

**QUANTIFYING THE BENEFITS OF WATER
QUALITY CATCHMENT MANAGEMENT
INITIATIVES**

VOLUME 1

A BENEFIT ASSESSMENT FRAMEWORK

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UK WATER INDUSTRY RESEARCH LIMITED
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MANAGEMENT INITIATIVES:

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Executive Summary

Introduction

Catchment management represents an alternative to conventional, capital-intensive treatment solutions by focusing instead on working with land owners and other stakeholders to tackle problems at source, rather than just treat the symptoms.

Catchment management initiatives form an important part of the water company plans for AMP5 yet the effectiveness of catchment management is often uncertain and the outcomes of schemes are difficult to predict and measure. In particular, there is limited evidence available to indicate what type and scale of improvement may be achieved by catchment management and over what time-scales. As a result, companies have, to date, struggled to justify investment in catchment management schemes.

In response, UKWIR commissioned WRc to develop a framework and toolkit that will enable the benefits of catchment management schemes to be identified and quantified. An industry-standard benefit assessment framework is needed to:

- provide water companies with the understanding and techniques to test and measure the effectiveness of their catchment management initiatives and quantify the resulting benefits;
- provide an agreed, consistent and transparent basis for regulators to judge the progress and success of water companies' catchment management initiatives; and
- facilitate the development of a stronger evidence base for supporting future investment decisions and the design of more cost-effective catchment management schemes.

It is intended that the framework will be used by water companies and regulators to determine the cost-effectiveness of catchment management schemes in the context of more conventional drinking water solutions and WFD measures. The results generated by the framework will inform decisions about where and when to invest in catchment management in the future and enable the water industry to build a sound economic business case for catchment initiatives in the next investment period.

An approach to quantifying benefits

Standard techniques are capable of assessing benefits that have a market value but a broader range of valuation tools are required to take account of the multiple benefits that some schemes aspire to deliver. The framework therefore adopts an ecosystem services approach,

which uses a standard methodology to assess broader environmental, economic and social benefits as well as direct financial benefits to water companies.

The framework is intended to provide sufficient flexibility to allow considerable variation in the type and scale of assessment undertaken according to the objectives of the scheme, the size and type of catchment, and the scale and level of ambition of the management intervention. It may be used to conduct anything from a rapid, qualitative assessment to a detailed monetary valuation.

Quantifying the benefits of catchment management can be difficult and subject to various sources of uncertainty. The framework therefore promotes a rigorous scientific approach to the collection, analysis and interpretation of data, and explains how to understand and measure uncertainty in the results. Quality assurance, uncertainty analysis and sensitivity analysis are used to help produce clear, credible results.

Structure of the framework

This report presents a framework and supporting toolkit for assessing the benefits of catchment management schemes. Specifically, it: develops a conceptual approach for quantifying the benefits of catchment management schemes; provides structured, step-by-step guidance on undertaking a benefit assessment; offers practical advice and guidance on assessing effectiveness and monetising resulting benefits; signposts further guidance, resources and tools; and discusses how the results of the benefit assessment may be used in a cost-effectiveness or cost-benefit analysis.

The framework itself follows a logical five stage process comprising:

- Stage A (Scoping) identifies the problem, understands the context, characterises the baseline situation, and sets clearly defined objectives for the catchment;
- Stage B (Planning) designs a catchment management scheme, identifies and describes the anticipated impacts of the planned intervention, prioritises the impacts for quantification, and sets targets for monitoring progress;
- Stage C (Measuring) quantifies the impact of the catchment management scheme on the provision of ecosystem goods using a combination of literature sources, expert judgement, monitoring and modelling;
- Stage D (Valuing) applies economic valuation techniques to value, in monetary terms, the impacts measured in Stage C; and
- Stage E (Reporting) presents a complete and transparent record of the work undertaken to quantify the benefits of a catchment management scheme.

The framework may be used to undertake a qualitative, quantitative or monetary assessment of the benefits (and negative dis-benefits) resulting from a specific management intervention. The framework may be used in an appraisal to forecast the benefits of one or more options before a decision is made, or in an evaluation to measure the benefits realised by an operational scheme. This information may be an end in itself, but is more commonly input

into a cost-effectiveness or cost-benefit analysis to judge whether a scheme is economically viable or to decide where to invest in catchment management.

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