



# Cost-effective solutions in urban drainage

## Surface water management, UK

The surface water management plans we deliver help our clients plan their drainage provision and better protect homes and businesses from flood risk.

Halcrow has set the standard for this key flood risk management tool through its work with Defra on pilot surface water management plans and national guidance on developing the plans. Local authorities facing the greatest surface water flood risk have chosen Halcrow to support the development of their surface water management plans, including Gloucestershire, Hull and Sheffield.

### Surface water management plans

Around 50 per cent of the damage caused by the floods in the UK during the summer of 2007 was due to surface water flooding. In the subsequent Pitt review and government response, surface water management plans were recognised as essential for managing surface water flooding in the future. The government has since supported the recommendation for the plans to be the delivery vehicle for managing surface water flood risk.

### Our approach

We work with local authorities to create a framework through which local partners can better understand the causes of surface water flooding and agree the most cost-effective way of managing flood risk. The

purpose is to enable them to make sustainable decisions that are evidence based, risk based, future proofed and inclusive of stakeholder views.

Through a surface water management plan, we can also help a local authority co-ordinate and plan strategically the drainage provision for large new developments. This supports consistent ownership and maintenance regimes for sustainable drainage systems and avoids inefficient piecemeal actions. Applying best practice in this way protects properties within the development and offers opportunities to improve surface water management downstream.

We believe that successful surface water management plans rely on engaging a diverse range of stakeholder groups, including water companies, the Environment Agency and local authority departments, such as emergency planning and highways. Halcrow has strong relationships with these groups:

**Local authorities** – we have played a lead role in developing strategic flood risk assessments and we're working with local authorities to support growth through water cycle planning.

**Environment Agency** – Halcrow is a leading provider of flood and coastal risk management services in the UK, via the strategic flood risk management framework.

**Water and sewerage companies** – our relationships give us a solid appreciation of how these companies work within the regulatory framework and the evidence they need to support investment.

## Our services

Halcrow has the range of expertise to deliver the technical, planning and policy requirements of a surface water management plan, including:

- drainage modelling
- fluvial and coastal modelling
- surface water modelling using ISIS SW
- sustainable drainage systems
- spatial planning and links to water cycle studies
- working across stakeholder organisations
- cost-benefit and multi-criteria analysis
- design and implementation of solutions

## Delivering value – case studies

### ■ Integrated urban drainage pilot project and first-edition surface water management plans

Between January 2007 and June 2008, Halcrow was project manager for Defra's 15 integrated urban drainage pilot studies. These tested new ways of understanding surface water flood risk through partnership working.

On behalf of Defra, Halcrow then authored technical guidance for those undertaking a surface water management plan, using the outputs and experiences from the studies. The first six plans were implemented between January and September 2009, at which point the draft technical guidance was tested. Halcrow was project manager for these first plans, providing technical co-ordination and guidance throughout.

### ■ Gloucestershire first-edition surface water management plan

Following successful completion of the Gloucestershire strategic flood risk assessment, Halcrow was commissioned to undertake the county's first-edition surface water management plan.

The project sought to better understand surface water flood risks on a county-wide scale, by building on the strategic flood risk assessment. We completed pluvial modelling and a wide consultation process with a range of stakeholders. Analysis of these identified target areas for further assessment using a detailed surface water management plan. With central Gloucester the first location, an integrated hydrodynamic model of the city centre was built and verified using information from the July 2007 rainfall event. It was then used to test cost-beneficial options for surface water flood risk alleviation.

We also produced a supplementary planning document to ensure surface water is dealt with

appropriately in new developments.

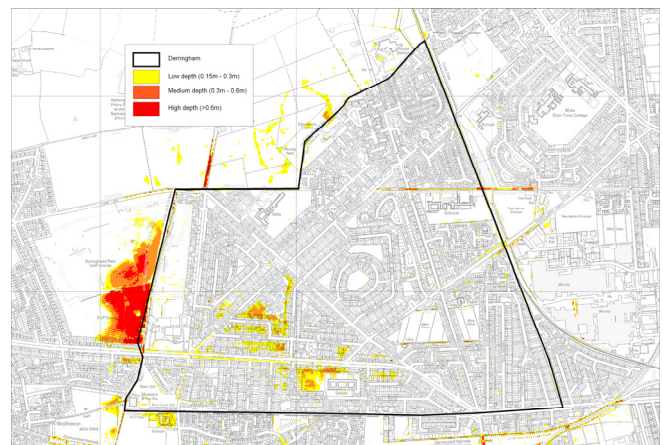
### ■ Hull first-edition surface water management plan

Our experience from the city's strategic flood risk assessment told us that the model we were to create needed to accommodate a complex catchment area and drainage system.

We developed a close working relationship with the project partners to overcome this challenge. Regular communication with the partners about the planned approaches enabled us to test the results against anecdotal evidence.

Using the knowledge gained from working in partnership, combined with our pragmatic modelling approach, we identified and assessed options to mitigate flooding in Hull. In particular, we assessed the potential for using open space as dual flood storage to protect the city.

The process identified other problems that could be managed by the project partners without having to create additional drainage infrastructure. A draft supplementary planning document was also prepared.



Mapping of proposed surface water flood storage areas in Hull

## Contact us

- **Elliot Gill** – Swindon  
tel +44 (0)1793 812479  
email gillej@halcrow.com
- **Alistair Cotton** – Swindon  
tel +44 (0)1793 812479  
email cottona@halcrow.com
- **Beccy Dunn** – Birmingham  
tel +44 (0)121 456 2345

For your nearest Halcrow office, visit [halcrow.com](http://halcrow.com)