



Peterborough

Flood information



Peterborough, Curdies River Esuary outlet (June 2018)



For flood emergency assistance call
VICSES on **132 500**





Peterborough

Peterborough is impacted by both riverine and coastal flooding. The Curdies River Estuary is predominantly shaped by the prevailing south westerly ocean swell causing infilling and is classified as a wave dominated estuary. The rocky headland to the west of the estuary combined with easterly currents, common in summer months, promotes the accumulation of sand at the estuary entrance forming sandbars.



Curdies River Estuary, a sandbar is blocking the Estuary mouth.

The interaction of riverine flooding and coastal processes are important considerations in determining the overall flood risk in Peterborough. The influence of these two factors on flooding varies with condition of the entrance, tides, swell, storm surges, the height of the sandbar and river flow. If flooding occurs in the Curdies River when the estuary mouth is closed, this will significantly increase flood levels in Peterborough. The height of the sandbar strongly influences the flood levels in Peterborough, the higher the sandbar the higher the flood levels.

Conversely there are significant coastal flooding risks associated with artificially removing the sandbar during storm surge conditions. This can cause coastal flooding from waves being pushed up the estuary.

Key factors influencing flooding in Peterborough include;

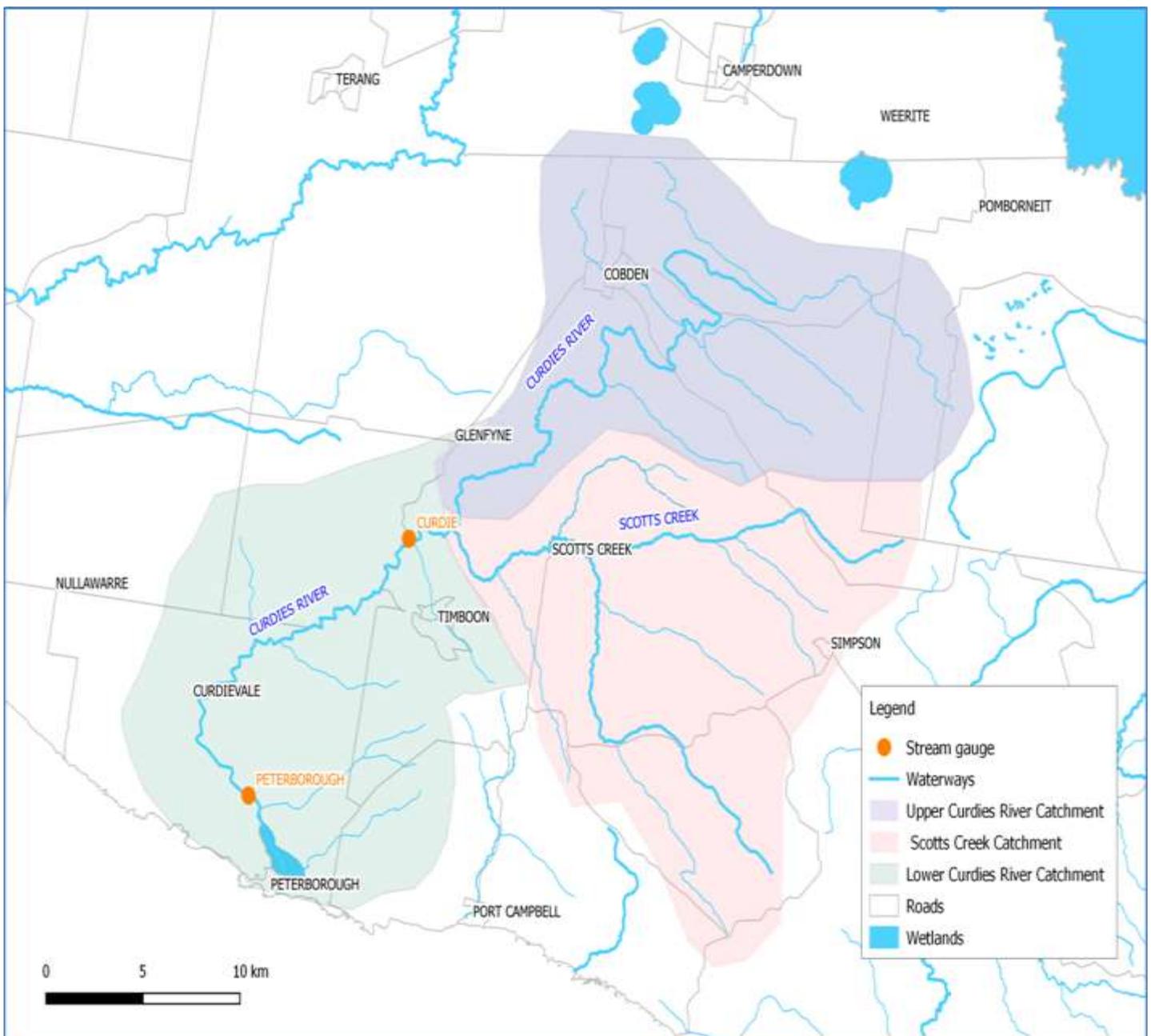
- Peak flows in Curdies River (recorded between 1,000 ML/day to 70,000 ML/day). ML/day stands for a million litres per day.
- Sandbar height (recorded between 0 m AHD to 2.5 m AHD). AHD stands for Australian Height Datum, meters above mean sea level.
- A storm surge event can occur when estuary mouth is open or closed. Large waves can overtop the sandbar filling up the estuary inlet, causing flooding in Peterborough.



