

Modelling & Mapping

Introduction

We have a diverse team of experts able to offer services in modelling for infrastructure development, water and wastewater networks, fluvial and coastal processes as well as visualisation and geographic information systems (GIS) for a wide range of applications.

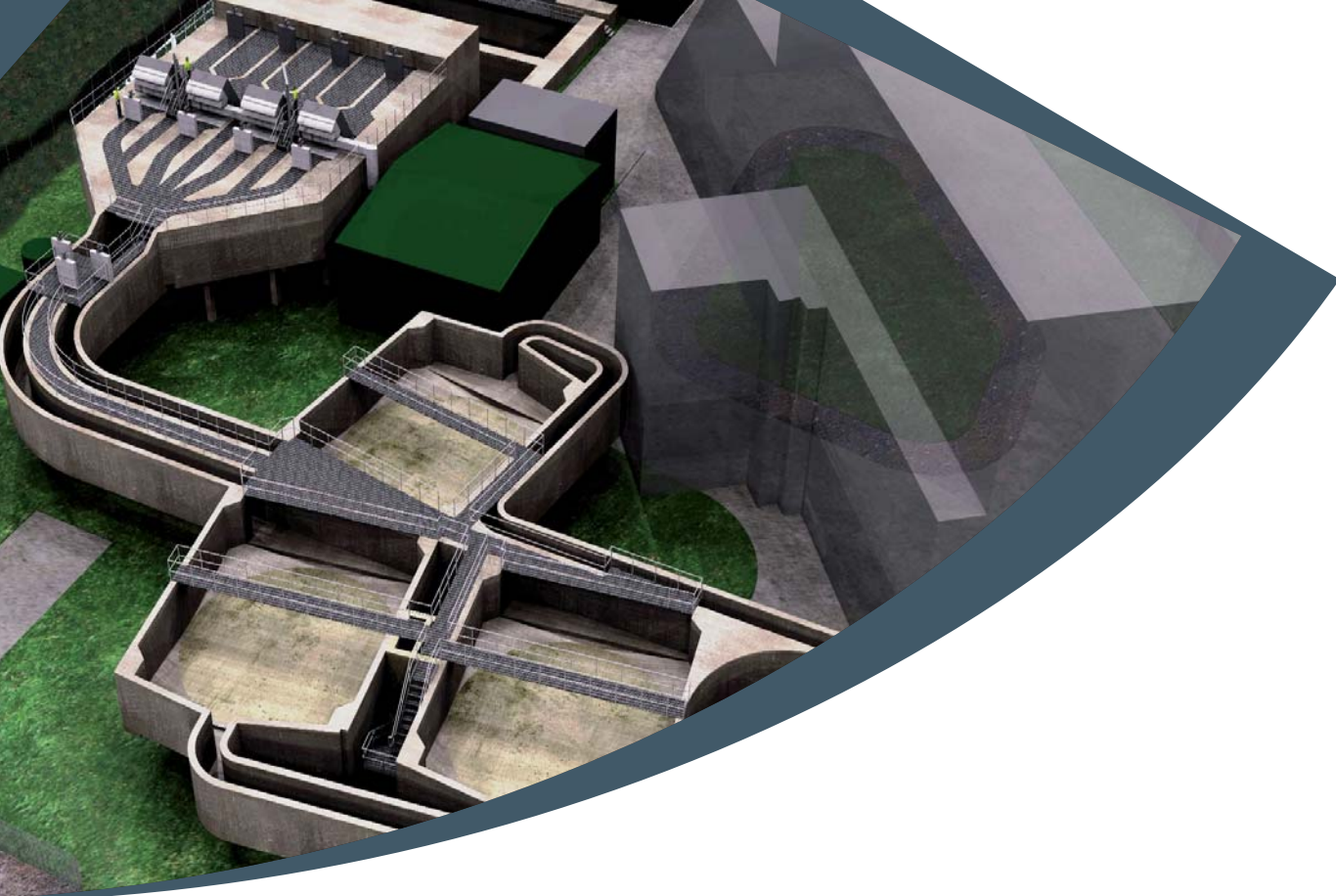
Atkins is a major user of geographic information technology and we have won awards based on our expertise in this area. GIS has been successfully applied by Atkins in many market sectors, including:

- utilities
- communications
- transportation
- property
- environmental
- heritage.

