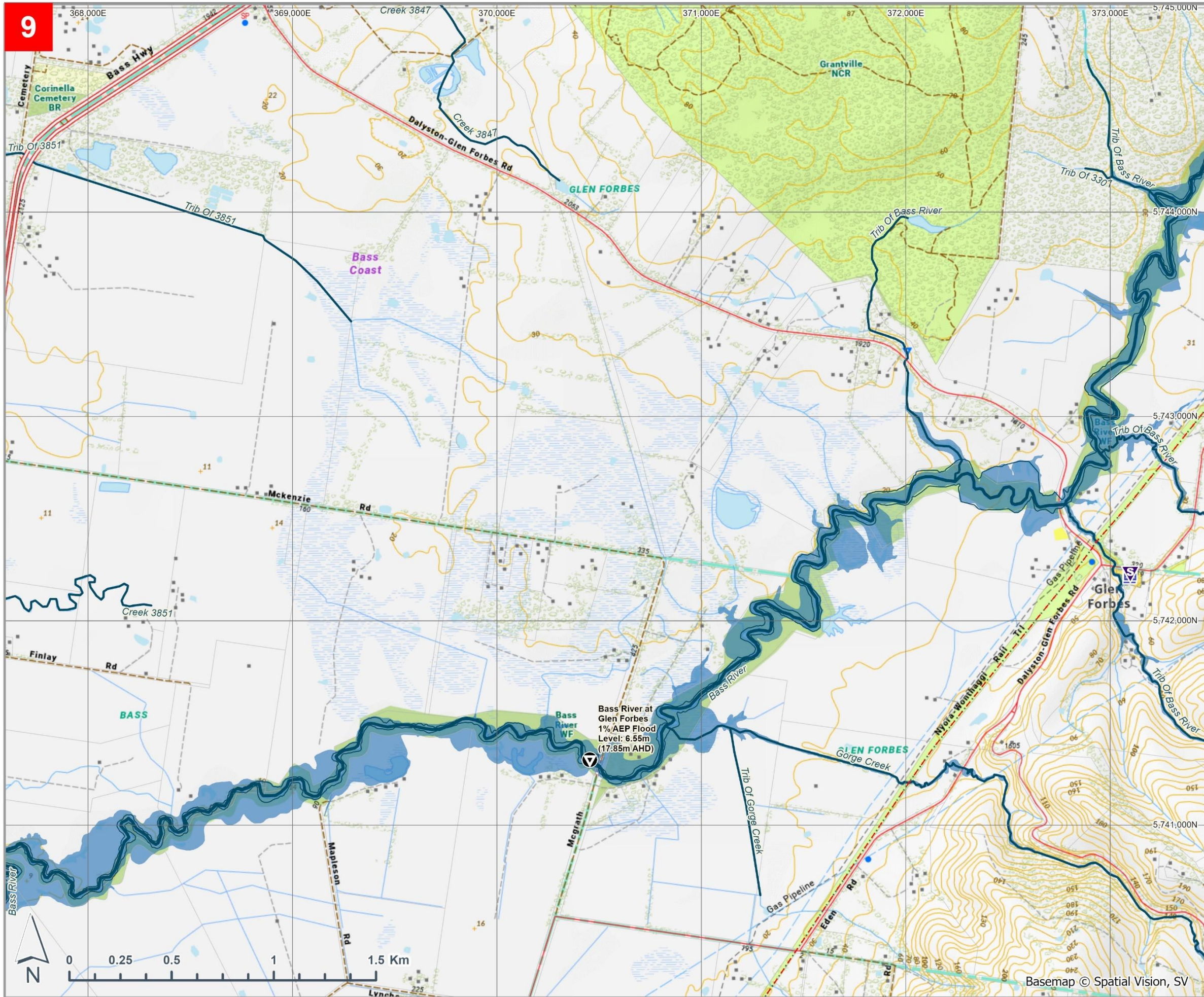


BASS COAST SHIRE
 1% AEP Flooding
8. Bass River (Kernot)



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Bass River Flood Mapping completed by Melbourne Water (June, 2009). Map produced by VICSES: 2/09/2025 11:31 AM



- Stream Level & Rain Gauge
- Camp Ground
- Education Facility
- Group Camp
- Bicycle / Walking Trail
- Top Of Bank
- Waterway (Main)
- Waterway (Tributary)
- Building
- Property
- 1% AEP Waterway (Riverine) Flood Extent (Depth Unavailable)

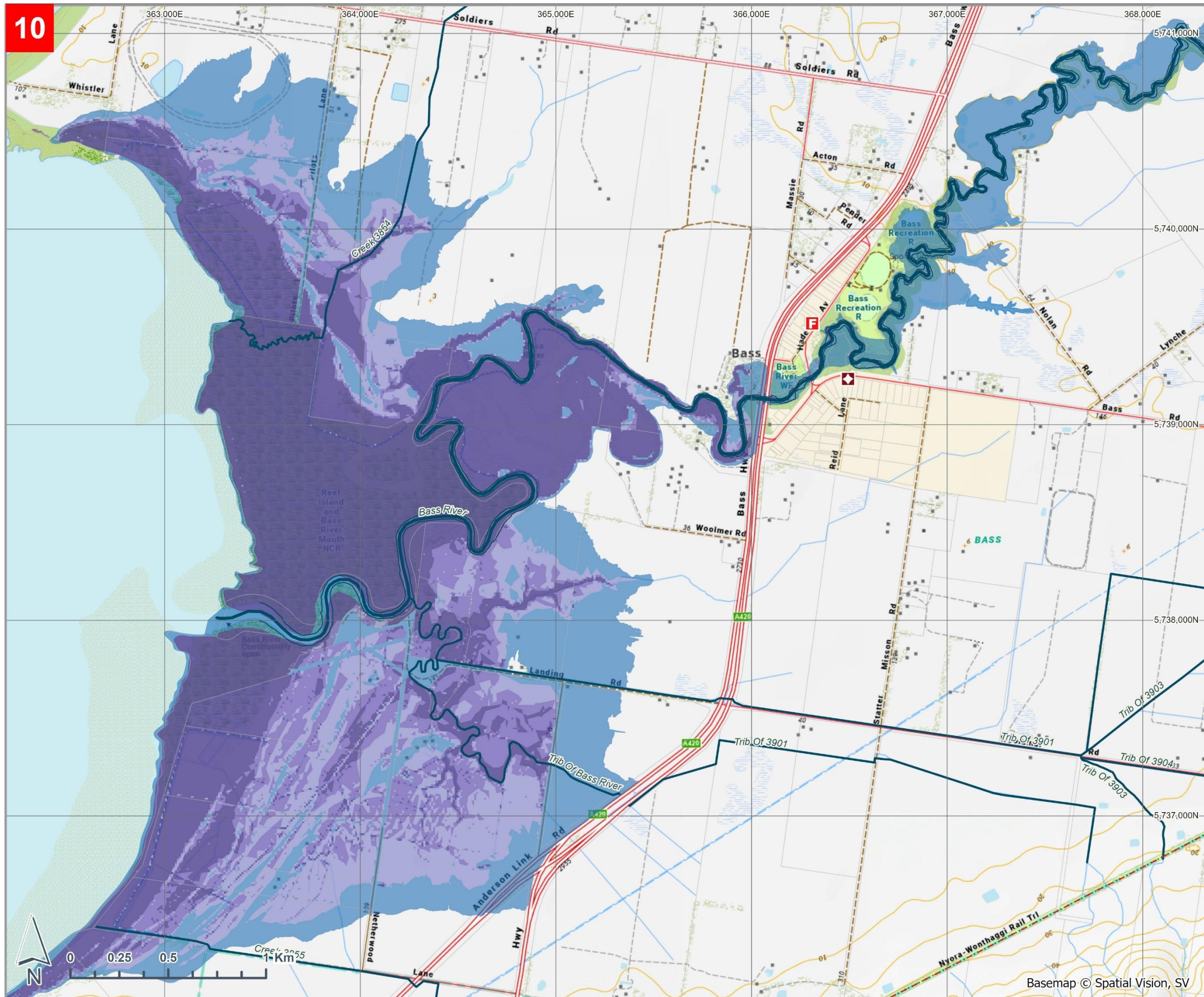


BASS COAST SHIRE
1% AEP Flooding
9. Bass River (Glen Forbes)



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Bass River Flood Mapping completed by Melbourne Water (June, 2009). Map produced by VICSES: 2/09/2025 11:09 AM



- F Fire Station
- ⬠ Place Of Worship
- Bicycle / Walking Trail
- Top Of Bank
- Waterway (Main)
- Waterway (Tributary)
- Building
- Property
- 1% AEP Waterway (Riverine) Flood Extent (Depth Unavailable)
- 1% AEP Coastal (Storm Surge) Flood Depth
- Up to 30cm
- Between 30cm and 50cm
- Greater than 50cm



BASS COAST SHIRE

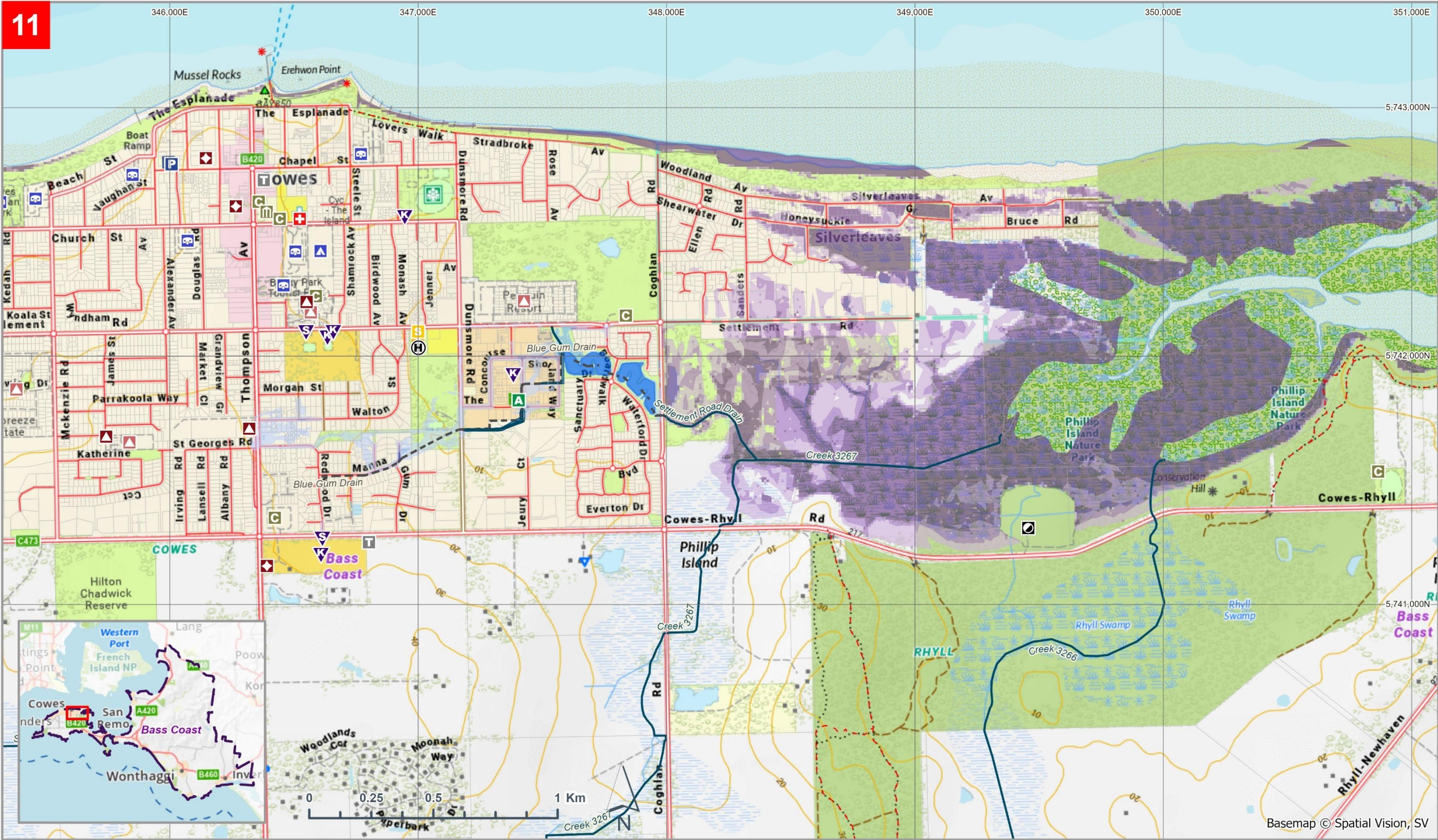
1% AEP Flooding

10. Bass River (Bass)



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Bass River Flood Mapping completed by Melbourne Water (June, 2009). Western Port Local Coastal Hazard Assessment completed by Water Technology (January, 2024). Map produced by VICSES: 2/09/2025 11:33 AM



