

## The 3D Geological Model for the Forres Groundwater Flood Risk Area.

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In recent years, the urban areas of Elgin, Nairn and Forres have been threatened by severe river flooding events leading to the expenditure of millions of pounds on the design and installation of new flood prevention measures. The most severe catastrophic flood in modern British history occurred on August 3<sup>rd</sup> 1829, along the course of the River Findhorn, which reaches the coast near Forres. Reconstructions suggest that more than 100mm of rain fell in 24 hours and peak flows exceeded 1,400 cubic metres per second in parts of the catchment. BGS studies around Forres, commissioned by Moray Council, indicate that groundwater has a significant impact on flooding particularly in the lower reaches of this 'flashy' catchment. Targeted work has now been completed, that included detailed Quaternary mapping and geotechnical testing to supplement ground water measurements from boreholes and trial pits, to establish the permeability of the shallow geology of the catchment around Forres. A GSI3D model has been constructed of the shallow geology that has 43 separate layers. This will be demonstrated during the workshop. The model has also been reattributed with permeability values and this is now being linked to a ZOOM ground water model to produce the most detailed evaluation of shallow groundwater movements in any part of Scotland.