We have a dedicated team of highly qualified and experienced geospatial consultants with expertise in all aspects of the built, social and natural environment. Our consultants have an extensive and diverse range of skills, including data management and analysis, implementation, application development, land and aerial surveying, photogrammetry and project management.

Our team offers a full range of services, specifically targeted at improving the operational performance and efficiency of water supply and distribution networks as well as modelling groundwater and sewerage networks. Our team is the longest established specialist team of its kind in the UK, providing specialist advice and field support for the operation, performance and management of clean water network assets.

Similarly, our rivers and coastal experts are renowned for their solution-driven approach towards the complex nature of flood defence schemes as well as using innovative techniques for modelling fluvial and coastal processes for a range of applications. We offer a comprehensive range of services, from master planning to feasibility studies to design and implementation.



Modelling

Atkins is well-equipped to provide the entire range of professional services required for successful operation of water & wastewater networks, drainage, leakage, flood risk, coastal and fluvial processes assessment, control and management. The breadth and depth of experience contained within our team enables us to deliver the right solutions to our clients anywhere in the world.

By keeping up to date with the latest techniques and software, we provide modern solutions to increasingly complex issues. We use a variety of the latest mathematical models to forecast network, coastal and fluvial processes. Atkins offers a full range of skills for coastal modelling studies, drawing on in-house expertise from both, scientists and engineers, to provide in-depth capability.

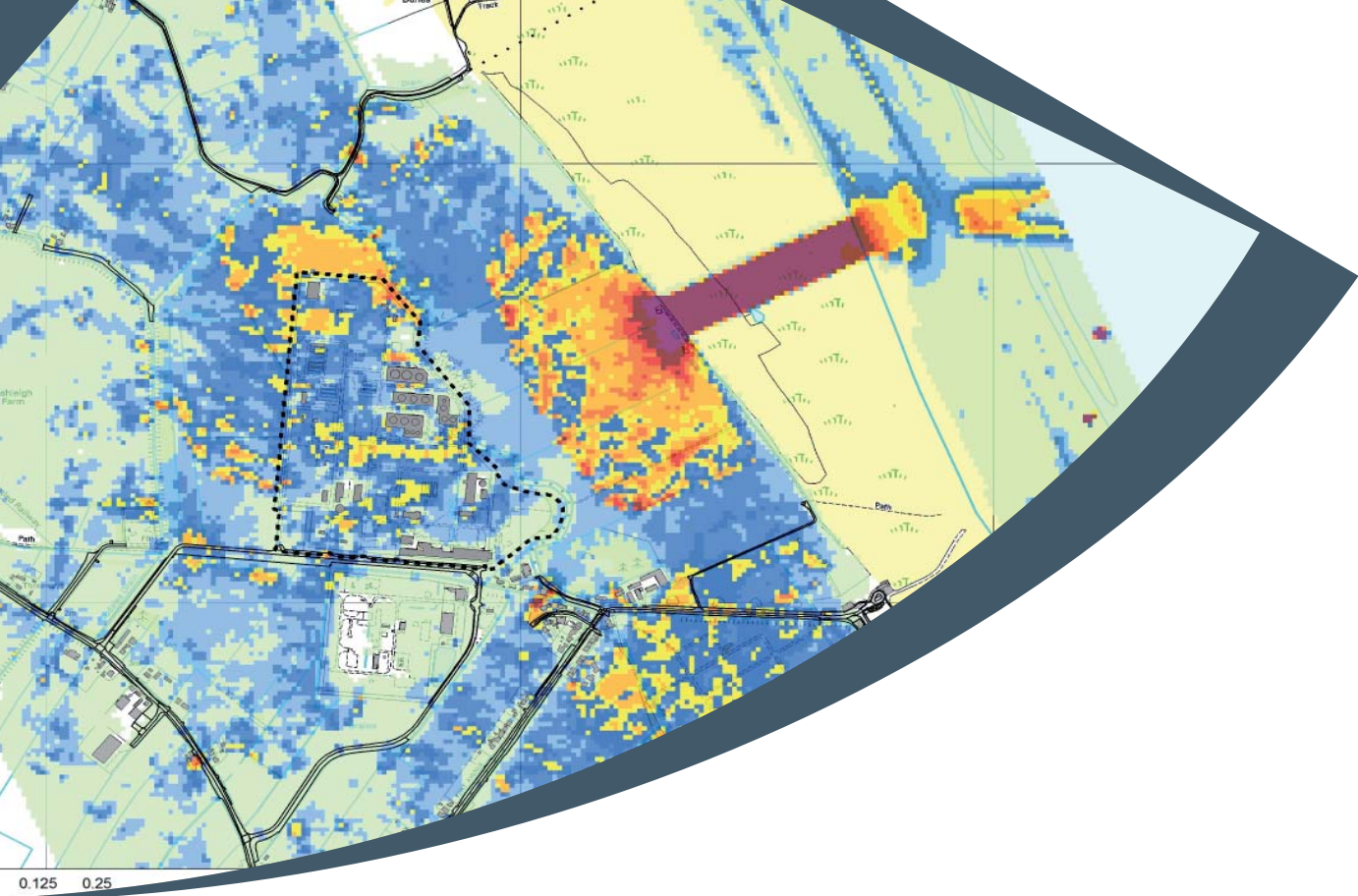
For examples, drainage area assessments provide operations managers with an essential understanding of their sewerage systems and their condition within a catchment. Our practical engineering experience enables us to ensure that capital investment is only proposed where absolutely