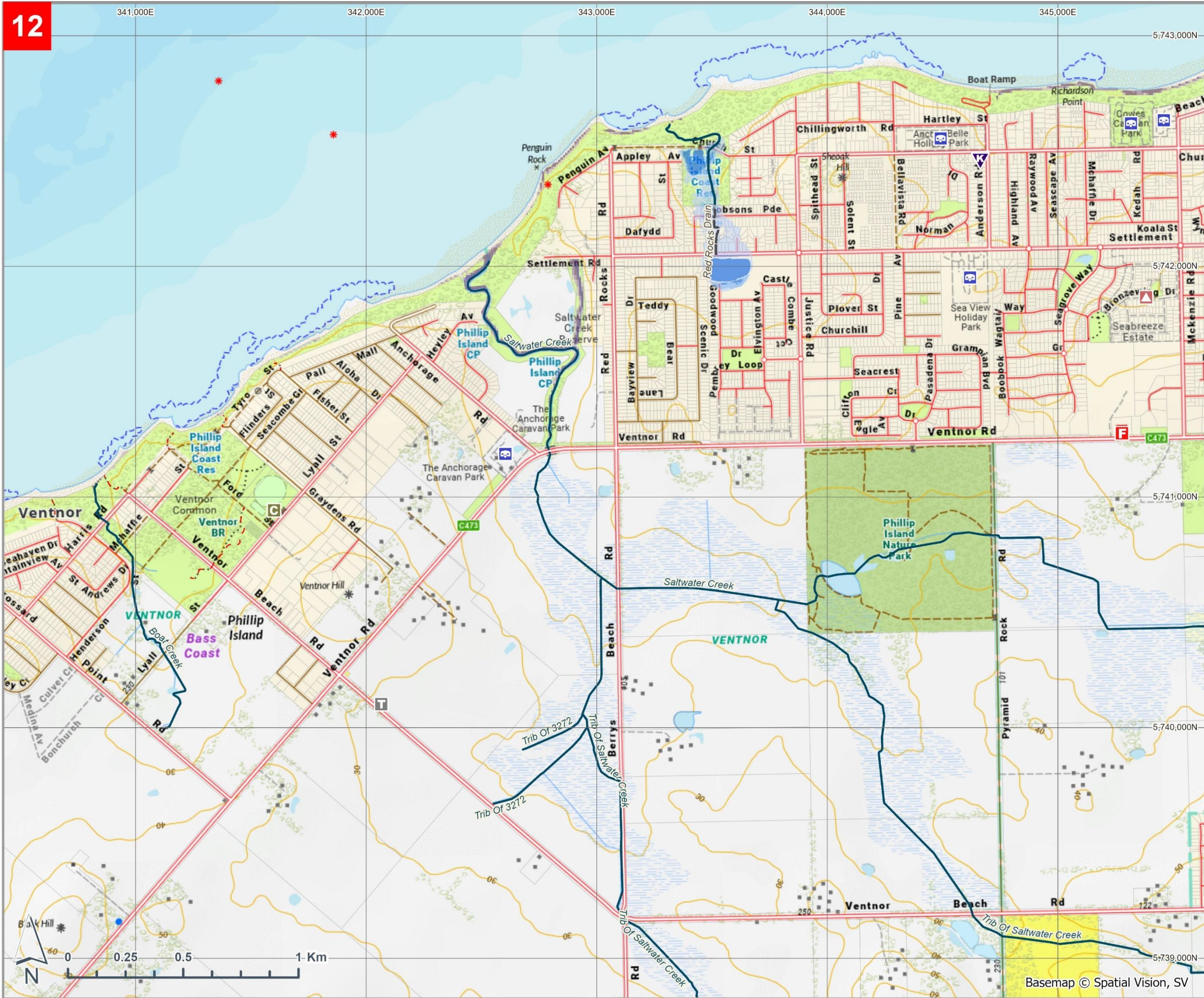
Phillip Island Flood Mapping completed by Cardno (June, 2015). Western Port Local Coastal Hazard Assessment completed by Water Technology (January, 2024). Map produced by VICSES: 2/09/2025 12:13 PM

BASS COAST SHIRE
1% AEP Flooding
11. Silverleaves Coast (Cowes & Silverleaves)

- | | | | | |
|----------------------------------|--------------------|----------------------------------|--|---------------------------------------|
| Aged Care / Disability Support | Place Of Worship | Retirement Village | Waterway (Tributary) | 1% AEP Stormwater (Flash) Flood Depth |
| Ambulance Station | Police Station | Helipad | Building | Up to 30cm |
| Child Care / Kindergarten | Telephone Exchange | Bicycle / Walking Trail | Property | Between 30cm and 50cm |
| Community Venue | Tip / Recycling | Top Of Bank | 1% AEP Coastal (Storm Surge) Flood Depth | Greater than 50cm |
| Education Facility | VICSES Unit | Melbourne Water Stormwater Drain | Up to 30cm | |
| Hospital / Day Procedure | Caravan Park | Waterway | Between 30cm and 50cm | |
| Municipal Offices / Civic Centre | Group Camp | | Greater than 50cm | |



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- Child Care / Kindergarten
- Community Venue
- Fire Station
- Telephone Exchange
- Caravan Park
- Retirement Village
- Bicycle / Walking Trail
- Top Of Bank
- Melbourne Water Stormwater Drain
- Waterway
- Waterway (Tributary)
- Building
- Property
- 1% AEP Coastal (Storm Surge) Flood Depth
 - Up to 30cm
 - Between 30cm and 50cm
 - Greater than 50cm
- 1% AEP Stormwater (Flash) Flood Depth
 - Up to 30cm
 - Between 30cm and 50cm
 - Greater than 50cm