Riverine Flooding in Peterborough

Peterborough is located on the banks of Curdies River Inlet, the estuarine lagoon of the Curdies River. Stream gauges on the Curdies River include the Curdies and Peterborough gauges, refer to the map below. There is also a gauge board at the Curdies Inlet on the Peterborough Bridge, refer to photo on page 4.

Historic rainfall data shows that the Scotts Creek sub catchment contributes the majority of stream flow during flood events. Refer to the map below showing steam gauge and sub catchment areas within the Curdies River Catchment.





Curdies Inlet gauge board on the Peterborough Bridge.

Historic Flood Events

Flood events have occurred in Peterborough during 2010, 2011, 2012, 2013, 2014, 2015, 2016 and 2017, with the most recent flood event occurring in June 2018. Refer to flood photo of the Peterborough June 2018 event.



During the August 2010 flood event, peak river flows naturally cut through the sandbar (source: CCMA).



Curdies Estuary Inlet mouth closed, December 2018.



Flood Intelligence Card

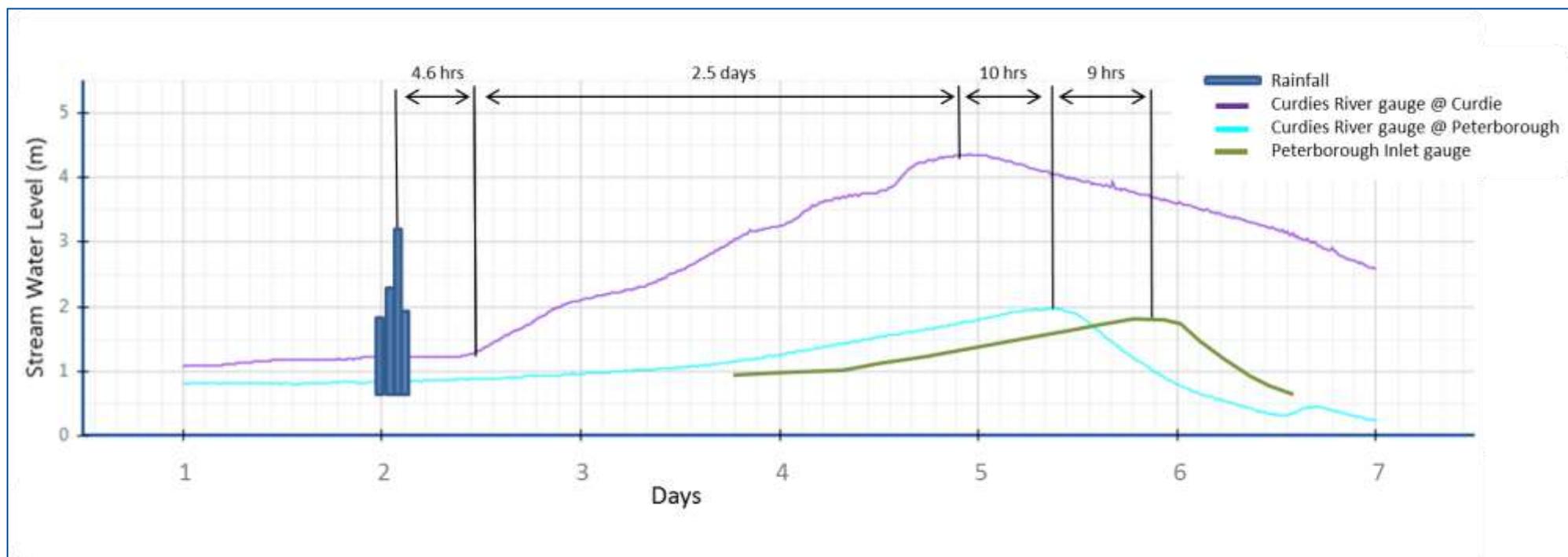
Curdies River at Curdie gauge height (m)	Curdies River, U/S Peterborough gauge height (m)	Curdies River, Peterborough gauge board, west of Hamilton Street Bridge (m)	Historic flood event	Flood Impacts
		3.10	1966	
		2.80	100 year event	Estimated using the 1978 flood level. Caravan Park buildings are subject to flooding above floor. Two houses are subject to flooding above floor.
		2.02	1929 & 1974	
7.19	1.98	2.00	2010	
4.36	1.97	1.97	18th June 2018	Reported rainfall total was 135 mm. The sand bar at the Estuary mouth was unable to be opened. Many Caravan Park buildings were flooded above floor. Two houses flooded above floor in Dorey Street and Halladale Street. There were also several houses in Irvine Street impacted by flooding below floor.