necessary and facilitates the most cost-effective and sustainable solutions for the client.

Similarly, hydrological and hydraulic flood modelling studies provide inputs to the design of river and coastal defences, and to flood risk assessments linked to development planning and control.

Our expertise ranges from providing high level advice, such as strategic asset management planning, through to the provision of fully trained and equipped field staff. These are also licensed to operate water networks, including the operation of large diameter trunk main valves.

We also provide a comprehensive range of services relating to leakage management, allowing our clients to operate efficiently in the identification, assessment and control of leakage levels across their system.



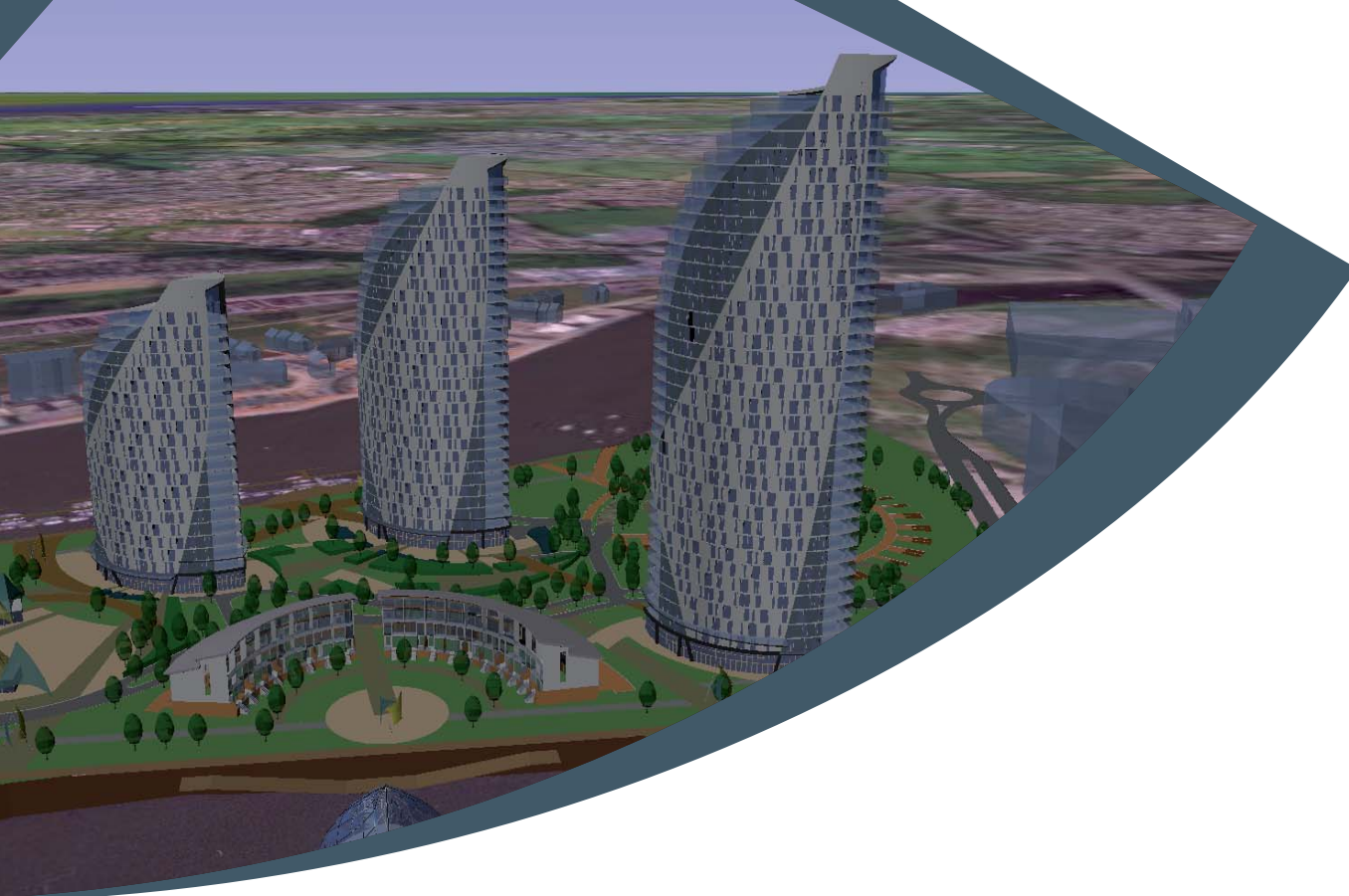
Key services in modelling include:

Environmental, Fluvial & Coastal

- 1D, 2D and 3D river and coastal modelling
- catchment Flood Management Plans
- coastal offshore-onshore-wave overtopping models
- coastal zone management
- developer flood risk assessments
- environmental impact assessments
- environmental modelling
- estuary modelling for impact analysis and sedimentation processes
- hydropower modelling
- modelling for implications of sea level rise and climate change.

Water & Wastewater

- 2D and 3D Scheme visualisations
- conceptual and transfer function rainfall runoff models
- dams and reservoirs supply modelling
- demand assessment and minimum night flow analysis
- distribution zone studies
- DMA / PMA design, audit and Implementation
- drainage area assessments
- feasibility and design support for capital schemes
- hydraulic and serviceability analysis
- hydraulic investigation.



Mapping & Surveying

Acquiring raw data is typically one of the most cost and time-intensive phases of a modelling or geospatial project. However, continuing advances in technology are revolutionising many of the traditional field survey and earth observation techniques, enabling greater efficiencies and innovative uses of the resulting data.

Atkins has developed a wide range of capabilities over 25 years of trading within the mapping sector. These include:

- topographic surveys
- GPS geodetic and photo control surveys
- aerial and terrestrial photogrammetric mapping
- orthophoto and DTM production
- asset surveys and condition assessment
- photogrammetric scanning
- cadastral survey
- deformation monitoring
- measured building surveys.

Our remote sensing experts acquire and process imagery from a variety of optical, multi-spectral and laser (LiDAR) sensor platforms. Specialist image analysis supports a number of environmental and related applications, including change detection, habitat classification, land use monitoring and quantity surveying.

