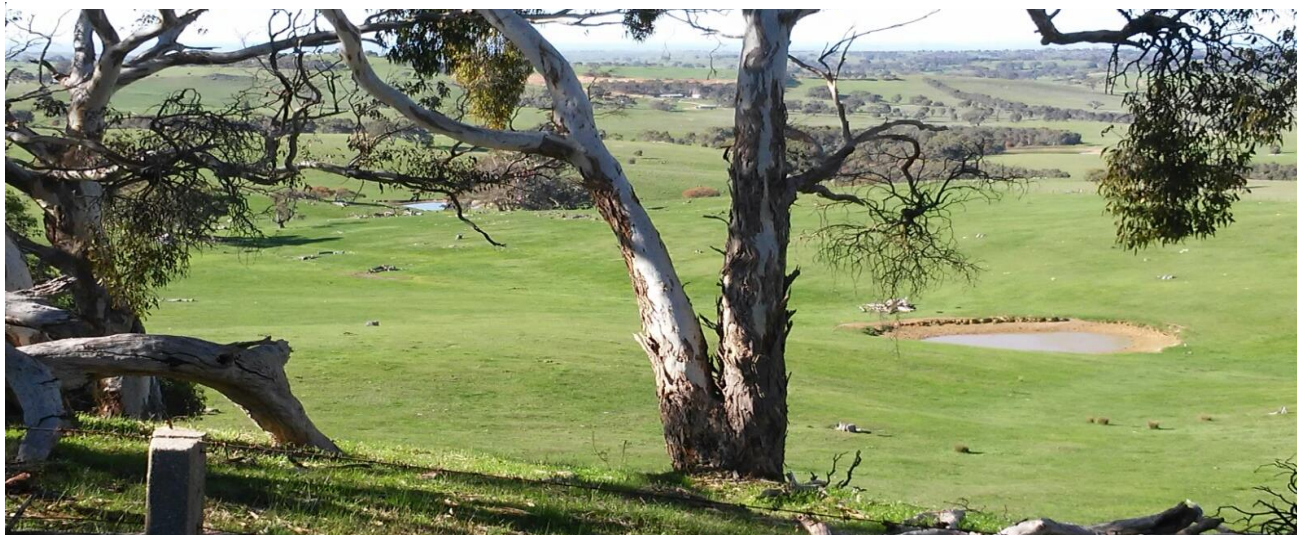


Dam removal and reduction guidelines for property owners



Why is there a need to reduce dams in the Eastern Mount Lofty Ranges?

The Eastern Mount Lofty Ranges is an important area for food and wine production in this state and contains areas of natural beauty and important ecological function. There are many ways that we can maintain and improve the Eastern Mount Lofty Ranges for the benefit of current and future generations. One of these is through the responsible management of our water resources.

In some river catchments of the Eastern Mount Lofty Ranges, the high levels of dam development threaten ecological assets and the security of supply for downstream water users.

Any reductions in dam capacity in these catchments will ease some of the pressure on local water resources and may make additional water available for the environment or productive use.

Who should be involved?

These guidelines are for property owners who may have dam capacity in excess of what they require on their properties. This is relatively common in the Mount Lofty Ranges with many large farms being divided into smaller lifestyle blocks and change in land use. Understanding the water needs on your property is important and discussed further in these guidelines.

How will reducing or removing a dam benefit you?

There are a number of benefits that can be gained by reducing the dam volume or removing a dam on your property. These include:

- Improved amenity by creating an island or other actions can add habitat value to your dam for native species and improve its visual appearance
- Improve function and maintenance of the dam by lowering the water level and stabilising banks to reduce erosion issues
- Address a water hazard risk through dam design, making the dam safer for children and livestock
- Reclaim the area of land and put it to more effective use
- To promote sharing of the water resource across the catchment improving catchment health.



What do you need to consider?

When planning for the removal of a dam on your property, or reducing its size, you will need to consider any potential issues that may impact on neighbouring landholders and watercourse health, and how they can be effectively managed. This may include:

- For a dam on creek, the size of the creek and the volume of flows associated with it
- The location of infrastructure and assets near the dam and how they will be affected by the modification to the dam
- The soil characteristics at the location of the dam and the potential for soil erosion once the dam is removed
- The topography around the dam (eg steep hills or relatively flat plain) and how it may increase erosion potential.

