

Reservoirs (Scotland) Act 2011: Inundation Mapping



In this briefing you will find information about:

- Reservoir inundation maps
- Inundation mapping methodology
- Further information

1. Reservoir inundation maps

The Reservoirs (Scotland) Act 2011 (the 2011 Act) supersedes the Reservoirs Act 1975 (the 1975 Act) and introduces a risk-based approach to reservoir safety in Scotland. As part of the implementation work for the new legislation, the Scottish Environment Protection Agency (SEPA) has produced inundation maps for those reservoirs currently regulated under the 1975 Act.

Reservoir inundation maps show the area of land that is likely to be flooded in the event of an uncontrolled release of water from a reservoir.

SEPA has now produced inundation maps for the majority of reservoirs covered under the 1975 Act, of which there are approximately 670. Each of these reservoirs is capable of holding greater than 25,000m³ of water above the natural level of the surrounding land and represents the first group of reservoirs that have been modelled to allow the production of inundation maps under the 2011 Act.

The primary purpose of the inundation maps is to assist SEPA in assigning a risk designation to all registered reservoirs, as required by the Reservoirs (Scotland) Act 2011.

2. Inundation mapping methodology

In order to fulfil its new duties, SEPA has worked collaboratively with key stakeholders from the reservoir industry to develop a nationally consistent reservoir inundation mapping methodology. It utilises available and reliable national datasets, such as ground level information, in a consistent modelling approach.

There is an element of uncertainty in any flood modelling study as a result of the necessary assumptions that need to be made when reflecting complex natural processes. This equally applies to modelling dam breach flooding processes which have been assessed consistently on a national scale. Examples of these assumptions include:

- The use of a simplified breach scenario (e.g. failure of an entire dam).
- The use of national scale topography datasets.

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- The application of standard overtopping rates based on reservoir type.
- The use of national scale datasets to sense-check dam structure parameters such as dam heights.

The modelling methodology has been subject to a number of sensitivity analyses of key parameters to better understand the impact of these assumptions on the outputs. Results indicate the outputs are not significantly affected. Therefore in the majority of cases there will be minimal implication for the assignment of the risk designation which is likely to be driven by the range and density of downstream properties and other infrastructure.

In those cases where it can be demonstrated that the risk designation has been influenced by assumptions in the modelling approach, SEPA will review the inundation outline and will undertake further work where necessary. Given the application of a nationally consistent inundation methodology and the use of appropriate national datasets, local, site specific issues will not be considered.

In a small number of cases, this may lead to the maps showing areas being inundated when in reality flooding is unlikely to occur. As the purpose of the inundation maps is to inform the assignment of risk designations, and considering the overriding influence that the presence of downstream properties and infrastructure has on determining risk designations, the limitations of the mapping are unlikely to cause any significant issues in the majority of instances. However, if it is clear that a risk designation has been assigned based on an uncertainty in the flood outline or due to an obvious error, SEPA will review the initial risk designation and undertake further model refinements where necessary.

SEPA intends to make outline inundation maps available online prior to the release of the provisional risk designations, which is envisaged to start in October 2015.

Going forward it will be the responsibility of the reservoir manager to supply reservoir inundation maps at the time of registration for those sites which are not currently regulated under the 1975 Act and which have the capacity to hold greater than 25,000m³. These inundation maps are required to be produced in line with SEPA's *Reservoir Inundation Mapping Methodology*. This methodology will be made available on SEPA's website.

3. Further information

For enquiries relating to the current regulation of your reservoir please contact your local authority.

For further information about the 2011 Act and its implementation visit [SEPA's website](#) or contact reservoirs@sepa.org.uk.