Services available from our mapping and surveying team include all aspects of the management of geographic information, from business process analysis, data flow modelling, metadata design and capture through to the development of full spatial data infrastructures. We are also frequently called upon to deliver strategic advice on data policy, GIS systems and issues such as data re-use.

Our approach

Mapping

The clear and unambiguous presentation of geospatial information is vital to effective communication, planning and decision-making. Atkins accomplishes this through the use of the latest technology to create cartographic mapping, internet web services and visually engaging 3D models. We utilise these methods to inform our clients and our clients' customers, in both the public and private sectors.

We create:

- planning, development and transportation records
- flood and disaster risk maps
- cityscape models
- line-of-site, noise, and signal propagation visualisations
- land parcel plans
- orthophoto and historical mapping of the built environment at many scales.

Atkins regards spatial data as a key corporate asset, and has developed an approach to managing this asset for maximum value. This includes mechanisms for collection and update, quality assurance (including metadata management) and dissemination - including through web-based systems.

The size and breadth of our experience enables us to provide a flexible and responsive resource that can be mobilised and deployed to meet our clients' changing demands. For this reason, we believe our resource flexibility and ability to respond positively to peaks and troughs in work load is a feature that differentiates Atkins from its competitors.

Over and above the resources which exist locally, additional staff could also be drawn from our national team. We also actively recruit new staff in line with the development and growth of our business. Furthermore we will utilise our team in India to assist with data analysis if required. To facilitate our services Atkins owns a large number of licensed copies of key network modelling software such as StruMap, InfoWorks WS and Synergee.

In addition, we have developed innovative procedures to expedite routine tasks. For example, our Calibration Assistant Tool (CAT) produces a thematic plan comparing model results and field test data for a whole model area, enabling rapid visual appreciation of the calibration errors and hotspots.

We also own a full range of equipment for undertaking all sizes of field tests ranging from local small scale DG2 investigations, to large tests covering major city pressure zones. These tests focus on obtaining adequate and accurate flow and pressure data.

Similarly, to facilitate our work, key staff are trained in:

- NRSWA Units 2 and 10
- confined space entry
- first aid
- valve operations
- manual lifting

Our Approach

Modelling

Atkins' team of professionals invests in the latest modelling software and has managed a wide range of research and development studies covering subjects such as reservoir modelling, flood forecasting and leakage assessment. We ensure that our models are well-adapted and appropriate to tackle specific engineering problems which need to be addressed.

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Outcomes we deliver to our clients

Our people are our greatest assets. Atkins' multi-purpose solutions are designed to identify and recommend opportunities aimed at:

- improving efficiency
- reducing operational costs
- optimising capital expenditure
- establishing policies
- delivering tangible benefits.

In modelling we offer a widely respected service covering model development, audit and review:

- We perform hydrological and hydraulic modelling studies for most of the major water utilities, local authorities and regulators in the UK, and a range of other public and private sector organisations in the UK and overseas.
- Our Network and River and Coastal Modelling teams are amongst the largest in the UK, with wide international experience.

- We are able to provide modelling analyses ranging from rapid assessments and reviews lasting a few hours through to major projects involving large teams of staff collaborating on different aspects of the model development.
- We use all of the mainstream 1D, 2D and 3D hydraulic modelling packages and are able to apply our own 2D and 3D modelling techniques for applications which cannot be handled by commercially available software.
- We help organisations develop strategies to meet the legislative requirements of 'Making Space for Water', the Water Framework Directive and the Floods Directive.

Geospatial analyses are often a key component of modelling studies and Atkins is uniquely placed in the Geospatial market:

- we cover all aspects of the geographical information lifecycle and can offer in-depth skills and experience across the entire geospatial sector
- we offer an integrated team of 50+ consultants, located across the UK and in Bangalore, India
- we are "systems neutral" with experience in delivering solutions on many of the major GI software suites
- our client base and previous experience reflects the full breadth of the wider Atkins' corporate domains.