



# **STRATEGIC PLAN SUMMARY 2002 -- 2005**

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## Introduction

The Australia-wide Program for **Sustainable Irrigation** will take a quantum leap towards irrigation sustainability in Australia. It will orient irrigation research towards critical emerging sustainability issues while improving the productivity of irrigated agriculture and fostering community development. This is the natural resource management challenge facing Australia – to build productive and sustainable land use systems.

<b>Vision</b> Australia is demonstrably a world leader in sustainable irrigation
<b>Mission</b> To provide Australia with research and innovation to achieve sustainable irrigation.
<b>Planned outcome</b> Substantial improvement in the environmental and productive performance of irrigated agriculture and horticulture in Australia.
<b>Program Objectives</b>
<i>A Research &amp; Innovation Strategy</i> <ul style="list-style-type: none"><li>▪ To improve the technology and innovation available for enhanced irrigation sustainability</li><li>▪ To substantially increase the consideration of ecological impact as a factor in the design or re-configuration of irrigation systems</li><li>▪ To provide the irrigation industry with technology and innovation to enable it to continue as a profitable user of limited water resources through informed public policy</li></ul> <i>A Knowledge Management Strategy</i> <p>To achieve a knowledge-sharing culture across program partners</p>

## Clients

Clients in **Sustainable Irrigation** are resource users particularly irrigators and environmental groups; irrigation utilities; policy makers; resource managers; research providers; representative bodies such as farming organisations; community organisations including landcare, catchment management and similar stewardship groups; federal, state and local governments and the wider public.

## Client focus

To achieve sustainable irrigation there is a need for:

- Partnerships with all the end users of research including irrigators, water providers, policy makers;
- Joint Inquiry approaches to research inclusive of industry partners as well as governments and non-government organisations, and catchment communities
- Communication activities to comprehensively inform all interested parties.

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## Rationale

Irrigation uses 75% of the water extracted from rivers and streams, utilises about 0.5% of the area of Australia's continental land mass, and each year produces \$10 billion of agricultural output before value-adding. The net profit from irrigated agriculture now exceeds 50% of the profit derived from all Australian agriculture. Products derived from irrigation, such as dairy products, wine and fruits, are attracting substantial investment in value-adding infrastructure — a crucial component in the strengthening of regional economies. For example, more than \$100 million per annum have been invested in infrastructure in the Goulburn Valley for the past five years to value-add milk and fruit products. The wine manufacturing sector now employs 7,800 people nationally in 40 major winemaking areas.

Increased demand for water for agricultural, industrial and urban uses are putting the management of Australia's river and groundwater systems under scrutiny. Management must balance the various water use needs, providing also for instream requirements - biodiversity and water quality. The sustainability of irrigation is a key component of water resource management.

Irrigated agriculture can lead to exports off farm of sediments, salts, nutrients and pesticides into receiving waters. These exports can have significant environmental and economic impacts, locally and regionally. Groundwater accessions under irrigation can contribute to local and regional waterlogging and salinity problems. The irrigation industries is under pressure to optimise its water requirements and minimise its downstream impacts — while other factors apply pressure to increase production.

There is a need to derive information to allow us to predict how changes will affect our natural resources, ecosystems and regional communities and economy. This information must be adapted, adopted and used so that sustainable irrigation can become a reality. ***Sustainable Irrigation*** is about generating new information and ensuring the knowledge is well managed to achieve positive change.

Irrigation systems, a major contributor to Australia's rural production and the social and economic wellbeing of rural communities, have historically been designed without taking all sustainability criteria explicitly into account. Irrigation traditionally has been considered an engineering and agricultural activity and ecologists and conservationists have not been engaged in irrigation design and management. Australia is living with a substantial non-sustainable irrigation inheritance.

## Research & Innovation

Key areas for investment include:

- Scheme and catchment – building improved, integrated, regional systems covering productivity, ecology and community development
- Commodity – bringing innovation to farming systems that both reduce ecological impacts and enhance productivity
- \* Smart science – achieving substantial breakthroughs in concepts, technologies, designs or practices

Objective	Issues	Core Research Questions <sup>1</sup>
<p>Improve the technology and innovation available for enhanced irrigation sustainability</p>	<ul style="list-style-type: none"> <li>• improve understanding of sustainable irrigation</li> <li>• understand the size of change needed to achieve sustainable irrigation</li> <li>• provide measures of sustainability from which unsustainable practices can be identified</li> <li>• provide indicators of progress towards sustainability at the landscape level (and which can be developed to provide a set of progress indicators at farm level)</li> <li>• benchmark the sustainability performance of irrigation industries</li> <li>• explore geographic contexts for irrigation sustainability</li> <li>• develop technologies capable of delivering quantum improvements in irrigation design and practice</li> <li>• identify via a skills audit the abilities and knowledge of all sectors towards achieving sustainable irrigation</li> <li>• explore irrigation extraction levels as part of a total water use framework</li> <li>• understand the nature and structure of communities and industries reliant on irrigated agriculture including adaptability to change</li> <li>• understand the potential, and transaction costs, of substantially increasing the use of recycled water</li> </ul>	<p>The core Research Questions relate to multiple themes and issues. They are –</p> <p>Define effective mechanisms for stimulating and managing change in the irrigation sector</p> <p>Define mechanisms for identifying, managing and evaluating risk in the irrigation industry.</p> <p>Define “sustainability” in the context of irrigation</p> <p>What tests can farmers or other groups use to assess sustainability of their enterprise, catchment, region etc?</p>

