

# Dam Improvement Program

## Frequently Asked Questions

### What is the Dam Improvement Program?

Seqwater is required to comply with the Queensland Dam Safety Guidelines under the *Water Supply (Safety and Reliability) Act 2010*. Like all dam operators across the country we also seek to meet national standards as defined by the Australian National Committee for Large Dams (ANCOLD). We have a rolling assessment, monitoring, review and maintenance program to meet these guidelines and ensure our dams meet national standards, improve storage capability and operate at a high level of safety.

In recent years we have upgraded a range of dams, including Lake Manchester (2008), Borumba (2008), Hinze (2011), North Pine (2012) and Ewen Maddock Stage 1 (2012).

### How do you assess each dam?

In 2012-13, Seqwater commissioned an assessment of its 26 regulated dams. This assessment was undertaken by independent experts and included a comprehensive assessment of the condition of the dam and its compliance with modern standards.

Importantly ongoing surveillance and monitoring has shown our dams continue to perform as they should. The assessment for each dam has highlighted actions Seqwater needs to take to ensure our dams meet national standards into the future, and sets out a program of investigations and upgrades to be undertaken over the coming years. We are now implementing a Dam Improvement Program to upgrade dams identified as a priority and reduce the water levels of some dams until such time as upgrade works can be completed.

### What factors are considered when assessing dams?

We commissioned independent, external experts to undertake each dam assessment. They considered factors such as downstream development (including population growth), environmental consequences, economic damages, changes to relevant design standards and improved estimates for extreme weather events. The findings from the assessment showed:

#### **Increasing population**

There has been an exponential increase in population and development downstream since many of our dams were built.

#### **Greater knowledge**

Our knowledge and understanding of extreme weather events, such as floods and earthquakes, has increased as a result of events in Australia and around the globe. While the chances of these events occurring may be low, we are committed to doing what we need to ensure our dams can continue to protect against such events in the future.

Our increased knowledge of dam performance – including construction, maintenance and tolerance of severe weather events – means we are better informed than ever about the capabilities of our dams.

## Which dams are included in the assessment program?

All 26 dams that fall under the *Water Supply (Safety and Reliability) Act 2010*.

## Are other dam owners across the country undertaking upgrade works?

Seqwater and other dam owners around Australia manage dams that were built over the past 100 years, with most built in the last 50 years. During this time, advances in dam design have improved ways of managing the loads on our dams from the reservoir, flood events and earthquakes. Key advances include better estimation of extreme flood events and earthquakes, an improved understanding of seepage and the interaction of water pressures within the foundations and embankments of dams, and the development of defensive designs to address deficiencies highlighted by historic dam failures.

Seqwater manages similar dam issues to other major dam owners around Australia. Regular assessments enable us to prioritise and plan upgrades. Lowering dam water levels and increasing surveillance help us to ensure the continued performance of our dams while investigative work is carried out and until upgrade works can be completed. This approach is consistent with the action taken by other dam owners. For example, Melbourne Water has implemented a lower operating level at Greenvale Reservoir prior to the dam being upgraded.

## Does the need for a dam upgrade mean the dam is unsafe?

No. Ongoing surveillance and monitoring has shown that all Seqwater dams continue to perform as they should. The assessment has highlighted the actions Seqwater needs to take to ensure our dams meet national standards into the future.

## Why do we need to monitor the safety of our dams?

Seqwater's dams play a vital role in our region, providing drinking water and irrigation water supplies, mitigating floods (Wivenhoe and Somerset dams), generating hydroelectric power (Wivenhoe, Somerset, Baroon Pocket and Hinze dams), and offering a diverse range of recreation opportunities for the community to enjoy.

Keeping our dams in top operating order and ensuring we meet the latest standards and guidelines is essential for the health and prosperity of our region.

Queensland has an excellent dam safety record and dam monitoring is important to ensure our dams continue to perform as they should.

Our Dam Improvement Program ensures that:

- we comply with current engineering standards
- we operate our dams in a safe manner
- the condition of each dam is regularly assessed
- we are prepared for an emergency situation at each dam, and
- the risk of dam failure is minimised.

## How do we monitor our dams?

Seqwater has a comprehensive program to monitor dams. While monitoring is required by regulation, Seqwater views monitoring as core business. It enables us to act on any identified issues to improve dam performance.

Dam safety monitoring	
Frequency	Monitoring
<b>Daily</b>	Visual inspection – major dams Seepage inspection – all dams
<b>Weekly</b>	Visual inspection – minor dams Piezometer reading (measuring the water pressure within the embankment)
<b>Monthly</b>	Inclinometers (measure movement within the embankment – more frequent inspections are made if an abnormal reading is received)
<b>Every year</b>	Audit by Seqwater staff Inspection report submitted to the Dam Safety Regulator
<b>Every five years</b>	Comprehensive audit undertaken by industry experts within Seqwater. Inspection report submitted to the Dam Safety Regulator
<b>Every 20 years</b>	Independent safety review – Certified by Registered Professional Engineer (Queensland) Inspection report submitted to the Dam Safety Regulator

Our trained and experienced dam operators conduct daily visual inspections of our major dams – thrice weekly on our small dams. This enables us to identify if there any changes to the established baseline of the dam’s regular, daily functions and investigate further.

We use a variety of specialist equipment to check dams for abnormal movement, levels of water pressure and seepage. Any measurements outside acceptable limits can alert us to possible changes in the dam’s operation and trigger us to conduct further investigations. Annually independent surveyors are engaged to conduct measurements of the dams to assess any movement of the embankment.

In addition to the Dam Safety Regulator’s requirements, our dams are inspected yearly by specialist internal staff. These audits are conducted by planning engineers and other specialists. Yearly inspections help us to appropriately plan maintenance and improvements to ensure dams continue to operate at their best.

A comprehensive inspection of our dams is undertaken every five years. In addition, all dams must undergo an independent safety review of the dam design every 20 years.

All of these inspections and subsequent reports are submitted to the Dam Safety Regulator.

## What action is Seqwater taking as a result of the assessment?

The assessment identified a list of upgrades and improvements to our dams. These upgrades have been prioritised to ensure a staged and well planned program of works can be scoped and scheduled to ensure public safety and security of water supply while delivering best value for money.

We have already implemented actions in response to the assessment, including lowering the operating level of four dams (Bill Gunn Dam [Lake Dyer] near Laidley, Cooloolabin Dam on the Sunshine Coast, Leslie Harrison Dam at Capalaba, and Nindooinbah Dam in the Scenic Rim) and increasing surveillance by dam operators.

Our current actions include:

1. Lowering of Sideling Creek Dam [Lake Kurwongbah] at Petrie. Lowering the water level in dams is an industry accepted practice to manage the operation of the dam or to conduct maintenance or improvements.
2. Upgrading Maroon and Moogerah dams. These upgrades are underway and scheduled to be completed before the 2014-15 wet season.
3. Undertaking detailed planning for upgrades to other dams.

## If Seqwater is reducing dam water levels, does this mean a dam is unsafe?

No. All of our dams continue to perform as they should. Lowering the water level in dams is an industry accepted practice to manage the operation of the dam or to conduct maintenance or improvements.

## If dam levels are lowered, will the dams be refilled at a later date?

In some cases the reductions will be temporary (planned for up to five years) so we can undertake further investigations or until such time as upgrade works can be completed. In other cases the reduction will be long term as the most cost effective way of ensuring the dam meets the required national standards.

## How much will the dam water level be lowered by?

For the dams being lowered, the new water level will be determined on a case-by-case basis to ensure the dam can continue to perform at its best, and continue to provide a high quality drinking water supply or water for irrigation.

## When will the dams be lowered?

As of August 2014, the operating level of four dams (Bill Gunn Dam [Lake Dyer] near Laidley, Cooloolabin Dam on the Sunshine Coast, Leslie Harrison Dam at Capalaba, and Nindooinbah Dam in the Scenic Rim) have already been lowered as part of the Dam Improvement Program. Local communities are informed before any dam lowering or upgrade works commence. Seqwater plans to lower water levels at two drinking dams in the coming months - Sideling Creek Dam (Lake Kurwongbah) at Petrie and Six Mile Creek Dam (Lake Macdonald) at Noosa.

### **How will the dam water level be lowered?**

The dam water level will be lowered using the low level outlet valves, gates or siphons at each dam. Levels will be lowered at a slow, controlled rate to protect water quality and the environment and ensure no downstream flooding.

### **What is the impact of dam lowering on the environment and aquatic life?**

The water dam levels are lowered at a slow, controlled rate so that Seqwater dam operators, technical and environmental staff can monitor water quality and the dam environment, particularly flora and fauna. Monitoring is conducted during and after the lowering and any impacts are evaluated and mitigated within the constraints of safe dam operation.

### **What impact will the Dam Improvement Program have on water bills?**

The cost of the Dam Improvement Program has been built into the current bulk water price path. As this program of work is business as usual for Seqwater, the program will not have any additional impact on the bulk water component of water bills.