

# Resilient Valley, Resilient Communities Hawkesbury-Nepean Valley Flood Risk Management Strategy

## Frequently asked questions

### March 2021 flood



#### What caused the March 2021 flood?

The March 2021 flood in the Hawkesbury-Nepean Valley was caused by significant rainfall across the catchment from 17 to 24 March 2021. This included:

- 157mm of rainfall at Warragamba over 24 hours from 9am 20 March to 9am 21 March 2021
- 536mm of rainfall at Blackheath in the 8 days from 9am 16 March to 9am 24 March 2021.

Initial analysis suggests the Warragamba catchment contributed about 60% of floodwaters. The other catchments contributed around 40% of floodwaters.

#### How big was the March 2021 flood?

The peak river levels at key locations within the Hawkesbury-Nepean Valley are listed in Table 1. The flood height is expressed as metres AHD (Australian Height Datum) which is equivalent to metres above sea level.

The March 2021 levels are compared with the 1 in 20 and a 1 in 100 chance per year flood levels. At Penrith, the flood was about a 1 in 20 chance per year event, while at Windsor was slightly more likely.

Before the March 2021 flood, the last major event in the valley was in August 1990 when the flood peak reached 13.5 metres at Windsor.

Table 1: Likelihood of the March 2021 Hawkesbury-Nepean flood

Location	Observed March 2021 peak level (metres AHD) <sup>2</sup>	Approximate likelihood (1 in X chance per year) <sup>3</sup>	1 in 20 chance per year level (metres AHD) <sup>1</sup>	1 in 100 chance per year level (metres AHD) <sup>1</sup>
Warragamba Dam	118.26	1 in 10-20	118.56	121.47
Wallacia Weir	35.2	1 in 5-10	39.2	44.6
Penrith <sup>4</sup>	24.2	1 in 20	24.0	25.9
North Richmond	14.6	1 in 10-20	15.4	17.6
Windsor	12.9	1 in 10-20	13.7	17.3
Sackville	9.7	1 in 10-20	10.1	13.2

Notes:

<sup>1</sup> Modelled flood levels are taken from the 2019 Hawkesbury-Nepean Valley Regional Flood Study model results (excluding Penrith)

<sup>2</sup> Peak flood levels are obtained from the Bureau of Meteorology

<sup>3</sup> Approximate chance per year are based on the levels from the HNVRF model for the location of interest (excluding Penrith)

<sup>4</sup> Modelled flood levels at Penrith have been updated to take account of revegetation in and near the river in recent years.

## How does the March 2021 flood compare with other Hawkesbury-Nepean floods?

The Hawkesbury-Nepean Valley has a long history of flooding, stretching back many thousands of years. The valley has the longest records of any floodplain in Australia, dating from early days of European settlement.

The records show that since the 1790s there have been around 130 moderate to major floods and many minor floods in the Hawkesbury-Nepean. Table 2 below lists the 14 floods that exceeded the peak level of the March 2021 flood at Windsor. In this location, the March 2021 flood was similar to the April/May 1988 flood which reached 12.8 metres AHD.

Table 2: Floods exceeding March 2021 levels at Windsor

Year	Level (m AHD)
1809	14.7
1816	14.1
1817	14.4
1864	15.1
1867	19.7
1870	14.1
1873	13.1
1879	13.6
1900	14.5
1956	13.8
1961	15.0
1964	14.6
1978	14.5
1990	13.5



View of the Windsor 'island' in the 1867 flood

Source: *Illustrated Australian News*, 27 Jul 1867 p.8; State Library of Victoria

## When was the largest flood in the Hawkesbury-Nepean Valley?

The largest flood in the valley happened in June 1867 (illustrated above). That flood reached 19.7 metres AHD at Windsor, nearly 7 metres higher than the March 2021 flood. Table 3 below compares the peak flood level in March 2021, with the June 1867 flood at key locations in the floodplain.

Table 3: Comparison to June 1867 flood at key locations

Location	Observed June 1867 peak level (metres AHD)	Observed March 2021 peak level (metres AHD)	Height below June 1867 peak level (metres)
Wallacia	47.1	35.2	11.9
Penrith	27.5	24.2	3.3
North Richmond	20.4	14.6	5.8
Windsor	19.7	12.9	6.8

For more information about flooding in the Hawkesbury-Nepean Valley, visit [www.myfloodrisk.nsw.gov.au](http://www.myfloodrisk.nsw.gov.au)