Resilient Valley, Resilient Communities

Hawkesbury–Nepean Valley Flood Risk Management Strategy

February 2020 flood   Frequently asked questions

What caused the February 2020 flood?

The flooding in February 2020 was caused by intense rainfall across the Hawkesbury-Nepean catchment with daily rainfall in excess of 200mm in many areas. It was the first moderate flooding in the region since the early 1990s. The most significant 4-day period of rainfall was from Thursday 6 to Sunday 9 February. The most intense part of the storm occurred on Sunday 9 February roughly over a 12-hour period.

What happened during the flood in February 2020?

Rivers rose rapidly due to the intensity of the rainfall. Bridges were closed and submerged at Yarramundi, North Richmond and Windsor while Wallacia Bridge was closed. All ferry services on the Hawkesbury River were closed. These closures, along with flooded local roads, caused significant disruption.

Flood evacuation orders were issued on Sunday 9 February for low lying areas including Pitt Town Bottoms, Richmond Lowlands and Gronos Point. While these are largely agricultural lands, people were directed to evacuate because of potential isolation and loss of power, water, and other essential services.

None of the urban areas in the valley were required to evacuate as this was a relatively small flood.

How big was the flood in February 2020?

The Bureau of Meteorology uses 3 levels to describe floods: minor, moderate and major based on the consequences of flooding at key river gauge heights. The flood in February 2020 peaked in the minor to moderate range including:

- Wallacia Weir – minor range
- Penrith – minor range
- Windsor – moderate range.

The February 2020 flood event peaked at 9.3m above sea level at Windsor. The largest flood on record was in 1867 at 19.7m above sea level at Windsor, almost 11m higher than the February 2020 event.

How does the February 2020 flood compare with other Hawkesbury-Nepean floods?

When we compare different floods, we talk about how likely it is that the flood could happen in any given year. The flood in February 2020 is described as having a likelihood of approximately 1 in 5 (20%) chance per year – or almost a 100% chance of happening at least once in an 80-year lifetime.

The historic records show that since the 1790s there have been around 130 moderate to major floods, and many minor floods. Including the March 2021 flood, there have been 42 floods since records began in the 1790s which exceeded the February 2020 flood peak in Windsor.

Could this flood have been larger?

As Warragamba Dam storage was low at around 43% capacity at the start of the heavy rainfall, the dam was able to capture all inflows from the large Warragamba catchment.

Dam storage levels across Greater Sydney's water supply system rose quickly and significantly during the event. Within 3 days, Warragamba Dam levels had risen to 69%, and then later reached 80%. Other dams supplying Greater Sydney also saw major inflows, with some dams filling and spilling.

The floodwaters captured by Warragamba Dam significantly lessened the downstream impacts of the flood. Flooding was instead largely driven by inflows from the Grose River, South Creek and Nepean River catchments. These smaller catchments do not create the very deep flood levels that pose the greatest risk to people's lives and homes.

If Warragamba Dam had been full at the time of this rainfall, the downstream flooding in the Hawkesbury-Nepean Valley would have had much larger impacts, similar to those from the more recent March 2021 flood.

Figure 1: McKenzies Creek, Pitt Town Rd, Feb 2020. Photo by Adam Hollingworth

Figure 2: Upstream from junction with Grose – Yarramundi Bridge on Nepean River. February 2020. Photo by Adam Hollingworth

For more information about flooding in the Hawkesbury-Nepean Valley, visit www.myfloodrisk.nsw.gov.au

For more information about the Flood Strategy, visit www.insw.com/flood-strategy