Australian Government

Land & Water Australia

Land & Water Australia
Annual Report 2007–08

knowledge for managing Australian landscapes

Australian Government
Land & Water Australia

13 October 2008

The Hon Tony Burke MP
Minister for Agriculture, Fisheries and Forestry
Parliament House
CANBERRA ACT 2600

Dear Minister Burke

Land & Water Australia — Annual Report 2007–08

I have pleasure in presenting to you the Annual Report of Land & Water Australia for 2007–08. This report has been prepared in accordance with the *Primary Industries and Energy Research and Development Act 1989* (particularly Section 28), the *Commonwealth Authorities and Companies Act 1997*, and the *Commonwealth Authorities and Companies (Report of Operations) Orders 2008*.

This past year has been another productive period for Land & Water Australia, with Australian Government core funding of $13 million, leveraged with partner funds to $38.7 million, dispersed to support scientific research and development on questions of real importance and benefit to our sustainable and productive agricultural landscapes.

Highlights of the year include leadership of the National Climate Change Research Strategy for Primary Industries, and completion of four major programs (*Grain & Graze, Healthy Soils for Sustainable Farms, Land, Water & Wool* and *Knowledge for Regional Natural Resource Management, National Land & Water Resources Audit)*. Under the goals and strategies of the Corporation's *Five-Year R&D Plan 2005–2010*, another 11 major programs will be continued in 2008–09

As the environment in which Land & Water Australia operates is dominated by an increasing range of environmental and socioeconomic challenges (particularly the continued drought and water shortages, the need to address various climate change scenarios, and the potential impact of an emissions trading regime), the need to have a strong scientific foundation for decision-making intensifies. We continue to be in a strong position to serve this need.

Yours faithfully

Roberta Brazil
Chairman
Board of Land & Water Australia

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Executive Summary — Chairman's Report

The 2007–08 Board of Land & Water Australia
Pictured standing left to right are Jack Speirs, Dianne Bentley, Michael Robinson, Ted Lefroy and Tim Fisher. Seated left to right are John Childs, Roberta Brazil and the late Peter Cullen.

Land & Water Australia is one of 16 rural research and development (R&D) corporations which foster innovation in Australia's agricultural production systems. However, unlike the other 15 corporations, which focus on specific industries, Land & Water Australia's charter is to invest in generating and managing new knowledge for sustainable and productive agricultural landscapes. It therefore plays a unique and critical role which continues to grow in importance with the growing pressures of climate change, ongoing drought and global food shortages.

Increasing emphasis on environmental matters right across the Australian community highlight the role that Land & Water Australia plays in supporting long-term sustainability of our agricultural regions and their production systems. Prolonged drought, massive reductions in water flows, soil degradation, and the overall climate-change context, including need to reduce emissions, are major concerns for managers and policy-makers who demand hard evidence from research for guidance.

Research has underpinned the growth and success of primary industries in Australia. It has helped to address pest and disease problems, provided technologies for low-input production, found improved species of pasture, created efficient production systems,

initiated environmentally responsible farming practice and helped to build markets overseas for reliable, high-quality produce.

The Review of the National Innovation System will be an important work that will shape the innovations system in Australia in the years ahead. However, we have already seen the first steps within primary industries towards a new National Research, Development and Extension Framework. Land & Water Australia is well placed to respond to changing priorities and well able to focus on partnerships, climate change adaptation and mitigation strategies, and our place in a shrinking world. We have an enviable track record in delivering outcomes across a diverse portfolio. Our return on investment has been conservatively estimated at a benefit:cost ratio of 4.67 to 1, through partnering with a broad range of public and private organisations, and through efficient and cost-effective management.

This year we said farewell to several of our Directors and here acknowledge the substantial contribution that Deputy Chair Mr John Childs, Professor Peter Cullen, Mr Tim Fisher and Mr Jack Speirs have made, not just to Land & Water Australia, but to a more sustainable Australia. We also now welcome our new and continuing directors — they join an eminent group of talented people who have served on the Board of Land & Water Australia.

The years ahead promise to be an exciting time with a real opportunity for Land & Water Australia to build on its successes to truly make a difference to the sustainability and productivity of our agricultural landscapes.

Roberta (Bobbie) Brazil

Chairman

Highlights of the Year

- **Success in delivering a record $38.7 million program of R&D, including managing knowledge for adoption, to underpin the sustainable use and management of natural resources for the benefit of primary industries and the Australian community.**

This was achieved through widespread collaboration with government and industry, leveraging the $13 million Australian Government budget appropriation to $38.9 million in total revenues.

- **An internationally recognised return on investment approach that includes triple-bottom-line assessment, built on conservative assumptions, found an internal rate of return on Land & Water Australia's investment of 26.3 per cent.**

This collaborative funding is evidence of Land & Water Australia's strong reputation as a research investor and manager, and is recognition of our capacity to work with others to deliver practical research results.

- **Leadership as coordinator in Phase 1 of the National Climate Change Research Strategy for Primary Industries.**

This is a first step towards a nationally coordinated effort that will lead to sustainable and profitable Australian primary industries in the face of climate change. The National Climate Change Research Strategy for Primary Industries is a joint initiative of rural R&D corporations, CSIRO, the Australian Government, and all state and territory governments.

Successful completion of four major programs.

- The *Grain & Graze* program, which led to 3,700 producers adopting more sustainable farming practices on mixed farms, with an average nine per cent increase in profit to participating farmers.
- The *Healthy Soils for Sustainable Farms* program, which successfully engaged more than 17,000 farmers, as well as advisors and extension agency and natural resource management (NRM) staff, with awareness-raising events, which attracted more than 30,000 people. This program assisted in putting soil health back on the national agenda. Widespread adoption of improved practices for soil health is expected in coming years.
- The *Land, Water & Wool* program, which generated a benefit/cost ratio of 3.9 to 1 on $20 million of industry funds over six years, with 3,190 wool producers improving practices as a result of the program.
- The *Knowledge for Regional Natural Resource Management* program, which has improved the capacity of those in the natural resource management (NRM) sector to find, use, share and manage information and knowledge, facilitating better-informed decisions. Knowledge management tools and communities of practice remain to facilitate improved management of knowledge and information in the future.

Strengths of the Land & Water Australia Approach

Land & Water Australia supports evidence-based policy and effective investment — links researchers, policy-makers, investors, and managers of land and water resources.

Land & Water Australia has engendered a spirit of collaboration and cooperation — recognising the value of working together in flexible frameworks.

Land & Water Australia directly addresses cross-sectoral and cross-regional issues — risk and financial planning, modelling whole-of-sector solutions.

Land & Water Australia makes economic sense — directly addresses market failure and efficiency challenges.

Philip Dawson uses LandSat images and other advanced means of tracking changes on his property.

Vale Peter Cullen

A commitment to restore surface and groundwater systems to sustainable levels of extraction has underpinned the water reform endeavours of the past decade. The challenge for aquatic scientists and river managers is to determine these sustainable levels of extraction and the challenge for our politicians is to resist pressures from interest groups and ensure we operate within these sustainable levels.
Peter Cullen 2007

Peter Cullen 1943–2008

Professor Peter Cullen, who served as a non-executive Director on the Board of Land & Water Australia for six years, combined his scientific expertise with a rare skill to resolve complex scientific issues into clear messages easily understood by all, a skill he used so effectively to communicate the urgency of the crisis facing Australia's river systems.

His untimely death in March 2008 was mourned by many Australians, among them the Directors and staff of Land & Water Australia who valued his contribution and enjoyed his warmth, guidance and good humor. His broad management experience and his unwavering commitment to an improved Australian environment will be greatly missed.

A leading campaigner for a national approach to water resources, Peter Cullen was always a willing participant in debates and conferences at all levels across the nation where he spoke passionately and logically about the urgency for reform. He bridged gaps between scientists and landholders, kept water on the agenda for journalists, and was a trusted adviser to government.

While he was widely known for his membership of the Wentworth Group of Concerned Scientists, his credentials extended much further. A graduate in agricultural science from the University of Melbourne, he became a distinguished scientist with major contributions to nutrient dynamics and river health. He worked in the field of natural resource science for more than 35 years and, in 2004, was appointed an Officer of the Order of Australia for service to freshwater ecology, particularly in the area of sustainability of freshwater systems. His contribution to Land & Water Australia was invaluable.

Peter Cullen was a highly valued and respected Director of Land & Water Australia, and his broad management experience and unwavering commitment to an improved Australian environment will be greatly missed.

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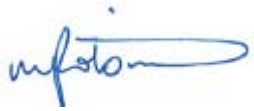
Certificate Concerning the Report of Operations

The Directors of the Land and Water Resources Research and Development Corporation (which is the legislated title of Land & Water Australia) are responsible under Section 9 of the *Commonwealth Authorities and Companies Act 1997* for preparation of the following Report of Operations in accordance with the *Commonwealth Authorities and Companies (Report of Operations) Orders 2008* and the Finance Minister's Orders.

This Report of Operations is made in accordance with a resolution of the Board of Land & Water Australia on 18 September 2008.

Roberta Brazi
Chairman



Michael Robinson
Executive Director

Legislative Framework

Enabling Legislation

Land & Water Australia was established on 3 July 1990 under the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act).

Objects

The legislated objects of all rural R&D corporations are set out in Section 3 of the PIERD Act. Sub-sections 3 (a) to (c) respectively cover primary industry and community benefits, sustainability of natural resources, and social capital development—equating to the economic, environmental and social components of sustainable development to which the rural R&D corporations direct their efforts. Sub-section 3 (d) encompasses accountability.

Section 3 of the PIERD Act deals with:

- increasing the economic, environmental or social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries;
- achieving the sustainable use and sustainable management of natural resources;
- making more-effective use of the resources and skills of the community in general, and the scientific community in particular; and
- improving accountability for expenditure on research activities in relation to primary industries.

Functions

A core function of Land & Water Australia, derived from Section 11 of the PIERD Act, is to investigate and evaluate the requirements for R&D relevant to issues affecting the management of land, water and related vegetation resources and, on that basis, prepare a five-year R&D plan, review it annually and revise it if required.

Other requirements are to: prepare an annual operational plan for each financial year; coordinate or fund the carrying out of R&D activities that are consistent with the annual operational plan; monitor, evaluate and report on NRM research activities; and facilitate the dissemination, adoption and commercialisation of the results of research.

Powers

Section 12 of the PIERD Act grants powers to Land & Water Australia to: enter into agreements for carrying out R&D activities; make applications for patents; charge for work or services rendered; accept gifts, grants and bequests, and act as a trustee of money or property vested in Land & Water Australia; acquire, hold and dispose of real and personal property; and join in the formation of a company.

Over the past year the Corporation has, in accordance with its powers set out under Section 12, entered into contractual arrangements for the carrying out of R&D activities with and by other persons in accordance with Sections 13 and 14 of the Act. The Corporation's research investment activity is underpinned by contracts which include milestone schedules. The Corporation uses milestone management as one of its key performance indicators in delivering against strategic outcomes.

During 2007–08, the Corporation did not apply for patents for inventions or commercially exploit patented inventions, or grant licences under patented inventions.

Strategic and Reporting Framework

The 2007–08 Annual Report is prepared by the Land & Water Australia Board of Directors to meet the requirements of Section 9 of the *Commonwealth Authorities and Companies Act 1997* (CAC Act) in accordance with the *Report of Operations Schedule* of that Act for the 2007–08 financial year and the requirements of Section 28 of the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act). Among other things, the report reflects Australian Government policies and priorities while covering progress against Land & Water Australia's *Five-Year R&D Plan 2005–2010*. It is also required to report against the four objects of the PIERD Act. The broad way in which Land & Water Australia responds to these four objects is described below. More details are provided in later sections.

Object (PIERD Act Section 3)	Corresponding LWA activity
(a) Increasing the economic, environmental or social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries.	The Corporation works with primary industries (particularly through fellow Rural Research and Development Corporations) to increase the sustainable use of natural resources and the profitability of farming systems.
(b) Achieving the sustainable use and sustainable management of natural resources.	This object encompasses the entire spectrum of the Corporation's business, as prescribed in its mission to build knowledge, partnerships, innovation and adoption to underpin sustainable NRM.
(c) Making more effective use of the resources and skills of the community in general and the scientific community in particular.	The Corporation makes use of its extensive networks in the general and scientific communities to help in the design, development and implementation of its research programs and projects. There is a specific undertaking to equip present and future land managers, policy makers, educators and others with the knowledge and tools needed to expand their capabilities in achieving sustainable NRM.
(d) Improving accountability for expenditure on R&D activities in relation to primary industries.	The Corporation's commitment to accountability includes meeting all statutory obligations in a comprehensive, timely and transparent manner.

Operating Environment

Land & Water Australia's fundamental charter is to support, through targetted research and development programs, improvements in the sustainable productivity of Australia's agricultural landscapes. Yet the environment in which Land & Water Australia operates is dominated by an increasing range of challenges. The most significant of these include:

- continuing drought and shortages of water for ecosystems, primary production, and towns and cities in many areas of Australia;
- the long-term viability of communities centred on irrigated agriculture, particularly in the Murray-Darling Basin;
- concerns about climate change and its impacts on some of Australia's most important food production systems;
- the capacity of agriculture to reduce emissions of greenhouse gases, or indeed to act as net sinks of greenhouse gases;
- the potential impact of emissions trading on primary industries; and
- continuing soil degradation and loss.

Such threats to sustainable production in Australia, and some other parts of the world, combined with increasing demand from developing countries, heighten fears of global food shortage. The need for R&D to inform and support improvements in sustainable productivity of agriculture has never been greater.

During the year, Land & Water Australia continued to commit a significant proportion of its resources to investing in and managing research related to climate, water and soil. These investments were made through programs such as *Tropical Rivers and Coastal Knowledge*, the *National Program for Sustainable Irrigation*, *Managing Climate Variability, Environmental Water Allocation*, *Social and Institutional Research*, the *Innovation Program*, and *Healthy Soils for Sustainable Farms*.

Extending results of research and listening to communities

Various activities were instigated by land & Water Australia during the year to extend results of research and encourage discussion between researchers and those who will benefit from their work.

One of those activities was a briefing held in June to discuss projects undertaken in the Northern Territory. Pictured, centre, are researcher Naomi Rae and traditional custodian of water resources in the Ti Tree region Tony Scrutton who gave a talk titled *Provisions for Cultural Values in Water Management — The Anmatyerr Story*. They are flanked by the Executive Director of Land & Water Australia, Michael Robinson, and Senator Anne McEwen, Chair of the Senate Standing Committee on the Environment, Communications and the Arts.

While Land & Water Australia continued to attract significant research co-investment in 2007–08, there is a risk that continuing drought and water shortages will adversely affect the Corporation's capacity to attract co-investment funds in the future, particularly from enterprise-based rural R&D corporations which have been important collaborative funding partners, but which depend in part on production levies. Concluding programs to which they have contributed substantial funds include *Grain & Graze*, *Healthy Soils for Sustainable Farms* and *Land, Water & Wool*.

The election of a new federal government to office in November 2007 brought strongly promoted policies on water and climate change, the most significant of which, *Caring for Our Country*, will build on strengths of previous programs and target national natural resource management priorities. While announced in 2007–08, this initiative was designed to begin operating in the following year, integrating responsibilities that had been those of the Natural Heritage Trust, the National Action Plan for Salinity and Water Quality, the National Landcare Program, the Environmental Stewardship Program and the Working on Country Indigenous Land and Environmental Program.

The Natural Heritage Trust had been a source of funds for major investments, including four of Land & Water Australia's closing programs and various other projects. Replacement of this source by a new system of funding through new government initiatives means new opportunities, as well as some uncertainty for the revenue base of the next few years.

A significant reflection of the current operating environment has been the *National Climate Change Research Strategy for Primary Industries*. Work on this strategy began early in the reporting year and Land & Water Australia took a leadership role as coordinator. This was a joint initiative of 15 rural R&D corporations (through the Council of Chairs), the CSIRO, the Australian Government and all state and territory governments (through the Primary Industries Standing Committee, R&D Subcommittee).

Preparation of this strategy document has been a first step towards a nationally-coordinated effort which will greatly assist Australian primary industries be sustainable

Research interests go beyond surface water resources to include groundwater and how they interact. These cattle in Newcastle Waters Station in the Northern Territory rely on groundwater reserves.

and profitable in the face of climate change. It was shaped by consultations with expert reference groups, primary industry organisations, government departments, research providers and the public. Reports were commissioned from CSIRO on impacts and adaptation, and from the Australian Farm Institute on emissions trading.

During development of the strategy, there was evidence of a strong desire to equip Australian primary industries to meet the challenges of climate change supported by robust, coordinated research and clear communication of the best available information. This national effort will focus on providing information to assist people with their decision-making, whether they be farmers or policy-makers.

Actions will generally fall into one of two categories — adaptation or mitigation. Adaptation involves understanding impacts and modifying production management to account for changes in climate, while mitigation focuses on reducing emissions, improving production efficiencies, and identifying opportunities for offsets or sequestration. It is also planned to quantify net greenhouse gas emissions from primary industries at the specific industry and enterprise levels.

The *National Climate Change Research Strategy for Primary Industries* is consistent with the development of a new National Research Development and Extension Framework, supported by the Primary Industries Standing Committee and the Council of RDC Chairs. This new framework will be important to the primary industries sector in developing and implementing efficient and effective national plans over the coming years.

Australia has the most variable climate in the world. More accurate forecasts of when rain will fall and at what intensity increases farmers' certainty in their cropping decisions.

Financial Performance

Land & Water Australia continued its strong financial performance in 2007–08. The overall financial result was a operating surplus of $0.17 million compared with an operating surplus of $1.6 million in 2006–07.

Both revenue and expenditure for the year are approximately $4.5 million higher than forecast in the Corporation's *2007-08 Annual Operating Plan*. The increased revenue and expenditure principally corresponds with greater than forecast activity on a number of programs, including *Tropical Rivers and Coastal Knowledge Research, Defeating the Weeds Menace, Climate Change Research Strategy for Primary Industries, Healthy Soils for Sustainable Farms* and the *National Land and Water Resources Audit*.

The equity position of $15.2 million includes $13.1 million set aside for program or project expenditure, either as a result of formal agreements with external funding bodies or Land & Water Australia Board decisions. A further $0.3 million was set aside in the asset revaluation reserve leaving $1.8 million in unallocated reserves at 30 June 2008.

The 2007–08 audited financial statements (p. 85) show Land & Water Australia received total revenues of $38.9 million, of which external contributions amounted to $24.4 million or 62.9 per cent of total revenue. In 2006–07 the comparable figures for external contributions were $21.5 million, or 61 per cent of total revenue.

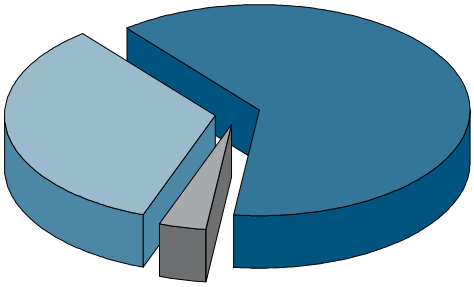
Revenue in 2007–08 represented a significant level of financial leverage on the Commonwealth appropriation. Monies from the Australian Government amounted to $13 million, or 33.5 per cent of total revenue. In the previous financial year, the figures were $12.7 million, or 36.2 per cent.

Interest and other income came to $1.4 million, or 3.6 per cent, compared with $1.0 million (2.8 per cent) of total revenue in 2006–07. Figure 1 shows a representation of the proportion of revenue sources for 2007–08.

During the 2007–08 financial year, expenditure by Land & Water Australia reached $38.7 million of which $32 million (82.7 per cent) was invested in research. Communication and adoption investment was $3.4 million (8.8 per cent) while portfolio management expenditure accounted for $0.1 million (0.2 per cent). Administrative costs were $3.2 million (8.3 per cent) of expenditure.

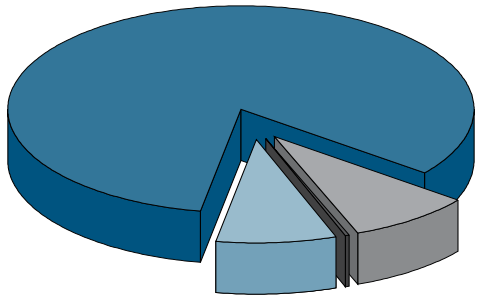
Figures 2 and 3 show the break up of Land & Water Australia expenditure by activity and by program, while Figure 4 provides a comparison between 2006–07 and 2007–08 expenditure. Table 1 lists expenditure by both program and strategy.

Figure 1 Proportion of revenue sources for 2007–08.



Revenue from Government 33.5%
External contributions 62.9%
Interest and other income 3.6%

Figure 2 Breakup of LWA expenditure for 2007–08 by activity.



Research and development ($32.0m)
Knowledge & adoption ($3.4m)
Portfolio management ($0.1m)
Administration ($3.2m)

Figure 3 Breakup of LWA expenditure for 2007–08 by research program.

