



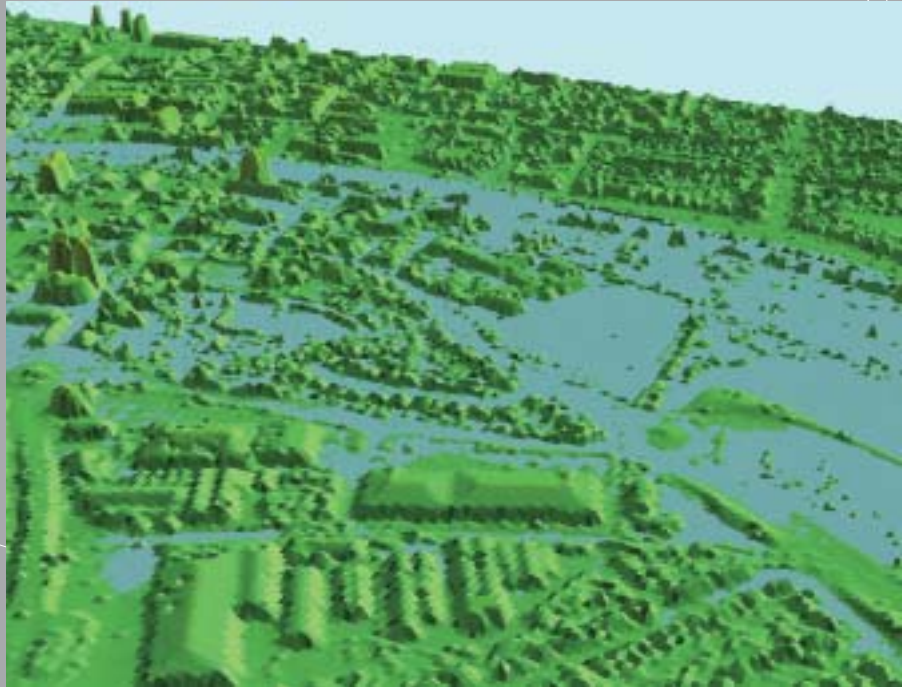
rivers



ROYAL HASKONING

thinking in
all dimensions

rivers



Clockwise from top left: Weir structure incorporated into the River Brit hydraulic model, Bridport, UK; 3D flood view map of Bedford, UK; Environment Agency Flood Risk Map for Bridport, UK.

management of floodplains

Operating authorities, exercising their permissive powers in connection with the management of fluvial flood plains, are coming under increasing pressures. Flood risk is escalating, with predicted climate change scenarios set to worsen further still. Development pressures are therefore increasing, especially for residential purposes.

The management of flood defence structures and assets in particular is under close scrutiny. Financial budgets are constrained, so best value for money is needed from maintenance and renewal programmes. The rivers team available at Royal Haskoning, through Posford Haskoning Ltd., and Haskoning Nederland B.V., provides a number of specialist services that help to meet all these challenges.

flood risk mapping

The level of expertise within our team has enabled us to provide flood risk mapping services for the Environment Agency in locations across England and Wales. These studies can be undertaken for both main river and ordinary watercourses. The degree of detail and precision applied is adjusted to ensure that it is appropriate for the location.

flood risk assessments

Assessments can be completed in accordance with the guidance provided by PPG 25. Engineers and planners can use the assessments to determine the impact of proposed developments within the floodplain.



Clockwise from top left: Hambleton, Hampshire UK; Pumping operation, Patixbourne, Kent, UK; Little Paxton, River Great Ouse, UK.

gathering & presenting essential information

flood event reporting

Collecting and analysing field data at times of flooding leads to a greater understanding of how each river operates. This knowledge proves to be invaluable when carrying out subsequent studies and modelling. The range of staff resources within our team enables us to respond quickly when called to flooding incidents, while our data collection and reporting methods can be tailored to meet each client's specific requirements.

asset inspections

Whether the assets are 'on line' structures or 'off line' defences their condition can be assessed and reported on. The reports may be used to determine maintenance programmes or form part of an overall flood risk assessment. The condition of flood defence assets is part of the reporting process that operating authorities are required to complete for the high level targets produced by Defra.



