



## CHICHESTER DAM SAFETY REVIEW

**AS PART OF OUR COMMITMENT AS A RESPONSIBLE DAM OWNER, HUNTER WATER HAS COMPLETED ITS FIVE-YEARLY RISK ASSESSMENT TO INFORM OUR 15-YEARLY DAM SAFETY REVIEW.**



### Why is Hunter Water completing a safety review for Chichester Dam?

The NSW Government regulates dam safety standards and directs all dam owners to assess their safety through risk-based audits and inspections. NSW dams safety legislation requires certain reviews to be undertaken annually, every five years and every 15 years. Hunter Water's most recent five-yearly risk assessment and 15-yearly safety review forms part of our routine assessment program, which we are committed to doing as a responsible dam owner.

### When did Hunter Water start the 15-yearly safety review?

The 15-yearly safety reviews are completed in conjunction with every third five-yearly assessment or when there is a change to the accepted technology or methods used in the design criteria for dams. These are also completed as part of our commitment as a responsible dam owner and in line with our obligations under the [Dams Safety Regulation 2019](#).

Hunter Water began the work for the 15-yearly safety reviews for both Chichester and Grahamstown Dams in the second half of 2022, with the final Risk Assessment submitted to the regulator in August 2023. The 15-yearly safety review is also informed by findings of the annual investigations and audits and the five-yearly risk assessment.

These reviews are very extensive and thorough in nature, and they require a significant amount of time and expertise to be completed. It is common practice for us to review and assess our major assets.

### What specific risks or concerns prompted the reviews?

Safety reviews are a standards-based assessment that occur routinely at 15-yearly intervals as part of our commitment as a responsible dam owner and requirements to meet the dams safety regulations. They seek to apply modern engineering and scientific techniques to ensure our dams are managed to the highest possible standard. In response to changes in regulations we have now commenced our requirements to complete five-yearly risk assessments in conjunction with our routine safety reviews.

This is the first time a risk assessment has been carried out in this particular way, under the new NSW dam safety regulations. New technology and techniques have improved our understanding of these risks, enabling us to continue to be proactive in managing the safety of our dams.

### **The risk assessment has found that the dam is above the safety threshold for some scenarios. What does this mean?**

Risk assessments generally consider two aspects: the **likelihood** of an event occurring and the **consequence** if it were to occur. Where the failure of a large dam is concerned, the likelihood is usually low, but the consequence is significant. Many 'failure modes' – or different ways that the dam could feasibly fail (break), were considered during the risk assessment. The identified risks are related to rare, very rare and extreme flooding and earthquake events, larger than has ever been experienced since the construction of the dam. The cumulative result of the likelihood and consequence of these events has been identified as being above the safety threshold in our recent five-yearly risk assessment.

New techniques, guidelines and technology such as 3D computer modelling is helping us improve our modelling of different scenarios, particularly how the dam may respond during, rare, very rare and extreme events. This new information helps us assess the risk that these events may pose to downstream communities and provides our engineers and independent expert review panel with new insights on the dam.

This means that we can continue to be proactive in the planning and delivery of safety upgrades for our dams and enhance our emergency response plans and 'disaster readiness' for all foreseeable hazards that may compromise the safety of the dam.

### **The five-yearly risk assessment refers to the AECOM (2017) dam break and consequence assessment. Why are we hearing about this now?**

Dam break and **consequence** assessments are a standard component of a dam safety program, required to be completed at least once every 15 years. The assessments are used to estimate the consequences if a dam were to fail, but does not consider the likelihood of a failure or how a failure may occur. The consequence category assigned at the time of the assessment sets the frequency of inspections that are required, as well as the design standards that the dam is to meet.

The current assessments build on this knowledge by focusing on the causes of possible dam failure, and assessing the probability (or likelihood). This information combined informs the five-yearly risk assessment and 15-yearly safety review.

### **Are the residents and businesses surrounding Chichester Dam at risk?**

Chichester Dam remains safe for day-to-day operations and continues to operate as it has for almost 100 years under normal conditions.

The identified risks are related to rare, very rare and extreme flooding events, larger than has ever been experienced at the dam. The alert levels within the Dam Safety Emergency Plan are designed to ensure that the downstream population is evacuated before the safety of the dam is a concern.

With new knowledge from this most recent review, we will be updating our Dam Safety Emergency Plans with the SES and Police, and the community to ensure risks to our downstream communities are minimised in the event of an emergency.

### **The assessment considers the safety of the dam under rare to extreme conditions. How is this different to recent flood events?**

The identified risks are related to very rare flooding events and earthquakes, larger than has ever been experienced within the dam catchment since construction of the dam.

We know the 2015 floods had a devastating and tragic impact on Dungog and the district.