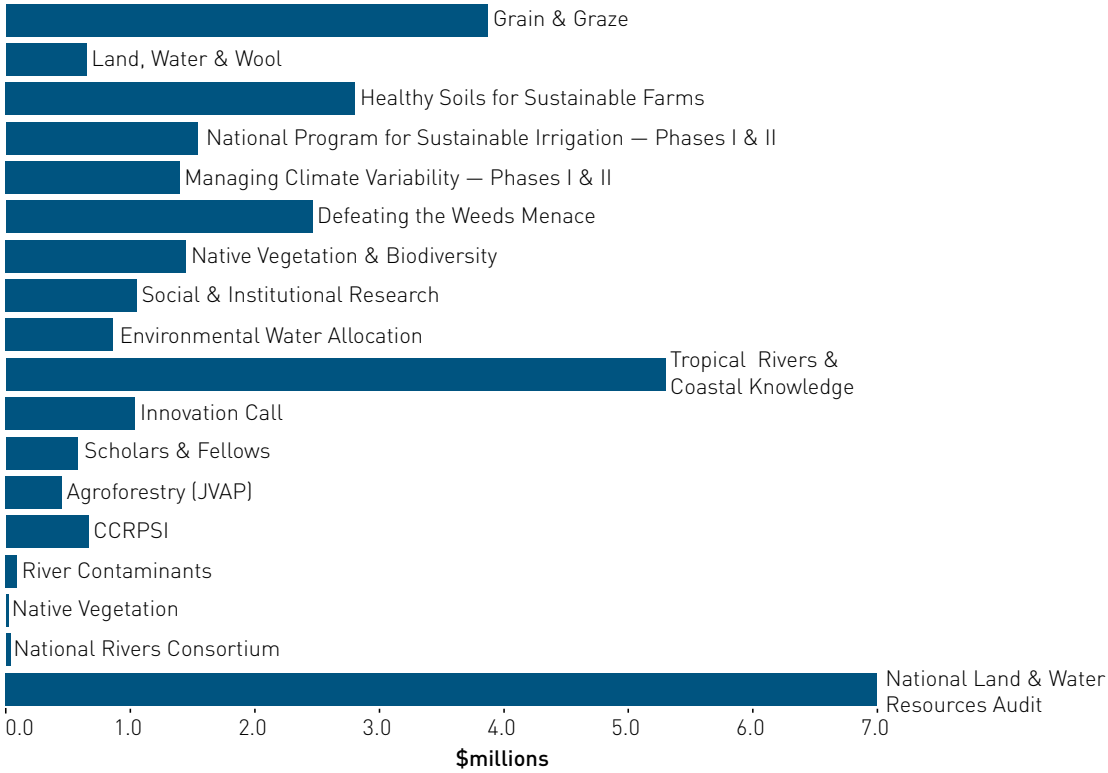


Figure 4 Comparison between 2006–07 and 2007–08 expenditure.

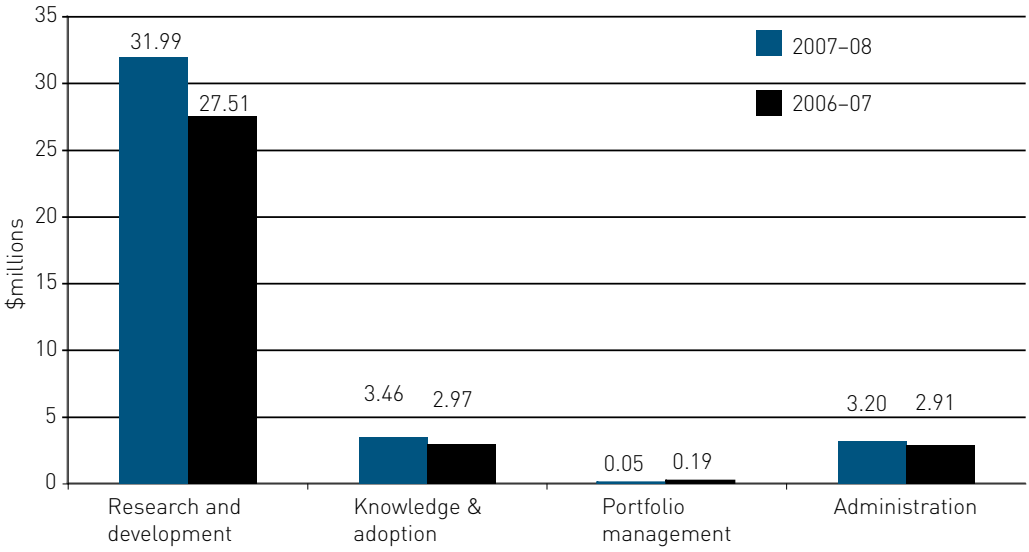


Table 1 LWA expenditure for 2007–08 by program and strategy ($ million).

Program	Actual expenditure		Program total
	LWA	Partners (incl interest)	
Strategy 1 — Research investment			
Land, Water & Wool	$ -	$0.650	$0.650
Grain & Graze	$0.822	$3.047	$3.869
National Program for Sustainable Irrigation	$0.396	$1.144	$1.540
Managing Climate Variability	$0.300	$1.099	$1.399
Climate Change Research Strategy for Primay Industries	$0.011	$0.656	$0.667
Healthy Soils for Sustainable Farms	$ -	$2.806	$2.806
Environmental Water Allocation	$0.588	$0.272	$0.860
National Vegetation and Biodiversity	$1.228	$0.220	$1.448
Native Vegetation	$ -	$0.012	$0.012
Defeating the Weed Menace (the National Weeds Research Program)	$ -	$2.461	$2.461
Joint Venture Agroforestry Program*	$0.450	$ -	$0.450
National Rivers Consortium	$0.020	$0.004	$0.024
River Contaminants	$0.021	$0.070	$0.091
Tropical Rivers and Coastal Knowledge	$0.780	$4.518	$5.298
Social and Institutional Research Program	$0.853	$0.199	$1.052
Innovation	$1.815	$ -	$1.815
Other	$0.365	$0.013	$0.378
Total Strategy 1	**$7.649**	**$17.171**	**$24.820**

Program	Actual expenditure		Program total
	LWA	Partners (incl interest)	
Strategy 2 — Collaboration and Strategic Analysis			
Partnerships	$0.218	$ -	$0.218
National Land & Water Resources Audit	$ -	$6.997	$6.997
Total Strategy 2	**$0.218**	**$6.997**	**$7.215**
Strategy 3 — Knowledge into Practice			
Knowledge and Adoption	$1.585	$ -	$1.585
Australian Agriculture and Natural Resources Online	$0.011	$0.184	$0.195
Knowledge for Regional NRM	$ -	$1.684	$1.684
Total Strategy 3	**$1.596**	**$1.868**	**$3.464**
Corporate Enabling Functions	$3.195	$0.004	$3.199
Total Investment**	**$12.658**	**$26.040**	**$38.698**

* Managed by the Rural Industries Research and Development Corporation

** The figures in this table refer to direct cash investment only. Actual investment at the level of research projects is higher again, when project-level and in-kind contributions from research providers are considered. Additionally, Land & Water Australia provides in-kind contributions to research programs through provision of corporate services and management-level support.

No developments or circumstances have occurred subsequent to the end of financial year that will significantly affect the operations results and state of affairs of the Corporation in future years.

Expenditure Across National Research Priorities and Rural R&D Priorities

Tables 2 and 3 align expenditure by strategy across the National Research Priorities and the Rural R&D Priorities, respectively. These priorities, as well as the strategies within the Land & Water Australia *Five-Year R&D Plan 2005–2010*, are described later in this report.

Table 2 LWA research expenditure estimates for 2007–08 across National Research Priorities ($'000).

National Research Priorities	An environmentally sustainable Australia							Promoting and maintaining good health				
	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	
	$	$	$	$	$	$	$	$	$	$	S	
Strategy 1												
Industries	1,749	1,055	4,468		1,161		2,321					
Landscapes	6,856				2,082							
People	345			115	229		57					
Innovation	594	59	99	99	99		198					
Strategy 2	1,607	1,537	775	12	2,300		82					
Strategy 3	1,206	287	578	24	635		288					
Total Expenditure	**12,357**	**2,938**	**5,920**	**250**	**6,506**		**2,946**					

Table 3 LWA research expenditure estimates for 2007–08 across Rural R&D Priorities ($'000).

Rural Research & Development Priorities	Sustainable natural resource management	Improving competitiveness through a whole of industry approach	Maintaining and improving confidence in the integrity of Australian agricultural, food fish and forestry products	
	$	$	$	
Strategy 1				
Industries	10,754			
Landscapes	8,938			
People	746			
Innovation	1,148			
Strategy 2	6,313			
Strategy 3	3,018			
Total Expenditure	**30,917**			

	Frontier technologies for building and transforming Australian industries					Safeguarding Australia					Total
	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5	
	$	$	$	$	$	$	$	$	$	$	$
					1,558						12,312
								2,682			11,620
					344			57			1,147
		534			297						1,979
		1,526			24						7,863
		223			240			296			3,777
		2,283			**2,463**			**3,035**			**38,698**

	Improved trade and market access	Use of frontier technologies	Creating an innovative culture	Protecting Australia from invasive diseases and pests	Other research	Total
	$	$	$	$	$	$
			1,558			12,312
				2,682		11,620
			344	57		1,147
		534	297			1,979
		1,526	24			7,863
		223	240	296		3,777
		2283	**2,463**	**3,035**		**38,698**

Land & Water Australia Five-Year R&D Plan 2005–2010

The Land & Water Australia *Five-Year R&D Plan 2005–2010* sets out the corporation's strategies to fulfill the objectives of the PIERD Act. PIERD Act objectives are:

- sustainable use and sustainable management of natural resources;
- increased environmental, social and economic benefits to primary industries and the community;
- more effective use of the resources and skills of the scientific and general community; and
- accountability for research expenditure.

Land & Water Australia's **Vision**, articulated in the *Five-Year R&D Plan 2005–2010*, is sustainable use and management of natural resources for the benefit of primary industries and the Australian community. The **Mission** is to invest in knowledge, partnerships, innovation and adoption to underpin sustainable NRM. The **Outcome** is knowledge, understanding and informed debate to inspire innovation and action in sustainable NRM.

The **Outputs** of the Plan are focused on:

- new knowledge useful to the sustainable management and use of Australia's natural resources;
- productive partnerships to support research investments; and
- tools for improving adoption of the results of research.

Investment strategies are grouped into six categories (consistent with the Department of Agriculture, Fisheries and Forestry Portfolio Budget Statements):

Strategy 1. Research Investment in the following four research arenas:

- Sustainable Industries
- Sustainable Landscapes
- People (Social and Institutional)
- Innovation

Strategy 2. Collaboration and Strategic Analysis

Strategy 3. Knowledge into Practice

In Strategy 1, under *Sustainable Industries*, Land & Water Australia has made investments in programs seeking such outcomes as improved irrigation efficiency, restoration of soil and water health, and implementation of production systems which are appropriate for regional environments.

Under *Sustainable Landscapes*, research has been targeted at the broader picture, with interests ranging from management of northern rivers to understanding native vegetation and how to protect it. Important elements of landscape research are the development of human capacity for regional management and the linking of local-level activities with wider regional goals.

Through *People (Social and Institutional)*, social values and lifestyle aspirations are investigated, whether they are personal or relate to national concerns for the environment. These studies may spread across the total portfolio of investments. Stimulation of new ideas, concepts and technologies is encouraged across all portfolio areas and is the core business of the *Innovation* area of investment of Strategy 1.

Strategy 2, *Collaboration and Strategic Analysis*, seeks partnerships with government, industry and research bodies to provide efficient research and its adoption.

Strategy 3, *Knowledge into Practice*, also crosses the full portfolio of research investments and, as the name implies, addresses the need to ensure that the results of research are extended to appropriate stakeholders in a manner which suits their needs.

Progress Against the Land & Water Australia Five Year R&D Plan 2005–2010

Land & Water Australia has identified three goals and three strategies by which to broadly assess progress against the *Five Year R&D Plan 2005–2010*.

Goals	Progress to date
Generate new knowledge useful to the sustainable use of Australia's natural resources	The generation of new knowledge for sustainable natural resource management continues
Develop productive partnerships and undertake strategic investment in natural resource management	Collaboration continues to expand
Improve adoption of the outputs of research	Levels of adoption continue to improve

Key strategies	2007–08 activities
Research Investment	The research investment strategy is in four streams of activity, focusing on sustainable industries, sustainable landscapes, social and institutional research and innovation
Collaboration and Strategic Analysis	Much of Land & Water Australia's research involves collaborative arrangements at program and project levels Strategic analyses ensure research investments are directed appropriately and address current and emerging issues
Knowledge into Practice	Land & Water Australia has continued to make inroads for improved adoptability and applicability of its research program through its focus on knowledge and adoption activities

On the following pages research investments and outcomes for specific programs are presented as illustrations of progress. Projects within each program which were underway during 2007-08 are listed in Appendix 4, and the programs which concluded during the year are listed on page 25.

Progress Against the LWA R&D Plan and Annual Operational Plan

Land & Water Australia has identified three goals and three strategies through which progress against the *Five-Year R&D Plan 2005–2010* can be assessed. These goals and strategies are described in detail below.

Goals	Progress
Generate new knowledge useful to the sustainable use of Australia's natural resources	The generation of new knowledge for sustainable NRM continues. A total of 311 research projects generating new knowledge operated during 2007–08.
Develop productive partnerships and undertake strategic investment in NRM	Collaboration continues to expand. Collaborations, relationships and partnerships with external bodies brought $24.4 million in external funding to Land & Water Australia in 2007–08 for investment in R&D.
Improve adoption of the outputs of research	Adoption drives the return on Land & Water Australia investment in R&D. Using conservative assumptions, the latest return on investment analysis of Land & Water Australia investment in R&D shows an internal rate of return of 26.3 per cent.
Key strategies	**2007–08 activities**
Research Investment	The research investment strategy is organised into four streams, focusing on sustainable industries, sustainable landscapes, social and institutional research and innovation. A total of 156 new projects was contracted during the year.
Collaboration and Strategic Analysis	Much of Land & Water Australia's research is organised through collaborative arrangements at program and project levels. Almost 63 per cent of Land & Water Australia's total funding in 2007–08 came from collaborations and other relationships with external parties (not including substantial in-kind contrbutions). Strategic analyses ensure research investments are directed appropriately and address current and emerging issues.
Knowledge into Practice	Land & Water Australia has made substantial progress on embedding managing knowledge for adoption into all phases of research, from planning to legacy. Return on investment analysis demonstrates the effectiveness of managing knowledge for adoption activities.

Land & Water Australia's *Annual Operational Plan 2007–08* included a planned outcome, performance indicator and performance measurement at corporate level for 2007–08.

Planned Outcome	Knowledge, understanding and informed debate to inspire innovation and action in sustainable NRM.
Performance Indicator	Improvements in the understanding, management and condition of Australia's natural resources which can be linked demonstrably with the adoption of outputs of our research investments.
2007–08 Performance Measurement	Triple-bottom-line benefit-cost analysis of 32 major Land & Water Australia innovations and programs, covering approximately 50 per cent of Land & Water Australia's completed projects since 1990.
2007–08 Achievement	Detailed benefit-cost analyses have been undertaken on 33 innovations and programs, using an internationally recognised return-on-investment approach that includes triple-bottom-line reporting. Using conservative methodologies and assumptions, this study found a benefit cost ratio of 4.67 to 1 and an internal rate of return of 26.3 per cent on Land & Water Australia's investments.

The *Annual Operational Plan 2007–08* also listed a series of major planned outputs from programs for the financial year. On the following pages, research investment and outcomes for 16 specific programs are presented as illustrations of progress. Outputs are tabulated against planned outputs summarised from the *Annual Operational Plan 2007–08*.

The first five of these programs formally ceased at the end of the 2007–08 financial year. However, Land & Water Australia will continue to manage knowledge to maximise adoption and outcomes from these research investments. The programs described are:

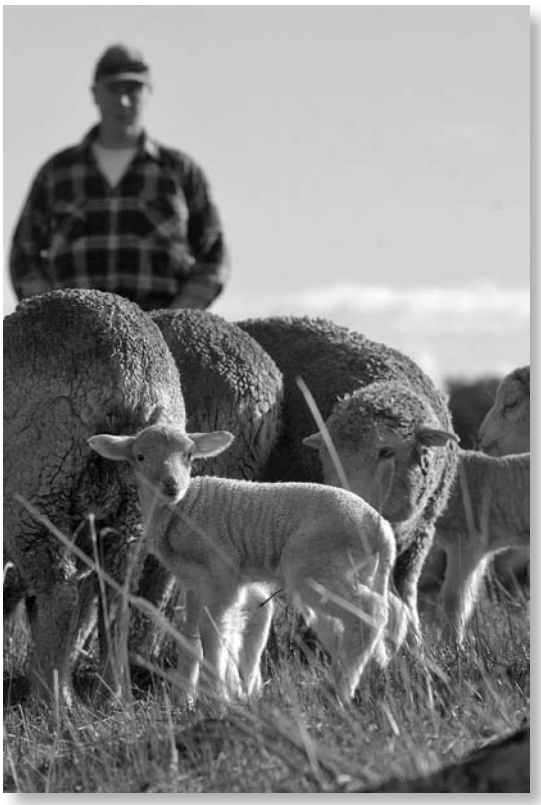
1. Grain & Graze
2. National Land and Water Resources Audit
3. Knowledge for Regional NRM Program
4. Healthy Soils for Sustainable Farms
5. Land, Water & Wool
6. Environmental Water Allocation
7. Tropical Rivers and Coastal Knowledge (TRaCK)
8. Social and Institutional Research
9. Defeating the Weed Menace
10. Innovation
11. National Program for Sustainable Irrigation
12. Joint Venture Agroforestry Program
13. Native Vegetation and Biodiversity
14. Managing Climate Variability
15. Knowledge and Adoption
16. Collaboration and Strategic Analysis

Appendix 1 lists all projects operating during the year, which may be at various stages. The program highlights which follow are a selection which show progress against the *Land & Water Australia Five-Year R&D Plan 2005–2010* and, where appropriate, how this progress addresses National Research Priorities and National Rural Research and Development Priorities.

Grain & Graze

The *Grain & Graze* program ran from 2003 to 2008 and more than 27,000 Australian farmers were aware of it, 8,000 participated in it and more than 4,000 trialled practices to provide benefits both to farm profitability and farm and catchment environmental health.

Grain & Graze aimed to improve farm profit and environmental health through an integrated approach to farm management and by broadening the options for optimising the crop-livestock-pasture mix given the prevailing climatic, market and resource conditions.



Graziers like Brian Walker were keen participants in the Grain & Graze program.

The collaboration of Land & Water Australia with partners (Grains R&D Corporation, Australian Wool Innovation Limited and Meat & Livestock Australia), in Grain & Graze provided the impetus needed to make whole-farm management more tangible on mixed farms.

The program was conducted across nine regions spread throughout the medium-rainfall zone of Australia. It has been considered a revolutionary experiment in combining bottom-up regional processes with complex interdisciplinary systems, research processes, triple-bottom-line targets and new methods of extension.

Already 3,700 producers have adopted practices advocated by the program, with data suggesting even higher levels of adoption to come. These practices included the adoption of grazing cereals to fill the feed-gap and relieve pressure on pastures, integrated pest management in broadacre cropping involving the utilisation of native pastures to act as a harbour for beneficial predators of pests, and timely utilisation of stock containment strategies utlising grain-feed to prevent soil erosion during droughts.

The following is a synthesis of the insights arising from across Grain & Graze's research investments:

- *It is not the mix of pastures, crops, livestock and resource use that counts, but the flexibility to change the mix as required that is the key to profitable and environmentally sensitive mixed farming.*
- *Non-traditional extension methods are required to meet the demands of complex decision making.*
- *A number of mixed farming strategies improve farm profit and sustainability under specific conditions.*
- *Production risk is not a major influence on farmers' decision making — in fact, some practices increase risk.*
- *The relationship between mixed farming and biodiversity is integral to the productive and natural health and wealth of mixed-farms and across landscapes.*

A component of Land & Water Australia's Strategy, *Research Investment*, Grain & Graze has reflected the National Rural Research Priority *An Environmentally Sustainable Australia* and the National Rural Research and Development Priorities *Productivity and Adding Value* as well as *Natural Resource Management*.

Outcomes

Around 3,700 producers have adopted more sustainable farming practices on mixed farms. This has resulted in a 3:1 return on investment for the partners, and an average of a nine per cent increase in profit to the participating farmers. The *Biodiversity in Grain & Graze* project produced the single largest dataset of biodiversity on mixed farms in Australia, and was recognised with a 2008 Banksia Environmental Award in the Land & Biodiversity category.

Details of case studies outlining improvements in profitability and sustainability can be found in the Grain & Graze publication *Insights into Mixed Farming in Australia*, available from Land & Water Australia.

Grain & Graze		
Planned Output/Activity	Achieved Output/Activity	Outcome and Value
Regional projects from across the mixed farming belt of Australia reporting on the outcomes of their research, development and extension projects over the last four years.	Regions submitted final reports which constitute the completion of Grain & Graze activities in eight of nine regions. Regional reports which assist producers improve their management practices for sustainability and productivity outcomes. A report, *Managing Complex Systems*, integrates regional and research findings about triple-bottom-line sustainability of mixed farming.	A national evaluation of the program showed that all regions achieved increased profitability, ranging from two per cent to 19 per cent, with an average of nine percent. All regions demonstrated improved outcomes through the maintenance of groundcover, with benefits to soil health, nutrient retention and water-table levels. More than 3700 primary producers have made positive changes in practices attributed to the program, including adoption of grazing cereals, integrated pest management and stock containment strategies.
National research projects covering economic and social analysis and biodiversity.	Final reports covering biodiversity, feed base management, economics, social research and database management were produced.	National research projects have synthesised the benefits of mixed farming systems.
National and regional forums.	Forums were held with stakeholders.	Shared information has lead to new insights and informed interpretation of research findings.

