

Our client operates a large drink manufacturing site in Scotland, which is located along the banks of a main river.

The site has experienced fluvial flooding in the past, which has led to the temporary shutdown of operations. Due to the disruption and cost associated with clean-up and re-commissioning of plant and equipment, our client was keen to find a solution for managing flood risk.

Our client engaged a large engineering consultancy, who carried out numerical modelling of the watercourse and determined that the only way to prevent the site from flooding was to install permanent flood defences, with an estimated cost of £3 million.



The Challenge

Our client was frustrated and on the back of our ongoing involvement with the management of the site's water supply, asked us to take a look at the problem and see if there were more pragmatic solutions.

We reviewed the previous work, and whilst it was numerically sound, we found it did not account for a number of important landform and drainage features and therefore overestimated the scale of the potential flooding problem.

More fundamentally, whilst not only being expensive, the suggested scheme would result in loss of flood plain storage which could not be easily mitigated in this case. Consequently, it was unlikely that the proposed scheme would gain regulatory approval.

“The proposed £3m scheme was unlikely to gain regulatory approval”

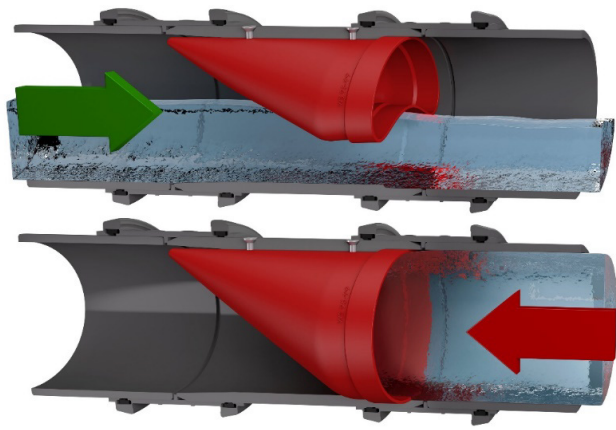


The Envireau Way

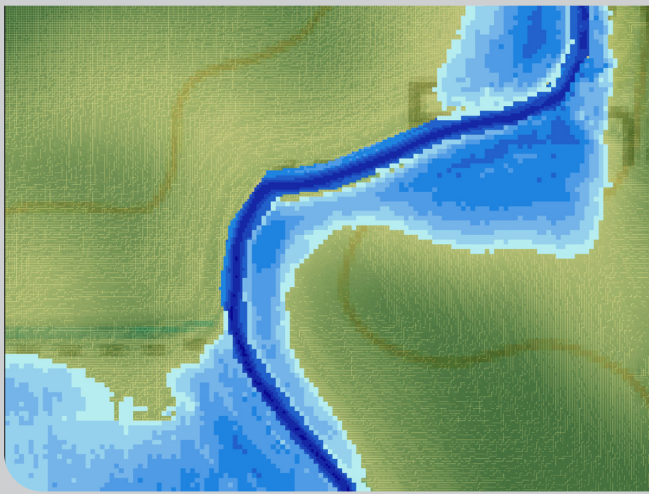
We decided to take a step back and focus on practical ways to improve flood resilience using alternative solutions.

We first co-ordinated a topographical survey of the site and a specialist survey of the river, to ensure that the local drainage routes and the areas at most risk from flooding were well understood. Redundant drains were sealed and active ones were fitted with specialist valves to prevent backflow from the river. This provided immediate betterment, preventing the drains surcharging during high river flows and flooding the lowest parts of the site.





Principles of an in-pipe check valve



Flood modelling

At the same time, we designed and installed a flood warning system to monitor river levels and rainfall, not only at the site but also at several locations within the upstream catchment. The data was combined to predict river flows and levels and provide an early warning of potential flooding.

This was combined with a system of portable flood defences, deployable based upon the output from the warning system, to protect the most vulnerable parts of the site. Whilst the defences cannot protect the whole site, they provide significant protection of the key infrastructure.



Portable flood defences



The Result

Approaching the problem pragmatically has delivered a scheme that improves flood resilience, fraction of the cost of installing permanent flood defences. Whilst the risk of flooding cannot be completely eliminated in this case, it is now being actively managed to ensure the site remains operational during the most frequent flood events.

Need our help?

Envireau Water are experts in natural water systems and understanding the complex interactions between surface water and groundwater systems.

Our team are specialists within their field and have the tenacity to develop innovative solutions to problems, where others struggle. Combined with our unrivalled knowledge of the UK regulatory framework, this enables us to deliver the most appropriate and cost effective solutions.

If you are experiencing a similar problem, get in touch with our technical lead LeeClarke@envireauwater.co.uk or contact 01332 871 882.



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