



Hydroecology

Integration for modern regulation

Overview

Part of the role of the Environment Agency (the Agency) is to protect the long-term future of the water environment while encouraging sustainable development. To achieve the balance between the water needs of society and the environment it is essential that hydroecological considerations are an integral part of water resource management.

The publication *Hydroecology: Integration for modern regulation* presents a clear way forward in terms of hydroecology and a strategic direction to its development and application. In the strategy we intend to:

- identify and give priority to gaps within hydroecological tools and techniques;
- enable the dissemination of information and best practice on key hydroecological issues;
- establish a clear picture of current and future ecological monitoring needs to ensure consistency and enable efficiencies to be made;
- ensure efficient interaction between Agency staff involved in all aspects of hydroecology;
- enable effective communication between the Agency and external stakeholders;
- develop a strategic approach to the development of hydroecological science;
- ensure that hydroecological technical expertise is maintained in the Agency through appropriate training and development;
- ensure that policy revision and development takes into account new challenges such as climate change.

Hydroecology: Integration for modern regulation ensures that priorities for future work are clearly set out to help avoid a fragmented approach over the next 5 years (2004 to 2009). The actions will be reviewed annually, so that progress is monitored and any revised or additional actions incorporated.

The Agency must ensure relevant ecological considerations are integral to water resource evaluation and management decisions across the range of temporal and spatial scales. Hydroecological considerations also need to be incorporated across a range of operating levels, from Head Office policy development to Area operations. Hydroecological understanding needs to be developed within the Agency to enable relevant staff to communicate effectively with other Agency colleagues and external stakeholders.

The main focus of the Agency's hydroecology strategy, which builds on the principles stated in the Agency's *Water Resource Strategy 2001*, is the management of water resources. However, the remit of hydroecology is not limited to water resources, and hydroecological information is also vital to the management of flood risk, water quality, land-use planning and development. The implementation of this strategy will ensure that we meet our obligations set out in statute and policy, through identifying and addressing improvements that need to be made. The strategy will also highlight future work on which the Agency should focus.



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Key work areas that require hydroecological input include the:

- Agency's Restoring Sustainable Abstraction (RSA) Programme, which addresses issues associated with water company and non-water company abstractions thought to affect the environment adversely;
- Habitats Directive Review of Consents. As a 'competent authority' under the Directive, the Agency has a legal duty to ensure that no authorised activity or permission results, directly or indirectly, in an adverse effect on the integrity of a Natura 2000 site, unless there are no alternatives and there are reasons of overriding public interest;
- Catchment Abstraction Management Strategies, which are the Agency's mechanism for managing the abstraction licensing of catchments nationally;
- UK Biodiversity Action Plan, the Agency is committed to enhancing biodiversity, and in all our work we need to consider opportunities to contribute to the success of the UKBAP,
- Appraisal of applications for drought orders and permits, for which hydroecological information plays an integral role;
- Water Framework Directive, which requires a change from the currently separate management of water quality and quantity to a new integrated approach, based on ecological targets.

To provide a consistent approach within these work areas, the Agency needs to use hydroecological tools to define the ecological sensitivity and status of an aquatic system. These tools can be placed into three broad categories:

- to define flow or water level regimes to ensure maintenance of ecological integrity;
- to define what ecological damage is and where it is occurring;
- to predict where and why ecological integrity is likely to be compromised.

There is a need to ensure robust assessments can be made on a variety of temporal scales, from the assessment of short-term extremes including drought and flood evaluation, to understanding longer-term alterations as required by climate change assessment. To ensure hydroecological tools are used effectively, both Water Resources and Ecology Policy and Process teams should assess staff training needs and develop hydroecological components within their training plans.

Through this strategy and the actions identified within it (see table 1), we have planned a clear way forward for the Agency's development and use of hydroecology. We intend *Hydroecology: Integration for modern regulation* to provide a strategic framework to ensure the strategy's full application within Agency business for several years to come.

Table 1

Action list

| Number | Action | Time-scale of delivery |
|---------------|---|-------------------------------|
| 1 | Review existing tools and techniques, identify current approaches to linking ecological and hydrological/hydrogeological assessments, and flag gaps within current assessment needs. | June to August 2004 |
| 2 | Ensure that gaps in tools and techniques are prioritised against regulatory and business needs. Where appropriate, ensure that local-scale projects are integrated nationally to optimise the targeting of Science resources. | June 2004 onwards |
| 3 | Ensure that technical review of the performance of RAM is carried out for the forthcoming RAM revision. This will need to focus on the performance of the macro-invertebrate and macrophyte components and understanding the situations where ecology and hydrological components conflict. | December 2004 onwards |
| 4 | Improve provision of best practice information, especially on complex issues such as the assessment of compensation flows and drought impacts. Increase the availability to Areas through use of the Easinet, discussion groups and monthly updates etc. | May 2004 onwards |
| 5 | Establish a network of hydroecological specialists, detailing areas of specialisation and types of project work undertaken. Improve communication of best practice between staff undertaking assessment work. | May 2004 onwards |
| 6 | Review the status of Area ecologists contribution to the delivery of CAMS. | April to September 2004 |
| 7 | Review the extent to which ecologists nationally are consulted on abstraction licence applications, review current service levels and update guidance. | April 2004 onwards |
| 8 | Review the current national level of drought monitoring in place and define national needs. | April 2004 onwards |
| 9 | Increase the awareness of the RSA Programme, especially within Area Ecological Appraisal, Fisheries and Biodiversity teams, through internal promotion and updating of guidance to account for ecological elements. | April 2004 onwards |
| 10 | Update guidance on determining environmental monitoring requirements in the assessment of drought periods, including the distinction of impacts and unacceptable environmental damage. | May 2004 onwards |
| 11 | Undertake work within the Ecological Monitoring Review to find out the level of communication/integration that is established within each Area | May to September 2004 |

| Number | Action | Time-scale of delivery |
|--------|--|------------------------|
| 12 | Highlight the need for hydroecological technical experts within cross-cutting national technical teams. | Ongoing |
| 13 | Identify ways of improving working links between staff on all levels. Provide a strategic and integrated direction, ensuring efficiencies and early identification of issues. | May 2004 onwards |
| 14 | Consider opportunities to contribute to the success of the UK Biodiversity Action Plan, especially through programmes such as the RSA. | May 2004 onwards |
| 15 | Ensure that ecological concerns regarding flow and level management are accounted for within CFMPs and Flood Risk Management proposals. | September 2004 onwards |
| 16 | Ensure that hydroecological considerations continue to be accounted for within the various aspects of WFD development work. | Ongoing |
| 17 | Engage academics and policy-makers on key hydroecological issues through a hydroecology action group. Increase academics' understanding of the Agency's working constraints and make the best use of academic support for hydroecological research. | June 2004 onwards |
| 18 | Ensure that links developed through the Water Resources Habitats Directive TAG and the AMP4 Liaison Group are extended to cover the full range of interlinking issues, providing an open forum for discussion. | July 2004 onwards |
| 19 | Develop a strategic approach to prioritisation of hydroecological science, building on a risk-based (three-tier) approach and priorities put forward. | As above |
| 20 | Establish mechanisms for developing long-term (5–10 years) Science plans (i.e. timing, priorities etc.). | June 2004 |
| 21 | Within Water Resources and Ecology teams progress the development of a hydroecology training course/annual seminar. | September 2004 onwards |
| 22 | Encourage the inclusion of hydroecological aspects within development plans of both ecologists and hydrologists, and encourage staff to take the opportunity of job swaps and shadowing to gain an improved understanding of each other's roles and day to day technical challenges. | As above |
| 23 | Link to the Environmental Policy Team and their development of a strategy for climate change. | Ongoing |
| 24 | Ensure that policy formulation and revision takes full account of climate change implications where possible. | When required |
| 25 | Where appropriate, have regard to climate change scenarios in hydroecology science projects. | As above |