



Environment
Agency



Reservoir Flood Maps

Guidance for users of the Defra Data Services
Platform

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We are the Environment Agency. We protect and improve the environment.

We help people and wildlife adapt to climate change and reduce its impacts, including flooding, drought, sea level rise and coastal erosion.

We improve the quality of our water, land and air by tackling pollution. We work with businesses to help them comply with environmental regulations. A healthy and diverse environment enhances people's lives and contributes to economic growth.

We can't do this alone. We work as part of the Defra group (Department for Environment, Food & Rural Affairs), with the rest of government, local councils, businesses, civil society groups and local communities to create a better place for people and wildlife.

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What the maps show

Reservoir flood maps show where water may go in the unlikely event of a dam or reservoir failure.

There are two flooding scenarios shown on the reservoir flood maps. They are a “dry-day” and a “wet-day”.

The “dry-day” scenario predicts the flooding that would occur if the reservoir failed when rivers are at normal levels. The “wet day” scenario predicts how much worse the flooding might be if a river is already experiencing an extreme natural flood. More than one reservoir could affect a location at the same time.

The ‘fluvial-only extent’ shown on the pdf maps is the extent of the river flooding we used in the model for the “wet-day” scenario. It is not the same as Flood Zone 2 or 3 shown in the Flood Map for Planning on GOV.UK but is considered to be an extreme flood. You should only use the ‘fluvial-only extent’ to see the impact the reservoir flooding has. More information on these scenarios can be found in assumptions made as part of the modelling.

How the maps were created

The Environment Agency made a model of each reservoir using computer software. A laser recorded the height of the ground around each reservoir. This was added to the computer software to produce a model of the ground.

For each reservoir, the Environment Agency calculated how much and how fast water would flow out of the reservoir in the unlikely event that it fails. They added this ‘flow’ to the ground model of the reservoir and allowed it to spread onto the area downstream. The computer recorded the largest predicted flood extent.

Assumptions made as part of the modelling

Wet-day and dry-day scenarios

In both a wet-day and dry-day reservoir failure scenario we assumed:

- a void occurs through the full height of the dam and stops at the base of the dam
- the base of the dam is the bed of the watercourse just downstream, if there is one
- features, such as road and rail embankments, may collapse when under water that is flowing fairly quickly
- openings or culverts in embankments of smaller than 2 metres are blocked to represent floating debris
- wave walls on top of dams are not considered as part of the model

- a reservoir on a different tributary would not fail at the same time
- that cascade reservoirs which are not regulated by the Environment Agency have an average depth of 1 metre
- that flood defences in the model are included in the model where the ground levels have been recorded by laser
- that where there is a boundary with the coast, that water will leave the model based on the slope of the land and is not restricted by the sea

In a dry-day scenario we've assumed that just before reservoir failure:

- the water level in the reservoir is the same as the spillway level or the underside of the roof for a service reservoir
- the watercourses upstream and downstream of the reservoir are at a normal level

In a wet-day scenario we've assumed that just before reservoir failure:

- the water level in the reservoir is higher than the top water level and is consistent with the probable maximum precipitation
- there's already an additional flow in the downstream watercourse that represents an extreme flood in the present day

Cascade reservoirs

In some places the floodwater from one reservoir flows into another reservoir. This is called a 'cascade'. These have been modelled to fail when they meet criteria set out in the specification.

What the attributes mean

The Geographic Information System (GIS) layers contain attribute information, these are explained in Table 1.

Table 1: Reservoir Flood Map GIS attribute description

Attribute	Description
RESERVOIR	Reservoir name
NGR	National grid reference
LLFA_NAME	Lead Local Flood Authority
UNDERTAKER	Owner and/or operator

Attribute	Description
RISK_DESIGNATION	Risk designation which determines the level of statutory inspection
COMMENTS	Contact organisation for local emergency plans

Where to find more information

Information on how the maps were created and how to use the data is available on the Defra Data Services Platform Customer Forum in the [Frequently Asked Questions](#). If you do not find an answer there please contact reservoirs@environment-agency.gov.uk.

Further information on how the models used to create the maps were created and how to use the maps can be found on GOV.UK. You can request the specification used to create the models by contacting the Environment Agency.

Accessibility

If you require the Reservoir flood maps in an alternative format for accessibility purposes please contact reservoirs@environment-agency.gov.uk

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