

# Knowing the signs

WHAT ARE THE WARNING SIGNS FOR A FLOOD IN THE HAWKESBURY-NEPEAN VALLEY?

## What causes significant floods here

Most significant floods in the Hawkesbury-Nepean Valley are caused by intense low-pressure systems called East Coast Lows.

These weather systems can happen at any time and can occur several times a year. They tend to be more common in Autumn and Winter and often intensify rapidly overnight. This makes them one of the most dangerous weather systems to affect the region.

The unique geography in the valley also affects the extent and depth of flooding in the region. Most river valleys tend to widen as they approach the sea. The opposite is the case in the Hawkesbury-Nepean Valley. Narrow downstream sandstone gorges between Sackville and Brooklyn create natural choke points that cause the 'bathtub effect'.

Floodwaters back up and rise rapidly, causing deep and widespread flooding across the floodplain. Much like a bathtub with five taps (the major tributaries) turned on, but only one plug hole to let the water out.

There is a pattern of flood-dominated and drought-dominated cycles in the Hawkesbury-Nepean Valley. These cycles typically last from 30 to 50 years. We are currently around 30 years into a drought-dominated period. It's not a matter of 'if' another major flood will happen, it's a matter of 'when'.

Recent floods like those in Townsville have shown that a drought affected region with low dam levels and water restrictions in place can become one facing devastating floods in a matter of weeks.

## What are the natural warning signs?

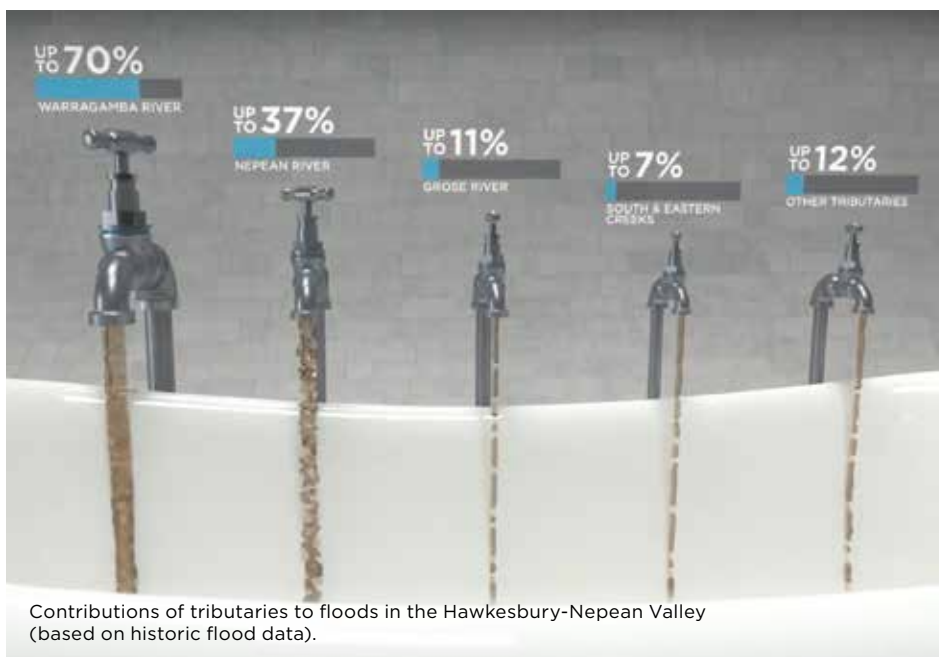
Every flood is different, so you can't rely on what you might have experienced or heard about in the past.

It's important to pay attention to weather reports and be aware of some of the early warning signs such as:

- predictions of heavy and/or prolonged rainfall
- East Coast Lows affecting the region
- heavy, sustained rainfall is occurring in upstream catchments such as the Blue Mountains, the Southern Highlands, Goulburn and Wollondilly regions.

In the Hawkesbury-Nepean Valley, there may be **only a few hours warning** between heavy rainfall and being told to evacuate.

In most cases you won't see flooding in your neighbourhood before being told to evacuate. This means your best source of information is the official warnings.



Contributions of tributaries to floods in the Hawkesbury-Nepean Valley (based on historic flood data).



Windsor and McGraths Hill in 1988

## Official warnings and advice

Official warnings and flood advice are provided by The Bureau of Meteorology (the Bureau) on their website and the NSW State Emergency Services (NSW SES) on radio stations and NSW SES social media.

The Bureau uses rainfall and flood gauges to predict the arrival time and depth of floodwater. Working in cooperation with NSW SES, the Bureau issues three types of related forecasts and warnings:

- **A Flood Watch** provides early advice that flood-producing rain is expected to happen in the near future. Note: a flood watch is updated daily but it is *not a warning of imminent flooding*.
- **A Flood Warning** is issued when the Bureau is more certain that flooding is expected in a specific area and is typically issued when rainfall has started to fall.
- **A Severe Weather Warning** is issued for very heavy rain that may cause flash flooding or abnormally high tides that can affect flooding. Localised flash flooding occurs after intense rainfall and is also referred to as overland flooding.

Leading up to and during a flood, NSW SES issues:

- **Flood Bulletins** that provide information on likely flood consequences and what actions you should take to protect yourself and your property.
- **Evacuation Warnings** that warn when evacuation routes are likely to be cut or when floodwaters are expected to inundate property. These warnings aim to get people prepared to evacuate and to respond quickly if an Evacuation Order is issued.
- **Evacuation Orders** that advise people what to do in an evacuation and where to go. You might hear an evacuation order that is relevant to you on radio stations, or by automated telephone and/or SMS, NSW SES social media, or door knocks.

It is vital that you leave if you receive an Evacuation Order.

## Improving flood forecasting in the valley

The Bureau of Meteorology is working to enhance flood forecasting for the Hawkesbury-Nepean Valley to support improved emergency planning and response.

This has included improving forecasts, new flood modelling and better understanding of timing, behaviour and heights of floods. The new system is expected to be rolled out in late 2019.