

Helping Local Authorities to Manage Flooding

What are the issues?

Following extensive flooding in the summer of 2007, when 100,000s of people were left without power and water, the Government commissioned an independent review of the floods by Sir Michael Pitt. The final Pitt Report was published in June 2008. One of its key recommendations was that Local Authorities should take a lead on the management of local floods.

The draft Flood and Water Management Bill now translates many of Pitt's recommendations into statutory duties. It gives Local Authorities a central responsibility for coordinating and delivering significant changes to local flood risk management.

Local Authority responsibilities for local flood risk management:

- Collate and map flood risk management and drainage assets
- Coordinate Surface Water Management Plans
- Adopt and maintain SUDS
- Assess and where necessary enhance technical capabilities in flood risk management
- Work with all relevant parties to tackle local problems of flooding

Why Atkins?

Atkins has already been working with Local Authorities across the country to manage the impact of the 2007 floods. Within Atkins we have the skills to provide the complete set of services required to develop coherent, realistic and affordable strategies to manage local flooding: from assessing the flood risk, developing solutions for flood management and planning for emergencies if they should arise.

In addition, we have framework agreements with all of the UK water and sewerage companies as well as the Environment Agency. We have built long-standing relationships with key players in these important stakeholder organisations.

As one of the world's leading multi-disciplinary consultancies we can draw on a broad base of expertise across engineering, planning and management services. We have over 1,000 water experts operating from 15 bases across England and Wales and in 2008 were voted the Best Consultancy for Water and Wastewater in the Edie Consultancy Survey.



The Environment Agency's Review of the 2007 Floods recommended that key utility and public services take responsibility for climate change proofing critical infrastructure, facilities and services. The 'Receptors Vulnerable to Flooding' project identified a significant number of vital services at risk of flooding:

Critical Facilities	Number of Sites at Risk of Flooding	Percentage of Overall Number of Sites
Electricity Sites	8,423	15%
Health Centres	2,971	10%
Schools	1,796	7%
Sewerage and Water	1,145	58%
Care homes	1,028	7%
Railway Stations	512	17%
Police Stations	397	13%
Fire Stations	265	14%
Ambulance Stations	172	14%
Hospitals	90	6%
Gas Supply Sites	23	28%
Prisons	19	13%

How can we help?

Collating and Mapping of Assets

Atkins regularly provides support to Local Authorities in all aspects of asset management including flood management infrastructure. We undertake surveys of above and below ground assets. We can also provide a Spatial Data Infrastructure (SDI) that enables an integrated approach to the management and interpretation of metadata, time series and spatial data, obtained from these surveys. SDI offers the potential to develop decision support tools that allow, for example, risk based prioritisation of management activities or whole life value approaches to investment.

The award winning Atkins SDI was used by Partnership for Urban South Hampshire (PUSH) to share their strategic flood risk information with citizens and stakeholders across 11 Local Authorities.

Our recent experience includes numerous surveys of river and coastal flood defences, assets and hydrometric structures for the Environment Agency; surveys of coastal assets for Local Authorities such as Ceredigion County Council and development of a common information and a data platform for the Bahrain National Plan.

“This sophisticated web-based mapping approach is an important part of the toolkit for assessing flood risk at a strategic level and is already being used by planning officers when considering housing allocations and for controlling development. SDI can also be used by emergency planners in assessing the vulnerability of existing communities to flooding”.

Lyall Cairns, Partnership for Urban South Hampshire (PUSH)

Protecting Critical Assets

Protecting critical assets from flooding is fundamental to maintaining power and water supplies and protecting essential services during flooding. Ofwat guidance for the water industry advocates a three stage approach:

- Risk Screening - to identify those infrastructure and non-infrastructure assets at risk of flooding
- Risk Analysis - to obtain flood depths at the critical sites from the various modes of flooding which formed the basis of the Failure Mode Effects Analysis (FMEA) and solution development
- Risk Management - to appraise the solutions selected with respect to Cost Benefit Analyses (CBA), Willingness to Pay, environmental impacts and carbon costs

Through appraising and adapting the Ofwat guidance and understanding our clients' needs we can generate a robust methodology for developing engineered solutions to protect existing assets from flooding. Our approach spans a range of expertise within Atkins from site assessment, fluvial and pluvial flood mapping, sewerage modelling, Failure Mode Effect Analysis (FMEA), engineering design and Cost Benefit Analysis (CBA).

Recent studies undertaken in accordance with the Ofwat guidance for water companies and the rail sector have provided us with the experience now to assist Local Authorities with similar issues.



Surface Water Management Planning

Surface Water Management Plans are widely welcomed as a positive step in developing a joined up approach to the many strands of flood risk management in urban areas that have traditionally been carried out by separate organisations. Their success will depend on effective engagement and coordination of many different parties, as well as a strong technical capability in flood risk management.

At Atkins we have specialists in surface water drainage, sea and river flood risk, pluvial flooding, Sustainable Urban Drainage Systems (SUDS), water quality and engineering design as well as expertise in strategic planning and stakeholder engagement – all skill sets which will be needed to develop an effective Surface Water Management Plan.