National Land and Water Resources Audit

The National Land and Water Resources Audit was established in 1997 to estimate the direct and indirect causes and effects of land and water degradation on the quality of the Australian environment, and on the economy. Specific needs were identified, including development of nationally-consistent but regionally-relevant reports on the condition of resources, and improvement in the efficiency of information collection.

A report in June 2002 (*Australia's Natural Resources 1997–2002 and Beyond*) made a series of assessments of the nation's land, water and biodiversity resources.

A key finding was that there were significant gaps in information. The baselines developed through projects were model-based to understand of cause and effect. An enduring system of environmental reporting based on the monitoring of key indicators requires long-term consistent data so, from 2002–08, the work continued. Specific activities included working with national issue-based coordination committees, involving all jurisdictions and associated expert assistance.

The Audit assessed frameworks for integrating information at the national and regional scale and, with the assistance of collaborative partnerships, produced reports using these frameworks for agricultural commodities, and regional reports in selected regions.

During the course of the program, useful information was collated and disseminated to policy-makers, natural resource managers and primary producers. This activity included production of fact sheets on topics ranging from threatened ecosystems to rangeland issues, comprehensive information on critical matters like salinity, and reports on the status of natural resources. In a series titled *Signposts for Australian Agriculture* the role of agriculture in NRM, economic growth and community life was investigated.

Staff completed the operational program on 30 June 2008 and Land & Water Australia (where the office of the Audit was located) will complete contractual administrative arrangements during 2008–09.

Outcomes

The National Land and Water Resources Audit built capacity to understand and use information about the condition of natural resources, and national baselines were established to aid assessment.

National Land and Water Resources Audit		
Planned outputs	Achieved outputs	Outcomes/importance
A web-based compilation of resource condition and social and economic indicators.	Specific assessments were reported in publications titled *Rangelands — Taking the Pulse, Signposts for Australian Agriculture (a framework and case studies), Australian Terrestrial Biodiversity (a National Vegetation Assessment), Extent of Significant Invasive Weed Species,* and *Significant Invasive Vertebrate Pest Species.*	There is now a valuable database and a set of assessments to guide those who evaluate natural resources and design policies and management systems to support these resources, as well as sustainable primary production.

Knowledge for Regional NRM

The *Knowledge for Regional Natural Resource Management* program was funded by the Australian Government to facilitate better links between regional NRM bodies and knowledge providers, and to assist regional NRM bodies to better manage their information and knowledge. The program was funded from early 2005 through to 30 June 2008.

Three major contributions were made to managing and making available relevant regional information. All were built on open source information technology platforms to ensure regional NRM bodies were not committed to ongoing information technology software licences.

The first was the *Better Practice in Knowledge Management* package. This included the *Regional Knowledge Resource Kit* (www.rkrk.net.au), which provided a stage-by-stage guide to developing a regional knowledge strategy, an online resource library and news about initiatives relevant to regional NRM.

Other developments included the *Regional Knowledge Leaders Training Program*, which built the capacity of regional NRM staff to facilitate the knowledge strategy process. Thirty-eight of a potential 56 regional NRM bodies participated in the Program designed to train staff to facilitate a regional knowledge strategy and use the resources provided in the *Regional Knowledge Resource Kit*. Australian Government facilitators and staff, as well as state government departments and research organisations, also participated. Training was given to a National Core Team consisting of state-based Australian Government NRM facilitators, key state agency NRM officers and representatives of regional NRM support organisations. The Team was established to assist and support the regional knowledge leaders to develop and implement regional knowledge strategies.

A second, equally significant, contribution was the *NRM Toolbar* (www.nrmtoolbar.net.au). The primary purpose of the Toolbar was to provide a single point of contact to search, store and share Australian NRM information, and to increase access to information for regional planning and decision making by staff in the NRM sector. The NRM Toolbar does this by providing a range of online discovery tools (databases and websites). This online resource was first released in October 2007. One of the major functions delivered was evidence-base software which allows an organisation or individual to create an online collection of information that is useful as evidence for decision making.

The third major activity was support for knowledge brokering in the NRM sector to better use existing knowledge and information to address regional NRM knowledge needs and management issues. Support was provided in the following forms.

- *Systematic review trials.* Systematic review is a technique commonly used in science to synthesise available evidence.
- *Gotta question?* This service provided information to NRM professionals run by the Knowledge for Regional NRM Team. The purpose of the service was to address requests received through an online form or telephone. There are now links with *Exchange* (Greening Australia's knowledge brokering service) and key contacts within such agencies as Envirofund as well as regional body clients.

- *Communities of Practice* such as *The Friends of the Regional Knowledge Resource Kit*. The administrative rights for this group belong to all who have done Regional Knowledge Leaders training or Core Team training. This ensures continuity after June 2008.
- *Trial advisory service to assist regions to select decision-making approaches*. This trial assisted regions to undertake the selection of appropriate decision-support tools.

In July 2007, Land & Water Australia accepted the role of managing agent for the administration and redevelopment of Australian Agriculture and Natural Resources Online (AANRO) until June 2010. While not a concluding program, AANRO is mentioned at this point because of its connection with information services for NRM. The cost of AANRO redevelopment is being met equally by members of the Primary Industries Standing Committee, the Natural Resource Management Standing Committee and the rural R&D corporations.

Outcomes

Improved capacity of those in the NRM sector to find, use, share and manage information and knowledge, facilitating better-informed decisions. Knowledge-management tools and communities of practice remain to facilitate improved management of knowledge and information in the future.

Workshops and training in country areas have been important activities for the Knowledge for Regional Natural Resource Management team. Program Manager Nerida Hart (standing) is pictured assisting Jane Chrystal and Peter Wilcock at a workshop in Tamworth. Jane is a Program Manager with the Central West (NSW) Catchment Management Authority and Bendigo-based Peter is an Australian Government facilitator with a focus on biodiversity in Victoria.

Healthy Soils for Sustainable Farms

The recognition that healthy soils underpin sustainable and productive agriculture led to establishment of the *Healthy Soils for Sustainable Farms* program, a collaborative initiative of the Department of Agriculture, Fisheries and Forestry, Land & Water Australia and the Grains Research & Development Corporation.

The program goals were to evaluate soil management options based on soil processes, to develop efficient systems and tools for producers to measure, record, monitor and adaptively manage soil health, and to provide opportunities for learning more about soils and their management.

The program investment strategy focused on raising awareness, communicating management principles for healthy soils, providing measurement and assessment tools, demonstrating results, and providing guides and materials for education and training courses. This was done in a series of projects across major agricultural regions and industries, focused on driving uptake of practices which are conducive to good soil health and sustainable and profitable production.

Farmers, industry, agribusiness and the community participated in activities which promoted application of practical knowledge about good soil-health management practices.

Among project outputs were a Ute Guide and DVD for vegetable growers, comprehensive training materials tailored for regions and industries, soil health cards and a field-based test kit, decision support tools, newsletters, fact sheets, case studies and websites with information on soil health. An important program output was the *Soil Health Knowledge Bank* which consolidated current knowledge and experience of managing healthy soils into one easily accessible website, providing clear and consistent peer-reviewed information on the attributes of healthy soils and the management practices needed to sustain biological functioning, maintain environmental quality and promote plant and animal health.

This project has contributed to achieving of the production sustainability goals outlined in the *Land & Water Australia Five-Year R&D Plan 2005–2010* and addresses the National Rural Research and Development Priorities *Productivity and Adding Value* and *Natural Resource Management*.

Outcomes

Evaluation showed that there had been increased understanding and knowledge among farmers and agronomists about the importance of soil health in supporting sustainable farm businesses. It also showed them how to assess soil health themselves. Although it is too early to demonstrate widespread adoption of improved or best practices, there is some evidence of their uptake. More than 17,000 farmers, as well as advisors and extension agency and NRM staff, attended at least one *Healthy Soils for Sustainable Farms* activity, and awareness-raising events involved, in total, more than 30,000 people.

Healthy Soils for Sustainable Farms		
Planned Output/Activity	Achieved Output/Activity	Outcome and Value
Utilise applied research and demonstration sites nationwide for training and dissemination of healthy soils messages.	Training events (courses, demonstrations, seminars, field days and workshops) were conducted; over 17,000 farmers, advisors, extension, agency and NRM staff attended. Awareness-raising events and materials have involved more than 30,000 people.	Evaluation shows participants have gained new awareness and knowledge about soil health and its management.
National Symposium July 2007.	262 attendees with 40% farmers.	Symposium proceedings released.
Peer reviewed core knowledge for Knowledge Bank available for public access (release 1).	Soil Health Knowledge Bank www.soilhealthknowledge.com.au undergoing external peer review.	Clear, consistent peer reviewed information about the attributes of healthy soils and management practices for farmers has been consolidated.
Undertake communication activities that raise awareness about healthy soils.	Fourteen Soil Health Management Guides produced and distributed to 13,000 people; 103 fact sheets, case studies and articles distributed to 12,630 people; 120 brochures, newsletters and media articles; seven websites enhanced.	Farmers and advisors aware and knowledgeable about soil health and its role in supporting sustainable farm businesses.
Collect monitoring and evaluation data for projects and program.	Monitoring and evaluation data.	Monitoring and evaluation data has allowed reliable assessment of program outputs and outcomes.

Land, Water & Wool

Land, Water & Wool (LWW) was established as a collaborative effort by Land & Water Australia and Australian Wool Innovation Limited to improve profitability on wool properties while enhancing environmental management. Work focused on fragile environments and identified new practices to manage saline land, rivers and waterways, native pastures, pastoral areas and climate variability, in the context of commercial wool-growing businesses.

A major finding was that sheep can assist in the sustainable management of Australian landscapes. For example, through strategic grazing management and without compromising productivity, sheep can enhance biodiversity and ecosystem services in the landscape in some situations, especially the abundance and diversity of native grassland plants. In addition, sheep production can make it commercially viable to rehabilitate degraded landscapes such as salt affected areas.

As well as providing technical solutions and improved risk management, LWW unearthed some key insights into adoption pathways through participatory research, along with a deeper understanding of how social issues (such as sense of place and community expectations) influence the management practices of wool producers.

The program contributed to a range of matters that are covered in Land & Water Australia's *Five-Year R&D Plan*, as well as in the National Research Priorities and National Rural Research and Development Priorities, particularly as they apply to sustainability, productivity and adapting to climate change.

Outcomes

The *Land, Water & Wool* program ran for six years, including a legacy year in 2007–08. A strong emphasis of the legacy year was to work with regional NRM bodies to provide them with insights on how the wool industry can be engaged to assist in the implementation of regional catchment strategies using LWW findings. In evaluating this approach, regional NRM bodies were highly appreciative of the way in which information was targeted and customised in relation to their own individual priorities. In addition, the program website has been redeveloped to provide a comprehensive repository of publications and reports from more than 80 LWW projects. Over the life of the program, a benefit-cost ratio of 3.9 to 1 was generated on $20 million of industry funds, resulting in adoption of improved practices by 3190 wool producers.

Land, Water & Wool		
Planned Output/Activity	Achieved Output/Activity	Outcome and Value
Sustainable Grazing on Saline Land Synthesis Product.	Website awaiting launch. Material for printed version produced.	Synthesis of relevant material into Saltland Solutions for 11 different land classes, for wool growers and their advisors.
Additional data collection on productivity and environmental indicators for saline land and native vegetation.	Data collected and final reports completed. New extension material produced, e.g. plant identification posters; contributions to website.	Additional data has given more confidence in research conclusions and allowed formulation of better management recommendations.
Delivery and communication activities relating to the program final reports.	Recommendations from research matched to objectives in regional catchment management plans and actively promoted through visits by advocates.	Regional catchment management bodies better able to achieve their objectives.

Improved environmental practices lifted returns for producers who participated in the Land, Water & Wool program.

Environmental Water Allocation

The *Environmental Water Allocation* program is part of the key strategy *Research Investment* which aims to achieve important outcomes outlined in the *Land & Water Australia Five-Year R&D Plan 2005–2010*. Outcomes of this program have been delivered collaboratively with CSIRO, the Department of the Environment, Water, Heritage and the Arts, the Fisheries Research and Development Corporation, and the National Water Commission (NWC).

The program seeks to evaluate particularly the benefits of environmental water allocations. Aquatic ecosystems and biodiversity have been the subject of research in environments ranging from the Lower River Murray to rivers in Australia's tropics. Models for making predictions of environmental change under different water management scenarios have been developed across major river systems and wetlands, as well as groundwater-dependent ecosystems.

While this initiative is clearly directed at the National Research Priority of *An Environmentally Sustainable Australia,* it also addresses the National Rural Research and Development Priority of *Natural Resource Management for Economic and Environmental Sustainability*.

Outputs during 2007–08 included reports which proposed innovative policy and planning approaches to water reform, information on biodiversity status and flow requirements for environmental sustainability, workshops to share knowledge and scope future research about the subject, materials for use by Indigenous and other communities, and fact sheets on environmental flows. Nationally significant outputs include the following range of actions.

- The newsletter, *Droplets*, which is having a significant influence on the public policy debate on ways to allocate water, especially in the Murray – Darling Basin.
- A nutrient/ion budget and draft report providing a framework from which predictions can be made about relative concentrations of nutrients/ions in the Lower Murray Lakes and Northern Coorong under different flow scenarios.
- A 3D hydrodynamic-ecological model, developed, calibrated and being used by management agencies to predict salt intrusion through the Lower Murray Lakes under different scenarios. Information and tools from this project are being used to determine impact and solutions for the national crisis in the Lower Murray.
- A model that predicts the influence of various additional environmental flows on plant biodiversity in River Murray wetlands. This work was undertaken in conjunction with CSIRO's CLLAMMecology Flagship project.

Outcomes

There are multiple pressing demands for the use of Australia's scarce water resources: agriculture, industries, towns and communities, and the environment. Decisions about purchase or allocations of water for environmental reasons will increasingly be made on the basis of sound scientific information.

This program is producing information which is helping decision-makers at regional, state and national levels understand the water requirements of aquatic ecological systems so that the likely impacts of water allocation decisions on competing demands can be assessed better. Knowledge is being generated about the environmental water flow needs of Australia's riverine ecosystems (for example for wetlands, ephemeral streams, estuaries).

Authorities with water allocation and management responsibilities have adopted modelling. An example is the use of a hydrodynamic ecological model by the SA Department of Land, Water and Biodiversity and SA Water as a management tool for the Lower Murray and Coorong. Research results, such as data on minimum flow requirements to protect fish habitats in the Daly River in the Northern Territory, are influencing policy. Australia's national policy debate on water allocation reform is being informed by innovative ideas and economic analyses through the project led by Professor Mike Young of Adelaide University.

Environmental Water Allocation		
Planned Outputs	Achieved Outputs	Outcome/Importance
Demonstrated benefits of environmental water allocation.	Instigation of a project to assess wetland plant biodiversity in response to reduced environmental flows in the River Murray.	This study and resultant model will provide advice to management agencies regarding target volumes required for environmental flows in the River Murray to maximise wetland plant biodiversity (one measure of sustainability).
	Development of a model to predict the influence of various additional environmental flows on wetland plant species biodiversity in the Murray Valley.	A key outcome of the project is that the hydrodynamic-ecological model will become an important management tool for the Lower Murray, including the Coorong.
	A three-dimensional hydrodynamic-ecological model for the Lower Murray Lakes and the Coorong has been developed and calibrated.	The model, developed in conjunction with the SA Department of Land, Water and Biodiversity Conservation, can predict nutrient budgets and phytoplankton dynamics for a range of flow scenarios.
	Fact sheets on *Defining Environmental Flows and Managing Flows for Ephemeral Streams* were produced.	Fact sheets like this increase community and government understanding of these important issues and ensure that the professional and public debate is well informed.
Methods for monitoring and evaluating environmental water allocation.	A project to test the use of aquatic plants as indicators of environmental water benefits has developed a geo-coded database of aquatic plant collections.	Techniques are needed to assist in monitoring environmental flow impacts so that the outcomes of management actions can be readily demonstrated and evaluated.

Environmental Water Allocation		
Planned Outputs	Achieved Outputs	Outcome/Importance
New mechanisms for managing groundwater-dependent ecosystems.	A Groundwater-Dependent Ecosystem workshop was held in January 2008 to present LWA-funded research to leading researchers in the field.	Use of groundwater, because of its interaction with surface water, can have profound impacts on the health of riverine ecosystems. These projects are improving the knowledge base so that policy makers and water managers are better informed about the ecological consequences of their decisions and actions. Activities are leading to stronger appreciation of groundwater ecosystems. This workshop provided opportunities for the NWC and other government agencies and research organisations to improve their understanding of the key issues and knowledge gaps.
Assessments of water needs of aquatic ecosystems across Australia.	Field studies were undertaken into the importance of pools as refugia for fish and macro-invertebrates in ephemeral streams in western Victoria.	The project has revealed that refugia for invertebrates is much more restricted than previously believed — generally only limited to remnant waterpools — which has important implications for management of these sites. These studies will inform environmental flow strategies as they should apply to ephemeral streams.
	Studies have included work in the Daly River region of the Northern Territory to determine minimum flow requirements to protect fish species and their habitats.	Good relationships have been established with Indigenous peoples in order to incorporate traditional knowledge about fish habitat preferences and foster participatory research.
	A video training course and a poster were developed in conjunction with the traditional owners, the Wagiman Rangers.	This work will lead to recommendations to the Northern Territory Government on minimum flow requirements to protect fish species and critical fish habitats.
Collaboration between researchers and managers in designing environmental allocations.	A report was produced in November 2007 titled *Watering Wetlands — Impediments and Challenges to the Transfer of Knowledge Between Wetland Managers and Scientists.*	Improving the understanding and the dialogue between researchers and managers is crucial to focusing research and ensuring management decision-making is underpinned by the best available science.
Innovative institutional approaches to water allocations.	Water management has been the subject of specific institutional studies as well as forums supported by LWA to encourage debate and development of ideas.	Proposals and presentations have been made to improve the level of public debate about improved water management in our stressed river systems (e.g. through the *Droplet* series).

Tropical Rivers and Coastal Knowledge (TRaCK)

The aim of TRaCK is to provide the science and knowledge that governments, communities and industries need to make better decisions for the sustainable use and management of Australia's northern rivers, estuaries and coasts. The objectives of TRaCK are to:

- increase our understanding of the social, cultural, economic and environmental benefits that our tropical rivers and estuaries provide;
- develop methods and tools for assessing the implications of current use and potential developments;
- identify opportunities to develop sustainable enterprises; and
- build the capacity and knowledge of local communities to manage Australia's tropical rivers and estuaries.

This research initiative brings together a multidisciplinary consortium which includes Charles Darwin University, the University of Western Australia, Griffith University, North Australia Indigenous Land and Sea Management Alliance and CSIRO. Altogether more than 50 of Australia's leading researchers from social, cultural, environmental and economic disciplines are involved. The broad base of research is addressing such fundamental matters as the hydrology of northern waters and the nature of organisms in major rivers and streams, as well social and economic aspects ranging from agricultural use to Indigenous values.

This program is characterised by a high level of collaboration involving the Australian Government Department of the Environment, Water, Heritage and the Arts and the NWC as major co-funders. It falls within the Land & Water Australia strategic category of *Research and Investment* and addresses the first of the National Research Priorities, namely *An Environmentally Sustainable Australia*. There is also a link with the second of the National Research Priorities, *Promoting and Maintaining Good Health*, as research has established a strong connection between health of Indigenous people and the status of resources which support their communities.

Activities undertaken during 2007–08 demonstrate a wide field of enquiry. They included a broad classification of tropical rivers based on their hydrology and interactions with the wider environment, aquatic ecology studies and an assessment of water-sharing policies. There has been exploration of future scenarios including modelling of the possible effects of climate change, and investigations have started into impacts of land use on water quality, while other researchers have directed attention to food webs in rivers and are monitoring biodiversity. This suite of research projects will help identify sustainable and culturally appropriate use of river and coastal resources

In addition to the funding partners, there is engagement with those who use the resources of northern Australia, including Indigenous communities, regional NRM bodies, and primary producers and fishermen. There is also support from government bodies in Queensland, Western Australia and the Northern Territory.

Outcomes

The program is producing science and information which will help decision-makers in governments, communities and industries understand the ecology and range of values provided by tropical rivers and estuaries in northern Australia so that planning and decisions about the use and management of these water resources can be better informed.

Established in 2007 and due for completion in 2011, the TRaCK program has had insufficient time to yield significant outcomes. It has, however, already helped to build research capacity to address key water resource sustainability questions in northern Australia, including through several universities, CSIRO and with Indigenous peoples. The program has also provided a focus for interaction between researchers, policy advisers, water planners and communities. Advice is being provided to assist government programs such as the *Northern Australian Water Futures Assessment* and it is anticipated that research results will help frame policies concerning water resource use and may identify opportunities to develop sustainable enterprises in northern Australia.

Tropical Rivers and Coastal Knowledge (TRaCK)		
Planned outputs	Achieved outputs	Outcome/Importance
Community engagement across TRaCK research program.	A Kimberley water forum was held in Broome in March 2008. Meetings have been held with groups such as the NT Daly River Management Advisory Committee and the Mitchell River Watershed Management Group in Queensland.	Relationships are being built with key state agencies and regional groups (e.g. the WA Department of Water, Kimberley Land Council, Environs Kimberley, and the WA Department of Agriculture and Food) to ensure TRaCK meets the needs of stakeholders.
Collaborative water planning.	A literature review has covered collaborative water planning, best practice strategies and techniques for resolving public disputes over natural resources.	Water planning agencies in all tiers of government, as well as regional natural resource management bodies, have improved knowledge and developed collaborative arrangements.
This project has developed a regional classification of Australia's rivers based on ecologically relevant aspects of their hydrology (i.e. an ecohydrological classification) as a tool for management and science.	Projects were completed dealing with the classification and regionalisation of Australian rivers based on their hydrology, interactions between topography and geology, plus vegetation and climate. Advances in the understanding spatial variation in aquatic ecology and the relevance to environmental flow management and modelling impacts of climate change.	Improved characterisation of rivers will enable policy advisers and water managers to better understand the nature of the Australia's river systems and therefore be better informed to plan and monitor their management. Stakeholders include state and Australian Government natural resource and water agencies, catchment management groups and regional bodies.

Tropical Rivers and Coastal Knowledge (TRaCK)		
Planned outputs	Achieved outputs	Outcome/Importance
Tropical river food webs and biodiversity project.	Stable isotope surveys in the Daly, Mitchell and Fitzroy catchments have been undertaken to identify the primary sources of carbon and nitrogen in riverine food webs.	Resource interactions in northern river systems are better understood so that likely impacts upon them arising from management actions can be better predicted.
River change stories (Indigenous engagement).	A river change story has been completed for Daly River.	Traditional owners are sharing their knowledge about river systems and how they are used and valued. This information will be used to improve the monitoring of waterways and provide input into planning and policy decisions about water sharing and management.

Social and Institutional Research

Land & Water Australia gives high priority to social and institutional research across all of its programs. Generating knowledge on how Australia can fulfill the potential of its human and social capital (including science and technology) and the institutional arrangements that enable this to happen is one of Australia's greatest challenges to the productive and sustainable use of our natural resources.

Land & Water Australia invests in a Social and Institutional Research Program as part of its *Research and Investment* and *Knowledge into Practice* strategies. This investment contributes to the national Rural R&D Priorities, particularly *Productivity and Adding Value, Natural Resource Management* and *Climate Variability and Climate Change*, and to the National Research Priority, *An environmentally sustainable Australia*.

During 2007–08, the Corporation produced a wide range of outputs from its social and institutional research that have the potential to improve NRM policy development and program delivery at national and regional levels. This included a proof-of-concept report on the development of a cultural and conservation economy for Northern Australia. Future application of this concept will improve sustainable development in rural and remote Indigenous communities in Australia.

Volunteers are critical to Australia's natural resource management at regional and local levels. A project in collaboration with the Corangamite Catchment Management Authority (Victoria) and the Northern

Agricultural Catchments Council (WA) produced a set of recommendations about what was needed to be included in volunteerism policy to achieve a long-term, effective and resilient volunteer-based NRM system in Australia.

Other outputs included reports on the constraining preventing landholders from adopting market-based instruments in NRM, and how to improve landholder conservation contracts and covenants. Progressing knowledge on how to create and develop markets for environmental goods and services will be at the forefront of the productive and sustainable use of landscapes in the future.

Much of the investment by the 56 NRM regional bodies around Australia is targeted towards fostering change in practice by landholders. A project that continued in 2007–08 has been working with selected regions and developing tools and processes to help them understand the dynamics of this change within their regions and how they can best foster the desired change. This understanding, coupled with a culture of continuous learning, is helping the regions to effectively plan, implement, review and adapt their investment in practice change. There is also opportunity to influence future policy for regional NRM to enable and support successful investment in NRM practice change at a regional level.

Outcomes

Land & Water Australia is progressing improving methods to measure and evaluate the degree to which Social and Institutional Research Program investments influence change in NRM. In 2007–08, a number of projects effectively engaged Indigenous Australians in the National Water Initiative and led to greater awareness and appreciation of Indigenous knowledge, cultural values and customary law regarding land and water. Another project has demonstrated that Indigenous people taking part in customary and contemporary land and sea management practices were much healthier, including lower rates of diabetes and lower risks of cardiovascular disease. Land & Water Australia produced a report in November 2007 on key findings and outcomes of its research investment in the engagement of Indigenous Australians in natural resource management.

Social and Institutional Research		
Planned outputs	Achieved outputs	Outcome/Importance
Effective, timely and on budget management of portfolio of current 30 projects across the following themes: NRM institutions and governance; choice and mix of NRM policy instruments; landscapes, lifestyles and livelihoods.	Twenty-two of the portfolio of 30 projects have been completed: NRM institutions and governance: Capacity development for regional bodies to plan and invest for practice change in NRM. Principles for effective practice in regional NRM governance based on interdisciplinary and collaborative research with nine NRM regions in NSW, Victoria and Tasmania. Processes for facilitating the adaptive management of natural resources and the environment.	Improved capacity of participating NRM regional bodies to plan, manage, review and adapt their investments and strategies for NRM practice change leading to improved natural resource condition. Lessons learned from the research passed to policy makers to enable continuous program and policy improvement for targeted and effective regional investment in NRM.
	Choice and mix of NRM policy: Policy options and an evaluation checklist tool for maintaining the long term role and viability of volunteerism in NRM based on collaborative research with the Corangamite Catchment Management Authority (Victoria) and the Northern Agricultural Catchments Council (WA).	Improved governance processes in the regions leading to improved NRM outcomes. The recommendations and tool will improve catchment or regionally-based governance of NRM and maximise volunteer contributions. Catchment and regional bodies are supported heavily by volunteer activities.
	Landscapes, lifestyles and livelihoods: Published *The Engagement of Indigenous Australians in Natural Resource Management*. This synthesised outputs of investment by Land & Water Australia in research that improves knowledge and practice through policy and programs for Indigenous Australians. Produced new knowledge on principles, processes, institutional arrangements and tools relating to improved engagement with, and participation by, Indigenous Australians in NRM.	A more integrated and targeted LWA research portfolio that addresses key strategic issues for Indigenous Australians. The key outcome of the research completed is greater awareness and understanding of Indigenous values, customary laws, knowledge and capacity. LWA-funded research has quantified the nexus between the health of Indigenous Australians and active involvement in Indigenous cultural and NRM.

Social and Institutional Research		
Planned outputs	Achieved outputs	Outcome/Importance
Initiate new collaborative projects accounting for balance of available program funding to 2010 in the following priority areas: water reform arrangements including water plans and planning; regional NRM governance and capacity; market-based instruments, including stewardship and carbon trading; and peri-urban issues related to agriculture, NRM and planning.	Negotiated a water planning project with the NWC which aims to provide lessons, indicate gaps in knowledge and practice and provide pathways to adoption through case studies of good practice water planning that informs broader water planning processes.	Improvement in the way in which water planning is undertaken in Australia leading to improved water allocation decisions, water use and water quality.
	Implemented a collaborative project with Australian Government agencies to provide knowledge and frameworks for identifying and understanding the role of social assets in achieving natural resource outcomes.	The social assets project will enable communities and regional bodies to identify social assets in NRM to improve planning, implementation, evaluation and results.

Defeating the Weed Menace

Invasive plants are estimated to cost Australia's economy $4 billion annually, of which $2.8 billion is in the livestock industry. Over 70 per cent of agricultural establishments are affected by weeds and, on average, Australian farmers lose 10 per cent of their production and millions of tonnes of water to weeds each year. Weeds are also recognised as being among the most serious threats to the natural environment.

Support for the Australian Government's *Defeating the Weed Menace* program is part of the key strategy *Research and Investment* and has sought to achieve sustainability and environmental outcomes outlined in the *Five-Year R&D Plan 2005–2010.* The program is delivered on behalf of the Australian Government Department of Agriculture, Fisheries and Forestry and Department of the Environment, Water, Heritage and the Arts. Elements, such as protection of biodiversity, also reflect the National Rural Research and Development Priority *Natural Resource Management for Economic and Environmental Sustainability*, and Biosecurity (protecting Australia's community, primary industries and environment from biosecurity threats).

Projects underway in 2007–08 (all of which are due for completion when the program ends during 2008–09) included biological control studies of several major weeds, such as Alligator, Boneseed, Cape Broom, Noogoora Burr, Parkinsonia, Salvinia and Scotch Broom. Other projects evaluated the environmental benefits arising from

managing weeds of national significance in natural ecosystems, an assessment of the influences of productive land use on weed distribution, quantification of the costs and benefits of certain weed species, and examination of the influence on weeds of peri-urban development.

Two new projects designed to provide a framework to help guide investment in biological control and inform the development of a national weed information system were approved during the year.

The scope of research investment has been designed to encompass weed issues that are having an impact on extensive land systems and conservation areas across Australia, where the benefit is largely to the community as a whole. As part of this, weeds with impacts on primary production, such as Noogoora Burr and Serrated Tussock, have been given attention.

Outcomes

The program is increasing national capacity to prevent, manage and reduce the impacts of weeds by generating new knowledge, for example in relation to biocontrol, and sharing this with policy advisers, land and water managers and other scientists.

This new knowledge will help guide future policy, programs and practice in farm and forestry production systems and biodiversity on issues such as:

- new techniques for identifying and monitoring weeds;
- emerging imaging technologies for weed monitoring;
- understanding pathways and risks for weed spread;
- managing 'conflict of interest' species;
- improving the methods, and understanding the role, of biocontrol; and
- managing weeds as part of broader landscape management.

Significant contributions are being made to improving the methods of biological control of important weeds are now in place and farmers and environmental managers are applying best practice guidelines, improving the efficiency of their attack on weeds.

Planned outputs	Achieved outputs	Outcome / Importance
Scoping and commissioning new research projects.	Eleven new projects ranging from quantifying the environmental costs of buffel grass, evaluating the environmental benefits from managing Weeds of National Significance in natural ecosystems, developing a model for environmental weed management in fragmented landscapes to aerial surveillance of aquatic weeds were contracted and being implemented.	This program is producing science upon which improved policies and management guidelines are being developed to assist in better management and reducing the impact of weeds.
Implementation of a knowledge and adoption plan in conjunction with the broader *Defeating the Weed Menace* program.	A Knowledge & Adoption plan has been developed to guide the outputs from this national weeds program.	The program is increasing national capacity to prevent and manage weeds by generating new knowledge and advanced biocontrol technologies.
Contributions to the 16th Australian Weeds Conference.	Many scientific papers were presented at the 16th Australian Weeds Conference in May 2008 and at other national and international conferences. Land & Water Australia hosted a discussion session at the 16th Australian Weeds Conference addressing future weeds research needs.	The outputs from the discussion have been fed into the development of a new National Weeds Research and Productivity program.
	At a Knowledge Assimilation workshop held in February 2008 the weeds research program participants identified a number of discussion papers, scientific papers and other knowledge products to be delivered which will target policy makers and managers.	The knowledge assimilation products being produced will guide both policy and practice in reducing the impacts of weeds on farm and forestry production systems and biodiversity.

Innovation

The *Innovation* program serves the National Research Priority *Frontier Technologies for Building and Transforming Australian Industries* and the Rural Research and Development Priority *Productivity and Adding Value*. It recognises the compelling need for coordinated efforts in Sustainable Agricultural and Landscape innovation by providing research outputs in the key environmental priorities and through activities and funding to stimulate collaborative research between government and research agencies.

The sub-programs of the Innovation Program explore the step-changes needed to:

- make sustainable productive landscapes in Australia (through a competitive call for research called the Innovation Call and a Travelling & Visiting Research Fellowship);
- build research capacity (through funding Postgraduate researchers); and
- integrate the best knowledge of natural resource management (through the Senior Research Fellows).

The Senior Research Fellowships are an exciting initiative that works at the intersection of two of the Australian Government's key science priorities—innovation and scientific excellence, and improved management of Australia's natural resources.

More than 56 research projects were managed through the *Innovation* program in 2007–08. These projects make integrated contributions across a range of investments including research on market-based instruments for investing in NRM, use of bio-indicators of chemical use in irrigation-based agriculture, equity issues associated with water use, and decision-support tools for use in sustainable management.

A significant research co-ordination role was made into the ecosystem impacts of endocrine disrupting chemicals, enabling rapid progress by researchers, policymakers and water managers. Such work on water quality is important given the increase in water re-use.

To gather opinions as well as to coordinate research results, Land & Water Australia has continued to organise meetings of interested parties and experts in particular fields. An example was a meeting of researchers, policy-makers and practitioners to plan a research program to deliver better outcomes using market-based instruments. Another highlight of the program was research into water planning that included Indigenous perspectives and provision of livelihoods in remote areas.

Outcomes

Investments in the *Innovation* program are building human capacity and sharing knowledge, finding novel approaches to complex NRM problems, stimulating thought and encouraging change. Change has been seen in technologies applied to NRM as well as in the way people deal with matters of importance. An example of the latter has been development of appropriate ways of incorporating Indigenous water values in planning, as witnessed with work undertaken with the Anmatyerr community in the Northern Territory.

Innovation		
Planned Activities/Outputs	Achieved Outputs	Outcome/Importance
A group of highly innovative projects selected and funded from a competitive national call.	Contracting completed for five innovative research projects of three years duration, four new postgraduate research projects of three years duration and two new fellowships of one year.	Innovative research that improves the knowledge foundation for sustainable management of Australia's natural resources is supported by investments made in this program.
Knowledge and adoption activities for new ways to attract private investment in NRM.	An innovative model using well-established tax systems and private markets as the mechanisms for investing in NRM was presented to Australian Government policy makers.	This report was distributed to many participants of the Australia 2020 Summit Rural Industries stream. Agreement of significant non-government investors to pursue these issues as a partnership.
Knowledge and adoption activities for endocrine disrupting chemicals.	A national survey of chemical contaminants in water was a rallying point for researchers, policy makers and water regulators to learn about this emerging issue.	Agreement has been reached among stakeholders about research needs to achieve breakthroughs in this field. Attracted international collaborators.
Incorporating equity into environmental policy.	Experimental results showed the risk of perverse outcomes where equity is not considered explicitly.	Risks and equity issues better understood.
Recognition of Indigenous values and rights in water management procedures.	Inter-cultural report and film launched in both Anmatyerr and Canberra water management communities and with policy briefings to DEWHA and NWC.	Reporting has influenced policy and provided a template for other communities to use. Engaging Indigenous people in water management by recognising non-consumptive values of water and working together. NWC is influenced into developing a forum and national approach.
Dynamics of sediment and nutrient fluxes from burnt forest catchments.	Quantified the impacts of sediments and nutrients washed out after bushfires in catchments and revolutionised the way this key process is understood and modelled.	Eleven peer-reviewed publications involving catchment managers. Technical report in preparation.
Novel In Situ Desalination of Low Quality Groundwater.	Innovation proof of concepts completed.	Commercialisation development now underway with AusIndustry.

Innovation		
Planned Activities/Outputs	Achieved Outputs	Outcome/Importance
Agriculture Land Retirement as an Environmental Policy.	Concept proven in the technical report that is now in publication. Results presented to DAFF and DEWHA joint team to raise equity as an emerging policy implementation risk. Conference presentations.	Raising awareness of the design requirements of agricultural land retirement contracts to work with market-based instruments and as an alternative to auctions mechanisms to achieve cost effectiveness in agri-environmental policy.
Ecohydrological regionalisation of Australia as a tool for management and science.	Breakthrough science just completed and demonstration planning underway to share the knowledge with water managers and researchers.	Improve evidence for investment decisions in monitoring and managing Australia's hydrological and ecological systems. Fundamental contribution to the digital map of Australia's waterways and understanding of flows.
Senior research fellow Professor Sam Lake Drought: The creeping disaster.	Peer-reviewed publications (seven in total) including one titled Australian futures: Freshwater ecosystems and human water usage. Final report published.	Improved information about the effects of drought on river ecosystems.
Senior research fellow Dr David Freebairn published a research synthesis of long-term experimental site data.	Peer-review and other publications (44 in total).	Evidence published that in Brigalow country the adoption of no-till farming by grain growers has cut the nutrients and soil lost to run-off by 90 per cent, information that was well covered by six regional newspapers reports.
Senior research fellow Dr Neil Barr demographic study of Australian farming.	Book in publication.	
Senior research fellows Dr Richard Stirzaker and Dr Mark Stafford-Smith final reports.	Peer-reviewed publications and summary final reports in negotiation with publishers.	
Completed PhD theses, new research capacity and associated publication.	Insectivorous bats, irrigated cotton production and Indigenous vegetation remnants. Fire, fragmentation and small mammals; synergistic impacts on ecosystem dynamics.	Developed research capacity in NRM and new understanding of ecological insect control in crops and fire in vegetation.

National Program for Sustainable Irrigation

Land & Water Australia invests in the *National Program for Sustainable Irrigation* as part of its *Research and Investment* strategy to achieve the critical goal of sustainable resource management as cited in its *Five-Year R&D Plan 2005–2010*. The work also addresses the National Rural Research and Development Priority *Natural Resource Management for Economic and Environmental Sustainability*. During the year an open call was made for applications for new projects and a strategic communication plan was instigated.

Research to improve the efficiency and sustainability of irrigation is undertaken in collaboration with partners including federal and state authorities, regional water management bodies, and other rural R&D corporations. Specific partners include: the Cotton Research & Development Corporation; Department of Environment & Water Resources; Gascoyne Water Asset Mutual Cooperative; Gascoyne Water Cooperative; Goulburn-Murray Water; Grains Research & Development Corporation; Harvey Water; Horticulture Australia Limited; Lower Murray Water; Ord Irrigation Asset Mutual Cooperative; Ord Irrigation Cooperative; Sugar Research & Development Corporation; SunWater; Western Australia Department of Water.

During 2007–08, projects within the program have:

- provided useful information to primary producers as well as catchment managers;
- developed techniques, such as open hydroponic irrigation in citrus;
- studied the effects of deficit irrigation systems, such as those widely applied in vineyards;
- given guidance on use of improved means of monitoring moisture and applying irrigation; and
- continued to research the nationally important issue of salinity.

Outcomes

A broad outcome from this program has been the steady improvement of irrigation efficiency. Individual irrigators have measured their own performance and include, for example, grape growers in the Riverland who have reduced water use by more than 40 per cent through conversion to drip irrigation and use of moisture monitoring techniques, without a reduction in yield or quality.

National Program for Sustainable Irrigation		
Planned Output/Activity	Achieved Output/Activity	Outcome and Value
A new phase of the program will commence early in 2007–08.	An open call for new projects attracted 70 expressions of interests.	The new strategic plan provides agreed directions and priorities for irrigation R&D in Australia.

Joint Venture Agroforestry

The *Joint Venture Agroforestry* program was established in 1993 and receives core funding from its three partners: the Rural Industries Research and Development Corporation (which manages the program), Land & Water Australia, and Forest & Wood Products Australia. Classified as a Land & Water Australia *Research Investment* strategy, this program has served the National Research Priorities of *An Environmentally Sustainable Australia* and *Frontier Technologies*.

The program aims to assist the development of profitable industries while delivering beneficial natural resource outcomes. Agroforestry can provide multiple products and services: energy, wood and fibre, eucalyptus oil and oil products, other extractives, food and fodder, and ecosystem services such as improved farm viability, soil and salinity management and carbon sequestration.

Among the outputs for 2007–08 from the 33 current research projects was information to support the improved design and management of plantations, guidelines for enhancing biodiversity, innovations to assist plantation establishment, and expansion of the knowledge of forestry regimes in a variety of regions including those which are relatively dry. There was also generation of information to help control groundwater recharge and salinity, and evaluation of the economic and natural resource aspects of farm forestry.

Outcomes

Established in 1993 and due for completion in June 2009, this program has delivered outcomes which are seen in the form of both policy and practice change. Three examples are described below.

- The Australian Master TreeGrower program, which since 1996 has primarily been a participatory outreach and extension project providing educational courses on farm forestry for farmers and regional advisers, has delivered over 67 regional courses throughout Australia involving over 1,350 participants and more than 30 partner organisations. It has resulted in a significant increase to the national skill base of farmers to sustainably manage their land for both production and conservation.
- The FloraSearch project, which was initiated in 2002 to provide a national focus on the development of broad-scale woody crops for the dryland wheat-sheep zone of southern Australia to meet both industry and NRM goals. It has focused on reviewing and selecting plant species that can be developed to supply biomass feedstock for large-scale markets of forestry, fodder and energy products.
- The Enrich project, which has screened woody species for fodder production on-farm.

JVAP has demonstrated how improved agroforestry systems using woody perennials can augment farm income while maintaining biodiversity and sustainably managing natural resources. It has provided a better understanding of agroforestry product supply and markets, and it has developed a greater awareness of the potential of environmental service markets to meet regional NRM targets, including through the use of agroforestry.

In 2007–08, JVAP research showed how better knowledge of best-practice seed pre-treatments, sowing depth and soil moisture could improve the reliability of direct seeding. This will increase the potential for broad-scale planting of woody perennials in low to medium rainfall zones to meet environmental and economic objectives, including carbon sequestration, biodiversity and dryland salinity.

Joint Venture Agroforestry		
Planned outputs	Achieved outputs	Outcome/ Importance
Current and new projects contracted and underway to deliver improved methods for direct seeding to enhance survival and reduce costs.	A direct seeding project was contracted with Kings Park and University of Western Australia to test seed germination pre-treatments for key commercial species. Guidelines have been produced for enhancing biodiversity in commercial farm-forestry plantings. These are based on surveys of vertebrate fauna in young experimental plantings with trees and shrubs, and a large number of sites in existing five to 10-year-old farm woodlots, cleared agricultural land and native forest.	Better knowledge of best-practice seed pre-treatments, sowing depth and soil moisture will improve reliability of direct seeding. This will increase the potential for broad-scale planting of woody perennials in low to medium rainfall zones to meet environmental and economic objectives, including carbon sequestration, biodiversity and dryland salinity.
Current and new projects contracted and underway to trial markets for ecosystem services for farm forestry plantings.	Three reports were finalised on implementing regional markets for ecosystem services.	A greater awareness of the potential of environmental services markets for regional NRM targets, including the use of agroforestry, will enhance the efficiency of NRM delivery.
Guidelines for improved design and management of plantations for biodiversity and ground water table outcomes.	Two projects show that phase farming with trees can be used to reduce groundwater recharge in areas prone to dryland salinity without impacting significantly on agricultural returns.	Improved agroforestry systems can augment farm income while maintaining biodiversity and sustaining natural resources in production landscapes.
Knowledge and adoption plan implemented for completed projects.	Thirty-nine reports were prepared for publication and research results were highlighted at 'Plantation eucalypts for high value timber' conference, Australian Forest Growers policy forum and Namoi State Landcare conference.	An improved understanding by policy makers, natural resource managers and practitioners of the potential of agroforestry to contribute to achieving production and conservation outcomes.

Native Vegetation and Biodiversity

The *Native Vegetation & Biodiversity* program started in 2006–07, with 15 new projects addressing four major themes:

- understanding and valuing the role of native vegetation and associated biodiversity in the delivery of ecosystem services;
- effective and efficient retention and/or restoration of native vegetation to improve the conservation of native plants and animals;
- management regimes for native vegetation which improve biodiversity values and ecosystem services at the landscape scale; and
- adoption and application of this knowledge to achieve the maintenance and restoration of healthy landscapes.

The program builds on previous achievements, including through work on genetic constraints to vegetation persistence, testing critical thresholds of vegetation cover, and determining guidelines for retention and management of vegetation regrowth.

A part of the key strategy *Research Investment* within the *Land & Water Australia Five-Year R&D Plan 2005–2010*, Native Vegetation and Biodiversity strongly serves the National Rural Research and Development Priority *Natural Resource Management for Economic and Environmental Sustainability*. CSIRO is our main collaborator on this program. The expression of the themes, outputs and outcomes of the program were revised during the year.

The year was busy for the program leaders and researchers. Among other things, activities involved fieldwork and preliminary analyses of species loss and population decline in several regions, the first comprehensive compilation of data about tropical forest regrowth patterns, presentation of workshops on native vegetation, preparation of information materials such as a brochure on managing genetic diversity in remnant vegetation, and further work to identify the impact of such disturbances as bushfires and grazing. CSIRO applied advanced technology to provide a better understanding of how to sustainably manage Australia's rangelands through examining the use of spatial variation in climate and vegetation growth to improve grazing management options and buffer the effects of drought.

Outputs have included a report on evaluating the science underpinning landscape restoration for biodiversity conservation and its on-ground application, and production of editions of the occasional LWA publication *Thinking Bush* to encourage and assist the improved management of native vegetation in agricultural landscapes.

Land & Water Australia administered the Exchange Incentive Fund in partnership with Greening Australia; the fund encourages extension of practical information to regional practitioners about how native vegetation can help deliver better NRM outcomes.

Outcomes

Research is aiding a greatly improved understanding of the value and practice of retention and restoration of native vegetation for delivering improved environmental and production services on the ground. A national review *Restoring Landscapes with Confidence — An Evaluation of the Science, the Methods and On-ground Application* has provided valuable insights into the science and information needs of regional NRM bodies and NGOs involved in planning, advising and implementing landscape restoration activities. The outputs of many projects within the program will contribute to providing this information and related decision-support tools.

Native Vegetation and Biodiversity		
Planned Outputs	Achieved Outputs	Outcome / Importance
Improved knowledge of ecosystem services arising from retention and management of native vegetation in agricultural, pastoral and Indigenous lands.	Studies completed during 2007–08 ranged from a simulation of how the spatial arrangement of sink and source habitats affects pest control on cotton farms, to improving the understanding of how Indigenous management of fire can produce carbon and biodiversity benefits and development of a technology to assist graziers cope with climate variation and drought.	The retention, restoration and management of native vegetation will be more widely pursued by farmers and other land managers where there is a recognised and measurable benefit, or service, for their business; for example, through pest control in agricultural systems and verifiable carbon sequestration.
Guidelines and tools for the retention and restoration of native vegetation.	Several concepts underpinning retention and restoration of native vegetation, including resilience theory, the concept of assembly rules, disturbance theory and impacts of habitat isolation were tested.	The retention and restoration of native vegetation in fragmented landscapes, or in those under more recent development pressure, will be most effectively and efficiently pursued where there are sound, ecologically-based guidelines and tools for regional natural resource managers.
	Field work and preliminary analyses of species loss and population decline were undertaken to determine trends over time.	
	Field work in the NT's Douglas-Daly region relating to habitat extent and species richness was undertaken to help inform the development of sound land clearing guidelines.	
	A project is exploring the use of genetic markers for paternity analysis within study remnant vegetation populations in South East NSW and South West WA to improve understanding of population viability; a brochure, *Managing Genetic Diversity in Remnant Vegetation* was produced and distributed.	Progress has been made in understanding the relative importance of different patches of vegetation, within highly-fragmented landscapes, for overcoming genetic constraints to vegetation persistence.

Native Vegetation and Biodiversity		
Planned Outputs	Achieved Outputs	Outcome / Importance
	Work on improving the design of market-based auction mechanisms to achieve landscape scale outcomes produced new software to engage landholders.	
Improved guidelines and tools for management of native vegetation.	Surveys using Mallee study sites, each representing a different history of fire extent and frequency, have been undertaken to improve knowledge of how fire affects biodiversity outcomes.	Fire and grazing are the most common sources of regular disturbance but management regimes that improve biodiversity values and ecosystem services are poorly defined so improving the knowledge base for land managers is vital to deliver better on-ground outcomes.
	A draft manuscript on the current understanding of Gilgai dynamics, soil processes, biodiversity and land management in the arid, stony plains ecosystem of South Australia was completed. Sampling at 80 sites across four landscape representing different configurations of regrowth and remnant Mulga was undertaken to improve understanding of biodiversity management in these lands.	Management of native vegetation, be it remnant or regrowth, will determine its habitat value and its capacity to provide ecosystem services.
	The first comprehensive assessment of tropical forests for both regrowth successional patterns and the availability of tree hollows was carried out.	
	A model of factors affecting diversity of birds in woodlands of the Brigalow Belt bioregion was formulated.	
	A process was constructed for evaluating and reporting the biodiversity impacts from investments in different management strategies.	

Native Vegetation and Biodiversity		
Planned Outputs	Achieved Outputs	Outcome / Importance
Knowledge, tools and process for building capacity to maintain and restore healthy landscapes.	A national review *Restoring Landscapes with Confidence — An Evaluation of the Science, the Methods and On-ground Application* was undertaken; it found that regional NRM bodies and NGOs involved in planning, advising and implementing landscape restoration activities have significant needs for more effective access to science, information and decision-support tools.	The information needs of regional NRM bodies, NGOs and state agencies involved in undertaking landscape restoration projects have been elucidated.
	Native vegetation workshops were conducted in eastern Australia with landholders through the Master TreeGrower course.	Inclusion of the management of native vegetation as part of the Master TreeGrowers course is ensuring these aspects of land management can be effectively integrated with farm forestry.
	Options for fire abatement projects were explored with land managers in central Arnhem Land, across the Gulf, and in the Northern Kimberley.	
	Inputs were made to the National MBI Capacity Building Program to transfer knowledge to regional NRM bodies.	Projects are effectively engaging state policy makers and regional natural resource managers to ensure the results are well communicated.

Managing Climate Variability

The *Managing Climate Variability* program is a component of the *Research Investment* strategy to help achieve outcomes outlined in the *Land & Water Australia Five-Year R&D Plan 2005–2010*. There are strong links with sustainability priorities of the Australian Government and with action to meet climate challenges. Research projects within this long-running program have helped to fine-tune forecasting tools and to generate practical advice for adapting to climate variability.

During 2007–08, there was a significant increase in enquiries to Land & Water Australia for climate-related information, with natural resource managers becoming as interested as primary producers in the effects of climate variability.

Studies have delved into the drivers of climate variability on a regional basis, the scope for management systems to alleviate the impact of a changing climate, and ways of improving forecasting. Through better forecasting tools, risks can be reduced and confidence about what to plant and when is lifted.

Partners in the *Managing Climate Variability Program* are: Grains Research & Development Corporation, Dairy Australia, Sugar Research & Development Corporation, Rural Industries Research & Development Corporation, Meat & Livestock Australia, and the Department of Agriculture, Fisheries and Forestry Australia.

Outcomes

An indicator of success of the program has been the number of primary producers and natural resource managers who factor seasonal climate forecasts into their management decisions. An outcome of work has been rapid growth in the number of people using climatic data and forecasting models. Fifteen years ago an estimated 60 per cent of cereal growers regularly used Bureau of Meteorology data and now nearly 95 per cent seek such information as a matter of course in their business planning.

Managing Climate Variability		
Planned output	Achieved output	Outcome/Importance
Complete research projects and their review.	Forecasting and risk-management tools.	Natural resource managers are using climate risk management tools. Climate risk management increases managers' ability to build the resilience of their businesses from a financial and sustained productivity perspective. Such tools as *Yield Prophet* enable farmers to make strategic production decisions as seasons unfold.

Knowledge and Adoption

The *Knowledge and Adoption* program is part of the key strategy *Knowledge into Practice,* and by assisting the adoption of research results it plays a key role across all other programs and strategies associated with the *Land & Water Australia Five-Year R&D Plan 2005–2010.* Similarly, achieving success for the National Rural Research and Development Priorities and Rural Research and Development Priorities is assisted by knowledge broking activity. Knowledge and adoption strategies were developed for all new programs in 2007–08.

A review of effectiveness of operations which deal with knowledge and adoption started during the year, as well as a task to improve customer service through electronic forms of communication. The review demonstrated a need for more detailed assessment of different audiences and their needs, as well as pointing to the value of engaging with other organisations, such as agribusiness, which provide services to farmers and natural resource managers. Another finding was that re-organisation of resources and analysis of market segments would be necessary to focus more sharply on audience needs and achieve greater effectiveness.

A process of embedding knowledge and adoption in all phases of research, from project design to legacy, gathered momentum and is now almost universal across the research portfolio. Legacy plans were developed for programs finishing at the end of the financial year.

Land & Water Australia held or supported 11 significant external events, such as workshops, seminars and conferences, during the year. In addition there were more than 40 regional field days and information sessions associated with such collaborative programs as Grain & Graze, Land Water & Wool, and Healthy Soils for Sustainable Farms.

There were 197 reports and fact sheets printed, or recorded in electronic form. These included project reports and summaries from the full portfolio of programs, special reports by the Land and Water Resources Audit on important issues (such as salinity), contributions from senior research fellows, comprehensive publications based on recently-completed research, fact sheets providing practical guidance for irrigators, leaflets identifying weed threats, and a range of other information. Land & Water Australia also regularly provided articles for the *Climag*, *Thinking Bush*, and *RipRap* magazines.

There were 138,123 visitors to Land & Water Australia websites. Improvements to the efficiency of these websites (with regard to content and navigation), as well as the means of tracking use, began to show positive results towards the end of the reporting year with a trend towards greater use and longer periods spent by each visitor browsing information.

Outcomes

Development of knowledge and adoption strategies draws early attention to research activities, stimulating discussion and exchange of information. Programs which have an extension component and fund a means of measuring results are best able to demonstrate outcomes. Grain & Graze, for example, provided participants with the means of measuring economic effects of change. A farmer from Eyre Peninsula, for example, was able to demonstrate increased profits, quantify positive changes to soil through soil analyses and record reduced water and wind erosion after adopting a minimum tillage regime.

Land & Water Australia's policy of requiring strategies to manage knowledge for adoption from the earliest stages of research has maximised rates of adoption through creation of strong links between researchers, policy-makers and managers of landscapes.

Knowledge and Adoption		
Planned outputs	Achieved outputs	Outcomes/Importance
Embed knowledge and adoption strategies into all stages of program and project lifecycles.	Knowledge and adoption strategies were developed for all new programs. Major advances were achieved in embedding knowledge and adoption strategies into all stages of program and project lifecycles, including legacy.	Development of knowledge and adoption strategies draw early attention to research activity, stimulating discussion and exchange of information. While such plans do not always include measureable components of an adoption process they are usually regarded as primary steps towards adoption of the results of research.
	During the year a review was undertaken of the effectiveness of operations which deal with knowledge and adoption. There was a focus on customer service.	The review has demonstrated a need for assessment of different audiences and their needs.
Legacy for completed programs.	Legacy plans were developed through the year for programs finishing in 2007–08, including Land, Water & Wool and the National Riparian Program.	The value of research investments is extended with legacy activity.

Knowledge and Adoption		
Planned outputs	Achieved outputs	Outcomes/Importance
Knowledge and adoption aids.	Development of the Knowledge and Adoption Toolkit.	Improved efficiency of the information process.
Synthesis products developed with successful models for developing them.	Two systematic reviews have been started by the Knowledge for Regional NRM Program with co-investment from CSIRO. Both of these are trials to test the benefits of systematic reviews for Australian NRM topics. The Centre for Evidence Based Conservation Methodology is being used and results will be published in early 2009.	
New content management system with a corporate intranet established program websites improved.	More interactive capacity for the websites continues to be investigated and improvements made.	Improved customer service.

Collaboration and Strategic Analysis

Investments in Land & Water Australia's strategy of Collaborative and Strategic Analysis aim to maximise project partnerships and the financial leverage that they bring. This is Strategy 2 within the *Land & Water Australia Five-Year R&D Plan 2005–2010*, and it focuses on establishing productive partnerships and collaborative efforts to promote, integrate and report NRM research issues.

Key collaborative partnerships have been established with government and industry bodies. These vary from joint investments in research programs to strategic alliances such as through the Australasian Joint Agency Scanning Network. Partnerships make research investments more efficient and bolster the research effort by reducing duplication, maximising investment and providing a greater platform for adoption.

Strategy 2 has provided expert written discussion papers on specialised NRM issues. These analyses benefit the research effort by providing information on priority issues, current and planned research activities, and the capacity of the research community to engage in research in priority areas. One of Land & Water Australia's planned outcomes is informed debate to inspire innovation and action in sustainable NRM.

Land & Water Australia participates in the Australasian Joint Agency Scanning Network. The network is a whole-of-government approach to environmental scanning, with membership from Australian and New Zealand state and federal government agencies. Environmental scanning refers to the process of gathering and analysing information about the corporate environment. Issues and trends are presented in a quarterly report, the *Horizon Watch Report*.

Outcomes

Because this is an 'inform and assist' program, outcomes are best seen in the achievements of other programs.

Collaboration and Strategic Analysis		
Planned outputs	Achieved outputs	Outcomes/Importance
Partnerships for new Land & Water Australia initiatives established.	More recent research partnerships which have been developed include *Phase 2 of the National Program for Sustainable Irrigation* and *Phase 2 of the Managing Climate Variability Program.*	Research is delivered more efficiently through reducing duplication and maximising investment.
Global and Australian Natural Resource Management Trends reports.	Analysis of global issues completed with Australian implications.	The Land & Water Australia Board is better informed of the position of the organisation and Australia on major issues.
Strategic Knowledge Framework completed.	Analyses of natural resource issues have been posted on the Land & Water Australia website as discussion papers.	The debate on these issues is better informed, and policy makers are better able to make decisions.
Methods for assessing science/research capacity developed and tested.	The capacity has been tested.	Future discussion papers will clarify science capacity.

Under its *Five-Year R&D Plan 2005–2010*, Land & Water Australia has used an internationally recognised return on investment measurement approach to assess public and private outcomes from investments in programs incorporating 630 projects. The approach incorporates triple-bottom-line analysis based on conservative valuations and methodology. The analysis finds an internal rate of return to LWA's investment of 26.3 per cent, reflecting efficient and effective strategies in collaboration, research contracting and management, and managing knowledge for adoption.

In addition to investment efficiency, the *Five-Year R&D Plan 2005–2010* seeks operational efficiency, including ease of access to information by stakeholders. Under this heading, the year saw upgrading of such tools as websites and improved publication process. A review of the Knowledge and Adoption program demonstrated the importance of understanding audiences and their motivations for change. This review is expected to lead to an improved structure for engaging with people on the land, providing appropriate information and guidance on an enterprise and regional basis.

Another step towards efficiency of information and technology transfer came in July 2007 when Land & Water Australia accepted the role of managing agent for the administration and redevelopment of Australian Agriculture and Natural Resources Online (AANRO) until June 2010. This is a gateway for easy access to information about Australian publicly-funded research programs dealing with natural resources.

Reporting Against National and Rural Research Priorities

The Australian Government's National Research Priorities and Rural Research and Development Priorities provide a framework and focus for all of its research agencies. Land & Water Australia is well placed to address these priorities. With a research portfolio clearly targeted at sustainability and productivity, Land & Water Australia also invests in frontier technologies, creating an innovative culture and safeguarding Australia.

National Research Priorities and their Associated Goals

Table 2 shows Land & Water Australia's expenditure across the four National Research Priorities in 2007–08. For compliance purposes, this includes information about expenditure for all associated goals, as indicated by a letter and number matching the goal.

Australia's National Research Priorities and are:

A — An environmentally sustainable Australia;

B — Promoting and maintaining good health;

C — Frontier technologies for building and transforming Australian industries;

D — Safeguarding Australia.

Details of these four priorities and their goals are provided below.

A — An environmentally sustainable Australia

1. *Water — a critical resource*. The goal for A1 is to achieve sustainable ways of improving water productivity, using less water in agriculture and other industries, providing increased protection of rivers and groundwater and the re-use of urban and industrial waste water.

2. *Transforming existing industries*. New technologies are sought for resource-based industries to deliver substantial increases in national wealth while minimising environmental impacts on land and sea.

3. *Overcoming soil loss, salinity and acidity*. Identifying causes and finding solutions to these problems is the goal of A3 which advises a multidisciplinary approach to restoration.

4. *Reducing and capturing emissions in transport and energy generation*. New transport options are sought in the quest for cleaner combustion. Efficient power generation and greater capture and sequestration of carbon dioxide are other goals.

5. *Sustainable use of Australia's biodiversity*. The goal of A5 is sustainable long-term use of natural resources and the protection of their ecosystems.

6. *Developing deep earth resources*. Exploration technologies are sought for mapping the deep earth and ocean floors with a focus on novel and efficient commodity extraction and processing.

7. *Responding to climate change and variability*. The goal of A7 is to increase the understanding of the impacts of climate change and variability at the regional level across Australia and to address the consequences of these factors on the environment and on communities.

B — Promoting and maintaining good health

1. *A healthy start to life*. This goal is concerned with genetic, social and environmental factors which predispose infants to ill health.

2. *Ageing well, ageing productively*. Improved mental and physical health are sought for older citizens.

3. *Preventive healthcare*. This seeks adoption of healthier lifestyles.

4. *Strengthening Australia's social and economic fabric*. Social and economic drivers of healthy and productive lives are the interests of this goal.

C — Frontier technologies for building and transforming Australian industries

1. *Breakthrough science*. This component seeks a better understanding of fundamental processes that will advance knowledge.

2. *Frontier technologies*. Frontier technologies are sought for their capacity to build on Australia's strengths in research and innovation.

3. *Advanced materials*. This sub-section seeks advanced materials for applications in construction, communications, transport, agriculture and medicine.

4. *Smart information use*. Such matters as creative application of digital technology and smarter management of data illustrate the interests of this goal.

5. *Promoting an innovative culture and economy*. Goal C5 is about maximising Australia's creative and technological capability by understanding the factors conducive to innovation and its acceptance.

D — Safeguarding Australia

1. *Critical infrastructure*. This goal is about protecting Australia's critical infrastructure, including its financial, energy, communications and transport systems.

2. *Understanding our region and the world*. Greater capacity to engage with others in the regional and global environment is sought.

3. *Protecting Australia from invasive diseases and pests*. New technologies are sought for countering invasive species, with integration of approaches across agencies and jurisdictions.