2.65	1.74	1.78	August 2013	The river mouth was blocked. Water rose within centimetres of 6 bungalows in the Peterborough Caravan Park. Access surrounding the houses was blocked. Parks Victoria opened the river mouth to relieve flooding.
		1.60	June 2014	May cause flooding of farmland, infrastructure, boat ramps, jetties at Curdievale and septic tanks in Peterborough.
4.99	1.5	1.58	July 2017	
	1.51	1.54	May 2011	The Great Ocean Road Tourist Park (caravan park in Irvine Street) impacted by flooding when the inlet level is > 1.5 m (refer to flood extent map 1).
		1.47	2012	
6.13	1.31	1.42	June 2016	
		1.30		Curdies River Estuary intermittently closes following the formation of a sandbar at the estuary entrance. EstuaryWatch regularly monitor the Curdies River levels.



Flood Peak Travel Times

Although each flooding event is different, closely monitoring the Curdie and Peterborough stream gauge levels in the upper Curdies River can provide several days of warning time. The time from a heavy rainfall event in the upper catchment to potential impacts in Peterborough can be three days. The graph below provides an example of flood peak travel time for a significant flood event, with approximately 140 mm of rainfall over 4 hours in the upper catchment;

- Time from the start of rain to steep rise in floodwater at the Curdie gauge 4 to 6 hours.
- Time between start of steep rise and peak at the Curdie gauge 2.5 days.
- Time between Curdie gauge and Peterborough gauge peak 10 hours.
- Time between Peterborough gauge and the Peterborough Inlet gauge board peak 9 hours.





Map 1. Flood extent map, relating to the Curdies River Inlet gauge board height (m AHD), refer to the Flood Intelligence Card above. When the flood level at the Curdies River Inlet gauge board reaches 1.5 m, floodwater will extend to the light blue flood extent.



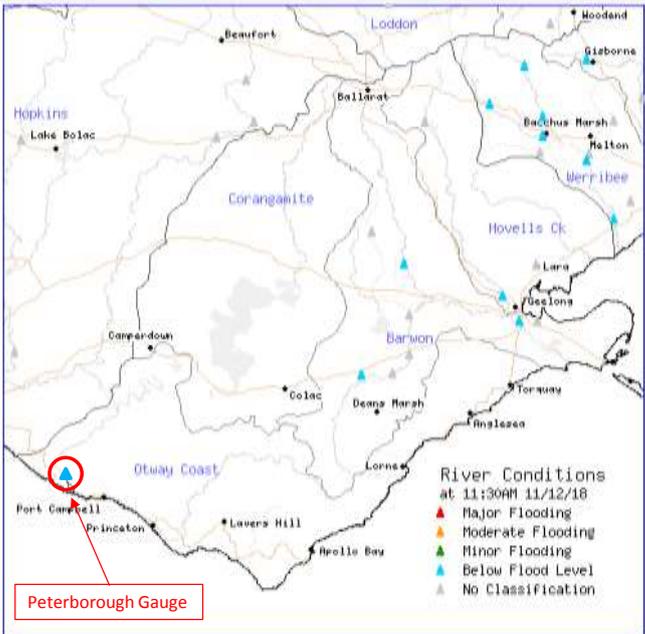
You can ensure you are always up to date by following these easy actions:

Monitor the stream gauge heights to determine the flood risk in Peterborough. Compare the current stream gauge heights (refer to instructions below) with stream gauge heights in the **flood intelligence card** (above) and the **flood extent map** (above) to determine if flooding is likely in Peterborough.

This needs to be done in conjunction with monitoring the sandbar height. If the Curdies River Inlet mouth is open, the flood risk is considerably reduced.

Monitor Curdies River (Peterborough gauge) water levels
bom.gov.au/vic/flood

- Select 'River Conditions' (above the map)
- Click on Corangamite on the right.
- Find the Peterborough gauge and hover over it.
- Compare river height to the stream gauge heights on the flood intelligence card (above) to determine if flooding is likely in Peterborough.



Staying Informed and Further Information

▪ Current warnings (VicEmergency)	emergency.vic.gov.au	1800 226 226
▪ Bureau of Meteorology (BoM)	bom.gov.au/vic/warnings	1300 659 217
▪ VicRoads Traffic	traffic.vicroads.vic.gov.au	
▪ Emergency Broadcasters	ABC 91.3, 92.1 FM ABC 1602 AM SKY NEWS Television	
▪ VICSES Social Media	facebook.com/vicses twitter.com/vicsesnews	Life-threatening Emergency 000
▪ Preparing for Flood Emergencies	ses.vic.gov.au/get-ready	
▪ Creating an Emergency Plan	redcross.org.au/prepare	
▪ Corangamite Catchment Management Authority	ccma.vic.gov.au	5232 9100
▪ Moyne Shire Council	moyne.vic.gov.au	5568 0555
▪ National Relay Service NRS	relayservice.gov.au	



Flood warnings and emergency checklist

Bureau of Meteorology Warnings

Warnings are issued by the Bureau of Meteorology (BoM) to tell people about possible flooding.

A **Flood Watch** means there is a developing weather pattern that might cause floods in one or two days. This service covers the whole state.

A **Flood Warning** means flooding is about to happen or is already happening. There are minor, moderate and major flood warnings. This service is only available where flood warning systems are in place.

 A Minor Flood Warning means floodwater can:	 A Moderate Flood Warning means floodwater can:	 A Major Flood Warning means floodwater can:
Spill over river banks and cover nearby low lying areas.	Spill over river banks and cover larger areas of land.	Cause widespread flooding.
Come up through drains in nearby streets.	Reach above floor levels in some houses and buildings.	Many houses and businesses are inundated above floor level.
Require the removal of stock in some cases.	Require evacuation in some areas.	Cause properties and whole areas to be isolated by water.
Cover riverside camping areas and affect some low-lying caravan parks.	Affect traffic routes.	Closes major roads and rail routes.
Cover minor roads paths, tracks and low level bridges.	Require the removal of stock in rural areas.	Require many evacuations.
Affect backyards and buildings below floor level.		Affect utility services (power, water, sewage etc).

Severe Thunderstorm Warnings

Thunderstorms are classified as severe when there is potential to cause significant localised damage through wind gusts, large hail, tornadoes or flash flooding. Severe Thunderstorm Warnings are issued to the community by BoM.

Severe Weather Warnings

These warnings are issued to the community by BoM when severe weather is expected that is not directly related to severe thunderstorms or bushfires. Examples of severe weather include damaging winds and flash flooding.

Flash Flooding

- Flash Flooding can occur quickly due to heavy rainfall. You may not receive an official warning.
- Stay informed- monitor weather warnings, forecasts and river levels at the [BoM website](#) and warnings through [VicEmergency](#).



VICSES Warnings

VICSES utilises the VicEmergency app, website and hotline to distribute flood warnings and emergency information in Victoria. You can also access this information through our social media channels and emergency broadcasters.

VICSES warnings aim to provide you with information to help you make good decisions to protect yourself and your family.

The warning level is based on severity, conditions and the likelihood of community impact.

WARNING LEVELS

	EMERGENCY WARNING You are in imminent danger and need to take action immediately. You will be impacted. A Major flood warning usually fits into this category.
	WARNING (WATCH AND ACT) An emergency is developing nearby. You need to take action now to protect yourself and others. A Moderate flood warning usually fits into this category.
	ADVICE An incident is occurring or has occurred in the area. Access information and monitor conditions. Can also be used as a notification that activity in the area has subsided and is no longer a danger to you. A Minor flood warning or Flood Watch usually fits into this category.

ADDITIONAL MESSAGES

	PREPARE TO EVACUATE/ EVACUATE NOW An evacuation is recommended or procedures are in place to evacuate.
	COMMUNITY INFORMATION Updates for communities affected by an emergency. Can also be used as a notification that an incident has occurred but there is no threat to community.
	EMERGENCY ALERT During some emergencies, communities may be alerted by the sounding of a local siren, or by sending an SMS to mobile phones or a voice message to landlines.

Your emergency plan

Emergencies can happen at any time, with little warning. People who plan and prepare for emergencies reduce the impact and recover faster.

Taking the time to think about emergencies and make your own plan helps you think clearly and have more control to make better decisions when an emergency occurs.

Visit redcross.org.au/prepare start creating your plan.



- Remember, you may not receive any official warning.
- Emergency assistance may not be immediately available. Be aware of what is happening around you to stay safe.
- Never wait for a warning to act.



Emergency Kit

Visit [Emergency Toolkit](#) for more information



Every home and business should have a basic emergency kit with a supply of 3 days:



Check your kit often. Make sure things work. Replace out of date items.

When a warning is issued, have ready for use or pack into your kit:

I need to add:

Write your list here. Tick items as you pack them into your kit

- | Special needs (eg, babies,
- | Elderly)
- | Photos
- | Family keepsakes
- | Valuables
- | Other



Emergency Checklist

- Check if your insurance policy covers flooding.
- Keep this list of emergency numbers in your mobile phone
- Download the Vic Emergency app on your mobile phone.
- Put together an emergency kit and prepare a home or business emergency plan, see [redcross.org.au/prepare](https://www.redcross.org.au/prepare)

Before Flooding

- Leaving early before flooding occurs is always the safest option. Evacuating through floodwater is very dangerous and you may be swept away.**
- Stay informed- monitor weather warnings, forecasts and river levels at [bom.vic.gov.au](https://www.bom.vic.gov.au) and warnings through [emergency.vic.gov.au](https://www.emergency.vic.gov.au).
- Secure objects likely to float and cause damage.
- Listen to the radio and check the VICSES website for information and advice.
- Go over your emergency plan. Pack clothing and other extra items into your emergency kit and take this with you if you evacuate.
- If you are staying in a caravan, move to higher ground before flooding begins.

During Flooding

- Make sure your family members and neighbours are aware of what is happening.
- Conditions change rapidly; roads and escape routes can be covered or blocked.
- Put household valuables and electrical items as high as possible.
- Turn off water, gas and electricity at the mains.
- Seek shelter indoors, away from floodwater.
- If floodwater comes inside, move to a higher point such as a kitchen bench or second storey.
- Stay away from trees, drains, low-lying areas, creeks, canals, culverts and floodwater.

Evacuating in Flooding

- Flood water is dangerous. Stay safe by never entering flood water. It can take just 15cm of water to float a car.**
- Find alternative travel routes if roads or underpasses are flooded.
- Be aware of driving hazards, such as mud, debris, damaged roads and fallen trees. If driving conditions are dangerous, safely pull over away from trees, drains and floodwater.

After Flooding

- For recovery information, contact your local council, go to the VicEmergency Relief and Recovery- [emergency.vic.gov.au/Relief](https://www.emergency.vic.gov.au/Relief) page or call the VicEmergency Hotline (1800 226 226).
- Have all electrical and gas equipment professionally tested before use.
- Stay away from damaged and flooded buildings, fallen trees and powerlines, and damaged roads. Drive slowly, obey all road signs and never drive through floodwater.
- When cleaning, protect your health and safety. Wear strong boots, gloves and protective clothing.

For VICSES emergency assistance, call 132 500, or Triple Zero (000) in life threatening emergencies.