

Reservoir Collapse



Wiltshire & Swindon
Prepared



Introduction

Reservoir Collapse – you can easily imagine it as a Disaster Movie called ‘Burst!’ with a picture of people running from a massive deluge of water on the front cover! That’s not quite what we are envisaging here in Wiltshire and Swindon but you can see why its something we do plan for considering we have several reservoirs in our patch.

Interesting Fact

The deadliest dam burst is said to be Banqiao and Shimantan Dams in China in 1975. This was caused by extreme rains dumped on China by Typhoon Nina.

Local Risk Rating

Bridge Collapses are assessed as ‘High’ on our Community Risk Register

Impact	Significant (4)	Likelihood	Medium Low (2)	Rating	High
--------	-----------------	------------	----------------	--------	------



What is it?

Reservoir?

There are a few different types of reservoir;

Damned Valleys: A dam constructed in a valley that relies on the land's shape to provide the basin of the reservoir. The dam is normally constructed at a narrow downstream area.

Coastal: A reservoir constructed at the mouth of a river (coast), to store water flowing down from a river/s. Earth dikes are built to separate the sea from the reservoir water.

Bank-side: Constructed separately from a river flow and is filled by pumping water from a river directly into it.

Service: These are often water towers or underground storage. This water is fully treated and often held close to the point of distribution.

Dam Burst?

Put simply a dam burst is the sudden, rapid and uncontrollable release of water due to the collapse/structural failure of the dam itself.

Dams often continuously or intermittently allow a small amount of water through them via the spillway/weir, with others also possibly having hydroelectric power generation as part of this process.


Dams might burst due to a number of reasons;

- Earthquakes – shaking the ground and causing weaknesses in the structure
- Sub/standard construction materials/ methods – Gleno Dam, Italy, 1923
- Sliding of land into the reservoir - Vajont Dam, Italy, 1963
- Extreme Inflow - Shadi Kaur Dam, Pakistan, 2005
- Human, computer, or design error
- Internal erosion

One not added to the list is deliberate breaches. Attacks on dams are now restricted under international law due to the severe effect it would have on huge numbers of the population. A particularly well known deliberate breach was Operation Chastity (Dambusters Raid) in World War II which occurred before international law outlawed attacks on dams.

What reservoirs do we have?

Wiltshire and Swindon has a number of larger reservoirs:

- Gaspur New Lake, Mere
 - Shearwater, Warminster
 - Coate Water Park, Swindon
 - Stanton Park, North Swindon
 - Peatmoor Lagoon, Peatmoor, Swindon
- 



History

A quick Google search will show you quite a few dam bursts in the past, however the good thing is that these happen very infrequently. An interesting one to look at is the near miss in Whalley Bridge in 2019.

Toddbrook Reservoir is fed from Todd Brook and is located above the town of Whalley Bridge (between Stockport and Buxton). In 2019 some concrete slabs on the overflow spillway were partially dislodged and damaged due to high volumes of water due to days of heavy rainfall in the area. A danger to life warning was released by the Environment Agency due to the possibility of the dam collapsing.

This in turn led to the evacuation of over 1,500 residents in areas likely to be affected should the reservoir waters be released. Immediate measures were put in place to reduce the pressure on the dam, by pumping water out alongside dropping aggregate onto the damaged area.

The after effects of the reservoir damage, are certainly a much better appreciation of the dangers they hold. Luckily no-one was injured in Whalley Bridge, but the memory of the near miss will be held by all those involved for a long time.

What can you do?

Wiltshire and Swindon have long held a reservoir plan which gets updated on a regular basis. Alongside the plan we regularly have contact with the reservoir owners to ensure all information is kept up to date and changes are reflected in the plan. As part of this process we also hold flood inundation maps which gives us a working knowledge of the most likely path of any flood water. Although not part of the LRF'S general business you can also be reassured that reservoirs regularly undergo inspection to ensure that they meet the required standards and that any issues can be spotted early.

What are we doing about it in the LRF?

There isn't much you can do to prevent a dam burst, however there are some key things you can do if the authorities raise safety concerns. The most important thing is always to listen to the advice given by the emergencies services, with the second being able to pick up those key pieces of information quickly (e.g. insurance documents, passports etc).

Most importantly we must emphasize that reservoir collapse are very rare and that we do have plans and checks in place to make them as safe and robust as possible.