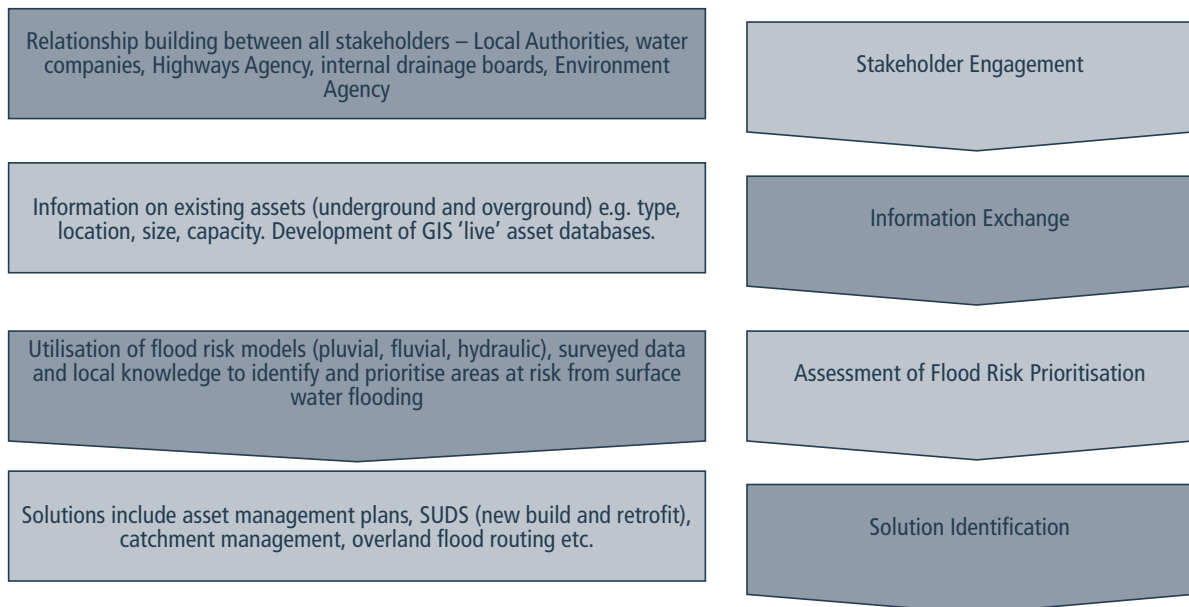
Atkins is working with an alliance of Authorities in the North East of England to develop an integrated regional approach to Surface Water Management. We are also working for Birmingham City Council on integrated urban modelling. As part of a pilot study being undertaken by the Welsh Assembly Government (WAG) we are developing an urban flood risk management plan for Prestatyn that is aimed at spreading best practice across Wales.

“Atkins has carried out valuable work for the Birmingham Water Group, lead by Birmingham City Council with representatives from the Environment Agency and Severn Trent Water. The integrated modelling of the Wood Brook has enabled the group to better appreciate how river, sewer and surface water flows interact in the catchment and to work together to consider the best approach to flood alleviation for the area”.

Kerry Whitehouse, Drainage Engineer,
Birmingham City Council

The fundamentals of the Surface Water Management Plan process are shown below:

Surface Water Management Plan Development



Surface Water Management Plan

Asset Management Programmes

Asset Resilience

Enhancing technical capability

Integrated computer hydraulic modelling is a valuable and essential tool for understanding processes that cause flooding from both rivers and piped systems to allow effective solutions to be developed. Modelling separate systems in isolation is likely to lead to poor decisions about flood management, since it is often the interaction between surface and river water that causes frequent or severe flooding.

By linking above and below ground flow routes around the town of Coleford in the Forest of Dean, Atkins was able to build a much more comprehensive understanding of the flooding process – flood water exiting the underground system, flowing across the catchment surface and then returning to underground drainage system. We were then able to develop a range of robust solutions for effectively mitigating the effects of flooding in the town and surrounding catchment.

The image below shows how hydraulic models can be brought vividly to life using technology similar to the CGI tools developed by the film industry. Visualisations of the impact of flooding are a powerful way of raising awareness amongst the public and stakeholders about flooding.



Emergency Planning and Civil Protection

The Civil Contingencies Act 2004 aims to improve the country's ability to manage the impacts of emergencies through the implementation of more coordinated planning processes at a local level. Atkins has been extensively involved in strengthening the collaborations between agencies and improving the link between local areas and central government.

We recently developed and facilitated an emergency exercise for West Mercia Local Resilience Forum to test plans for response to flooding. 'Exercise Extend' was developed and delivered by Atkins' resilience specialists to over 100 delegates from the Local Authorities, emergency services, Department for Transport, Highways Agency, military, utility companies, British Red Cross, private sector businesses and other voluntary organisations. This exercise was developed to Cabinet Office guidelines, delivered specific objectives and recorded lessons identified for all participants with regards to flooding response and recovery.

We have also recently completed a review of the statutory duties and responsibilities of the Highways Agency as a Category 2 responder under the Civil Contingencies Act 2004 and developed a policy for them. Atkins subsequently supported the creation and provided the training programme for regional Emergency Planning Officers, who discharge the Highways Agency's statutory duties under the act.

“Professionally qualified ‘Emergency Planning Officers’ will be in place, improving the Highways Agency’s ability to plan in advance of events and increase co-ordination during an event. They will manage all aspects of the Highways Agency’s policy under the Civil Contingencies Act 2004”.

Lord Hunt, within the Government Response to the Pitt Review in the House of Lords

Contact Us

If you would be interested in discussing any flooding related issues in more detail then please contact water@atkinsglobal.com or our experts based around the UK:

