

Warragamba Dam flood operations



How WaterNSW operates Warragamba Dam

Please note: This information relates to Warragamba Dam, a water supply dam for more than 5 million people in Greater Sydney and the lower Blue Mountains. For information on the operation of dams located in regional NSW, please see waternsw.com.au/floodinfo

Is Warragamba dam operated to reduce flood risk in the Hawkesbury-Nepean Valley?

WaterNSW is not permitted under the regulatory framework governing Greater Sydney dams to operate Warragamba dam or any Greater Sydney storage for flood mitigation purposes*.

This is because Warragamba Dam and all of Greater Sydney's dams are classified as water supply dams, responsible for the water security of the five million people who reside in Greater Sydney.

During a flood, WaterNSW operates Warragamba Dam to ensure the safety of the structure. At the end of a flood, the dam's storage is returned to its target level (Full Supply Level). Outside of flood operations, the storage level at Warragamba Dam may be temporarily drawn down by up to 1m below Full Supply Level to safely facilitate necessary maintenance activities.

What is the difference between flood mitigation and water storage dams?

Dams can be managed as water storage dams or flood mitigation dams or both. For water storage dams, the purpose is to store the maximum amount of water to ensure the longest possible time of water supply.

For flood mitigation dams, prior to rainfall events the dam operator can create additional space in the storage by making releases from its dams (while maintaining water security).

WaterNSW operates Warragamba Dam as a water storage dam using set procedures and protocols*. As Warragamba Dam is the primary supply for the Greater Sydney region, the dam is operated to capture and store water.

How is Warragamba Dam operated when there are high inflows and the storage is almost full?

When the dam is full, small releases are made at 100% to maintain this level to facilitate routine maintenance and avoid the main radial gates repeatedly opening and closing due to small increase in storage or wave action.

It is more practical and safer to deliver a controlled release to drop the level through the radial gates by a small amount (less than a metre) to maintain the level just below 100%. This avoids repeated opening and closing of the gates.

There is an operational procedure (the H14 operational protocol) for the gates at Warragamba Dam, which is designed to manage the inflows during a flood event to protect the community.

To release any more water prior to a forecast rain event would be a breach of the key operational objective of the dam being the provision of drinking water for Greater Sydney. In the event that rain never came as forecast, the dam level would have then been unnecessarily lowered.



What conditions are responsible for causing flood conditions in the Hawkesbury-Nepean Valley?

The major rainfall events that cause flooding in the Hawkesbury-Nepean valley are primarily East Coast Lows. These systems are dynamic and prove difficult to forecast and track along the NSW coast.

Reliable forecasts from the Bureau of Meteorology (BoM) may come only a couple of days in advance of an event. Forecasts may have high uncertainty about the location of the heaviest rain in the catchment, and high uncertainty about how much rain will occur.

Based on the size of the Warragamba catchment, large rainfall events in the Southern Highlands may take several days to reach the dam.

It is important to note that the spills from Warragamba Dam are not the only source of flooding in the Hawkesbury-Nepean Valley. Other downstream tributaries including the Grose and Colo rivers along with the Upper Nepean catchment also contribute to flooding. For example, in the March 2021 floods, water from Warragamba Dam only comprised 60% of all flood waters that reached Windsor.

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Why doesn't WaterNSW make releases to create room for predicted inflows from forecasted rain events?

First and foremost, in Greater Sydney, WaterNSW manages water supply dams and not flood mitigation dams and must operate the dam within strict regulations.

The SES takes the lead in managing flood impacts and works closely with WaterNSW and the BoM during flood events.

Pre-releasing water can lead to a number of issues, including:

- Exacerbating downstream flooding
- Bringing forward impacts of downstream flooding, therefore reducing the critical period for evacuating communities
- Artificially inducing drought conditions, should the dam not re-fill – negatively impacting critical water supply for Greater Sydney.

Pre-releasing may also have limited benefits. For example, to avoid a spill in the March 2021 rainfall event, WaterNSW would have had to lower the dam to levels lower than that experienced in the recent drought (approx. 60%). That equates to around 3 years' of water supply to Greater Sydney.

How does WaterNSW work with other government agencies during a flood event?

The NSW State Flood Plan outlines the NSW Government's multi-agency arrangements for responding to floods in NSW to protect life and property. The State Emergency Service (SES) is the NSW Government's lead agency for responding to floods.

Part of WaterNSW's role is to provide information and data about river and dam levels to the SES and the Bureau of Meteorology for the purposes of their public reporting, including public notifications, warnings and reporting.

WaterNSW does not issue flood warnings as this is the responsibility of the Bureau of Meteorology.

Members of the community are encouraged to understand the risk and obtain up to date information on preparing for floods by visiting [Hawkesbury Nepean Floods](#).

*WaterNSW manages its dams pursuant to the Water NSW Act 2014 (NSW), the Water Management Act 2000 (NSW) (Water Management Act), its Operating Licence, dam safety requirements, the NSW State Flood Plan and relevant statutory approvals (Governance Framework).




Where do I get information during a flood event?

If you are in a flood zone, plan ahead and be prepared:

- Sign up to the WaterNSW [Early Warning Network](#).
- Visit the [Bureau of Meteorology](#) for forecasts and flood warnings
- Visit [NSW SES](#) or call 132 500 for help or emergency information
- Monitor the NSW Government's [Hazards Near Me](#) app.

While the BoM should be the primary source of information for these events, WaterNSW also provides a range of information, including near real-time information which is available through the [WaterInsights](#) portal or the WaterLive App (downloadable through your App Store).

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