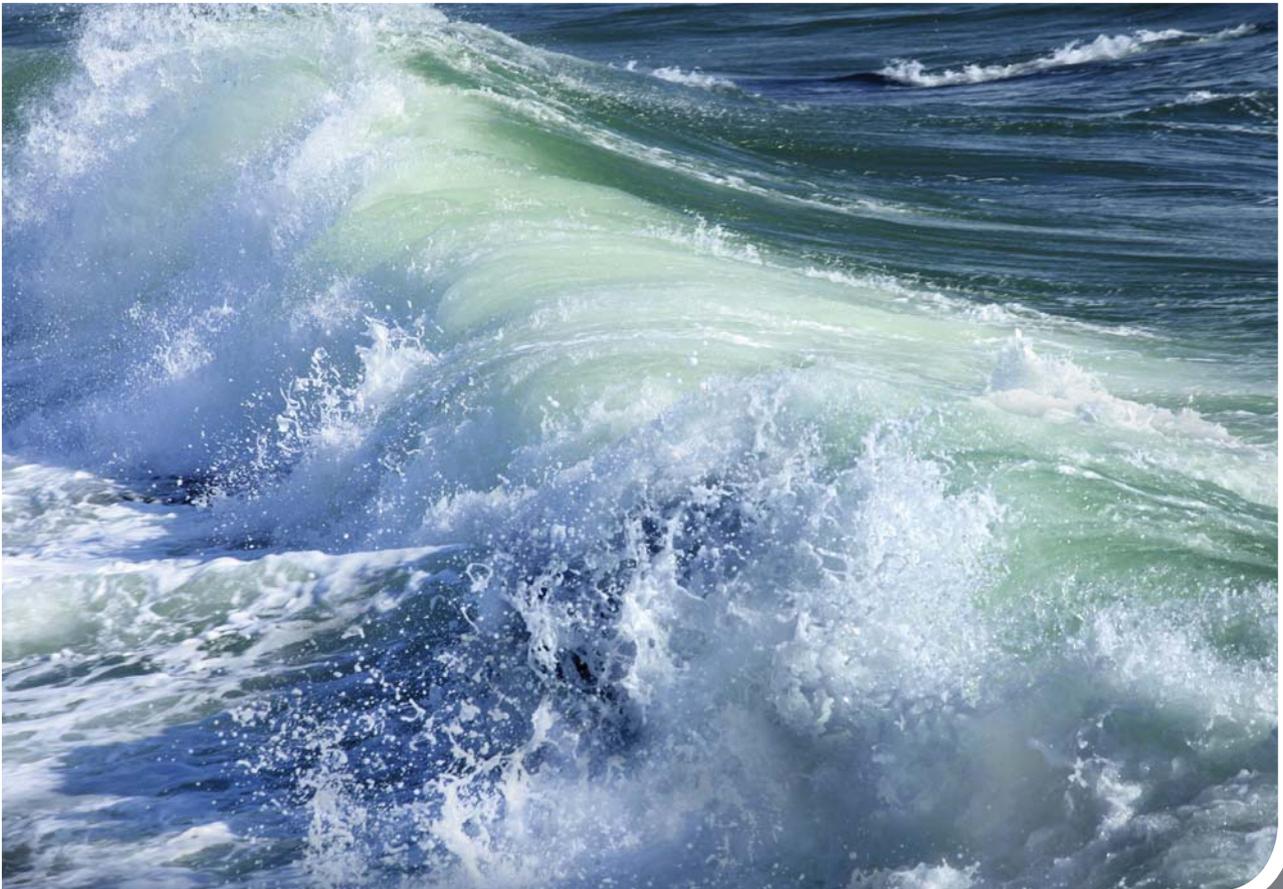




HR Wallingford
Working with water

Marine renewable energy developments

Specialist expertise for offshore wind and tidal energy



Marine renewable energy developments



HR Wallingford works with renewable energy clients to optimise their investment returns and minimise the environmental impacts of their projects. We provide the technical capability and specialist expertise needed to inform and support every phase of the development cycle.

Our clients include owners, operators, contractors and consultants, as well as regulators and other national organisations.

Technical capability and specialist expertise

- > Concept development and design
- > Construction
- > Site selection
- > Operation and maintenance
- > Environmental impact assessment
- > Monitoring
- > Detailed design
- > Decommissioning

Desk studies

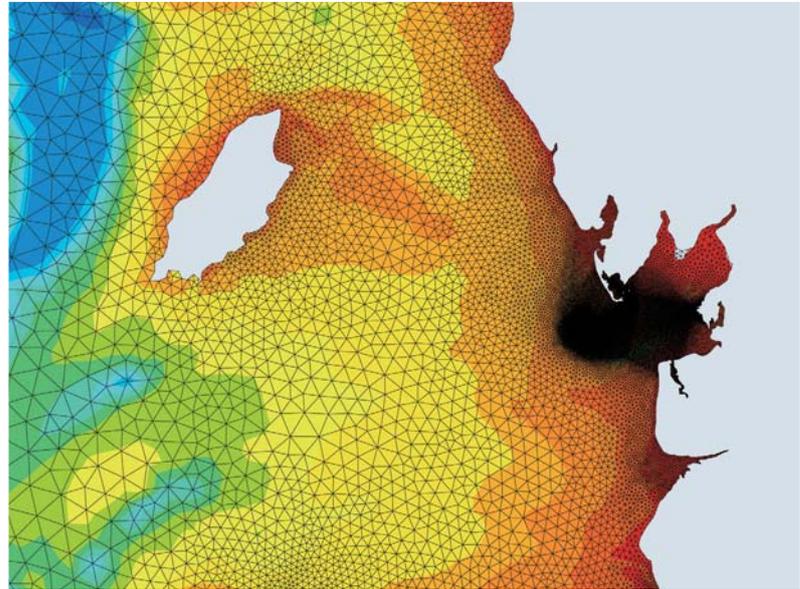
- > Review our extensive UK data archives on winds, waves, currents and the seabed
- > Assess published reports, charts, geotechnical/geomorphological information
- > Scoping of required studies and field work for development

Field data collection, analysis and management

- > Scope, manage and analyse field surveys including waves, currents, winds, bathymetry, suspended material, water levels, soils, geotechnics and geophysics
- > Assess baseline conditions
- > Monitor during construction and operations phases, including scour monitoring

Environmental condition prediction, modelling and analysis

- > Waves - offshore and shallow water wave distributions and extremes
- > Currents and water levels - normal and extreme events
- > Winds - distributions, extremes, over-water effects



Impacts

- > Assess hydraulic impacts on the seabed and coast in support of Environmental Impact Assessment (EIA)
- > Review impacts on other coastal and maritime interests
- > Cumulative and in-combination effects of clusters of developments

Sediment transport and seabed mobility

- > Historical chart analysis
- > Assess and model suspended loads, sand wave mobility, potential erosion/deposition and liquefaction risks for EIA and structural design
- > Scour assessment for foundations and cables

Structural design support

- > Define of metocean criteria
- > Wave loading and slam forces due to breaking waves
- > Current and wave conditions for fatigue analysis
- > Foundation stability
- > Joint probability of loading variables - correlation, joint distribution, joint extremes

Cable laying and maintenance

- > Route selection, cable protection, trench infill, depth of burial
- > Cable landfall - shoreline stability and protection

Managing uncertainty

- > Real time forecasting of wind and wave conditions for operational management
- > Assess weather downtime for contract risk management
- > Sensitivity tests for design optimisation
- > Risk assessment for design, construction and maintenance

Recent projects

HR Wallingford has had significant involvement with many of the UK Round 1 and Round 2 offshore wind farms, as well as emerging wave and tidal energy projects in the UK and Europe. We have an active involvement with industry research and have provided modelling and expertise for several overseas projects.



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HR Wallingford is an independent engineering and environmental hydraulics organisation. We deliver practical solutions to the complex water-related challenges faced by our international clients. A dynamic research programme underpins all that we do and keeps us at the leading edge. Our unique mix of know-how, assets and facilities includes state of the art physical modelling laboratories, a full range of numerical modelling tools and, above all, enthusiastic people with world-renowned skills and expertise.