4. *Protecting Australia from terrorism and crime*. This goal encourages research which strengthens protection against terrorism and crime.

5. *Transformational defence technologies*. Improved defence is an important goal of the Australian Government.

All but one of the seven goals listed under the first National Research Priority, *An Environmentally Sustainable Australia*, attracted investment from Land & Water Australia. Those attracting LWA investment were:

- water (giving attention to improving water productivity, resource protection and re-use), a goal tabled as A1 and which was the subject of most investment;
- transforming existing industries (including new technologies for resource-based industries);
- overcoming soil loss, salinity and acidity (identifying causes to land degradation and finding solutions);
- reducing greenhouse gas emissions;
- sustainable use of Australia's biodiversity; and
- responding to climate change and variability.

Rural Research and Development Priorities

Table 3 (page 20) details Land & Water Australia's investments against the Australian Government's Rural Research and Development Priorities. These priorities complement the National Research Priorities. As would be expected of a rural R&D corporation with a focus on sustainable production and improving the understanding of natural resources, the highest proportion of investments has been spread across these priorities.

The Rural Research and Development Priorities were changed in 2007, but not before Land and Water Australia's Annual Operational Plan 2007–08 was prepared and approved. This report responds to the original priorities (outlined in Table 3) on which the Annual Operation Plan was based. Sustainability and NRM remained a focus of the new priorities, which also introduced climate variability and climate change, and change as priorities. Land & Water Australia's substantial investment in climate variability and change research is detailed later in this report.

Corporate Governance and Management

Land & Water Australia is a rural R&D corporation within the Australian Government's Agriculture, Fisheries and Forestry portfolio. Its legislated title is Land and Water Resources Research and Development Corporation. It was established on 3 July 1990 under the Primary Industries and Energy Research and Development Act (PIERD Act) 1989, which provides a foundation for its accountability to Parliament and to natural resource users and managers across Australia.

Land & Water Australia also operates under the provisions of the Commonwealth Authorities and Companies Act (CAC Act) 1997, which applies high standards of accountability while providing sufficient independence to conduct national research programs.

Rural R&D corporations take a leading national role in planning, investing in and managing research. Their enabling legislation requires them to treat research as an investment in economic, environmental and social benefits to their industries and to the people of Australia. They strive to deliver high rates of return on research investments by translating research outputs into practical outcomes.

Corporate Governance Principles

Operations of Land & Water Australia are overseen by a Board of Directors comprising a Chairman, five to seven non-executive Directors, and an Executive Director. The Board of Land & Water Australia is committed to the highest standards of corporate governance, in accordance with required statutes and principles, and provides strategic direction to the organisation.

Internal and external audits are carried out and other measures are in place to ensure that operations are in accordance with the accountability provisions of the *Commonwealth Authorities and Companies Act 1997*. These measures include induction training for directors, compliance and due diligence checks, disclosure of potential conflicts of interests, risk identification and management, and systems for monitoring performance. An evaluation framework applies to director performance in accordance with corporate governance principles. The Board has an agreed charter under which it operates. Periodic, independent evaluations of performance are conducted at least once in the life of each Board.

This annual report includes a summary of corporate governance matters, including a description of how strategic directions, policies and processes have been applied during the year. The Board of Land & Water Australia continually reviews policies and processes concerning all major operations, and has strategic influence through committees such as the Finance Committee and Audit Committee. Various R&D program management committees are established to oversee program design and management, ensuring that desired program outputs are being met and that partnership and government funds are spent wisely.

Section 3 of the PIERD Act specifies the legislative objects of rural R&D corporations. The objects are essentially to fund and administer R&D with a view to carrying out development of primary industries.

Sustainable use and of natural resources, greater efficiency in use of the resources and skills of the community, and improved accountability for expenditure, are major interests.

The Minister is empowered by the Act to approve Land & Water Australia's *Five-Year R&D Plan* and annual operational plans, appoint the Board chairman and approve nominees for membership of the Board.

Responsible Ministers

During the reporting year the responsible minister until the Federal election in November 2007 was the Minister for Agriculture, Fisheries and Forestry, the Hon Peter McGauran MP, assisted by the Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry, the Hon Sussan Ley MP. The change of Government saw the appointment of the Hon Tony Burke MP as Minister for Agriculture, Fisheries and Forestry and, since that time, Land & Water Australia, as an agency in the Agriculture, Fisheries and Forestry portfolio, has reported to him.

Important Australian Government Rural Policy Frameworks

Policy frameworks which are significant to Land & Water Australia include the Australian Government National Research Priorities, the Australian Government Rural Research and Development Priorities, the Caring for Our Country initiative, the National Action Plan for Salinity and Water Quality, the National Water Initiative and the National Plan for Water Security.

Representative Organisations

The two representative organisations with major stakeholder status and memberships comprising key natural resource users and managers are the National Farmers' Federation and the Australian Conservation Foundation. Funding of $31,000 (excluding GST) was provided to the Australian Conservation Foundation in 2007–08 for a research project undertaken by Dr Rosemary Hill (Investigation of a Conservation Economy Model for Indigenous Northern Australia). No payments were made to the National Farmers' Federation in 2007–08.

Transparency of Research Project Information

Details of all projects funded by Land & Water Australia during the year are entered on to the publicly available online database (www.aanro.net) as part of the Australian Agriculture and Natural Resources Online information service. Details such as project title, principal investigator, objectives, contact numbers and amounts of funding provided are listed in this database. Abstracts of all final reports received by Land & Water Australia are also entered on the database. The database is currently being redeveloped as a full text digital repository which will further enhance public access to information about and from Land & Water Australia's research investments. Land & Water Australia is managing this project on behalf of a consortium which includes the Primary Industries and Natural Resource Management standing committees and the combined rural R&D corporations.

Risk Management

Land & Water Australia's risk management policy is integrated into its daily activities and overseen by the management team and the Audit Committee The policy seeks to protect the public and commercial position and its employees, information and property. A risk register identifies each risk, describes its probability, likely consequences and mitigation strategy, and records the status of the mitigation strategy.

The risk management policy also incorporates a fraud control framework in accordance with the *Fraud Control Policy of the Commonwealth—Best Practice Guide for Fraud Control* (Australian National Audit Office Audit Report No. 39 of 1996–97), which seeks to minimise the likelihood and impact of fraud. The policy is reviewed regularly by the Board's Audit Committee to ensure that it remains relevant to the Corporation's business. Internal audits, an important component of the risk management framework, are managed by the Audit Committee. The Risk Management Plan and the Fraud Control Plan were both substantially reviewed and revised during 2004–05. No incidence of fraud was detected during 2007–08

Indemnities and Insurance Premiums for Officers

Land & Water Australia has comprehensive insurance cover with the Australian Government insurer ComCover for its directors and officers. In accordance with the contract of insurance with ComCover, Land & Water Australia is prohibited from disclosing details of insurance.

Directors' Interests Policy

In accordance with the *Commonwealth Authorities and Companies Act 1997*, the Board of Land & Water Australia has a process to manage all direct and indirect conflicts of interest, including directors' formal declarations of their interests at each meeting, documented in the minutes of the meeting. This policy extends to all committees of Land & Water Australia.

Board Membership and Processes

Board Membership

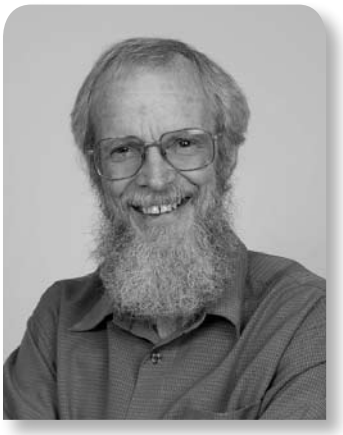
In accordance with Section 16 of the PIERD Act, the Board of Land & Water Australia comprises a chairman selected and appointed by the Minister, a number of non-executive directors nominated by an independent selection committee and appointed by the Minister, and an executive director appointed by the Land & Water Australia Board. The chairman and other directors (except for the executive director) are appointed for a term not exceeding three years and are eligible for re-appointment. Directors are selected to reflect a balance of expertise in appropriate areas specified in Section 131 of the PIERD Act. They are not appointed as representatives of the organisations or sectors with which they are associated.

Correspondence for directors can be sent to the office of Land & Water Australia, GPO Box 2182, Canberra ACT 2601 or by e-mail (land&wateraustralia@lwa.gov.au).

Roberta (Bobbie) Brazil LLM (UQ) LLB, BA, Grad Dip LP (QUT)

Chairman (non-executive)

Bobbie Brazil was appointed Chairman of the Board of Land & Water Australia in July 2001, and was reappointed in 2004 and 2007. In addition to representing Land & Water Australia at this level, she has served on Board committees and held positions with organisations which share interests in sustainable primary production, NRM, and the advancement of knowledge. Positions held during 2007–08 include those of Chair of the Australian Landcare Council and Chancellor of the University of Southern Queensland.



John Childs M Agr Sc (Melb), B Rural Science (UNE), Dip Ag Econ (UNE)

Deputy Chairman (non-executive)

John Childs was first appointed to the Board of Land & Water Australia in July 2002, and was reappointed in 2005. He is also a Director of Queensland-based Bush Business Consulting Pty Ltd and Chairman of the Daly River Management Advisory Committee. Broad involvement in matters of interest to Land & Water Australia is demonstrated by his membership of the Northern Territory Pastoral Land Board and the Daly River Management Advisory Committee. He has had a long association with organisations seeking solutions to problems surrounding natural resources, including the Tropical Savannas Cooperative Research Centre, of which he is a former Director.

Dianne Bentley BSc (Agric), MAICD

Director (non-executive)

Diane Bentley was first appointed to the Board of Land & Water Australia in July 2005. She brought extensive experience in environmental matters, particularly integrated catchment management. She is Assistant Commissioner of the Natural Resources Commission of New South Wales and has chaired the Liverpool Plains Land Management Committee. She has served on the Northern Regional Panel of the Grains Research and Development Corporation and with the Cotton Catchment Communities Cooperative Research Centre as a Director.

Peter Cullen M Agr Sc (Melb), B Ag Sc (Melb), Dip Ed (Melb)

Director (non-executive)

Peter Cullen was first appointed to the Board of Land & Water Australia in July 2002 and reappointed in 2005. He served on the Board until his death in March 2008. He also served as Commissioner of the NWC, Chair of the Scientific Advisory Panel to the Lake Eyre Basin Ministerial Forum, member of the Natural Heritage Trust Advisory Committee and member of the Wentworth Group. He spent 10 years as the founding chief executive of the Cooperative Research Centre for Freshwater Ecology at the University of Canberra. Major contributions were made during his career to the understanding of freshwater ecology, development of better water management policy, and fostering interest in critical natural resource issues.

Tim Fisher BA (Monash)

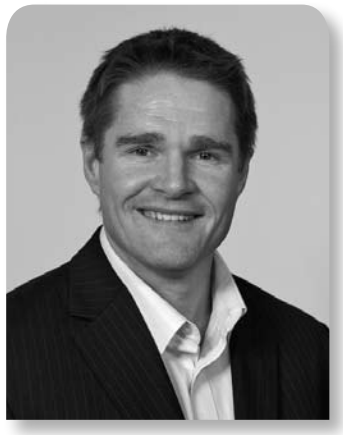
Director (non-executive)

Tim Fisher was first appointed to the Board of Land & Water Australia in July 2002, and reappointed in 2005. He was nearing the end of his second term when in February 2008 he resigned to take up an advisory position in the office of the Minister for Climate Change, Senator the Hon Penny Wong. His previous appointments include as a consultant with Marsden Jacob Associates based in Melbourne, manager of the Water and Catchment Unit at the Victorian Environmental Protection Authority and various roles with the Australian Conservation Foundation. Issues with which he has been active range from river health to biodiversity conservation. Of particular importance have been his knowledge of the impacts of salinity and changes to the landscape.

Ted Lefroy PhD, BSc (Agric) (WA)

Director (non-executive)

Ted Lefroy was first appointed to the Board of Land & Water Australia in July 2005. He is the Director of the Centre for Environment at the University of Tasmania and a member of the Tasmanian Natural Resource Management Council. He has 30 years experience in rural extension and research in Australia and overseas, and has worked for CSIRO, and departments of primary industries in two Australian states and Papua New Guinea, He has served as a member of the Cooperative Research Centre for Legumes in Mediterranean Agriculture and the Cooperative Research Centre for Plant-Based Management of Dryland Salinity. Research interests are in perennial farming systems, agroforestry and the management of biodiversity in production landscapes.



Michael Robinson PhD (U Melb), BSc Hons (ANU)

Executive Director

Michael Robinson was appointed Executive Director of Land & Water Australia in November 2006. He has worked in research, communication, business development and policy in Australia and New Zealand. Prior to joining Land & Water Australia he was Chief Executive Officer with the Cooperative Research Centre for Greenhouse Accounting. Previous roles include working with CSIRO in business development, management and communication. He has lead the development of the National Climate Change Research Strategy for Primary Industries and is a member of the Primary Industries Standing Committee Research and Development sub-committee.

Jack Speirs Dip FM

Director (non-executive)

Jack Speirs was appointed to the Board in July 2005. A farmer from Casterton, Victoria, his achievements have included development of sustainable practices on his own farm and championing such programs as Grain & Graze. He is a Director of Diamond Beef (an integrated paddock-to-household beef company) a member of the Australian Government's Industry Environmental Management Systems Advisory Group, Chairman of Victoria's Best Wool Best Lamb program and member of the Glenelg-Hopkins Catchment Management Authority Board. Practical experience in NRM ranges from ground cover and grazing systems to soil and river health.

Committees of the Board

In 2007–08, committees which dealt with matters affecting the Board were the Audit Committee, the Finance Committee and the Communication Committee.

The Audit Committee, comprising four non-executive directors, internal and external auditors, and an independent member (and the Chief Financial Officer and Executive Director as observers), helps with CAC Act compliance and provides a forum for communication between directors, senior managers and external and internal auditors.

The Finance Committee, comprising two non-executive directors, the Executive Director (and the Chief Financial Officer and Financial Controller as observers), considers financial matters affecting the Corporation.

The Communication Committee, comprising three non-executive directors, the Executive Director and the Research and Knowledge Executive Manager, develops the knowledge and adoption strategy and oversees its implementation.

The Board operates other committees to assist in the management of specific research programs.

Board and Committee Meeting Attendance

The number of meetings attended by directors and officers during 2007–08 are shown in the table below.

	Board Meetings	Audit Committee Meetings	Communications Committee Meetings	Finance Committee Meetings
Number of Meetings Held	4	6	2	6
Roberta Brazil º	4	6	2	
Dianne Bentley ±	4			6
Jack Speirs*	4	6		
John Childs	4			5
Tim Fisher**	2	3		
Ted Lefroy	4			
Peter Cullen ▫	2		2	
Michael Robinson	4	5	2	6
Chris de Mamiel		5		6
Albert Blair		5		5
Anwen Lovett				2
Bruce Wright			2	2
Jim Donaldson				1
Paul Perkins		5		

º Chair of Board

* Chair of Audit Committee (from February 2008)

** Chair of Audit Committee (until February 2008)

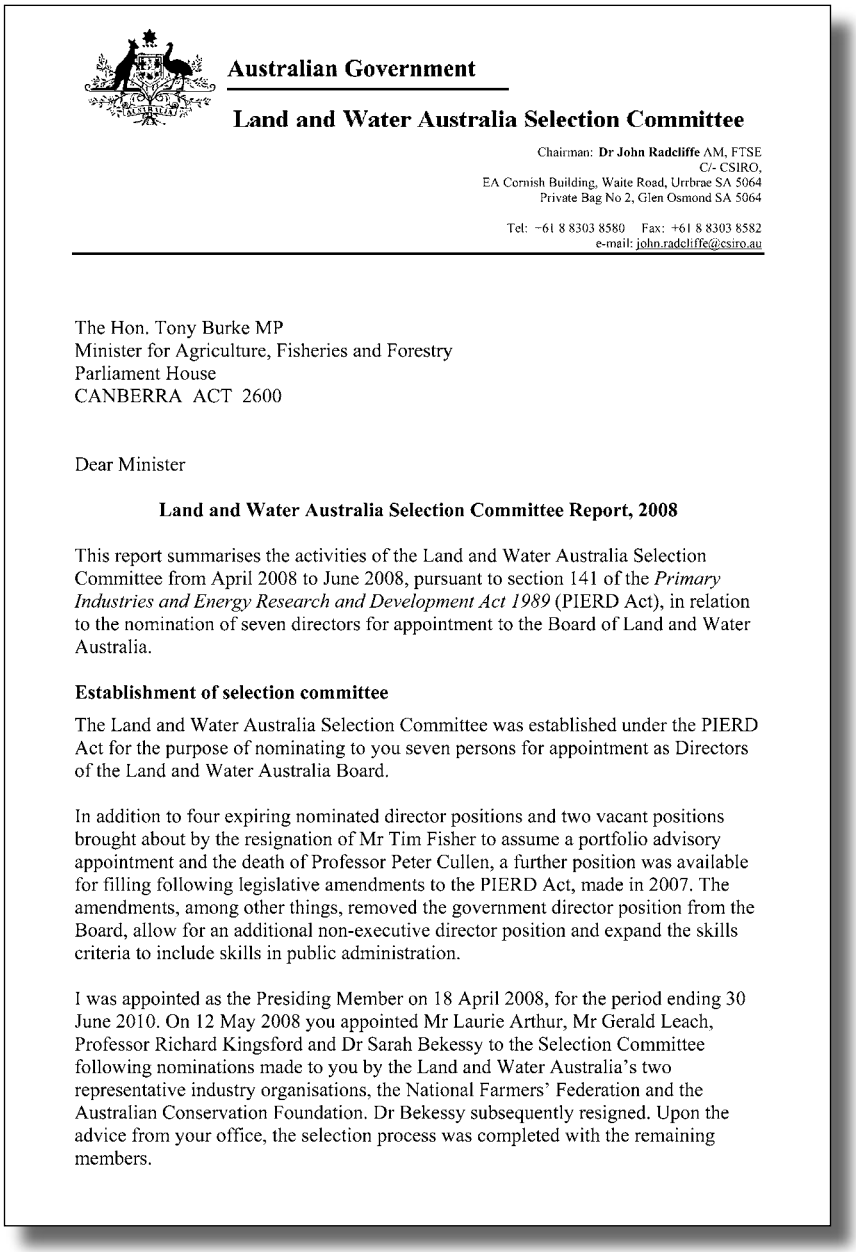
▫ Chair of Communications Committee (until March 2008)

± Chair of Finance Committee

Note that Anwen Lovett, Bruce Wright and Jim Donaldson were invited to only two of the six Finance Committee meetings. Paul Perkins is not a Director or staff member of Land & Water Australia but was invited to join the Audit Committee for his financial management experience.

Selection Committee Report

Because terms of appointment for non-executive directors were due to end on 30 June 2008, it was necessary for a selection committee to recommend appointments to the Minister of Agriculture, Fisheries and Forestry. This committee was chaired by Dr John Radcliffe, whose report follows.



Australian Government

Land and Water Australia Selection Committee

Chairman: **Dr John Radcliffe** AM, FTSE
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Private Bag No 2, Glen Osmond SA 5064

Tel: +61 8 8303 8580 Fax: +61 8 8303 8582
e-mail: john.radcliffe@csiro.au

The Hon. Tony Burke MP
Minister for Agriculture, Fisheries and Forestry
Parliament House
CANBERRA ACT 2600

Dear Minister

Land and Water Australia Selection Committee Report, 2008

This report summarises the activities of the Land and Water Australia Selection Committee from April 2008 to June 2008, pursuant to section 141 of the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act), in relation to the nomination of seven directors for appointment to the Board of Land and Water Australia.

Establishment of selection committee

The Land and Water Australia Selection Committee was established under the PIERD Act for the purpose of nominating to you seven persons for appointment as Directors of the Land and Water Australia Board.

In addition to four expiring nominated director positions and two vacant positions brought about by the resignation of Mr Tim Fisher to assume a portfolio advisory appointment and the death of Professor Peter Cullen, a further position was available for filling following legislative amendments to the PIERD Act, made in 2007. The amendments, among other things, removed the government director position from the Board, allow for an additional non-executive director position and expand the skills criteria to include skills in public administration.

I was appointed as the Presiding Member on 18 April 2008, for the period ending 30 June 2010. On 12 May 2008 you appointed Mr Laurie Arthur, Mr Gerald Leach, Professor Richard Kingsford and Dr Sarah Bekessy to the Selection Committee following nominations made to you by the Land and Water Australia's two representative industry organisations, the National Farmers' Federation and the Australian Conservation Foundation. Dr Bekessy subsequently resigned. Upon the advice from your office, the selection process was completed with the remaining members.

Selection process

The Selection Committee advertised the seven Board positions widely in the national and rural press, using *The Weekly Times* on 23 April 2008, *Queensland Country Life*, *Stock Journal*, *Farm Weekly*, *The Land*, and the *Australian Financial Review* on 24 April 2008, *Tasmania Country* on 25 April 2008 and *The Weekend Australian* on 26 April 2008. Applications closed on 9 May 2008.

