Mott MacDonald has an extensive portfolio of successful projects that demonstrate how we meet the needs of compliance when implementing the European Union (EU) Water Framework Directive (WFD) in Britain and across Europe.

We are assisting preparation for the WFD in Ukraine.

Implementing the Water Framework Directive

We have engaged in business planning for the WFD in Scotland.

The holistic needs of the Water Framework Directive (WFD) require integrated assessments with a sound appreciation of the links between the nature of the water environment and the viability of ecosystems. Mott MacDonald is well placed to deliver this requirement. We are experienced at linking hydrological changes to the potential impacts on the ecology of a system.

Our key services in this area include:

- Catchment management
- Cost-benefit analysis
- Environmental impact assessment (EIA)
- Flooding and flood risk management
- Habitat survey
- Hydraulic engineering
- Hydro-ecological assessment
- Hydromorphological assessment
- River basin planning
- Surface and groundwater modelling
- Water quality and pollution management
- Water resource management

Typical projects include:

Water resource strategic studies, Scottish Water

Scottish Water (SW) is the first water company in the UK tasked with delivering investment to meet the objectives of the WFD. We are helping to deliver this project by working closely with SW and the Scottish Environmental Protection Agency (SEPA) to apply the guidance set by the UK Technical Advisory Group to determine whether SW abstractions are affecting the ecological status of source water bodies. This work gives us first hand experience of implementing WFD principals. We are identifying and costing measures aimed at restoring water bodies to target ecological status and critically reviewing these measures to ensure that planned costs are proportionate to the environmental benefit delivered.

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We evaluated the impact of a gas pipeline installation on the foreshore at Bacton, England.

We evaluated the impact of water abstractions on the river ecosystem of the River Brett, England.

Valuing the Water Environment: an investigation of environmental attitudes and values to inform implementation of the EC Water Framework Directive, Scotland

Public participation is an integral part of the WFD. To deliver this, the Scottish Executive launched a qualitative research project to explore the opinions and priorities of the Scottish public and key stakeholder groups with regard to Scotland's water environment. Mott MacDonald provided expert advice to the project team and ensured that the research effectively targeted the key objectives of the WFD. The Executive has published the results from this study and they will inform policy with regard to implementing the WFD in Scotland.

Joint River Management Programme, Commonwealth of Independent States

This long term project addresses water quality management and related pollution impact in four river basins that are subject to a variety of pressures and flow from one country to another. The rivers in question are the Kura (Armenia, Georgia and Azerbaijan), Seversky-Donetz (Russia and Ukraine), Tobol (Kazakhstan and Russia) and Pripyat (Belarus, Ukraine). Three of these rivers are part of a group of eight transboundary rivers selected for a pilot programme directed by the UN/ECE task force on monitoring and assessment. Mott MacDonald is testing the task force's guidelines. The fourth river – the Pripyat – was included to introduce the application of river basin catchment management principles to the WFD focusing on the conservation of significant wetland environments.

Pilot river basins, Romania

Mott MacDonald assisted the Romanian authorities in preparing for implementation of the WFD. We evaluated the implications of the terms of the WFD on their current water resource management practices in two pilot areas. We also supported local specialists in adapting their current arrangements to suit the needs of the WFD. Activities included setting environmental objectives, characterising water bodies, developing a programme of measures, assessing water quality and identifying factors that influence it, developing simple and intermediate river models to assess compliance, and developing a monitoring programme that included analytical quality control for laboratories.

Local Government Association guidelines, England and Wales

Mott MacDonald developed guidelines for use by the Local Government Association for publicising the potential implications of the WFD for local government in England and Wales. We are also a contributing member of the Local Government Association Working Party on the WFD.

River basin planning, England and Wales

We assessed and developed recommendations for institutional arrangements to facilitate administration of the river basin planning process under the WFD for the Environment Agency.

River Soar and River Mease catchment water quality studies, England

We completed these two assignments for the Environment Agency that focussed on assessing the compliance of river reaches with water quality objectives and determination of necessary changes to industrial and municipal discharge consents. The work ensured the rivers met water quality objectives and satisfied prevailing legislation including the habitats, fisheries, nitrates, and urban Wastewater Treatment Directives. We used a Simulated Catchment (SIMCAT) water quality model based on Monte Carlo statistical methods.

We assessed whether water bodies in Scotland meet ecological standards.

We assessed the impact of water abstractions on the ecology and fisheries of Lough Neagh.

Training in techniques for water quality sampling for Joint River Management Programme.

Water quality study on the River Beult, England

The River Beult Special Site of Scientific Interest (SSSI) is a scenic clay river with a rich characteristic flora and fauna. We undertook an extensive monitoring programme to establish the current water quality and flows in the catchment and to investigate whether stops boards along the river had the effect of increasing dissolved oxygen downstream. A stochastic water quality model was developed (broadly similar to SIMCAT) based on the data collected, which incorporated diffuse and point pollution sources. This was used to model management options aimed at reducing total phosphorus concentrations in the SSSI.

East Kent groundwater model, England

We developed the East Kent groundwater model for the Environment Agency to help inform their decisions in relation to the water environment under the WFD and Catchment Abstraction Management Strategies (CAMS). We subsequently analysed the impact of a range of climatic conditions on flows in rivers.