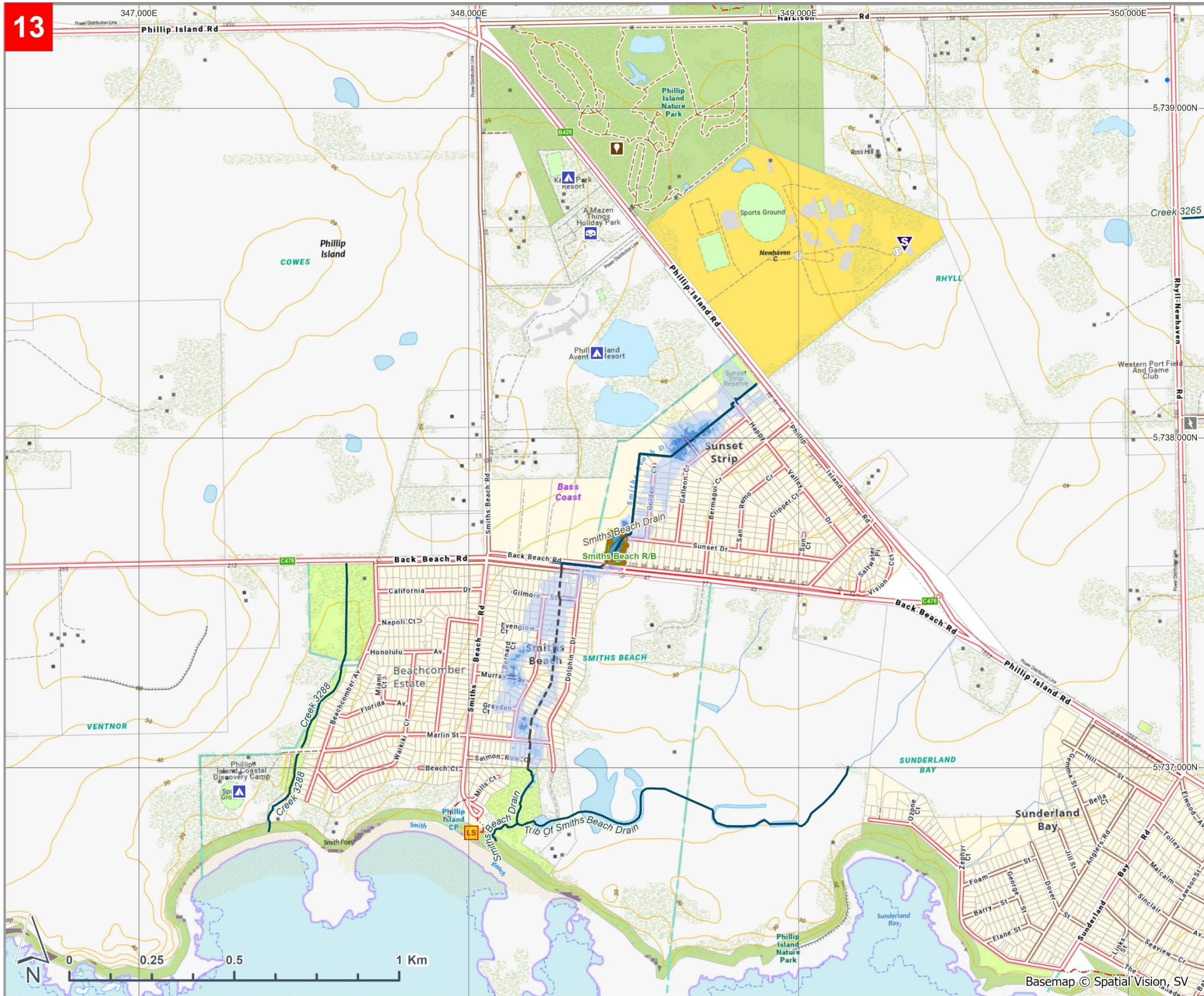
BASS COAST SHIRE

1% AEP Flooding

12. Saltwater Creek (Cowes & Ventnor)



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- Community Venue
- Education Facility
- Lifesaving Club
- Tourist Attraction
- Caravan Park
- Group Camp
- Power Facility
- Bicycle / Walking Trail
- Top Of Bank
- Embankment
- Melbourne Water Stormwater Drain
- Waterway
- Waterway (Tributary)
- Building
- Property
- Melbourne Water Retarding Basin
- 1% AEP Coastal (Storm Surge) Flood Depth**
 - Up to 30cm
 - Between 30cm and 50cm
 - Greater than 50cm
- 1% AEP Stormwater (Flash) Flood Depth**
 - Up to 30cm
 - Between 30cm and 50cm
 - Greater than 50cm



BASS COAST SHIRE

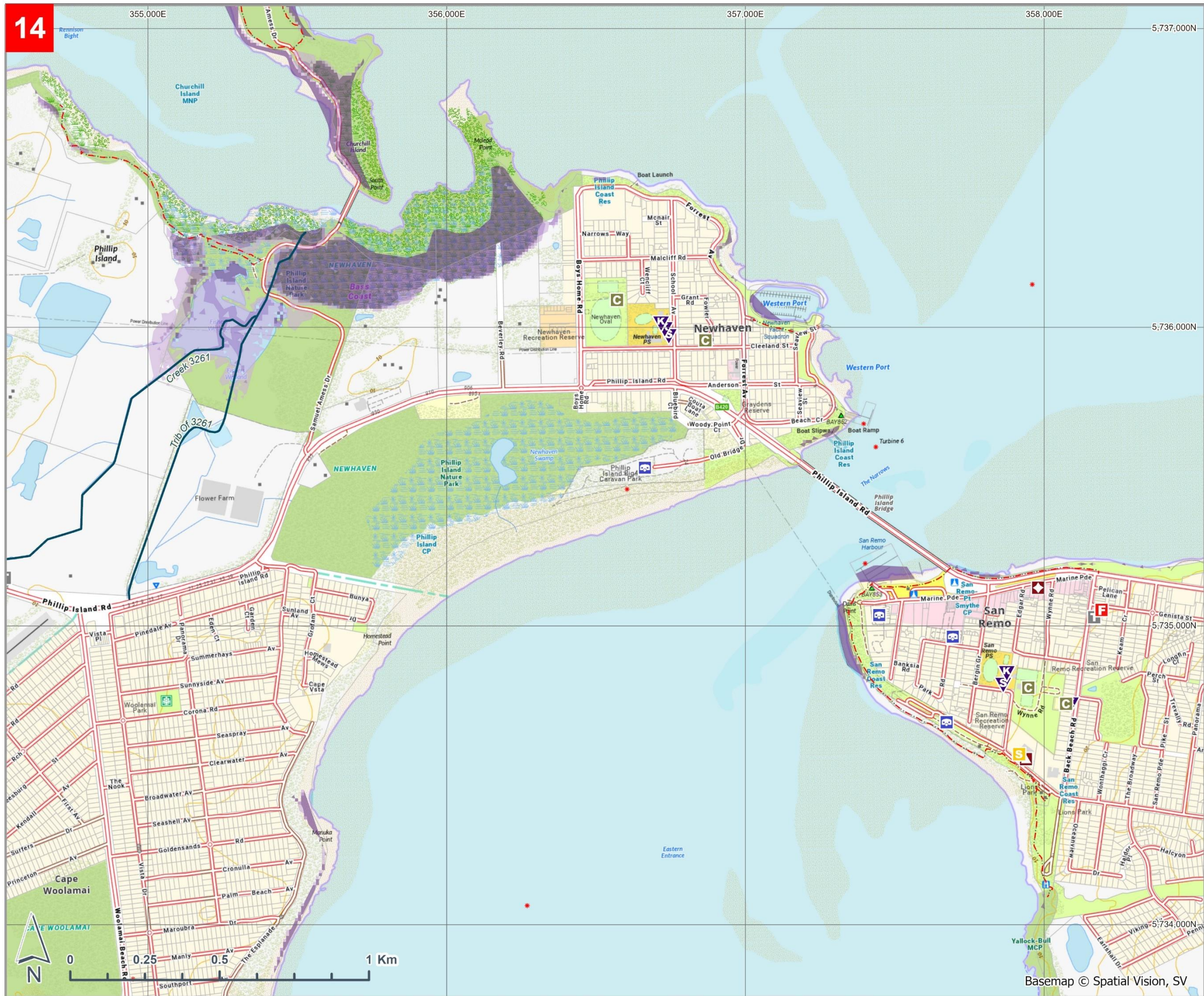
1% AEP Flooding

13. Smiths Beach Drain (Smiths Beach & Sunset Strip)



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Phillip Island Flood Mapping completed by Cardno (June, 2015). Western Port Local Coastal Hazard Assessment completed by Water Technology (January, 2024). Map produced by VICSES: 2/09/2025 11:33 AM



- Aged Care / Disability Support
- Child Care / Kindergarten
- Community Venue
- Education Facility
- Fire Station
- Place Of Worship
- Telephone Exchange
- VICSES Unit
- Caravan Park
- Bicycle / Walking Trail
- Waterway (Tributary)
- Building
- Property
- 1% AEP Coastal (Storm Surge) Flood Depth
 - Up to 30cm
 - Between 30cm and 50cm
 - Greater than 50cm