The 2015 rainfall and flooding did not affect Chichester Dam and its catchment to the same extent as seen in Dungog. If the same type of flash flooding in Dungog were to occur in the dam's catchment area, we have alert systems in place to support the evacuation of downstream residents.

The risk assessment modelling refers to even more widespread rain within the dam catchment than that experienced in 2015, and a larger flood than ever witnessed since the dam was built.

### **What measures do you have in place for emergency situations?**

Hunter Water's Dam Safety Emergency Plan (DSEP) describes emergency procedures for Chichester Dam, and provides information for emergency services and Hunter Water employees, in the event of any dam emergency or alert condition.

We review and update our emergency plan every year, as well as undertake a full review and rewrite of the plan every five years to ensure it is current and fit-for-purpose.

We also undertake routine exercises like emergency simulation to prepare our people as best we can for rare, but major incidents.

Importantly this includes information sharing with emergency response agencies like the SES and NSW Police, to assist in communicating with our communities during an emergency.

### **What is Hunter Water doing to help neighbouring residents and businesses prepare for emergency situations?**

Now that the assessments are finalised we are actively engaging with residents and businesses immediately downstream of the dam to ensure they are aware of the identified risks and how to respond in the event of an emergency.

Our Dam Safety Emergency Plan also includes information sharing with emergency response agencies like the SES and NSW Police, to assist in communicating with our communities during an emergency.

If you are a resident, business or property owner immediately downstream of Chichester Dam and are unsure of what to do in the event of an emergency, please contact one of our project team to discuss on **1300 657 657** or email [chichester.dam@hunterwater.com.au](mailto:chichester.dam@hunterwater.com.au)

### **I live immediately downstream of the dam in Bandon Grove. What does this mean for me?**

The safety, health and wellbeing of our people and our community is Hunter Water's highest priority.

Hunter Water is taking action now to reduce the highest risks to our community as soon as possible. This includes the following construction investigations and works:

- upgrading concrete on spillway aprons as detailed in the report recommendations
- increasing flushing frequency of pressure relief drains and further enhanced monitoring
- installing additional modern monitoring equipment
- hydrologic (converting rainfall to runoff) and hydraulic (flow / movement of water) modelling
- site surveys and geotechnical investigations, including boreholes to collect and test soil samples.

We are also reviewing our Dam Safety Emergency Plan to ensure that we keep our community safe as we work through the long-term recommendations in the report.

If you are a resident, business or property owner immediately downstream of Chichester Dam and are unsure of what to do in the event of an emergency, please contact one of our project team to discuss on **1300 657 657** or email [chichester.dam@hunterwater.com.au](mailto:chichester.dam@hunterwater.com.au)

As the long-term construction investigations progress, we will be sure to keep the community updated as we work towards reducing the dam risk level, ensuring the dam continues to operate safely for many decades to come.

## **I live downstream of the dam in Dungog. What does this mean for me?**

Our Dam Safety Emergency Plan includes information sharing with emergency response agencies like the SES and NSW Police, to assist in communicating with our communities during an emergency.

As part of our Dam Safety Emergency Plan review, we will continue to engage with emergency response agencies, including Dungog Shire Council to ensure any changes to the plan align with existing emergency response plans that are in place for the Dungog community.

## **How much will remedial actions cost?**

We are now actively working through the report recommendations, and have commenced interim works. We will continue our construction investigations to determine the right options for long-term solutions at the dam so we bring the identified risks below the safety threshold for these very rare scenarios. While we are yet to finalise the full scope of work for long-term solutions at the dam, and the associated costs, we are committed to investing the funding required to reduce Chichester Dam's risk level and we will keep you informed of progress.

## **Will any remediation actions for Chichester Dam impact customers' water supply?**

As part of the investigations into any remediation works at Chichester Dam, Hunter Water will conduct the relevant modelling to understand the possible impacts any safety upgrades may have on water supply. Once this information is available we will be able to plan and respond if required.

## **What will the risk assessment findings mean for neighbouring property land values and insurance premiums?**

The trend of rising insurance premiums has been well reported during the past year with significant flood events occurring across the state. Hunter Water does not have any role in setting insurance premiums. Risk assessments like this one have been a routine requirement that Hunter Water has completed over the life span of the dam.

Concerned property owners should speak with their insurer, or the Australian Financial Complaints Authority.

## **When will the Grahamstown Dam assessment be available?**

The five-yearly risk assessment for Grahamstown Dam is still underway and we will inform the community once it is complete.

We are working to understand all foreseeable hazards that could compromise the safety of the dam and how we might apply advancements in dam technology to ensure it can continue to operate safely for many decades to come.

We'll keep our community informed as we know more. If you would like updates, register your interest online at [www.hunterwater.com.au/Chichester](http://www.hunterwater.com.au/Chichester)