The advertisements called for written applications against the selection criteria contained in the PIERD Act, which included:

- Commodity production
- Commodity processing
- Commodity marketing
- Conservation of natural resources
- Management of natural resources
- Science
- Technology and technology transfer
- Environmental and ecological matters
- Economics
- Administration of research and development
- Finance
- Business management
- Sociology
- Public administration.

Details of the board vacancies were also provided on the Land and Water Australia website. Arrangements were also made for staff in the Department of Agriculture, Fisheries and Forestry (DAFF) to answer any enquiries. Land and Water Australia's two representative industry organisations were also invited to nominate candidates for consideration by the Selection Committee. A search undertaken by DAFF of its "Balance Database" resulted in the Selection Committee being provided with 13 names, three of whom submitted applications. The Department forwarded information regarding the LWA Board vacancies to the Australian Rural Leadership Foundation and a number of agricultural women's networks for distribution to their members. The Department's women's networks included members of Australian Women in Agriculture, representatives of the Country Women's Association of Australia, Foundation of Australian Agricultural Women, Women's Industry Network Seafood Community, Women in Business and Regional Development and State government rural women's networks. A total of 236 applications was received, twelve of which arrived only as "hard copy" and 224 came electronically. Of the total, 175 were male and 61 were female. Applications were received from all States and Territories. One applicant subsequently withdrew.

The Chair of Land and Water Australia was consulted in accordance with section 131(1A) of the PIERD Act. Its Executive Director was also consulted.

The Land and Water Australia Selection Committee met by teleconference on 21 May 2008 to discuss the process, to receive appropriate briefings and to review the applications. The Selection Committee agreed on fifteen candidates for interview,

including three women and the three existing board directors who had reapplied for selection.

Interviews were held on 5 and 6 June 2008 at the Melbourne Airport Hilton.

Following interviews the Selection Committee made its final decisions taking into account the collective balance of diversity, geographical experience, technical expertise and experience in board affairs required by the PIERD Act.

Board appointments

Upon completion of the selection process, the Land and Water Australia Selection Committee reported to you on 6 June 2008 with seven nominations for your consideration, in accordance with sections 130-132 of the PIERD Act. You agreed to the seven nominations made by the Land and Water Australia Selection Committee. The following appointments were completed by you, for a term commencing from 7 July 2008 and ending on 30 June 2011:

- Ms Dianne Bentley (reappointment, resident of New South Wales)
- Professor Ted Lefroy (reappointment, resident of Tasmania)
- Dr Nick Austin (new appointment, resident of New South Wales)
- Dr Stuart Blanch (new appointment, resident of Northern Territory)
- Mr David Eyre (new appointment, resident of New South Wales)
- Mr Rowan Foley (new appointment, resident of Northern Territory)
- Ms Sharon Starick (new appointment, resident of South Australia)

I formally abolished the Land and Water Australia Selection Committee pursuant to section 129 of the PIERD Act on 9 July 2008.

Expenses

Item	Total including GST ($)
Air fares, Selection Committee and applicants	8 633.15
Selection Committee and applicants' ground travel	1 315.41
Selection Committee accommodation and venue hire	4 696.96
Applicants' accommodation	831.70
Advertising	20 364.08
Presiding Member's fees	5 220.00
Secretariat costs (supporting the Selection Committee)	9 285.08
Miscellaneous	100.00
TOTAL (INCLUDING GST)	**$ 50 446.38**

Yours sincerely

John C Radcliffe

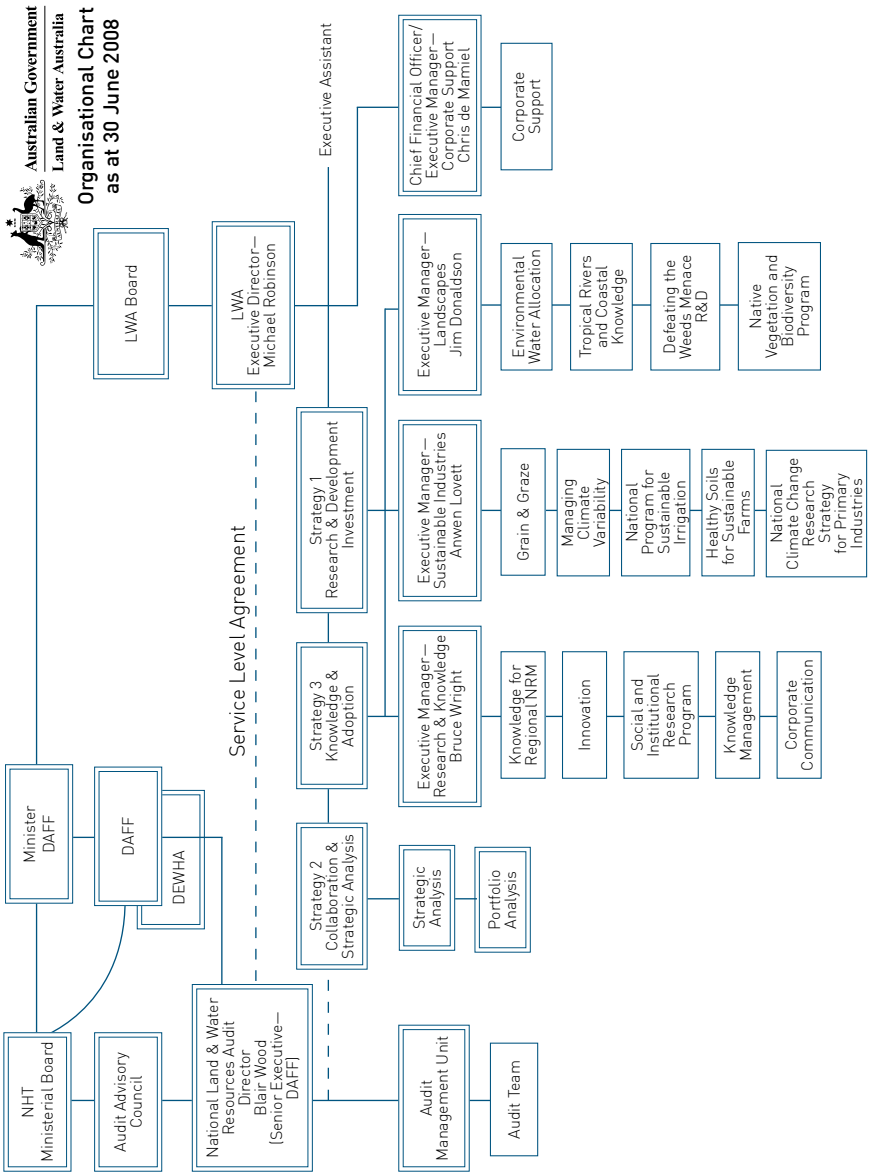
(Dr John C Radcliffe AM FTSE)
PRESIDING MEMBER
LAND AND WATER AUSTRALIA SELECTION COMMITTEE

13 August 2008

Land & Water Australia Staff

Land & Water Australia staff support the establishment, management, adoption and evaluation of research projects, as well as provide corporate services. At 30 June 2008, 51.3 full-time equivalent staff were employed.

Land & Water Australia finances and manages research projects across the nation, but operates from headquarters at Level 1, Phoenix Building, 86 Northbourne Avenue, Braddon, ACT.



Remuneration Policy

In February 2008, an external job evaluation and remuneration benchmarking review was conducted to provide a remuneration comparison report and recommend appropriate reward structures. The review resulted in the introduction of seven new remuneration bands to replace the previous four-band structure.

Employment Agreements

From March 2008, when Australian Workplace Agreements could no longer be made, new staff members were offered Individual Employment Agreements. Existing staff were also offered Individual Employment Contracts in place of their AWAs.

Performance Management

Land & Water Australia has a comprehensive performance management system, which includes annual and mid-term reviews of performance. The performance management arrangements are consistent with policy and good practice as they connect remuneration advancement to individual and organisational productivity and performance. Performance management guidelines were updated in early 2008 after further internal consultation, independent advice and experience. Linked to this was updating of position descriptions for all staff.

Staff Development

Importance is placed on recruiting, developing and retaining people of high quality. Training and development opportunities are not limited to formal qualifications, but may also include short courses and secondments. Each staff member's performance management agreement incorporates a training and development plan.

Occupational Health and Safety

Land & Water Australia is complies with both the *Occupational Health and Safety (Commonwealth Employment) Act 1991* and the *ACT Occupational Health and Safety Act 1989*. Land & Water Australia's occupational health and safety (OH&S) policy sets out corporate and staff obligations with respect to OH&S.

A friendly, supportive and continual learning environment for staff members is promoted. Activities during the year which contributed to promoting the health, safety and morale of the organisation included influenza vaccinations, a fitness and healthy living allowance for all eligible staff and OH&S reviews of workstations on a regular basis.

Staff are able to seek personal and professional support services from the Land & Water Australia's Employee Assistance Program (EAP) service providers, Davidson Trahaire Corpsych which is a confidential service that staff may use to up to three times per calendar year.

There were no reports of any accidents or dangerous occurrences during the year that required notice to be given under Section 68 of the OH&S Act. No OH&S investigations were conducted during the year.

Staff development has included visits to properties where the results of research have been adopted. Pictured are staff members on David Marsh's property at Boorowa.

Internal Sustainability Practices

As an organisation, Land & Water Australia is focused on sustainability, so in addition to a research portfolio which has emphasis on this subject, internal office operations are undertaken with an view to good environmental practices.

During the year several actions initiated in the previous year, including defaulting printers to duplex for internal printing and using the Desert Cube waterless urinal systems, were continued.

In addition, a 'close the loop' toner recycling program was expanded, attention was given to the airconditioning system (rebalancing and recalibrating), the shut down practices of computer users and use of sensors to control lights in meeting rooms and enclosed offices were reviewed to increase energy savings.

This followed an energy audit which identified that further improvements could be made by rebalancing and recalibrating the air-conditioning system, introducing a 'log off and shutdown' policy for all computer users and installing timing and moving sensors for meeting rooms and enclosed offices.

Land and Water Australia uses recycled paper for office printing. The downward trend in total consumption has continued. This is predominately due to the increase in the percentage of duplex printing.

Electricity consumption per staff member has continued to trend downwards. This is particularly pleasing as there was a corresponding increase in the consumption of energy by the computer room.

There has been a overall reduction in Land and Water Australia's carbon dioxide equivalent emissions, down to 5.62 tonnes per full-time staff-equivalent in 2007–08 from 7.08 tonnes previously.

Paper use by Year	2005–06	2006–07	2007–08
reams purchased	1,292	1,146	1,034
reams (sides) printed	1,766	1,784	1,635
per cent duplex	36.7	57.9	63.3
reams / FTE	41.07	31.02	27.26

Compliance with Australian Government Statutes and Polices

The following table presents a summary of Land & Water Australia's compliance with specific statutes and government policies.

Statute/Government policy	Obligation	Compliance
PIERD Act	Various	Compliant
PIERD Act section 28 (1)(a)(iii)	Revision of the R&D plan and annual operational plan	No revisions during the year
PIERD Act section 28(1)(a)(v) to (viii)	Various	Nothing to report during the year
PIERD Act section 28(1)(a)(iv)	Details of Land & Water Australia research projects	See Report of Operations
PIERD Act section 143	Ministerial directions	No Minister has notified the Corporation of a Ministerial direction. In September 2007 the then Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry sent LWA a Statement of Expectations, with which LWA complied.
CAC Act and *Auditor-General Act 1997*	Various	Fully compliant
CAC Act section 15	Significant events	Nil reported during period
CAC Act Section 16 (1) (c)	Keeping the responsible Minister and Finance Minister informed	Compliant
CAC Act Section 28(1)	Ministerial Directions	Compliant
CAC Act subsection 47A(2)	Finance Minister	Compliant
Division 3 section 16 of the Commonwealth Authorities and Companies (Report of Operations) Orders 2008	Disclosure of insurance cover	Compliant

Statute/Government policy	Obligation	Compliance
Environment Protection and Biodiversity Conservation Act 1999	Reporting obligations as specified at section 516A	Compliant — Land & Water Australia requires that sustainability of the natural resource base is the overriding objective when researchers and others are designing research projects and programs. Project contracts have specific clauses requiring providers to minimise negative environmental impacts. A significant number of projects across the research portfolio actively progress the intent of the *Environment Protection and Biodiversity Conservation Act 1999*. The mission and work of the Corporation advance the Government's principles of Ecologically Sustainable Development.
Occupational Health and Safety (Commonwealth Employment) Act 1991	Compliance with occupational health and safety policy	Compliant
Archives Act 1983		Compliant
Parliamentary or administrative reviews		No judicial decisions or decisions of administrative tribunals during the reporting period that have had or may have a significant impact on the Corporation's operations. There were no reports from a Parliamentary committee or the Australian Government Ombudsman regarding the operations of the Corporation.
Equal Employment Opportunity Act 1987	The Corporation's terms and conditions of employment promote a work environment free from discrimination in employment matters, ensuring application of the principles of merit and equity. The Corporation also promotes the principles of industrial democracy and a participative work place.	Compliant

Statute/Government policy	Obligation	Compliance
Energy efficiency statement		Land & Water Australia supports the Australian Government's enhanced Energy Management Program and energy management guidelines. The Corporation leases offices as part of a large office complex and does not own large, energy-consuming equipment or commercial vehicles.
Fraud control	Preparation of fraud risk assessments and fraud control plans	Compliant
Commonwealth Disability Strategy		Land & Water Australia implemented the strategy to an extent appropriate to the functions and size of the Corporation. The Corporation's premises have easy, safe access by people with special orientation and mobility requirements. The Corporation's recruitment and staff development practices seek to eliminate disadvantage due to disabilities.
Legislation/regulations affecting Land & Water Australia business	Land & Water Australia is required to comply with the Australian Government's requirements for regulatory best practice arrangements when proposing new regulation or amending existing regulation which impacts on business.	Land & Water Australia has not been involved in any regulatory proposals during the reporting period.

Note: Where 'compliant' appears in the 'Compliance' column, details of the actions or policy that constitutes compliance are available on request from Land & Water Australia (land&wateraustralia@lwa.gov.au, facsimile 02 6263 6099 or telephone 02 6263 6000.

Freedom of Information Statement

As an Australian Government statutory authority, Land & Water Australia is subject to the *Freedom of Information Act 1982*.

Documents relating to R&D activities funded by the Corporation are held at the office in Canberra.

Freedom of information statistics

- Freedom of information requests received: nil
- Internal review received: nil
- Administrative Appeals Tribunal appeals: nil

Facilities and procedures for freedom of information access

Members of the public can examine documents at the Land & Water Australia's office in Canberra by contacting the Chief Financial Officer on 02 6263 6000. Office hours are Monday to Friday between 8.30 am and 5.00 pm. Access to the documents incurs a fee as prescribed under the *Freedom of Information Act*. This statement is correct to 30 June 2008.

Documents available from Land & Water Australia

Category	Nature
Planning documents including the *Five-Year R&D Plan*, Annual Operational Plan and annual reports	Files Publications
Annual report	Files Publications
Applications and agreements	Files and forms
Financial and project administration	Files and electronic data Publications
Information relating to the commercialisation of R&D	Files
R&D plans	Files Publications
R&D reports and occasional papers	Files Publications
Staff administration and personnel	Files

Financial Statements

Financial Statements for the Year Ended 30 June 2008

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Australian National
Audit Office

INDEPENDENT AUDITOR'S REPORT

To the Minister for Agriculture, Fisheries and Forestry

Scope

I have audited the accompanying financial statements of The Land and Water Resources Research and Development Corporation for the year ended 30 June 2008, which comprise: a statement by the Directors and Chief Executive; Income Statement; Balance Sheet; Statement of Changes in Equity; Cash Flow Statement; Schedule of Commitments and Notes to and forming part of the Financial Statements, including a Summary of Significant Accounting Policies.

The Responsibility of the Board of Directors for the Financial Statements

The members of the Board of Directors are responsible for the preparation and fair presentation of the financial statements in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997* and the Australian Accounting Standards (including the Australian Accounting Interpretations). This responsibility includes establishing and maintaining internal controls relevant to the preparation and fair presentation of the financial statements that are free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

My responsibility is to express an opinion on the financial statements based on my audit. My audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards. These Auditing Standards require that I comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Land and Water

GPO Box 707 CANBERRA ACT 2601
19 National Circuit BARTON ACT 2600
Phone (02) 6203 7300 Fax (02) 6203 7777

Resources Research and Development Corporation's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Land and Water Resources Research and Development Corporation's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Board of Directors, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Independence

In conducting the audit, I have followed the independence requirements of the Australian National Audit Office, which incorporate the ethical requirements of the Australian accounting profession.

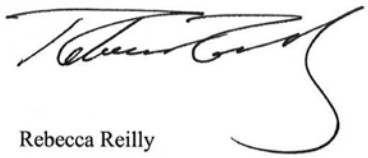
Auditor's Opinion

In my opinion, the financial statements of the Land and Water Resources Research and Development Corporation:

(a) have been prepared in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*, and the Australian Accounting Standards (including the Australian Accounting Interpretations); and

(b) give a true and fair view of the matters required by the Finance Minister's Orders including the Land and Water Resources Research and Development Corporation's financial position as at 30 June 2008 and of its financial performance and its cash flows for the year then ended.

Australian National Audit Office



Rebecca Reilly

Executive Director
Delegate of the Auditor-General

Canberra
3 September 2008

LAND AND WATER RESOURCES RESEARCH AND DEVELOPMENT CORPORATION
STATEMENT BY THE DIRECTORS AND CHIEF EXECUTIVE

In our opinion, the attached financial statements for the year ended 30 June 2008 are based on properly maintained financial records and give a true and fair view of the matters required by the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997.*

In our opinion, at the date of this statement, there are reasonable grounds to believe that the Corporation will be able to pay its debts as and when they become due and payable.

This Statement is made in accordance with a resolution of the directors.

Roberta Brazil Chairman	Michael Robinson Executive Director	Chris de Mamiel Chief Financial Officer
3/9/2008 Date of signing	3/9/2008 Date of signing	3/9/2008 Date of signing

LAND AND WATER RESOURCES RESEARCH AND DEVELOPMENT CORPORATION
INCOME STATEMENT
for the period ended 30 June 2008

	Notes	2008 $	2007 $
INCOME			
Revenue			
Revenue from Government	3A	**13,019,000**	12,751,000
External contributions	3B	**24,433,409**	21,476,663
Interest	3C	**1,157,897**	955,713
Other revenue	3D	**254,761**	33,429
Total revenue		**38,865,067**	35,216,805
Total Income		**38,865,067**	35,216,805
EXPENSES			
Employee benefits	4A	**5,266,242**	4,858,144
Suppliers	4B	**8,342,060**	6,712,544
Depreciation and amortisation	4C	**389,258**	263,249
Loss from disposal of assets	4D	**1,625**	-
Research and development	4E	**24,699,308**	21,757,454
Total Expenses	5	**38,698,493**	33,591,391
Surplus		**166,574**	1,625,414

The above statement should be read in conjunction with the accompanying notes.

LAND AND WATER RESOURCES RESEARCH AND DEVELOPMENT CORPORATION
BALANCE SHEET
as at 30 June 2008

	Notes	2008 $	2007 $
ASSETS			
Financial Assets			
Cash and cash equivalents	6A	**17,154,179**	19,003,421
Trade and other receivables	6B	**2,420,121**	1,340,879
Total financial assets		**19,574,300**	20,344,300
Non-Financial Assets			
Land and buildings	7A	**538,199**	532,240
Plant and equipment	7B	**110,783**	140,405
Intangibles	7D	**570,420**	660,225
Other non-financial assets	7E	**425,029**	48,983
Total non-financial assets		**1,644,431**	1,381,853
Total Assets		**21,218,731**	21,726,153
LIABILITIES			
Payables			
Suppliers	8A	**437,537**	268,842
Other payables	8B	**4,437,772**	5,526,089
Total payables		**4,875,309**	5,794,931
Provisions			
Employee provisions	9A	**1,007,683**	899,909
Other provisions	9B	**160,000**	160,000
Total provisions		**1,167,683**	1,059,909
Total Liabilities		**6,042,992**	6,854,840
Net Assets		**15,175,739**	14,871,313
EQUITY			
Reserves		**13,395,373**	13,564,613
Retained surplus		**1,780,366**	1,306,700
Total Equity		**15,175,739**	14,871,313
Current Assets		**19,999,329**	20,393,283
Non-Current Assets		**1,219,402**	1,332,870
Current Liabilities		**5,687,302**	6,448,742
Non-Current Liabilities		**355,690**	406,098

The above statement should be read in conjunction with the accompanying notes.

