Fluid thinking, smart solutions
Independent research and consultancy in civil engineering and environmental hydraulics
Long-term programmes of advanced research ensure that we remain at the forefront of technology and can advise our clients from a basis of up-to-date knowledge.
Working with water

HR Wallingford provides world-leading analysis, advice and support in engineering and environmental hydraulics, and in the management of water and the water environment.

Created as the Hydraulics Research Station of the UK Government in 1947, we became a private entity in 1982, and have since operated as an independent, non-profit distributing organisation committed to building knowledge and solving problems, expertly and appropriately.

Today, HR Wallingford has a 60 year track record of achievement in applied research and specialist consultancy. We have a unique mix of know-how, assets and facilities including state of the art physical modelling laboratories, a full range of computational modelling tools and, above all expert staff with world-renowned skills and experience.

HR Wallingford has a pedigree of excellence and a tradition of innovation, which we sustain by re-investing profits from our operations into programmes of strategic research and development, designed to keep us, and our clients and partners, at the leading edge. With headquarters in the UK, HR Wallingford reaches clients and partners globally through a network of offices, agents and alliances around the world.
Integrated water resources management
Sustainable drainage systems (SUDS) – research and outline design
Drainage and water supply system modelling
Urban pollution risk assessment and management
Water quality modelling (source to sea)
Water cycle management for new development
Water resources research

- Water resources planning, drought planning and forecasting
- Irrigation and drainage design
- Reservoir yield assessment
- Specialist studies to support reservoir design
- Climate change impacts and adaptation assessment
- International development
- Stakeholder consultation
Water

At HR Wallingford we take an integrated view of water resources and aim to apply our specialist research knowledge to balance resource use and water efficiency.

We work with our clients to promote good water governance, provide reliable water resources for industrial, municipal and agricultural needs, improve water quality and enhance the environment.

In the UK, we are leading research in sustainable drainage systems, reservoir water quality modelling and the impacts of climate change on river flows, groundwater recharge and sewerage systems. Our international role involves providing expert advice on the water sector problems in support of achieving the Millennium Development Goals.

HR Wallingford works with a range of clients in the water sector, completing research and consultancy for international policy makers, the European Commission, regional planners, water companies and leading developers. Our inputs range from multi-partner international research projects to specialist consultancy services, from providing policy advice to developing hydraulic models and building technical capacity within our client’s organisations. Our innovation in research enables us to help our clients solve difficult water management problems that range from meeting new environmental regulations to developing sustainable communities, adapting to climate change and solving water access problems in developing countries.
- Engineering and management of river and coastal systems
- Risk assessment, mapping and management
- Policy analysis
- Scheme design and appraisal
- Asset management, performance and failure processes
- Forecasting, warning and event management planning
- Integrated urban flood management
- Environmental and catchment management
- River hydrology, hydraulics and morphology
- Reservoir safety, sedimentation and emergency planning
- Environmental extremes and climate change impacts
- Social and environmental impacts
- Temporary defences and flood protection products
- Stakeholder communication
- Expert witness
Floods

At HR Wallingford, we recognise that sustainable management of flood risks in any situation requires an understanding of many issues – from the sources of flooding and erosion through to their impact on people, property and the environment.

Flooding is not simple, and the effective management of flood risk can be complex. Understanding floods and flood risk is at the heart of making sensible choices for policy, investment, planning, management and engineering. Through the marriage of research and expert consultancy HR Wallingford provides a world class service that is founded in science and delivered in practice. We are at the forefront in the development and application of innovative solutions across the whole spectrum of flood management issues, from policy appraisal and institutional reform through to strategic flood risk assessment and onto actions appropriate for individual sites and homeowners.

HR Wallingford continues to work actively with a range of clients – from policy makers to developers – to promote sustainable development. We continue to advance industry best practice on topics such as assessing and mapping flood risk as well as solving site specific problems.

Through our combination of cutting-edge science and practical knowledge, we pride ourselves on being uniquely placed to help our clients make effective flood management decisions.
- Wave recording, hindcasting and transformation studies
- Extreme water level predictions
- Performance of coastal structures
- Causes of coastal erosion, seawall deterioration and related problems
- Modelling of sediment transport including beach plan shape and profile response, and the effectiveness of beach control systems
- Cost-risk modelling for economic justification of schemes

- Environmental assessments
- Stakeholder consultations
- Establishment of appropriate shoreline management strategies
- Outline designs, drawings and costings of schemes
- Training in modern coastal management techniques
- Advice on detailed design, construction, maintenance and monitoring
- Expert witness
Coasts

As a pioneer in coastal research, HR Wallingford offers a detailed knowledge of coastal environments and processes, the expertise to utilise a wide range of investigative techniques, and experience drawn from more than 50 years of coastal studies.