BASS COAST SHIRE

1% AEP Flooding

14. Newhaven & Sand Remo Coast (Newhaven & Sand Remo)

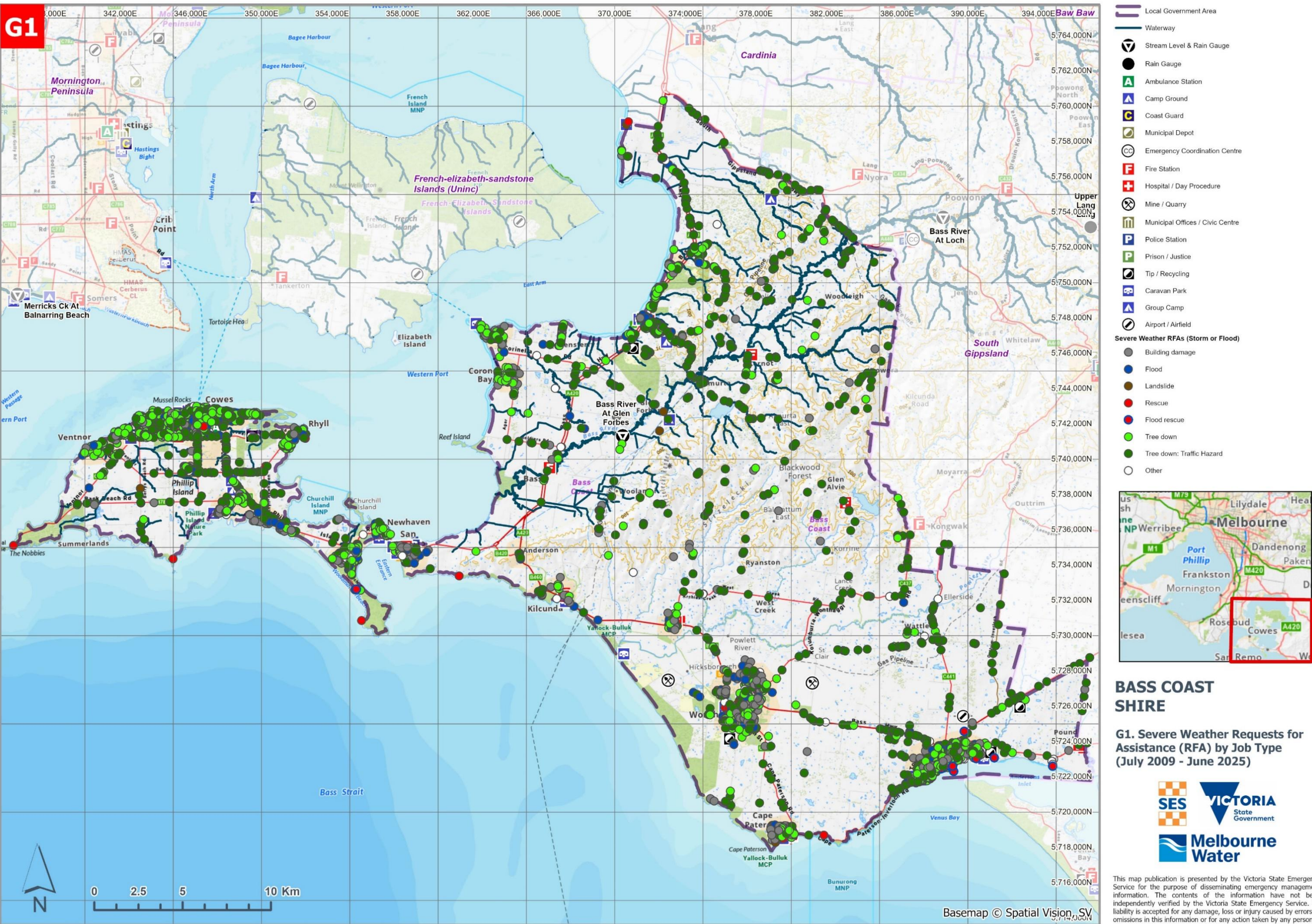


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Basemap © Spatial Vision, SV

Powlett River Flood Mapping completed by West Gippsland CMA (January, 2024). Western Port Local Coastal Hazard Assessment completed by Water Technology (January, 2024). Map produced by VICSES: 2/09/2025 2:42 PM

Severe Weather VICSES Requests for Assistance Maps



Map produced by VICSES 3/09/2025 8:36 AM



- Local Government Area
 - Waterway
 - Stream Level & Rain Gauge
 - Rain Gauge
 - Ambulance Station
 - Camp Ground
 - Coast Guard
 - Municipal Depot
 - Emergency Coordination Centre
 - Fire Station
 - Hospital / Day Procedure
 - Mine / Quarry
 - Municipal Offices / Civic Centre
 - Police Station
 - Prison / Justice
 - Tip / Recycling
 - Caravan Park
 - Group Camp
 - Airport / Airfield
- Severe Weather RFAs (Storm or Flood)**
(Where greater than 50 requests received)
- 26th - 27th September 2013
 - 10th June 2021
 - 26th May 2012
 - 2nd September 2024
 - 28th August 2020
 - 29th August 2024
 - 11th July 2019



BASS COAST SHIRE

G2. Severe Weather Requests for Assistance (RFA) by Weather Event (July 2009 - June 2025)



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Bass River Catchment Schematic

Version 4 - September 2025



Upper Lang Lang (Poowong East)
Station No. 586196 -
Location: Drouin-Korumburra Rd, Poowong East -

Bellview Reservoir
Capacity: 362 ML
Owner: South Gippsland Water

Little Bass Reservoir
Capacity: 218 ML
Owner: South Gippsland Water

SOUTH GIPPSLAND MFEP
Leongatha & Foster Units



Bass River at Loch
- Station No. 227219A
- Owner: Gippsland Regional Water Monitoring Partnership (GRWMP)
- Location: Loch-Poowong Rd, Loch (VicMap 6877 J7)
- Travel Time to Glen Forbes South: Between 6-20 hours
- Historical Flood Level: 3.15m (29th June 1980)
- Historical Flood Level: 2.72m (5th June 2012)
- Significant Level: 4.0m Breakout Level of Lower Bank at Gauging Station
- Significant Level: 6.0m McGraths Rd, Glen Forbes expected to be overtopped

POOWONG
Population: 717 -
Soldiers Rd at risk of flooding in a 1% AEP event -

Flow Direction ↓

LEGEND

River & Rain Gauge

Rain Gauge

River Gauge

TOWN / SUBURB

Reservoir / Dam / Lake

URBAN AREA

Creek / River

Stormwater Drain

20km Distance between Gauges or to River / Creek End

Schematic Not To Scale

SOUTH GIPPSLAND MFEP
Leongatha & Foster Units

BASS COAST MFEP
San Remo, Wonthaggi,
Inverloch & Phillip Island Units



Bass River at Glen Forbes South
- Station No. 227231A
- Owner: Gippsland Regional Water Monitoring Partnership (GRWMP)
- Location: McGraths Road, Glen Forbes South (VicMap Central 6920 A4)
- Historical Flood Level: 5.82m (22nd June 2012)
- Historical Flood Level: 5.52m (26th May 2012)

KERNOT

Candowie Reservoir
Capacity: 4,463 ML
Owner: Westernport Water

BASS COAST MFEP
San Remo, Wonthaggi,
Inverloch & Phillip Island Units

GLEN FORBES
- McGrath Rd at risk of flooding at
6.0m on the Glen Forbes South Gauge

BASS
- Population: 405

Western Port Bay



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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 during an incident. Field Observers, other agency networks and systems identified in this plan will help support this process.

Field Observers

Field Observers 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. During operational response, this may be through an LIO or direct to the Intelligence cell. In some circumstances it may also be through a Community Liaison Officer if one is in place within the Public Information Unit or via a Community Field Officer.
- The provision of authorised information to community members where requested.

Intelligence Gathering System



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 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.

Local Flood Information

At this time, there are no Local Flood Guides for the Bass Coast Shire Council area. Flood information for the Bass Coast Shire Council area can be found [here](#).

APPENDIX H – SEVERE WEATHER (STORM) EVENTS

Overview

Storm events in the Bass Coast Municipality may be subject to include wind storms, dust storms, hailstorms, and thunderstorms (including lightning activity). Flash flooding events are a relatively common occurrence with the greatest inconvenience being short term delays on roadways. Greater property damage may occur when flash flooding occurs in conjunction with damaging winds.

