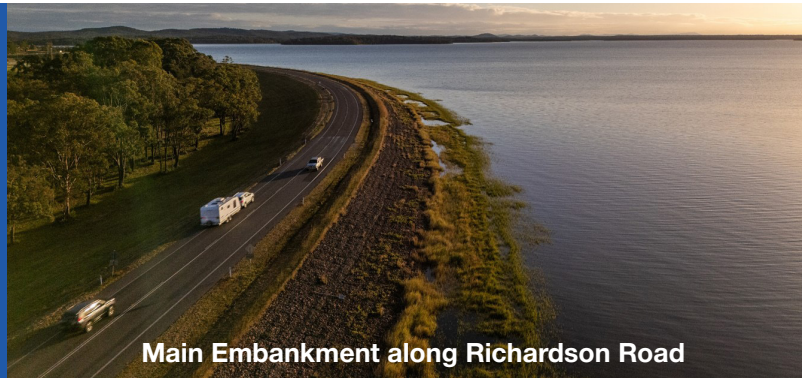




GRAHAMSTOWN DAM RISK ASSESSMENT

Hunter Water has completed a comprehensive Risk Assessment for Grahamstown Dam, as part of our commitment as a responsible dam owner



Main Embankment along Richardson Road

What is Grahamstown Dam?

Grahamstown Dam is our largest dam, which supplies over 50% of our region's water needs.

The dam is an 'off river storage'. Water is pumped from the Williams River at Seaham, and then flows through the Balickera Canal into the dam.

The dam was constructed in the early 1960s, consisting of three embankments to contain the water in the dam. These embankments are made of a compacted clay core wall in the centre, with sloping sand shoulders on each side for support of the core.

The embankments are shown on the map on the following page.

Grahamstown Dam safety program

As the dam owner, we inspect the dam each day, and complete periodic reporting on safety, risk, and maintenance to ensure the dam continues to operate safely. We provide our reports to the independent regulator (Dams Safety NSW).

We have just finished our most detailed risk assessment ever completed for Grahamstown Dam.

Risk assessments are important processes to help dam owners identify potential safety issues so that they can be managed or prevented.

Using the latest technology, we have been able to gain a better understanding of how the dam would respond under a range of rare and extreme events.

The risk assessment process considers all the possible scenarios that could potentially cause the dam to fail (break) – no matter how rare. It considers the **likelihood** of each scenario occurring and what the **consequence** could be if it were to occur. The process follows the methodology set out in the *Dams Safety Act 2015*.

Over the past decades, we have made many improvements to the dam as a result of various risk assessments and regular inspections.

Risk assessment results

The risk assessment confirms that the dam continues to operate safely under normal and flood conditions.

The most significant risk identified for the dam is the potential for an **earthquake** to cause the Main Embankment to fail and release water to lower-lying areas, presenting a risk to people and property.

The likelihood of this occurring is approximately 1-in-3,500 (or 0.03%) per year.

There is also a risk that an earthquake could cause the Subsidiary or Saddle embankments to fail. However, the likelihood of this occurring is much less (1-in-47,500 and 1-in-55,000 respectively, or 0.002% per year).

We are addressing earthquake risk as a priority.

This is not a new risk, but the assessment has changed our understanding of the risk. This risk has existed since the dam was constructed 60 years ago and is not a result of poor maintenance.



GRAHAMSTOWN DAM RISK ASSESSMENT

The latest technology used in this risk assessment has allowed us to now understand this risk in greater detail.

Further details about the risk assessment results are provided in the Risk Assessment Summary Report on our website.

How could an earthquake damage the dam?

During an earthquake, the sandy shoulders and foundations of the embankments could potentially become unstable through a phenomenon known as 'liquefaction'.

Liquefaction can occur when wet, sandy sediments temporarily behave like quicksand during the shaking motion of an earthquake. This process could destabilise the sand shoulders of the embankments, impacting the clay core, and lead to the erosion and eventual failure of the embankment.

The Main Embankment (located in Raymond Terrace) has the highest risk of liquefaction in an earthquake. Liquefaction is a much lower risk at the Saddle and Subsidiary embankments (near Campvale and Medowie). Embankment locations are shown on the map to the right.

The dam did not experience noticeable damage during the 1989 Newcastle earthquake. This may have been due to the location of the earthquake in relation to the dam or the short duration of the earthquake.

What actions are we taking to reduce the risk?

Reduced water level

To reduce the risk in the short term, we are reducing the amount of water stored in Grahamstown Dam. From July 2024, we will gradually reduce the water level in the dam until it reaches about 90% of its full capacity. The water level will be maintained at or below this capacity until more significant engineering upgrades can be completed at the dam.

This reduced water level lowers the potential consequence of a dam failure as there would be less water that could flow to lower lying properties. It is also balanced against the risk of running low on water in a future drought.

If we experience extended dry weather before we can complete engineering upgrades to the dam, it will become even more important for us and our community to work together to save water.

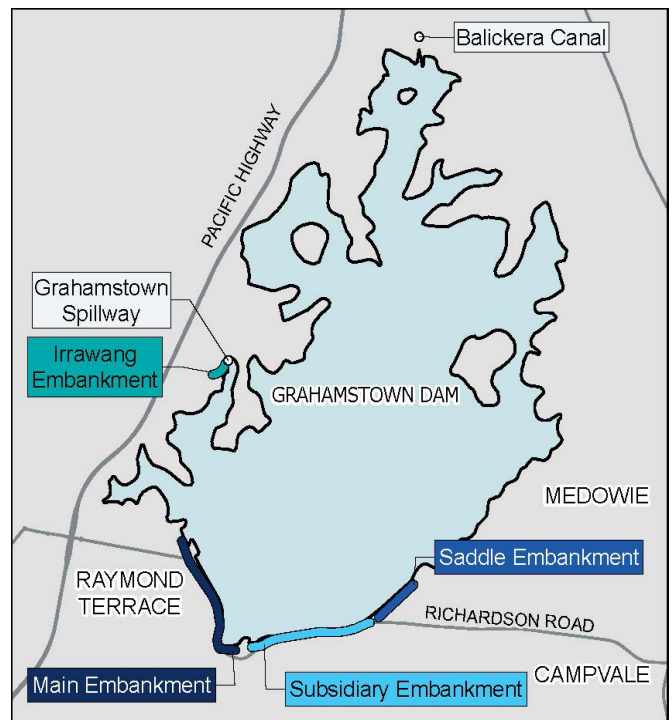
Emergency plan

If an earthquake were to occur, we will work with our emergency services partners and follow the actions in the Dam Safety Emergency Plan for Grahamstown Dam. We are working with the NSW State Emergency Service (SES) and other emergency response organisations to review the emergency plan and ensure that it incorporates the latest risk information.

Upgrades to the dam

We have started work with a team of specialist dam safety engineers to explore options to upgrade the dam embankments in the coming years. These upgrades will aim to permanently address earthquake-related risks, starting with the Main Embankment.

Dam upgrades are complex and will take some time to be planned, approved and delivered. We're planning to have the upgrades completed within 5 to 10 years.



More information

For more information:

- scan the QR code
- visit hunterwater.com.au/grahamstown
- call us on 1300 657 657 (Mon-Fri, 8am-5pm).