Leigh Barrier operation review, England

Building on a series of flood risk studies and the development of flood forecasting tools Mott MacDonald undertook a major review of the operation of this flood control structure that mitigates flooding across mid-Kent. Revised operating procedures to improve performance in floods were developed and tested using mathematic models. A specific objective of the assignment was to determine if revised procedures could provide additional environmental benefits.

Weir Wood reservoir SSSI, England

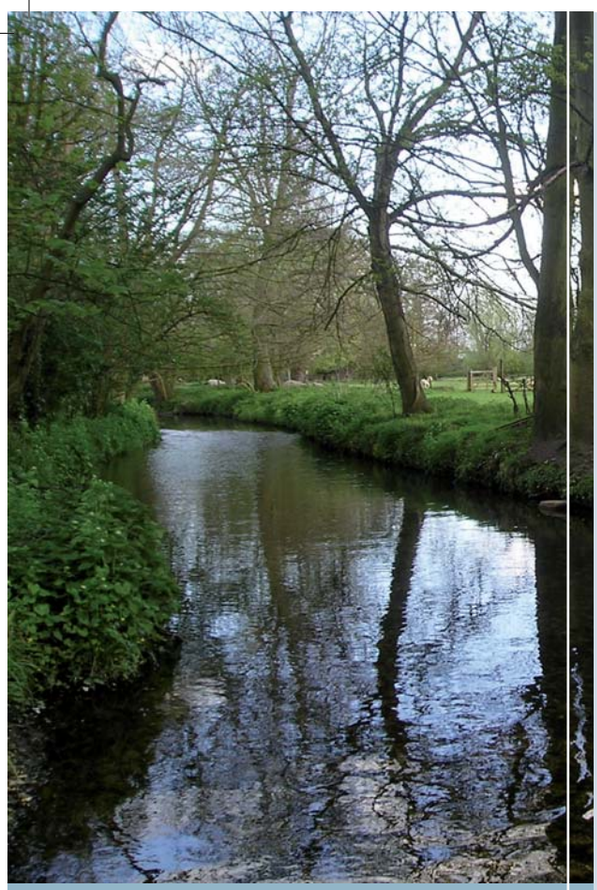
Weir Wood Reservoir SSSI, one of the largest open water habitats in Sussex, supports a rich community of breeding and wintering birds. We carried out an extensive field-monitoring programme over twelve months to establish the current water quality of the system. This included flow gauging, water quality sampling and surveys of phytoplankton. We used stochastic computer modelling to model the potential impacts on the catchment of changes in the water quality of the effluent from a wastewater treatment works, with emphasis on levels of phosphorus.

Hydro-ecology studies, Pevensey Levels, England

We carried out a comprehensive evaluation of the possibility that five wastewater treatment works were impacting the ecology of the Pevensey Levels. The studies investigated whether the species of conservation concern for this Ramsar site were affected by the nutrient (nitrates and phosphates) and organic loads discharged. We used flow measurements, an intensive programme of water quality sampling, macrophyte and invertebrate surveys, complemented by historical data, to determine flow pathways through this lowland marsh and to provide evidence for impact. The contribution of diffuse pollutant sources was also assessed and species habitat preferences and vulnerability to pressures were determined through a literature review. Using these many strands of information an overall appraisal was made of the significance of the wastewater treatment works' discharges.

Perth area wastewater strategy, Scotland

Mott MacDonald developed a strategy for the treatment of wastewater in the Perth area following the principles of environmental management systems and addressing the requirements of the WFD and the Water Industry Commission. We used risk management techniques to ensure that our client focussed their efforts on significant issues and presented whole life costs for the options developed.



We carried out a water quality assessment of the River Granta, England.

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Minor aquifers project, England

We undertook characterisation of the Environment Agency's minor aquifers in their southern region, as required by the WFD. In total, we reported on seven minor aquifers.

Power generation study, Scotland

We undertook a scoping study covering mainland Argyll and Bute. The work included a detailed study of the eligibility of new and existing schemes for review of consents, financial analysis and implications of WFD legislation.

Guadiana and Sado river basin studies, Portugal

Established integrated river basin management plans for three river basins. In addressing the economic issues related to water use and development, Mott MacDonald undertook parametric costing of development types both in terms of capital and operational and maintenance requirements in addition to economic pricing of environmental impacts and evaluation of ecological flow needs.

Strengthening Capacity in Environmental Projects Development (SCEPD), Romania, Baltic States, Czech Republic

We designed and delivered foundation courses in environmental projects through local training institutes. This included preparing and publishing training manuals.

China Water Law review assistance, China

Mott MacDonald provided advice to the Ministry of Water Resources on their review of the 1988 Water Law to strengthen river basin management over the whole of China. This advice drew on principles and details of the WFD and included making presentations to the Chinese authorities on the implementation of this EU legislation.

River Basin District projects, Ireland

To facilitate the implementation of the WFD in the Republic of Ireland, the Department of Environment, Heritage and Local Government promoted the establishment of eight River Basin District (RBD) projects. We assisted the local and national authorities, including the Environmental Protection Agency, in the development of two of the projects, the South Eastern (SERBD) near Carlow, and the South Western (SWRBD) near Cork. The SERBD was the first such project in Ireland, covering one fifth of the country. These projects are at the leading edge of implementing the WFD in Ireland and a key example of our ongoing major project work in this area.

We assessed the impact of water abstractions on terrestrial and aquatic ecology, Northern Ireland.

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