

# Terms of Reference

The Institute is currently seeking financial support for this proposed project

## Environmental water: How can the community be sure it is getting value for money?

A key element of the water reforms implemented by the Commonwealth and State governments is that the 'environment' will become a more secure owner of entitlements to water. It will be allocated water that has been saved through system efficiency gains or purchased from irrigators and therefore removed from 'productive' use.

The water removed from productive use has an economic cost from a community perspective. For example, in a 2004 report on the economic impact of proposed water reforms on the Murray-Darling Basin, the CIE concluded that as a consequence of the removal of 500 GL of water from irrigation uses "it is estimated that GDP would fall by \$88 million per annum, equivalent to a lump sum net present value of nearly \$1.0 billion over a 20 year period."

In effect, in proceeding with these changes, the community (via the Government) is making a judgment that the additional environmental benefits, generated by allocating this water to environmental flows, are of greater value than the economic benefits able to be generated from this water via irrigation.

Inherent in this decision are two assumptions. These are:

- that the marginal change in environmental outcomes as a consequence of allocating this additional water to the environment can be measured or assessed; and
- that an economic value can be attributed to the marginal environmental changes that will be achieved.

Assuming that answers can be obtained for each of these assumptions, a related question arises as to whether the environmental changes have been achieved in an efficient way. In other words, could the same environmental improvements have been achieved using less water, or could more improvements have been achieved using the same water in a different way?

These are quite challenging issues, especially for those charged with managing water that is 'owned' by the environment. There have already been cases where environmental water managers have become actively involved in water trading by selling water to irrigators and then later buying it back. The potential for environmental water to be wasted or poorly utilised becomes a real issue when the environment becomes such an active participant in water markets. This reinforces the need for a regular assessment of the economic efficiency and effectiveness of environmental water management.

Assessing river health, and subsequently monitoring trends in river health, is a particular challenge, although some progress has been made. As Professor Peter Cullen explained in an address to the Australian Farm Institute Roundtable conference in November 2007, "as yet, Australia does not have a nationally consistent approach to assessing river health, despite good tools being used in Victoria and Tasmania, and despite the 'Sustainable Rivers Audit' within the MDB. The development of the latter tool needs to be accelerated."

The recent release of the "sustainable rivers audit" by the Murray Darling Basin Commission, focusing on

indicators of fish communities, macroinvertebrates and hydrology has provided some initial environmental benchmarks that will be able to be used to compare future gains in river health, recognising that the recent low-rainfall years in the Murray-Darling Basin may distort these results somewhat. Repeat assessments of these three indicators are to be carried out every two, three and six years respectively, and additional indicators are proposed to be developed in the future.

The second aspect of this issue – developing techniques that enable economic value to be allocated to marginal changes in these river health indicators – has been gradually progressed in Australia in recent years. Some quite substantial studies have been carried out to estimate the value of marginal changes in river health and water quality in different catchments and rivers in New South Wales and Victoria. These studies are reviewed in a Research Report recently released by the Australian Farm Institute.

In combination, the above developments in river health assessment and the valuation of marginal changes in environmental outcomes provide the elements necessary to establish an economic framework to determine the extent to which the community is achieving value-for-money in decisions being made to divert water away from productive uses and towards environmental outcomes. In addition, these developments also provide a framework to begin comparisons of the economic efficiency of improvements in river health.

The aim of the project outlined here is to develop an appropriate economic framework to be used in making assessments of the economic effectiveness and efficiency of environmental water allocations and, as an initial application of that framework, to calculate the ‘break-even’ extent of improvement in river health indicators needed over the next five years in order for the community to benefit from current and future proposed environmental allocations of water currently used for irrigation.

### Project Objectives:

1. To review potential methodologies for allocating economic values to marginal changes in environmental indicators of river health, to recommend a preferred methodology, and to develop a framework for its application.

2. Utilising available indicators of river health that have been agreed for the Murray-Darling Basin, to apply the preferred valuation methodology to estimate the required marginal changes in these river health indicators required over a five or ten year period in order for the community to derive an economic benefit from such changes.
3. To make recommendations about the effectiveness of the economic valuation framework as a tool to guide future decisions regarding the allocation of water to either productive or environmental uses, and associated policy design.

### Scope:

The research proposed here involves the development of a conceptual framework that may be utilised in the future to compare the costs and benefits for the community of decisions to allocate additional water to environmental outcomes. Given its conceptual nature, it is proposed that up to three separate environmental economists will be commissioned to carry out the research in parallel, and to prepare papers detailing their conclusions. These papers will be compiled into a single research report, with the authors then asked to collaborate in the development of an agreed set of conclusions arising from the research, and in particular to develop a common response to the third project objective – that being the development of recommendations about the effectiveness of an economic valuation framework as a tool to guide future decisions about water allocations to either environmental or productive uses.

In order for the research to be carried out in the manner proposed, the water allocation decisions associated with the first step of the Living Murray initiative will be used as a case study. Commonly agreed information will be utilised concerning the estimated socio-economic cost of environmental water allocations associated with this initiative, and the financial costs associated with purchasing this water from irrigators.

A missing element in the research will be the ‘dose-response’ relationship between additional environmental water allocations and changes in specific environmental outcomes such as fish communities, macroinvertebrates and hydrology indicators. Instead, the approach taken with this

research will be to estimate the extent to which these will need to improve (assuming an agreed valuation methodology can be used to calculate transfer values for these environmental outcomes) over the next decade in order to return a positive net benefit to the community, based on known economic and socio-economic costs.

## Outputs:

The main output of the study will be a collection of up to three papers, which will be compiled into single research publication with common introduction and concluding chapters.

The papers and the concluding chapters will be written in plain English, suitable for an informed but non-technical audience. The primary audience will be policy-makers; that is, politicians, bureaucrats, consultants and farm leaders who are regularly involved in policy decision-making that has an impact on agriculture in Australia.

A more detailed publication, *Instructions for Authors*, will be made available to guide report writing.

The author(s) of the report will be required to provide the completed document as a soft copy, in Microsoft word format. Any figures, graphs or tables included in the report will need to be provided in an agreed format, suitable for incorporation into desktop publishing software that will be utilised to prepare the finalised report for publication in hard-copy format.

As part of the project outputs, the author(s) of the report may be required to present the findings and conclusions of the report to public forum(s) convened by the Australian Farm Institute in an Australian capital city.

## Timing:

It is anticipated that the project will be commissioned by the end of 2008, with a final report to be delivered within six months, although some flexibility is available in relation to project timing.

## Project Management:

The Australian Farm Institute will require the successful tenderer to establish a project management team consisting of Australian Farm Institute and contractor staff to manage the project and to ensure that project milestones are met and outputs are delivered.

The contractor will be required to nominate the specific staff who will be engaged on the project, and the extent of their involvement. Substitution or secondment of staff will not be permitted without written approval by Australian Farm Institute.

Costs included in tenders must be all-inclusive, and provide a fixed-price costing for the entire project. No variation of costs will occur in the absence of written approval by Australian Farm Institute. A schedule of required progress payments should be included in tender documents.

## Contract Agreement:

The contractor will be required to enter into a legally-binding agreement with the Australian Farm Institute as part of the commissioning of the project.

## Further Information:

Questions or requests for further information should be directed to Mick Keogh at the Australian Farm Institute on 61 2 9690 1388 or [keoghm@farminstitute.org.au](mailto:keoghm@farminstitute.org.au)