Modern day coastal management requires more than just a clear understanding of natural processes and the potential impact of man’s activities. Today, the right strategy or solution must be sustainable in engineering, economic and environmental terms. Increasingly, coastal management involves both capital and maintenance activities – and the choice and balance between the two can be influenced by a range of factors. HR Wallingford’s activities span all areas of the coastal environment. Our formidable research base allows us to keep pushing back the boundaries, to innovate and to apply our unique understanding and techniques for the benefit of all.

Our research provides improved understanding of sediment transport processes, of coastal erosion and flooding, and of the performance of coast protection structures, as well as new insights into remote monitoring and the management of coastal data. As a result, HR Wallingford is recognised world-wide as a leading centre for coastal engineering and modelling.

We work with a wide range of clients, from consultants and contractors to developers, local and regional governments, NGOs and private landowners. We can provide input at all stages of a project: from initial advice on the causes of a problem, to the specification of field survey work and onto detailed computational or physical modelling. As an independent organisation, we have no vested interest in any particular outcome, only in providing the best possible advice to those who seek it.
• Impact and design studies for all maritime development projects
• Data collection, collation, review and presentation
• Hydrodynamic, sediment transport and water quality modelling
• Ship manoeuvring and motion studies, navigation and marine risk studies and vessel operations analysis
• Dredging and disposal studies

• Planning and conceptual design, and specialist support to detailed design
• Assistance with consents process
• Design, execution and management of field monitoring programmes
• Operational conditions
• Real time forecasting
• Expert witness
Maritime

Design, construction and operation of projects in the maritime environment present significant challenges for all those involved in their development and implementation.

At HR Wallingford, we are specialists in the maritime environment and our acknowledged expertise has been used to optimise maritime projects around the world.

HR Wallingford provides a wide range of technical consultancy services in the design of maritime projects. These services can be used throughout a project – from initial planning and feasibility studies, through preliminary and detailed design, to construction and operation. We focus on delivering appropriate solutions for the cost effective development of projects – always within a sound planning, engineering and environmentally acceptable framework.

Our services are used for a wide range of maritime projects. These include ports, harbours, marine terminals, marinas and other coastal developments as well as industrial infrastructure such as intakes, outfalls and pipelines. We can provide advice on estuary crossings and reclamations such as bridges, embankments, barrages and barriers. Our research into sediment properties, dredging process and the beneficial use of dredged materials helps us to optimise dredging strategies and find acceptable disposal solutions.

At HR Wallingford, our expert consultancy advice is backed by state of the art computational and physical models. We have techniques available to establish wave and current climate, and to examine issues associated with sediment transport and water quality. We can also investigate dredging and navigational concerns, structural aspects, and the environmental and coastal impact of maritime projects.
- Marine import/export terminals
- Logistics/Supply bases
- Fixed and floating marine structures
- Pipelines
- Water supply/wastewater disposal systems
- Site protection and drainage

For:
- Oil and gas field developments
- Petroleum and chemical facilities
- LNG import/export terminals
- Power plants
- Desalination plants
- Marine renewable energy developments
Energy

HR Wallingford offers a range of specialist planning, design and engineering services for the global energy industry. We allow developers to understand and manage water-based risks at every stage of a project’s lifecycle.

From site selection and environmental assessment, through engineering and construction to operations, HR Wallingford has the technology, expertise and experience to deliver appropriate and effective solutions to complex development problems.

HR Wallingford has been involved in the design of energy projects for almost 60 years. We have completed more than 500 design studies, worked on projects in over 60 countries across five continents and developed a well deserved international reputation for scientific and engineering excellence.

Our generic, risk-based, process is used to optimise the planning and design of developments with the aim of minimising risk and whole life costs. Naturally, this involves working closely with the client’s project team. We help them identify the issues and understand the underlying science. We work with them to assess the impacts and risk of a development, and to devise appropriate strategies, plans and designs. HR Wallingford can collect field data, build physical models, set-up computational simulations, interpret this information in support of the decision making process, and engineer solutions. Clients recognise the value that HR Wallingford’s expert support brings and we are often retained as specialist advisors throughout the lifecycle of a project.
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Fluid thinking, smart solutions