Clockwise from top left: Lower Tone Flood Alleviation Scheme, Somerset, UK; Page from Elgin Flood Event Report in partnership with Moray Council; Kampden demountable defences, The Netherlands; Asset Management Survey, Sussex, UK.

in-house service levels

flood analysis

The causes and impacts of fluvial, surface water and ground water induced flooding can be analysed to determine 'return periods' and to identify site-specific flood alleviation measures. The engineering, economic and environmental impacts of flood alleviation schemes can be determined and used when justifying projects within an authority or with external funding agencies. We can also present such information to engineers, development control staff, politicians and local community groups, in an appropriate format.

operational support

Authorities are increasingly choosing to obtain services as and when they are needed, rather than experience the cost of employing full-time experts in all disciplines. With offices across the UK, we are able to support and enhance our clients' own engineering resources in this way.

To help clients maintain the service levels they would expect from an in-house team, we can offer service contracts on a 24-hour basis, dependent upon local requirements. Response times can be agreed and formalised within a service level agreement, with a two-hour target appropriate for most sites in England.



Above: Nailbourne, Kent UK.

support from experts in many disciplines

Within our Coastal & Rivers Division, engineers with fluvial, tidal and coastal experience are available to deliver a range of projects. The Division includes hydrologists and a hydraulic modelling capability, as well as environmental service teams.

In addition, the resources of Royal Haskoning's seven other divisions are available to provide a comprehensive service to clients. By accessing the resources from other divisions a full range of professional staff can be mobilised to provide a complete river management service. This service is designed and delivered to meet sustainability and 'best value' targets.

Associated resources include geotechnical engineers, civil and structural engineers, mechanical and electrical engineers and divers for underwater inspections.

This breadth of expertise enables us to fully identify and meet our clients' needs, no matter how diverse or unique.

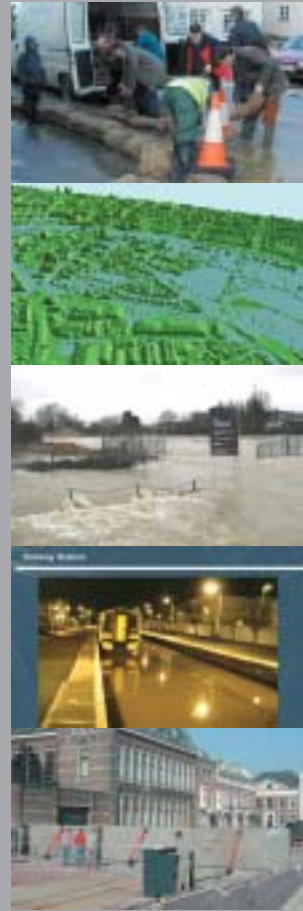
To do this most effectively, we seek to build and maintain longer-term relationships, where appropriate through formal partnering arrangements.

Royal Haskoning is an independent, worldwide operating consultancy that has its origins in a firm established in 1881 in the Netherlands. The consultancy now has a staff of 3,000 who together combine a wide range of knowledge and experience. Rooted in a technical background, our consultancy services focus on the broad field of the interaction between people and their environment, in the fields of spatial development, infrastructure & transport, architecture & building, mechanical & electrical services, environment, water, coastal & rivers and maritime.

We are committed to working enthusiastically with our clients to achieve sustainable solutions in an increasingly complex society. The expertise and experience of our professionals in a variety of disciplines allow us to

consider all technical, logistical, architectural, legal, organisational, social, environmental and economic aspects of your project, in order to develop sustainable and practical solutions. Royal Haskoning has subsidiaries and partners throughout the world.

Posford Haskoning is the UK branch of Royal Haskoning. Through our branch and project offices in Europe and overseas, we have access to all major international markets. This way, Royal Haskoning offers multidisciplinary and integrated services locally, based on experience built globally. With our personal service in consultancy, we contribute effectively to the successful planning, design, implementation, commissioning and operation of projects and programmes and enhance our clients' work with added value.



Royal Haskoning, through Posford Haskoning Ltd and Haskoning Nederland B.V. is a member of:

- ACE The Association of Consulting Engineers
- BCCB British Consultants & Construction Bureau
- PIANC Permanent International Association of Navigation Congresses
- ICHCA International Cargo Handling Co-ordination Association
- CIRIA Construction Industry Research Information Association British Section
- ICID International Commission on Irrigation and Drainage
- IEMA Institute of Environmental and Management Assessment
- FIDIC International Federation of Consulting Engineers

Royal Haskoning through Posford Haskoning Ltd or Haskoning Nederland B.V. is registered with: African Development Bank, Asian Development Bank, Caribbean Development Bank, European Bank for Reconstruction and Development, European Development Fund, International Development Bank, Islamic Development Bank, Kuwait Fund for Arab Economic Development, Department of International Development, United Nations Development Programme World Bank, and many other Funds and National Authorities.

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