Black & Veatch has a highly experienced team of professionals who are finding new ways to approach all aspects of flood risk management, whether for the Environment Agency or other clients.

Examples of some of our recent innovative ideas are as follows:
- Use of trenchmix to save time, costs and carbon footprint.
- New ways to assess flood impacts.
- State of the art visualisation techniques.
- Behavioural safety for designers.
- Use of fibre-reinforced concrete.
- Pioneering adjustable weir design.
- Using web-based technology to communicate our ideas and decisions and obtain feedback.

In everything we do, we are always looking for new ways of improving efficiency, cutting costs, providing clarity and enhancing safety standards.

**SAVING COSTS AND REDUCING OUR CARBON FOOTPRINT**

**NOTTINGHAM TRENT LEFT BANK FLOOD ALLEVIATION SCHEME**

*Environment Agency | 2010/11*

The introduction of state-of-art technology has enabled Black & Veatch to make considerable savings in CO₂, money and time, cutting 16 weeks from the construction programme of Nottingham flood defences. We have designed the scheme to reduce the risk of flooding to 16,000 homes and businesses along a 27km stretch of the River Trent. The use of Trenchmix required using a giant “chainsaw” to mix a seepage cut-off directly into the ground under new flood defence walls. In addition to being more cost-effective, quicker and more environmentally friendly than traditional sheet piles, the system significantly reduced health and safety risks by eliminating the need for excavations and improving working in constrained areas. This innovative approach attracted considerable media interest, with the Trench Mix being featured on BBC East Midlands television. The effectiveness of Black & Veatch’s approach to project execution has been recognised by Jo Jolly, ncpms Midlands Regional Operations Manager, “The Nottingham Team is doing really well, especially in terms of innovation and efficiency savings. I can demonstrate the savings made and value provided by the Nottingham Team”.

**NEW APPROACH TO ASSESSING IMPACT**

**ISLE OF AXHOLME FLOOD RISK MANAGEMENT STRATEGY**

*Environment Agency | 2008–ongoing*

The exciting use of GIS has revolutionised our flood damage assessment work, providing open, visible and accurate calculations of previously “black box” economics. Black & Veatch has developed an industry-leading tool, FDEM, to vastly improve the use of data and economic calculations. This often identifies more properties than previously-used techniques, maximising benefit-cost ratios, and provides a high impact, visual way of highlighting beneficiaries and potential funding contributors. FDEM was successfully used for a strategic appraisal of flood risk in the Axholme area. Once the extent of the flood risk was understood through hydraulic modelling (using TUFLOW), a strategic economic assessment was undertaken to ascertain the benefits of the various options. Mike Dobson, Economic PM on the project, said of FDEM: “The visualisation made possible by FDEM allowed us to easily focus on the few properties out of 20,000 that really matter (i.e. the highest contributors).”
ENGAGING THOSE AFFECTED BY OUR DECISIONS

Stakeholder engagement and effective consultation is critical for our projects, and we have a track record of working successfully using a wide range of both traditional and innovative communication tools, tailored to the needs of the project and the community.

RECOGNISED FOR INNOVATION IN HEALTH AND SAFETY

AWARD-WINNING BEHAVIOURAL HEALTH & SAFETY

Black & Veatch is both a designer and a contractor, with an integrated approach that is well demonstrated by our health and safety programmes. Having implemented a successful behavioural health and safety initiative for construction sites (BOSS – Behaviour on Safe Sites), we continue this drive to improve health and safety by extending the scheme to apply to design work. This lateral thinking and pioneering approach won an award from one of the construction industry’s leading underwriters. The award citation stated, “Black & Veatch is innovatively extending its successful BOSS programme into its design teams with obvious ‘buy in’ from those teams. This has resulted in a BOSS scorecard specifically developed for design activities with the aim of directly influencing and enhancing standards on site through the design process.”

ROBUST ADJUSTABLE OVERSPOILL WEIR

Black & Veatch conceived an innovative arrangement for the provision of a simple and robust adjustable overspill facility for use on top of existing fixed weir structures. There are numerous fixed weirs on rivers in the UK for which the ability to make relatively minor adjustments to the upstream retained water levels, say for summer and winter conditions, would be very useful. The design by Black & Veatch makes use of a rising sector, stainless steel cylindrical gate arrangement that can be rotated manually by one person from the safety of the river bank, thereby raising and lowering the weir crest.

To date, the adjustable overspill weir arrangement has been successfully used at two sites for the EA; the Sluice Weir on the River Medway in Kent and at Hardmead Sluice on the River Lee in Hertfordshire.

COASTAL CHANGE PATHFINDER FOR SOMERSET COUNTY COUNCIL

Black & Veatch worked successfully with the small community of Porlock Weir in Somerset to develop community led ways of adapting to the increasing coastal flood risk. We interviewed key members of the community and developed a mock newspaper article of a ‘disaster’ event in the future, as an innovative communication tool to convey the likely changes affecting the community. The article was based on technical information and analysis but was also designed to engage the community. Following this, we ran drop-in sessions to develop an action plan suited to the locality and to seek input and feedback.

Mock newspaper was used as an innovative communication tool.