<sup>1</sup> These research questions will continue to be informed by emerging research such as the new knowledge being generated by programs such as the MDBC *Watermark* research program. *Sustainable Irrigation* will identify and respond to knowledge ‘gaps’.

Objective	Issues	Core Research Questions <sup>1</sup>
<p>To substantially increase the consideration of ecological impact as a factor in the design or re-configuration of irrigation systems</p>	<ul style="list-style-type: none"> <li>• predict future "business environments" for irrigation including global drivers</li> <li>• seek radical breakthroughs in irrigation concepts, designs, and plant production systems</li> <li>• integrate irrigation systems within biophysical and social landscapes</li> <li>• understand current value systems and those required for future sustainability</li> <li>• understanding future learning systems</li> <li>• explore methods to minimise the environmental footprint of irrigation</li> <li>• understand the irrigation infrastructure needs of the future</li> </ul>	
<p>To provide the irrigation industry with technology and innovation to enable it to continue as a profitable user of limited water resources through informed public policy</p>	<ul style="list-style-type: none"> <li>• improve understanding of water property rights and trading regulations</li> <li>• integrate landscape and water resource planning</li> <li>• understand socio-economic structures of irrigation communities including the factors determining change and decision making</li> <li>• explore appropriate forms of governance and models for achieving responsibility and duty of care for irrigation communities</li> <li>• identify win-win solutions for water allocation to maximise environmental and production outcomes</li> <li>• understand the needs of different regions, particularly in</li> </ul>	<p>Define, for a sustainable irrigation-based community, the necessary socio-economic and physical infrastructure, both in terms of its state and its response to internal and external stimuli.</p> <p>Design new technologies that provide breakthroughs in concepts, systems and crop production targets.</p>

Objective	Issues	Core Research Questions <sup>1</sup>
	<p>developing areas such as northern Australia</p> <ul style="list-style-type: none"> <li>• enhance adoption of ecological risk assessment approaches</li> <li>• facilitate and develop accepted structural adjustment measures</li> <li>• understand the intended and unintended consequences of water reform (as it relates to the achievement of sustainable irrigation)</li> <li>• identify the distribution of costs and benefits of sustainable irrigation (including energy)</li> <li>• inform future water pricing</li> <li>• identify the consequences of failure (social, economic and environmental)</li> <li>• inform re responsibility for measuring, monitoring and evaluating progress</li> </ul>	<p>Identify technical, social and economic and environmental constraints to increased use of recycled water</p>

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## **Knowledge**

Knowledge already held within partner organisations will be shared and combined with the expert knowledge of practitioners Australia-wide. Making information emerging from research projects rapidly usable by our clients is a major component of the program. Research teams will be encouraged to listen, respond, and extend information in ways appropriate to the various client groups.

The program will-

- embed knowledge management in the *Sustainable Irrigation* partnership
- manage the balance between tacit and explicit knowledge
- exploit and share the knowledge already held within partner organizations
- develop research agreements that apply joint-inquiry processes between the investigation team and clients
- inform the establishment of a Communications Strategy which is based on:
  - easy and reliable access to information for partners (based on “Just In Time” principles)
  - promotion of sustainable irrigation concepts to target audiences

Due to the high level of interest expressed by partners in the Knowledge Management Strategy and its implementation, the methods will be documented and the processes evaluated and continually improved.

## **Investment partners**

In the irrigation industry there is much diversity among the many clients. As an Australia-wide program *Sustainable Irrigation* anticipates funding partnerships across 30 organisations, representing at least the following sectors –

- irrigator groups,
- water authorities,
- commodity groups,
- Research & Development Corporations and Cooperative Research Centres, and
- Commonwealth and State government agencies.

It is expected that all partners will be engaged by June 2003.

## **Budget**

The total investment from partners is forecast to be \$4,000,000 per annum.

## **Evaluation**

Program evaluation will be important in achieving *Sustainable Irrigation's* planned outcome. It will begin at the start of the program and will report against milestones to the Program Management Committee, especially ensuring cost effective and client relevant program development and implementation.

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## Management structure

A skills-based Program Management Committee appointed by and representing the interests of the partners will manage Sustainable Irrigation. Day-to-day administration of the program will be undertaken by Land & Water Australia. The management structure is:

