

# Central Coast Dams

## Frequently asked questions



*Mangrove Creek Dam*

Central  
Coast  
Council

## Who is responsible for managing dams on the Central Coast?

Central Coast Council is the dam owner and operator of all water supply dams on the Central Coast.

Dams Safety NSW is the state regulator for dams safety. It is responsible for developing and implementing regulation for effective dam safety management to protect life, property and the environment from dam failures.

## What is dam safety?

Dam safety legislation is in place to:

- ensure any risks that may arise from dams (including any risks to public safety, the environmental and economic assets) are of a level that is acceptable to the community
- promote transparency in regulating dams safety
- encourage proper and efficient management of dam safety
- encourage the application of risk management and the principles of cost benefit analysis in relation to dams safety.

## What is a Dam Safety Management System and Plan?

A Dam Safety Management System and Plan is a systematic approach to managing dam safety, including the required organisational structures, accountabilities, policies and procedures.

It is the primary means of ensuring that dam failure risks to life, property, the environment, and public welfare are managed throughout the life cycle of the dam, which includes design, construction, operation and maintenance and decommissioning.

Dam safety management is the responsibility of the dam owner, i.e. Central Coast Council, for the three declared dams on the Central Coast.

The independent regulator for dams is Dams Safety NSW.

## What is a Dam Emergency Plan?

The Dam Emergency Plan (DEP) describes emergency procedures for a declared dam and provides information for emergency agencies should downstream evacuation be required in the unlikely event of dam failure.

The purpose of this DEP is to:

- provide processes and procedures to manage likely risks to people and property

- enable a collaborative response with emergency agencies, emergency management groups, engineering specialists and regulators
- outline the roles and responsibilities for various staff and agencies in the event of an emergency at Mangrove Creek Dam
- identify, evaluate and classify potential emergency situations which could threaten the security of Mangrove Creek Dam and/or surrounding areas
- provide timely notifications for appropriate internal personnel and external emergency management agencies
- define the probable extent of flood emergencies through inundation maps and
- outline emergency instructions, including potential preventative actions, for Council to take prior to and following the development of an emergency.

## Can I see a copy of the Mangrove Creek Dam Emergency Plan?

The Mangrove Creek Dam Emergency Procedure is not a publicly available document as it contains personal details of Council staff, other agency staff and private residents, and high-risk information on security of critical assets.

Council has produced a publicly available summary of the DEP with key information.

## What happens during a dam emergency?

When emergency conditions are identified, Council takes action to respond and monitor in accordance with the DEP. If an emergency meets pre-defined alert levels (white, amber or red) Council notifies the relevant agencies.

Council's primary notification is to the NSW SES who is the lead response agency for dam failure emergencies.

The NSW SES will provide 'Watch & Act' or 'Emergency Warning' notifications to the community depending on the alert level.

Council continues to monitor and manage the dam and provide updates to response agencies and regulators.

## What are dam safety alert levels for?

The different safety alert levels help us to prepare for emergency situations effectively. The alert levels relate to the risk of dam failure in various scenarios. We have used detailed

modelling to guide the different levels to ensure we are taking the right actions at the right time and not sending warnings to our community unnecessarily.

The levels allow the different agencies involved in emergency response to be aware that a situation may occur and start planning what to do if an emergency response is required.

The three alert levels are:

- **White** – Support agencies are notified and begin preparation for an emergency response. There are no public notifications at this level.
- **Amber** – SES 'Watch and Act' issued instructing downstream population at risk to prepare to evacuate.
- **Red** – SES 'Emergency Warning' issued instructing downstream population at risk to evacuate now/move to high ground.

## What happens during a flood event?

Most flood events will pass through Mangrove Creek Dam without reaching any alert levels in the DEP or triggering activation of the DEP.

In these situations, there are no specific concerns for the safety of the dam and Council continues to monitor the dam as per usual.

Council may provide general advice to the community advising of flows passing out of the Mangrove Creek Dam spillway via its social media pages or website. Provision of this information is separate to alert notifications provided under the DEP.

In extreme flooding situations that reach DEP alert levels, the DEP processes apply.

## Who do I contact during a flood emergency?

The SES provides flood emergency information on their website [ses.nsw.gov.au](http://ses.nsw.gov.au), or their NSW SES Facebook page. If you are experiencing a flood emergency and require assistance, please call 132 500.

## When dams spill where does the water go?

A spillway is a structure used to provide the controlled release of flows from a dam into a downstream area. Spillways allow excess water to pass out of the dam so that the water does not overtop and damage or even destroy the dam.

Water which leaves Mangrove Creek Dam via the spillway enters Mangrove Creek and flows

downstream past the Mangrove Creek Weir and into the Hawkesbury River at Spencer. Low lying areas in the following suburbs may be affected by large outflows from Mangrove Creek Dam: Upper Mangrove, Mangrove Creek, Lower Mangrove, Greengrove, Glenworth Valley, Spencer, Mount White, Wendoree Park, Marlow and Bar Point.

## Does Mangrove Creek Dam have a spillway?

The Mangrove Creek Dam spillway was built in 1982. The spillway is 240 metres long and has a crest with a maximum width of 20 metres. The spillway channel can be divided into four segments: the upper, gently sloping portion, the steeply sloping portion, the flip-bucket area, and the stilling basin.

In times of flood the spillway transfers excess water from behind the dam down a smooth decline into Mangrove Creek. The spillway is lined with concrete on the bottom and sides to protect the dam and topography. The flip-bucket area of the spillway slows the water down by causing the water to rise and fall back down on itself, protecting the base of the dam from erosion. The stilling basin then continues to slow the water protecting the environment downstream of the dam.

## Why has the 80% storage level cap in Mangrove Creek Dam been removed?

Mangrove Creek Dam was designed and constructed to fill to 100% of its capacity. In 2009 a hydrology reassessment indicated that Mangrove Creek Dam was not capable of passing a probable maximum flood event with water level at full supply level (100%) at start of the event, and that an upgrade to the spillway was required to safely pass such an event. Consequently, and in liaison with the then Dams Safety Committee (DSC) (now Dams NSW), Council adopted an Interim Probable Maximum Flood Management Plan. This plan essentially limited the operational storage level of Mangrove Creek Dam to 80% of the full-service level, until such time as the required spillway upgrade was completed.

In 2021, a comprehensive risk assessment of Mangrove Creek Dam was completed. In line with industry guidance, the risk assessment used a modern risk-based approach to dam safety, rather than the traditional standards-based approach. The risk assessment found that the upgrades to the spillway were not

required and recommended that the current operational restriction on the storage level at Mangrove Creek Dam be removed and the original design full supply level be implemented. The independent expert peer review of the risk assessment report concurred with this recommendation.

Consequently, Council notified Dams Safety NSW of the risk assessment findings and removed the 80% cap from the dam. The removal of the operating restriction has saved Council water supply customers many millions of dollars by avoiding the spillway upgrade. It also enabled the storage of an additional 37 billion litres to provide additional water security to the Central Coast community and deferred future investments in new supply sources.

### **Why isn't water released from the dam before a flood?**

Mangrove Creek Dam is a water supply dam and is not a flood mitigation structure. Mangrove Creek Dam is not designed to operate with pre-emptive flood releases.

### **How big is the Mangrove Creek Dam catchment compared to other catchments?**

Mangrove Creek Dam has a catchment area of 101 square kilometres and is a pristine environment with minimal habitation.

The Warragamba Dam Catchment is the largest of Sydney's five drinking water catchments, covering an area of 9,050 square kilometres.

The Mangrove Creek Dam Catchment comprises approximately 0.5% of the Hawkesbury-Nepean Catchment.

### **What is Council's roles in a dam or flood emergency?**

For emergencies such as storms, floods, tsunamis or coastal erosion events, the NSW State Emergency Service ([ses.nsw.gov.au](http://ses.nsw.gov.au)) is the lead response agency.

Council's role during a local flood emergency is to:

- serve as a conduit for key information on the emergency event from the NSW SES
- support the NSW SES with the resources, people and equipment to manage the emergency and any follow-up recovery actions (as per legislative requirements of the State Emergency Management Plan)
- continue our constant and close monitoring of Council's dams for any impacts along with Council managed open spaces, reserves, facilities and roads
- mobilise Council resources, people and equipment to respond to any identified impacts to Council assets or as requested by the SES
- provide key information to the community and relevant stakeholders about how Council's services or facilities are impacted such as water and sewerage services, waste collection and availability of childcare centres, libraries and community halls
- drive community-led approaches to coping with the emergency.

