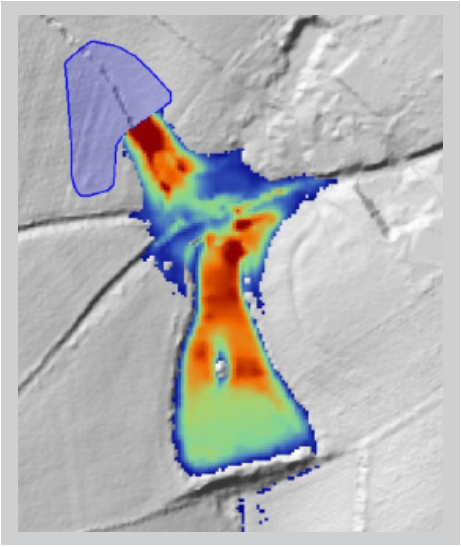
# Dam Breach Risk Assessment

envireau WATER

**Our client operates a large agricultural farm in England and required our help in developing winter storage reservoirs to capture rainwater for summer irrigation.**

**The site's location at the top of a steep valley, meant the Lead Local Flood Authority (LLFA) was concerned about the potential impact downstream in the unlikely event of a breach of the reservoirs. In particular, the LLFA was concerned about impacts to a historic bridge that was already located within flood zone 3. Our client therefore requested our assistance with gaining the necessary planning permission.**



## The Challenge

A detailed assessment of the residual risk of flooding posed by a potential breach of the reservoirs to downstream receptors was required. A high-level review of the area downstream using Ordnance Survey mapping, identified additional receptors that could potentially be impacted in the event of a breach of the reservoirs.

The existence of receptors downstream demanded a detailed understanding of flow pathways, water depths and velocities to ascertain the risk level in the unlikely event of a breach. In combination with a short timescale to obtain planning permission, a pragmatic approach had to be adopted to the next phase of the project.

## The Envireau Way

Our specialist team started by developing a conceptual model identifying the source, pathways, and receptors to assess which locally important features needed to be considered within the model. A detailed 2D hydraulic assessment was then constructed following the Environment Agency's technical guidance. High-resolution LiDAR digital terrain data was incorporated into the model along with land-use types.

A key feature of the model was the use of a 'breach outflow hydrograph' methodology. Instead of building the reservoir structures and breach characteristics within the model, the alternative simplified hydrograph method significantly reduces model run times. This allowed our assessment to be concluded quickly, while providing sufficient detail.

Model outputs included the breach extents along with their depth and velocities, allowing hazard maps to be accurately created.

## The Result

The 2D hydraulic model enabled a detailed understanding and identification of the breach flow routes downstream of the proposed reservoirs and demonstrated to the LLFA that the residual risk to receptors downstream was low.

The strong evidence base allowed the development to successfully progress through the planning process.

## Need our help?

Envireau Water's surface water team are experienced in assessing flood risk associated with a wide range of developments. Our technical expertise combined with our experience of regulatory liaison means we have an enviable track record of securing permissions and permits.

If you have a project that needs our assistance, get in touch with us on **01332 871 882**.