

## Environment Agency Methods, Tools, Processes and Reports for Catchment Abstraction Management Strategies, the Water Framework Directive and Abstraction Licensing Environment Agency

Since 2000, Entec has undertaken many groundwater and surfacewater projects to assist the Environment Agency in delivering Catchment Abstraction Management Strategies (CAMS), based on the Resource Assessment and Management (RAM) Framework. Since 2005 we have reviewed and adapted these approaches to fulfil the requirements of the Water Framework Directive (WFD) and to build abstraction licence risk screening tools as part of the Streamlining Abstraction Processes (SAP) project in preparation for national permitting operations. These projects have mostly been delivered under the Agency's Environmental Protection (EP) framework with a combined value of around £750k over the period 2005 to 2008. Projects include:

- Research and development to prepare WFD methods guidance in support of the UK Technical Advisory Group (UKTAG) abstraction and pollution risk assessment and status classification for groundwater, rivers, lakes and estuaries (funded by SNIFFER).
- GIS delineation of groundwater and surface water bodies across England and Wales for WFD and integration with CAMS river assessment points, to provide a comprehensive set of waterbodies for which risks can be assessed and reported consistently to

Europe as a key driver for more integrated catchment management.

- Development of risk screening methodologies to determine the pollution and abstraction pressure related risks of groundwater and surface water bodies failing to meet their environmental objectives, as defined by the WFD. A key requirement was the use of datasets with national coverage and the trialling and application of rule-based coding to allow consistent and repeatable assessment;
- National, regional and area workshops to improve the initial delineation of water bodies and subsequent auditing and improvement of WFD risk and status classification results. Consultation and trialling included a wide variety of staff including hydrogeologists, hydrologists, CAMS officers, licensing officers, ecologists, fisheries specialists, policy makers and economists.
- Assistance in the design of draft and final River Basin Management Plans and the stakeholder engagement process with WFD Liaison Panels, including the prioritisation of Significant Issues.

- Appraisal of WFD Objectives and associated Programmes of Measures for abstraction groundwater pollution management. Including justification for alternative objectives based on technical infeasibility or disproportionate cost, and a prioritisation of water bodies for ongoing investigation which takes account of the existing Restoring Sustainable Abstraction programme;
- Development of a national Water Resources GIS (WRGIS) system which incorporates coded calculations based on an integrated surface water / groundwater database of around 1000 water bodies, combined with many other Agency map layers in standardised formats.
- Development of a GIS tool and a new CAMSLedger to facilitate standard risk assessment for new or revised abstraction licence applications to the Agency. Receptors and associated risks are initially identified through GIS proximity screening, local river network tracing, and onward downstream searches to estuary or coastal outflows. This information helps to prioritise further local investigations, advertising and consultation as part of the ongoing streamlined determination process. Results can be easily imported into re-designed CAMSLedger spreadsheets which remain central for water resource management, alongside the WRGIS, groundwater models and other established tools.

The success of these projects has been achieved through a team working approach which encourages Agency staff across a variety of head office teams to work with operational users and other stakeholders on the design, testing, roll-out and support of the deliverables, which are all in active use.