If you are reducing the capacity of your dam, it is important to know how much you can reduce it by and still have sufficient water supply for your property. A Water Resources Assessment Officer can help you do this by working through a checklist of water needs for your property.

How can you reduce the capacity of the dam?

There are a number of ways of reducing dam volumes. The final method used should suit the specific site conditions of your property. A few simple and cost effective methods that could be applied to many of the dams in the Eastern Mount Lofty Ranges are outlined below.

Creating an island and safety considerations

As part of dam related works (where possible) consideration should be given to implementing some additional safety and environmental measures in the dam design as part of the works. This may include benching which is a technique where a dam wall has a stepped configuration which avoids drop-offs into deep water.

Creating an island in the dam (Figure 1) will reduce the water volume held by the dam and can provide positive environmental outcomes by creating habitat for native species with protection from cats or foxes. Islands can also make dams more visually attractive and contribute to watercourse health by providing additional fringing aquatic vegetation to help clean water. A variation of this idea could be to create a promontory extending into the dam.



Figure 1: An established island in a dam in the Eastern Mount Lofty Ranges

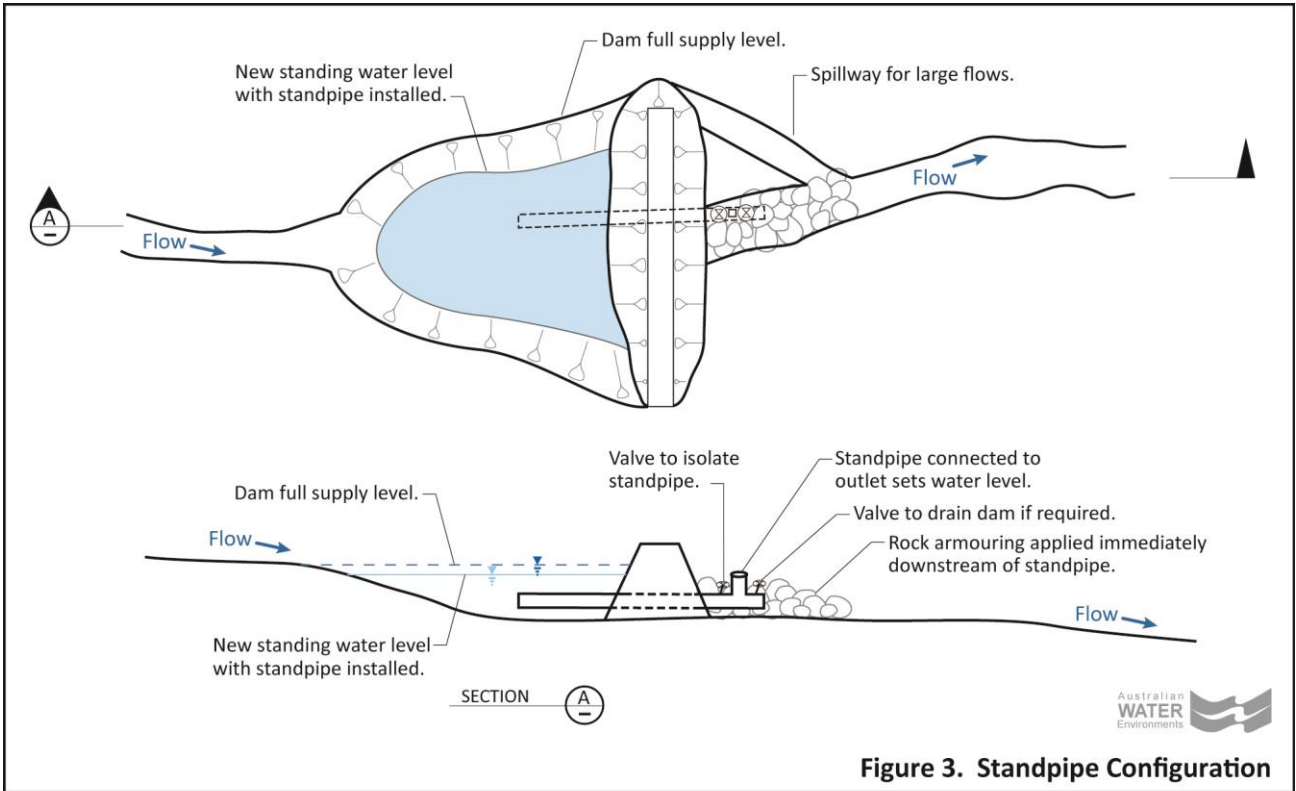
Standpipe configuration and lowering spillway level:

A simple way of lowering the level of your dam is by lowering the level of the spillway or overflow point in your dam. Care must be taken to stabilise the new overflow level using principles as explained in the section on *Watercourse stabilisation techniques*.

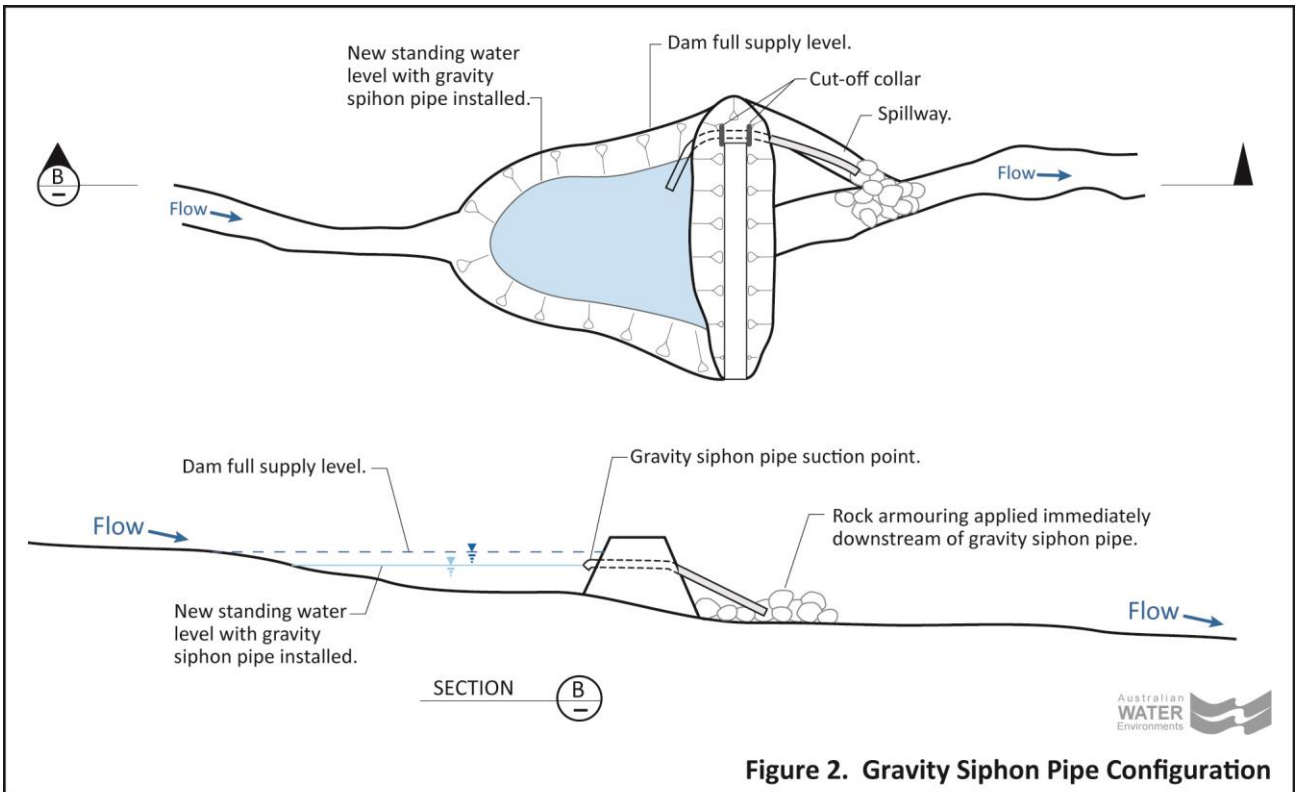
If there is an existing outlet pipe through the lower portion of the dam wall, a simple way of lowering the water level in the dam is to fit a standpipe which can set the new level of the dam (see Figure 2). Any large flows into the dam will still fill to the existing overflow in the dam wall but the water will then drop to the level of the standpipe once flows stop. Suitable scour protection will need to be provided to ensure outflows from the standpipe do not create downstream erosion issues for you or your neighbours.