Severe storm activity could result in injuries and an 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. Financial loss and temporary displacement of Bass Coast residents may occur as a result of property damage.

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

Bureau of Meteorology weather districts

The municipality falls within the weather district of West and South Gippsland.

Storm specific community education programs

VICSES provides standard community education material on [what to do during a storm](#) on its public website.

APPENDIX 11 – STORM DAMAGE SPECIFIC RESPONSE ARRANGEMENTS

Overview

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 recovery 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 intepower 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 flood and storm 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](https://www.emergency.vic.gov.au/incidents-and-warnings). 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 CFA brigades and 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.

- Bass Coast Shire
- CFA
- Forest Fire Management Victoria (DEECA, Parks Victoria)
- DTP (VicRoads)
- Panel of contractors

The following headings details each agency and the types of tasks its crews are authorised and trained to be tasked with when supporting VICSES storm operations.

Bass Coast Shire Council

- Detail services that fall under its jurisdiction
- Other potential services it can provide by agreement
- Callout arrangements

Country Fire Authority

CFA brigades in the municipality are made up of a mix of urban and rural brigades. Rural brigades typically have the capability to assist with on ground works including general tree down requests & tree down traffic hazard requests. Urban brigades typically have this same capability with the addition of Safe Work At Heights System operators, meaning they can also assist with trees down on rooves.

Forest Fire Management Victoria

DEECA crews typically have the capability to assist with all types of tree down requests for assistance; they also have the capability and access to machinery to deal with larger requests that VICSES may not have the capability for. Noting the above, FFMV's assistance is also dependent on planned burns in the area which may pull away their resources.

External panel of contractors (how to access it)

The Victorian Government has established a panel of contractors that are approved to provide services in emergencies without the need for quote or tender processes.

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.

Bass Coast Council establish coordination and liaison between the distribution networks and the ICC through its Emergency Management Region contact distribution list.

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 an CFA member 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
- Preparing a briefing to support in-coming other agency resources to identify
 - 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 12 – 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) <i>Issued Monday, Wednesday, and Friday.</i>	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.
Riverine flood warning(s) <i>Issued up to 24hrs before forecast flooding.</i> Flood Scenario Product <i>Issued ahead of forecast RL3 or higher in consultation with the Flood team</i>	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. No expected residential flooding impacts. No isolation of communities. No impact to transport routes. No evacuation required. No impact to utility services. No expected dam failure. No relocation of stock and/or equipment.	Areas of inundation are more substantial in size but consequence is low. No expected above floor flooding. No isolation of communities. Small number of minor transport routes may be affected. Evacuation not expected to be required. No impact to utility services. No expected dam failure. Possible relocation of stock and/or equipment.	Areas of inundation are more substantial with increased consequence. Properties may be isolated and a small number affected above the floor level. No isolation of communities. Small number of transport routes may be affected. Planning for possible evacuation. No impact to utility services. No expected dam failure. Low number of relocation of stock and/or equipment.	Extensive rural areas and/or urban areas are inundated. Many properties affected above floor level. One to two communities isolated. Number of transport routes may be affected, some closed. Evacuation of flood affected areas likely. Utility services may be impacted. Dam failure possible. Medium number of relocation of stock and/or equipment.	Extensive rural areas and/or urban areas are inundated. Significant number of properties affected above floor level. Three or more communities isolated. Major transport routes closed. Evacuation of large number of people/communities required. Utility services will be impacted. Dam failure considered very likely. 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.	<u>SCC</u> SAC - in place. SDO - in place. Night shift on standby or remote. <u>ESTA</u> SOCC - on standby.	<u>SCC</u> SAC - in place. SDO - in place. Night shift on standby. <u>ESTA</u> SOCC - in place. Night shift on standby.	<u>SCC</u> SAC - in place for day and night shifts. SDO - in place for day and night shifts. <u>ESTA</u> 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.	<u>RCC</u> RAC - in place. Night shift on standby or remote. <u>ROC</u> RDO - in place. Resources - in place (if required). Logistics - in place (if required). Night shift RDO on standby or remote.	<u>RCC</u> RAC - in place. Night shift on standby or remote. <u>ROC</u> RDO - in place. Resources - in place. Logistics - in place. Night shift RDO on standby or remote.	<u>RCC</u> RAC - in place for day and night shifts. <u>ROC</u> 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. <i>Where an ICC is not active, consider roles in place at a ROC to support critical functions such as warnings and public info.</i>	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	Limited impact.		Some disruption to access to parks and low lying community areas and infrastructure.		Significant damage to road infrastructure and community facilities. Long term closure of key community facilities likely.	
Essential Community Infrastructure			Some minor damage to community infrastructure built on floodplains.			
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.	
Telecommunications	Nil impact.		Minimal impact to individual premises only.		Significant potential for pollutants including sewerage in water. 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	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.	
Animal welfare					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.



VICES Severe Weather Readiness and Activation Levels - V6.0 - June 2024

CO/24/64321

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 (SWB) <i>Issued Monday, Wednesday, and Friday.</i>	Severe Weather Intelligence Briefing (SWB), issued Monday, Wednesday, and Friday.			Thunderstorm Forecast Chart (TFC), issued daily. Warnings issued by the BoM ad hoc.		
	No colour.	No colour.	No colour.	<i>Discussion to be held with the BoM at the SWB meeting to determine final RL.</i> <i>Consider: time of day, location, extent of forecast impact area for EM Region, previous impacts.</i> Coloured yellow for winds and/or rainfall. Coloured orange for winds and/or rainfall. Coloured red for winds and/or rainfall.		
Thunderstorm Forecast Chart (TFC), issued daily. <i>Note: this will not impact colour on the SWB.</i>	No thunderstorms.	Thunderstorms possible.	Severe thunderstorms likely for 4 or more weather districts. Consider: - Extent of district - Central district may have increased consequences. Detail from BoM discussion and/or issued severe thunderstorm warning to determine readiness level.	<i>Advice to be sought from the BoM to determine RL based on the TFC.</i> <i>Consider: time of day, location, extent of forecast impact area for EM Region, previous impacts.</i> Severe thunderstorms likely for majority of state. Consider: - Extent of district - Central weather district may have increased consequences. Key words to consider in forecast: - Supercells - Organised storm cells - Tornadoes / microbursts. Detail from BoM discussion and/or issued severe thunderstorm warning to determine readiness level.		
Severe Weather or Severe Thunderstorm Warning <i>Issued up to 24hrs in advance of the forecast event.</i>	<i>Consider: time of day, location, extent of forecast impact area for EM Region, previous impacts, AEP.</i> <i>Add 10km/hr to Active areas.</i>					
	No severe weather or severe thunderstorm warning.	Possible for: - Average winds (up to 60 km/hr) with wind gusts (up to 90 km/hr) - Rainfall - Hail (<2cm)	Possible for: - Average winds (up to 60 km/hr) with wind gusts (90 to 100 km/hr) - Heavy rainfall - Hail (<3cm) - Flash flooding	Possible for: - Average winds (60 - 80 km/hr) with wind gusts (101-115 km/hr) - Heavy rainfall - Hail (3-5cm) - Flash flooding	Likely for: - Average winds (60 - 80 km/hr) with wind gusts (101-115 km/hr) - Heavy rainfall - Hail (3-5cm) - Flash flooding Possible for: - Average winds (80+ km/hr) with wind gusts (115+ km/hr) - Intense rainfall - Giant hail (5cm+) - Flash flooding - Tornado - Microburst	Likely for: - Average winds (80+ km/hr) with wind gusts (115+ km/hr) - Intense rainfall - Giant hail (5cm+) - Flash flooding - Tornado - Microburst
Response Activity	<i>Consider: Increase level based on consequences of RFAs (e.g. power outages, significant roof/building damage to multiple properties).</i>					
	Local level Unit response Impacts / consequences of RFAs warrant activation. OR Active individual RFAs per Unit: 1 - 10	Local level Unit response Impacts / consequences of RFAs warrant activation. OR Active individual RFAs per Unit: 11 - 50	Local level Unit response with additional local agency support Impacts / consequences of RFAs warrant activation. OR Active individual RFAs per Unit: 51 and above Active RFAs per EM Region: 300 - 499	Multi-unit response with increasing multi-agency support. Impacts / consequences of RFAs warrant activation. OR Active RFAs per EM Region: 500 - 999 ESTA - Critical Incident Response Plan (CIRP) Level 1 activated.	Multi-unit response with multi-agency support and high level of multi-agency resources utilised. Impacts / consequences of RFAs warrant activation. OR Active RFAs per EM Region: 1,000 - 1,999 ESTA - Critical Incident Response Plan (CIRP) Level 2 activated. Event creation has increased to 2-4 per minute. <15 calls waiting.	Multi-unit response and high level of multi-agency response activity with significant impacts across municipalities. Impacts / consequences of RFAs warrant activation. OR Active RFAs per EM Region: 2,000+
Readiness State Command SAC, SDO, SOCC	VICES - Business As Usual - Operations			Multi Agency Operations under JSOP 2B3		
	SDO/SAC rostered. Standard VICES on call arrangements.	SDO/SAC rostered. Standard VICES on call arrangements.	SCC SAC - consider in place based on forecast areas and timings of impact. SDO - consider in place based on forecast areas and timings of impact.	SCC SAC - in place. SDO - in place. Replacement shift on standby / remote. ESTA SOCC - in place. Replacement shift on standby. VicPol RCC Consider State Water Rescue Commander in place based on risk/impact of flash flood.	SCC SAC - in place. SDO - in place. Replacement shift on standby / in place dependent on timings of impact. ESTA SOCC - in place. Replacement shift on standby / in place dependent on timings of impact. VicPol RCC Consider State Water Rescue Commander in place based on risk/impact of flash flood. Replacement shift in place dependent on timings of impact.	SCC SAC - in place. SDO - in place. Replacement shift in place where SCC is active day/night. ESTA SOCC - in place. Replacement shift in place dependent on timings of impact. VicPol RCC Consider State Water Rescue Commander in place based on risk/impact of flash flood. Replacement shift in place dependent on timings of impact.
Regional Command RDO, RAC	RDO/RAC rostered. Standard VICES on call arrangements.	RDO/RAC rostered. Standard VICES on call arrangements.	ROC RAC & RDO - consider in in place based on risk/impact to forecast areas and timings of impact. Warnings - consider member in place/standby/remote based on risks/impacts of flash flood in EM Region. Media Liaison - consider member in place/standby/remote to manage media enquiries.	RCC RAC - in place. Replacement shift on standby / remote. ROC RDO - in place. Replacement shift RDO on standby / remote. Resources - in place (if required). Logistics - in place (if required). <i>Where, based on RC discretion, an ICC is not active, consider Warnings and Media roles in place/standby/remote.</i> SCP/DCP activated as per advised command structure.	RCC RAC - in place. Replacement shift on standby / remote. ROC RDO - in place. Replacement shift RDO on standby / remote. Resources - in place (if required). Logistics - in place (if required).	RCC RAC - in place. Replacement shift in place where RCC is active day/night ROC RDO - in place. Replacement shift RDO on standby / remote. Consider additional support member if RDO activated for night shift alone. Resources - in place. Logistics - in place.
Unit Command UDO, ICP, SCP, DCP	UDO rostered.	UDO rostered.	UDO rostered. Consider plan for activation of ICP if required.	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. <i>Where an ICC is not active, consider roles in place at a ROC to support critical functions such as warnings and public info.</i>	Activated using JSOP2.03 as guidance.	Activated using JSOP2.03 as guidance.
Unplanned Activation State Command SAC, SDO, SOCC	VICES - Business As Usual - Operations			Multi Agency Operations under JSOP 2B3		
	Standard VICES on call arrangements.	SDO & SAC aware.	SCC SAC & SDO - consider activation to SCC based on impacts / consequences of RFAs. OR 2 or more EM Regions with impacts activate a ROC.	SCC SAC - activated to SCC. SDO - activated to SCC. Replacement shift on standby / remote. ESTA SOCC - on standby.	SCC SAC - activated to SCC. SDO - activated to SCC. Consideration of replacement shifts to be sourced to manage fatigue. ESTA SOCC - activated to ESTA. Consideration of replacement shifts to be sourced to manage fatigue.	SCC SAC - activated to SCC. SDO - activated to SCC. Consideration of replacement shifts to be sourced to manage fatigue. ESTA SOCC - activated to ESTA. Consideration of replacement shifts to be sourced to manage fatigue.
Regional Command RDO, RAC	Standard VICES on call arrangements.	RDO actively monitoring as required RAC monitoring.	ROC RAC & RDO - activated to ROC if EM Region meets identified RFA triggers above. OR Impacts / consequences of RFAs warrant activation. Warnings - consider warnings member activated to based on risks/impacts of flash flood in EM Region.	RCC RAC - activated to RCC. Consideration of replacement shifts to be sourced to manage fatigue. ROC RDO - activated to ROC. Consider additional management support member if RDO activated to ROC alone. Consideration of replacement shifts to be sourced to manage fatigue.	RCC RAC - activated to RCC. Consideration of replacement shifts to be sourced to manage fatigue. ROC RDO - activated to ROC. Consider additional management support member if RDO activated to ROC alone. Consideration of replacement shifts to be sourced to manage fatigue.	RCC RAC - activated to RCC. Consideration of replacement shifts to be sourced to manage fatigue. ROC RDO - activated to ROC. Consider additional management support member if RDO activated to ROC alone. Consideration of replacement shifts to be sourced to manage fatigue.
Unit Command UDO, ICP, SCP, DCP	Consider activation of ICP dependent on consequences / impacts.	Consideration for ICP to be activated if an individual Unit meets identified RFA triggers above. OR Impacts / consequences of RFAs warrant activation.	ICP to be activated if an individual Unit meets identified RFA triggers above. OR Impacts / consequences of RFAs warrant activation.	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.	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 tree blockages or flash flooding impacts.		
Remote Communities	Inconvenience only.		Some minor isolation and loss of utilities of individual properties or remote communities is likely.	Community isolation and loss of food/supplies potential with resupply requirements dependant on time of power or access outages.		
Health	Little impact expected. Some local issues might be encountered, but managed locally within own facility plans.		Consideration for review and familiarisation with facility plans. VICPOL and DHHS to review Vulnerable persons list.	Highly likely vulnerable people impacted by power outage will require relocation. Communities without power for days needing support.		
Critical Infrastructure	Nil impact.		May require some preparatory work and discussion with owner of infrastructure.	Significant work likely to be required to protect critical infrastructure. Contingency plans put in place if loss of the infrastructure occurs.		
Public Infrastructure	Limited impact.		Some disruption to access to parks and vegetated community areas and infrastructure.	Significant damage to community infrastructure and community facilities.		
Essential Community Infrastructure			Some minor damage to community infrastructure.	Long term closure of key community facilities likely.		
Power	Possible power disruptions.		Likely short term power disruptions.	Power disruptions almost guaranteed, with potential long term outages.		
Water Utilities	Little impact expected some local issues might be encountered but managed locally.		Increased potential but still managed locally. May be minor sewerage overflow issues in isolated areas.	Highly likely that some infrastructure will be impacted, water authorities should develop or initiate their plans to address issues. Significant potential for pollutants including sewerage in water and loss of power will exacerbate the impacts.		
Telecommunications	Unlikely impacts.		Minimal impact to individual premises only.	Significant impact with loss of landlines and mobile powers which will affect peoples capacity to receive warnings and information. Commercial Business impacts with loss of phone services.		
Gas	Little impact expected		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	Some local issues might be encountered but managed locally. Unlikely impacts.		Some minor roads may be impacted with possible disruption to critical needs supplies such as milk.	Highly likely for roads to be cut and egress and access impacted. Major roads potentially cut in some locations traffic diversions in place. Potential rescue of trapped persons in vehicles highly likely. Expected impact on rail routes. Economic impact likely with loss of power and utilities supply for lengthy period.		
Public Transport	Limited impact on public transport routes.		Impact to public transport routes may occur but likely to be minimal with diversions possible	Public transport impacts will occur with roads and rail lines cut and no alternative route available. Significant disruption to people movement likely.		
Education	Unlikely impacts.		Some impact expected. Traffic management plan for school buses should be considered.	Some school and preschools may be impacted by utilities loss and damage to infrastructure. School bus routes closed for period of time.		
Public Events	May be cancelled due to weather conditions only.		Some public events may need to be cancelled or rescheduled due to safety of patrons either whilst at event or travelling to/from the event.	Public events impacted likely cancellation of major events due to wind impacts and risk, and potential flooding impact on venue or ability to attend or leave event.		
Tourism	Unlikely that event(s) will be impacted but consideration must be given to any event occurring to ensure it is safe to continue.		Potential impact on tourist locations if area not safe to visit or isolated due to road closures.	May impact on high value tourist locations and facilities with long term impacts in the social and economic environment of communities.		
Agriculture	No impact likely with landowners managing any localised issues.		Potential impact with losses to live stock, fencing and crops including high intensive farming of produce and tree farms.	Substantial impact to crops, including high intensive produce farming (vegetables and fruit) and tree farms with short and long term impacts due to loss of crops.		
Animal welfare				Economic impact to area		
Environmental	Minimal impact.		Potential for stream erosion and loss of vegetation around watercourses. Minor tree damage.	Significant disturbance to vegetation with some areas heavily impacted.		
Cultural Heritage	Minimal impact likely.		Some disturbance along watercourses may occur, but likely to be minimal.	Potential for impact on historical structures and features.		
Relief and Recovery	Relief and recovery activity unlikely may be some local issues.		Increased potential for relief and recovery activity, but likely to be managed locally by LGA with support of DHHS	Formal arrangements put in place for relief and recovery activity. Regional Recovery Commander appointed. Health Commander in place Demands on relief and recovery to be substantial and potentially long term.		

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

Attachment 1 – VICSES flood mapping symbol set

Version 6 January 2024

 Stream & Level Gauge  Stream Level Gauge  Rain Gauge  Drainage Pumping Station  Sewer Pumping Station  Hospital  Fire Station  VICSES Unit  Ambulance Station  Police Station  Coast Guard  Municipal Office  Municipal Depot  Education Centre  Child Care Centre  Community Centre  Aged Care Facility  Place Of Worship  Power Facility  Telephone Exchange  Caravan Park  Camping Ground  Sewer Emergency Relief Point  Severe Weather RFA Red  Severe Weather RFA Orange  Severe Weather RFA Yellow  Severe Weather RFA Light Green  Severe Weather RFA Dark Green  Severe Weather RFA Light Blue  Severe Weather RFA Dark Blue	 Severe Weather RFA Purple  Severe Weather RFA Pink  Flood Gauge - Below Minor  Flood Gauge - Minor  Flood Gauge - Moderate  Flood Gauge - Major  Flood Gauge - No Scenario  Severe Weather Grey  Severe Weather RFA Brown  Severe Weather RFA White  Museum  Mine  Law Court  Helipad  Airfield  Level, Rain & WQ Gauge  Level, Rain WQ & FCS Gauge  Level, Rain & FCS Gauge  Level FCS Gauge  Level & Rain Gauge  Life Saving Victoria  Law Court  Hospital (Emergency)  Museum  Prison  Tip / Recycling  Quarantine  Emergency Coordination Centre	 Levee  Stormwater Drain  Waterway Main  Bicycle / Walking Trail  Flood Model Extent  Flooded Road  Retarding Basin  Appendix Area  Polygon Mask  Waterbody  Flash Flood Extent  Riverine Flood Extent  Council Flood Extent  Property  Building  Extent Indicator  Property at Risk  Municipal Boundary  Hazard - H1  Hazard - H2  Hazard - H3  Hazard - H4  Hazard - H5  Hazard - H6  Drainage & Waterway Boundary  Below Minor Catchment  Minor Catchment  Moderate Catchment  Major Catchment  No Scenario Catchment  Unit Boundary  Coastal Extent  Retirement Village
 Index Map Numbers  Municipality  VICSES Drains for LFG  Waterway Label		

Obtaining the symbol set for use in ArcGIS

The symbols shown above and their specifications reside within a stylx file maintained by VICSES. The consultant preparing a flood study should add this stylx file into ArcGIS to easily apply symbology to MFSSP & LFG Mapping projects.

Application of the Spatial Vision Mapscape Basemap

The consultant shall use colour and greyscale basemaps makes, which make map creation easier and more consistent. These basemaps replace previously used vector layer files needed for roads and polygon infrastructure.

The Mapscape Basemap licence for VICSES covers usage for printed and pdf mapping outputs which covers both MFSSP & LFG mapping products.

The following copyright label needs to be applied to each map:

© Spatial Vision, SV

Preferable formats for deliverables

- The MFSSP and LFG outputs should if possible be delivered as 'stand-alone' documents.
- Information presented in MFSSPs and LFGs should be consistent yet cater to the two distinct audiences and formats. For example, the flood gauge table should be consistent with the flood consequence and historical information provided within flood intelligence cards.
- There are many different ways of presenting the information in the MFSSPs and LFGs. For example, photos may be used. In MFSSPs tables and graphs may be used to present information (i.e. road closure information table, cumulative rainfall/consequence scenario graph).
- Reference to stage (m) and discharge (ML/d) are often made when describing design flood events and historic flood events. Where the information is available, stage (i.e. elevation of a river level measured to a particular datum) is preferred over the use of discharge (ML/d) (i.e. river flow rates) as it typically provides better links with flood warning systems and flood preparedness activities.