Gravity Siphon Pipeline:

This approach requires a siphon pipe to be installed in your dam (see Figure 3). This pipe creates a siphon after the dam fills and spills which then slowly drains the water down to the new water level set by the inlet of the siphon pipe.



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What is involved with removing a dam?

Removing a dam involves the removal of at least a section of the dam wall and restoring the base of the dam to the natural surface level. Removing a dam involves careful consideration and planning, particularly if it is a large dam and/or in a location that receives high flows and could be prone to erosion.

Environmental duty of care:

All landholders have a duty of care to protect the environment from damage that may occur by works they carry out on their properties.

Removal of the dam wall – You will need to engage a contractor experienced in earth works to remove the dam wall and the dam must be empty before work can commence. There are a number of ways a dam can be emptied including pumping and siphoning.

There are a number of methods for removing the dam wall depending on the specific site but most often this will involve a staggered excavation. Some of the existing wall may be left insitu to act as a temporary sediment basin, trapping soil from any erosion processes whilst the site is being re-established.

Temporary diversion of inflows – You may need to make arrangements to avoid inflows to the dam whilst the works are being undertaken. You will need to have an understanding of the flow regime of the watercourse to determine the appropriate timing of the works. It is generally recommended that works should be undertaken in the drier periods of the year such as summer months or early autumn when inflows are at a minimum. In developing a temporary diversion system you should engage appropriate technical expertise and approvals.

The excavated opening (through the dam wall) needs to be able to pass the water flow expected in the catchment.

Re-shaping dam banks – Soil removed from the dam wall may be used to re-shape the rest of the dam site and be stabilised through erosion control methods such as applying a geotextile fabric and planting out with native grasses and small shrubs (not trees) to provide additional structural integrity to the old dam banks.

Watercourse stabilisation techniques - Removing the dam wall will cause water to find a new flow path though the section of watercourse or drainage line affected. It will be important to ensure that this new area of flow does not erode. Some form of rock armouring, erosion protection matting or dense revegetation should be applied to the remaining dam wall in the main flow path and placed over the width and at the downstream/upstream ends of the remaining wall. This

will mitigate further erosion and prevent the bed of the watercourse from becoming deeper immediately upstream.

Revegetation and landscaping – A revegetation and weed management program should be developed to revegetate the areas where works have occurred. Vegetation cover should be encouraged on the remaining banks of the dam. Once the plants are established this will provide structural integrity to the banks.

What approvals are required?

Most works on dams or in water courses require a Water Affecting Activity permit or in the case of larger structures a development approval through Local Council. The two different approval pathways are shown in the flow chart below (Figure 4).

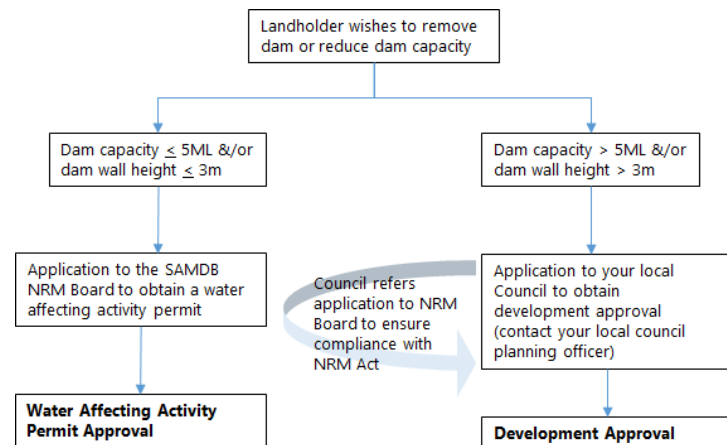


Figure 4: Approval pathways

For more information

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