LAND AND WATER RESOURCES RESEARCH AND DEVELOPMENT CORPORATION STATEMENT OF CHANGES IN EQUITY

as at 30 June 2008

	Retained Earnings		Asset Revaluation Reserve		Research and Development Reserve		Total Equity	
	2008	2007	**2008**	2007	**2008**	2007	**2008**	2007
	$	$	**$**	$	**$**	$	**$**	$
Opening balance	**1,306,700**	702,683	**188,667**	198,667	**13,375,946**	12,354,549	**14,871,313**	13,255,899
Adjusted opening balance	**1,306,700**	702,683	**188,667**	198,667	**13,375,946**	12,354,549	**14,871,313**	13,255,899
Income and expenses recognised directly in equity	**-**	-	**-**	-	-	-	-	-
Revaluation adjustment	**-**	-	**137,852**	(10,000)	**-**	-	**137,852**	(10,000)
Sub-total income and expenses recognised directly in equity	**-**	-	**137,852**	(10,000)	**-**	-	**137,852**	(10,000)
Surplus for the period	**166,574**	1,625,414	**-**	-	**-**	-	**166,574**	1,625,414
Total income and expenses	**166,574**	1,625,414	**137,852**	(10,000)	**-**	-	**304,426**	1,615,414
Transfers between equity components	**307,092**	(1,021,397)	**-**	-	**(307,092)**	1,021,397	**-**	-
Closing balance at 30 June	**1,780,366**	1,306,700	**326,519**	188,667	**13,068,854**	13,375,946	**15,175,739**	**14,871,313**

The research and development reserve represents funding which has been set aside for programmes or projects, either as a result of formal agreements with external funding bodies or of Board decisions.

The above statement should be read in conjunction with the accompanying notes.

LAND AND WATER RESOURCES RESEARCH AND DEVELOPMENT CORPORATION
CASH FLOW STATEMENT

for the period ended 30 June 2008

	Notes	2008 $	2007 $
OPERATING ACTIVITIES			
Cash received			
Revenue from Government		**13,019,000**	12,751,000
External contributions		**26,236,519**	23,258,496
Interest		**1,141,471**	966,663
Net GST received		**431,336**	913,660
Research and development refunds		**126,785**	119,760
Other cash received		**268,308**	47,120
Total cash received		**41,223,419**	38,056,699
Cash used			
Employees		**5,158,468**	4,809,588
Suppliers		**9,373,752**	7,684,396
Research and development		**28,400,878**	23,391,822
Total cash used		**42,933,098**	35,885,806
Net cash flows from or (used by) operating activities	10	**(1,709,679)**	2,170,893
INVESTING ACTIVITIES			
Cash used			
Purchase of property, plant and equipment		**78,029**	71,812
Purchase of intangibles		**61,534**	480,079
Total cash used		**139,563**	551,891
Net cash flows from (used by) investing activities		**(139,563)**	(551,891)
Net increase in cash held		**(1,849,242)**	1,619,002
Cash and cash equivalents at the beginning of the reporting period		**19,003,421**	17,384,419
Cash and cash equivalents at the end of the reporting period	6A	**17,154,179**	19,003,421

The above statement should be read in conjunction with the accompanying notes.

LAND AND WATER RESOURCES RESEARCH AND DEVELOPMENT CORPORATION
SCHEDULE OF COMMITMENTS

as at 30 June 2008

	2008 $	2007 $
BY TYPE		
Commitments Receivable		
GST recoverable on commitments	**(1,613,976)**	(2,257,587)
Capital Commitments		
Plant and equipment	**-**	28,457
Other Commitments		
Operating leases[1]	**1,532,928**	2,091,640
Goods and services contracts[2]	**8,457**	53,454
Research and development[3]	**16,212,347**	22,659,905
Total other commitments	**17,753,732**	24,804,999
Net Commitments by Type	**16,139,756**	22,575,869
BY MATURITY		
Commitments Receivable		
One year or less	**(1,043,486)**	(1,647,069)
From one to five years	**(570,489)**	(610,518)
Over five years	**-**	-
Total commitments receivable	**(1,613,975)**	(2,257,587)
Commitments Payable		
Capital Commitments		
One year or less	**-**	28,457
Operating Lease Commitments		
One year or less	**578,267**	558,712
From one to five years	**954,661**	1,532,928
Total operating lease commitments	**1,532,928**	2,091,640
Other Commitments		
One year or less	**10,900,082**	17,530,584
From one to five years	**5,320,722**	5,182,775
Over five years	**-**	-
Total other commitments	**16,220,804**	22,713,359
Net Commitments by Maturity	**16,139,757**	22,575,869

NB: Commitments are GST inclusive where relevant.

1 Operating lease is an effectively non-cancellable rental lease for office accomodation to January 2011 with annual increases in rent of 3.5%.

2 Goods and services commitments are primarily related to IT support.

3 Research and development commitments comprise amounts payable under research and development agreements in respect of which the recipient is yet to perform the services required.

The above schedule should be read in conjunction with the accompanying notes.

LAND AND WATER RESOURCES RESEARCH AND DEVELOPMENT CORPORATION
NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS
for the period ended 30 June 2008

Note 1:	Summary of Significant Accounting Policies
Note 2:	Events after the Balance Sheet Date
Note 3:	Income
Note 4:	Expenses
Note 5:	Total Expenses
Note 6:	Financial Assets
Note 7:	Non-Financial Assets
Note 8:	Payables
Note 9:	Provisions
Note 10:	Cash Flow Reconciliation
Note 11:	Contingent Liabilities and Assets
Note 12:	Director Remuneration
Note 13:	Related Party Disclosures
Note 14:	Executive Remuneration
Note 15:	Remuneration of Auditors
Note 16:	Financial Instruments
Note 17:	Reporting of Outcomes

Notes to and forming part of the Financial Statements

Note 1: Summary of Significant Accounting Policies

1.1 Objectives of the Land and Water Resources Research and Development Corporation

The Financial Statements and notes are required by clause 1(b) of schedule 1 to the *Commonwealth Authorities and Companies Act 1997* and are a General Purpose Financial Report.

The Corporation was established under the *Primary Industries and Energy Research and Development Act 1989* and is controlled by the Commonwealth of Australia.

The continued existence of the Corporation in its present form and with its present programs is dependent on Government policy and on continuing appropriations by Parliament via the Department of Agriculture, Fisheries and Forestry.

The Financial Statements and notes have been prepared in accordance with:

- Finance Minister's Orders (or FMOs) for reporting periods ending on or after 1 July 2007; and
- Australian Accounting Standards and Interpretations issued by the Australian Accounting Standards Board (AASB) that apply for the reporting period.

The Financial Report has been prepared on an accrual basis and is in accordance with historical cost convention, except for certain assets at fair value. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position.

The Financial Report is presented in Australian dollars.

Unless alternative treatment is specifically required by an Accounting Standard or the FMOs, assets and liabilities are recognised in the Balance Sheet when and only when it is probable that future economic benefits will flow to the Corporation and the amounts of the assets or liabilities can be reliably measured. However, assets and liabilities arising under agreements equally proportionately unperformed are not recognised unless required by an Accounting Standard.

Unless alternative treatment is specifically required by an Accounting Standard, revenues and expenses are recognised in the Income Statement when and only when the flow, consumption or loss of economic benefits has occurred and can be reliably measured.

1.2 Significant Accounting Judgement and Estimates

In the process of applying the accounting policies listed in this note, the Corporation has made no judgements that have a significant impact on the amounts recorded in the Financial Statements.

No accounting assumptions or estimates have been identified that have a significant risk of causing a material adjustment to carrying amounts of assets and liabilities within the next accounting period.

Notes to and forming part of the Financial Statements

1.3 Statement of Compliance

Adoption of new Australian Accounting Standard requirements

No accounting standard has been adopted earlier than the application date as stated in the standard. The following new standards (including reissued standards)/erratum/interpretations are applicable to the current reporting period:

AASB 7 *Financial Instruments: Disclosures*

AASB 101 *Presentation of Financial Statements* (issued October 2006)

AASB 1048 *Interpretation and Application of Standards* (reissued September 2007)

AASB 2005-10 *Amendments to Australian Accounting Standards [AASB1.4,101,114,117.132,133,139,1023,1038]*

AASB 2007-1 *Amendments to Australian Accounting Standards arising from AASB Interpretation 11 [AASB 2]*

AASB 2007-4 *Amendments to Australian Accounting Standards arising from ED 151 and other amendments*

AASB 2007-5 *Amendments to Australian Accounting Standard - Inventories Held for Distribution by Not-for-Profit Entities [AASB 102]*

AASB 2007-7 *Amendments to Australian Accounting Standards [AASB 1,2,4,5,107.128]*

AASB 2008-4 *Amendments to Australian Accounting Standard - Key Management Personnel Disclosures by Disclosing Entities [AASB 124]*

ERR Erratum *Proportionate Consolidation [AASB 101, AASB 107, AASB 121, AASB 127, Interpretation 113]*

Interp 10 *Interim Financial Reporting and Impairment*

lnterp 11 *AASB2 Group and Treasury Share Transactions*

lnterp 1003 *Australian Petroleum Resource Rent Tax*

Future Australian Accounting Standard requirements

The following new standards (including reissued standards)/erratum/interpretations are applicable to future accounting periods:

AASB 3 *Business Combinations*

AASB 8 *Operating Segments*

AASB 101 *Presentation of Financial Statements (issued September 2007)*

AASB 123 *Borrowing Costs*

AASB 127 *Consolidated and Separate Financial Statements*

AASB 1004 *Contributions*

AASB 1049 *Whole of Government and General Government Sector Financial Reporting*

AASB 1050 *Administered Items*

AASB 1051 *Land Under Roads*

AASB 1052 *Disaggregated Disclosures*

AASB 2007-2 *Amendments to Australian Accounting Standards arising from AASB Interpretation 12 [AASB 1, AASB 117, AASB 118, AASB 120, AASB 121, AASB 127, AASB 131 & AASB 139]*

AASB 2007-3 *Amendments to Australian Accounting Standards arising from AASB 8*

AASB 2007-6 *Amendments to Australian Accounting Standards arising from AASB 123*

AASB 2007-8 *Amendments to Australian Accounting Standards arising from AASB 101*

Notes to and forming part of the Financial Statements

AASB 2007-9 Amendments to Australian Accounting Standards arising from the Review of AASs 27,29 and 31 [AASB 3, AASB 5, AASB 8, AASB 101, AASB 114, AASB 116, AASB 127 & AASB 137]

AASB 2008-1 *Amendments to Australian Accounting Standard - Share-based Payments: Vesting Conditions and Cancellations [AASB 2]*

AASB 2008-2 *Amendments to Australian Accounting Standards - Puttable Financial Instruments and Obligations arising on Liquidation [AASB 7, AASB 101, AASB 132, AASB 139 & Interpretation 2]*

AASB 2008-3 *Amendments to Australian Accounting Standards arising from AASB 3 and AASB 127 [AASBs 1, 2, 4, 5, 7, 101, 107, 112, 114, 116, 121, 128, 131, 132, 133, 134, 136, 137, 138 & 139 and Interpretations 9 & 107]*

Interp 1 *Changes in Existing Decommissioning, Restoration and Similar Liabilities*

Interp 4 *Determining Whether an Arrangement Contains a Lease*

Interp 12 *Service Concession Arrangements*

Interp 13 *Customer Loyalty Programmes*

Interp 14 *AASB 119 -The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction*

Interp 129 *Service Concession Arrangements Disclosures*

Interp 1038 *Contributions by Owners Made To Wholly-Owned Public Sector Entities*

1.4 Revenue

Revenues from Government

The full amount of funding from the Government, through the Department of Agriculture, Fisheries and Forestry, for the Corporation's outputs for the year is recognised as revenue at its nominal amount.

External contributions

External contributions comprise voluntary contributions from government, industry and other organisations to particular research programmes or projects. These contributions are recognised on receipt, or when receivable under contractual arrangements, in the period when the obligation is due.

Interest

Interest revenue is recognised using the effective interest method as set out in AASB 139 - *Financial Instruments: Recognition and Measurement.*

Other revenue

Revenue from the sale of goods is recognised when:

- The risks and rewards of ownership have been transferred to the buyer;
- The seller retains no managerial involvement nor effective control over the goods;
- The revenue and transaction costs incurred can be reliably measured; and
- It is probable that the economic benefits associated with the transaction will flow to the Corporation.

Royalties are recognised when the royalty is entitled to be received by the Corporation.

Receivables, which have 30 day terms, are recognised at the nominal amounts due less any provision for bad and doubtful debts. Collectability of debts is reviewed at balance date. Provisions are made when collectability of the debt is no longer probable.

Notes to and forming part of the Financial Statements

1.5 Gains

Sale of Assets

Gains from disposal of non-current assets are recognised when control of the asset has passed to the buyer.

1.6 Employee Benefits

Liabilities for services rendered by employees are recognised at the reporting date to the extent that they have not been settled.

Liabilities for 'short-term employee benefits' (as defined in AASB 119) and termination benefits due within twelve months of balance date are measured at their nominal amounts.

The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability.

All other employee benefit liabilities are measured as the present value of the estimated future cash outflows to be made in respect of services provided by employees up to the reporting date.

Leave

The liability for employee benefits includes provision for annual leave and long service leave. No provision has been made for sick leave as all sick leave is non-vesting and the average sick leave taken in future years by employees of the Corporation is estimated to be less than the annual entitlement for sick leave.

The leave liabilities are calculated on the basis of employees' remuneration, including the Corporation's employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination.

The liability for long service leave is recognised and measured at the present value of the estimated future cash flows to be made in respect of all employees as at 30 June 2008. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

Superannuation

Staff of the Corporation contribute to the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS), the PSS accumulation plan (PSSap) or an approved superannuation scheme of their choice.

The CSS and PSS are defined benefit schemes for the Australian Government. The PSSap is a defined contribution scheme.

The liability for defined benefits under CSS and PSS is recognised in the financial statements of the Australian Government and is settled by the Australian Government in due course. This liability is reported by the Department of Finance and Deregulation as an administered item.

For CSS and PSS members, the Corporation makes employer contributions to the employee superannuation schemes at rates determined by an actuary to be sufficient to meet the cost to the Government of the superannuation entitlements of the Corporation's eligible employees. The Corporation accounts for the contributions as if they were contributions to defined contribution plans. For other approved superannuation schemes the employer contributes a minimum of 9% of superannuable salaries and all other schemes are defined contribution schemes.

From 1 July 2005, new employees are eligible to join the PSSap scheme although they may join another approved superannuation scheme of their choice.

The liability for superannuation recognised as at 30 June represents outstanding contributions for the period between employees' final pay in 2007-08 and 30 June.

Notes to and forming part of the Financial Statements

1.7 Leases

A distinction is made between finance leases and operating leases. Finance leases effectively transfer from the lessor to the lessee substantially all the risks and rewards incidental to ownership of leased non-current assets. An operating lease is a lease that is not a finance lease. In operating leases, the lessor effectively retains substantially all such risks and benefits.

The Corporation has no finance leases. Operating lease payments are expensed on a straight line basis which is representative of the pattern of benefits derived from the leased assets.

Lease incentives, taking the form of 'free' leasehold improvements and rent holidays, are recognised as liabilities. These liabilities are reduced by allocating lease payments between rental expense and reduction of the liability.

1.8 Research and Development Expenses

Research and development expenses are expensed as incurred.

The Corporation recognises research and development provisions and liabilities. Research and development agreements require the grantee to perform services, provide facilities, or to meet eligibility criteria. Liabilities are recognised only to the extent that the services required have been performed or the performance eligibility criteria have been satisfied by the grantee. Where research and development monies are paid in advance of performance or eligibility, a prepayment is recognised.

1.9 Cash

Cash and cash equivalents includes notes and coins held and any deposits in bank accounts with an original maturity of 3 months or less that are readily convertible to known amounts of cash and subject to insignificant risk of changes in value. Cash is recognised at its nominal amount.

Notes to and forming part of the Financial Statements

1.10 Financial assets

The Corporation classifies its financial assets in the following categories and currently only has assets in the 'loans and receivable' category:

- 'financial assets as 'at fair value through profit or loss',
- 'held-to-maturity investments',
- 'available-for-sale' financial assets, and
- 'loans and receivables'.

The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition.

Financial assets are recognised and derecognised upon 'trade date'.

Effective interest method

The effective interest method is a method of calculating the amortised cost of a financial asset and of allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset, or, where appropriate, a shorter period.

Income is recognised on an effective interest rate basis except for financial assets 'at fair value through profit or loss'.

Loans and receivables

Trade receivables, loans and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. They are included in current assets, except for maturities greater than 12 months after the balance sheet date. These are classified as non current assets. Loans and receivables are measured at amortised cost using the effective interest method less impairment. Interest is recognised by applying the effective interest rate.

Impairment of financial assets

Financial assets are assessed for impairment at each balance date.

1.11 Financial Liabilities

Financial liabilities are classified as either financial liabilities 'as fair value through profit or loss' or 'other financial liabilities'. The Corporation's financial liabilities are 'other financial liabilities'.

Financial liabilities are recognised and derecognised upon 'trade date'.

Other financial liabilities

Other financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs.

Other financial liabilities are subsequently measured at amortised cost using the effective interest method, with interest expense recognised on an effective yield basis.

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments through the expected life of the financial liability, or, where appropriate, a shorter period.

Supplier and other payables

Supplier and other payables are recognised at amortised cost. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

Notes to and forming part of the Financial Statements

1.12 Contingent Liabilities and Contingent Assets

Contingent liabilities and contingent assets are not recognised in the Balance Sheet but are reported in the relevant schedules and notes. They may arise from uncertainty as to the existence of a liability or asset or represent an existing liability or asset in respect of which the amount cannot be reliably measured. Contingent assets are disclosed when settlement is probable but not virtually certain, and contingent liabilities are disclosed when settlement is greater than remote.

1.13 Acquisition of Assets

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken. Financial assets are initially measured at their fair value plus transaction costs where appropriate.

1.14 Property, Plant and Equipment

Asset Recognition Threshold

Purchases of property, plant and equipment are recognised initially at cost in the Balance Sheet, except for purchases costing less than $2,000, which are expensed in the year of acquisition (other than where they form part of a group of similar items which are significant in total).

The initial cost of an asset includes an estimate of the cost of dismantling and removing the item and restoring the site on which it is located. This is particularly relevant to 'makegood' provisions in property leases taken up by the Corporation where there exists an obligation to restore the property to its original condition. These costs are included in the value of the Corporation's leasehold improvements with a corresponding provision for the 'makegood' recognised.

Revaluations

Fair values for each class of asset are determined as shown below:

Asset class	Fair value measured at
Land and buildings (leasehold improvements)	Depreciated replacement cost
Plant and equipment	Market selling price

Following initial recognition at cost, property, plant and equipment are carried at fair value less accumulated depreciation and accumulated impairment losses. Valuations are conducted with sufficient frequency to ensure that the carrying amounts of assets do not differ materially from the assets' fair values as at the reporting date. The regularity of independent valuations depends upon the volatility of movements in market values for the relevant assets.

Revaluation adjustments are made on a class basis. Any revaluation increment is credited to equity under the heading of asset revaluation reserve except to the extent that it reverses a previous revaluation decrement of the same asset class that was previously recognised through the operating result. Revaluation decrements for a class of assets are recognised directly through the operating result except to the extent that they reverse a previous revaluation increment for that class.

Any accumulated depreciation as at the revaluation date is eliminated against the gross carrying amount of the asset and the asset restated to the revalued amount.

Notes to and forming part of the Financial Statements

Depreciation

Depreciable property, plant and equipment assets are written-off to their estimated residual values over their estimated useful lives to the Corporation using, in all cases, the straight-line method of depreciation.

Depreciation rates (useful lives), residual values and methods are reviewed at each reporting date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate.

Depreciation rates applying to each class of depreciable asset are based on the following useful lives:

	2008	2007
Leasehold improvements	**Lease term**	Lease term
Plant and equipment	**3 to 8 years**	3 to 8 years

Impairment

All assets were assessed for impairment at 30 June 2008. Where indications of impairment exist, the asset's recoverable amount is estimated and an impairment adjustment made if the asset's recoverable amount is less than its carrying amount.

The recoverable amount of an asset is the higher of its fair value less costs to sell and its value in use. Value in use is the present value of the future cash flows expected to be derived from the asset. Where the future economic benefit of an asset is not primarily dependent on the asset's ability to generate future cash flows, and the asset would be replaced if the Corporation were deprived of the asset, its value in use is taken to be its depreciated replacement cost.

1.15 Intangibles

The Corporation's intangibles comprise externally acquired software and internally developed software for internal use. These assets are carried at cost less accumulated amortisation and accumulated impairment losses.

Software is amortised on a straight-line basis over its anticipated useful life. The useful lives of the Corporation's software are 3 to 5 years (2006-07: 3 to 4 years).

All software assets were assessed for indications of impairment as at 30 June 2008.

1.16 Taxation

The Corporation is exempt from all forms of taxation except fringe benefits tax (FBT) and the goods and services tax (GST).

Revenues, expenses and assets are recognised net of GST:

- except where the amount of GST incurred is not recoverable from the Australian Taxation Office; and
- except for receivables and payables.

1.17 Comparative Figures

Comparative figures have been adjusted to conform to changes in presentation in the Financial Report where necessary.

Note 2: Events after the Balance Sheet Date

The Corporation is not aware of any events that have occurred since the balance sheet date which will affect the amounts disclosed in the Financial Report.

Notes to and forming part of the Financial Statements

	2008 $	2007 $
Note 3: Income		
Revenue		
Note 3A: Revenue from Government		
Funding through the Department of Agriculture, Fisheries and Forestry	**13,019,000**	12,751,000
Note 3B: External contributions		
Related parties	**20,268,775**	17,240,739
External entities	**4,164,634**	4,235,924
Total external contributions	**24,433,409**	21,476,663
Note 3C: Interest		
Deposits	**1,157,897**	955,713
Note 3D: Other revenue		
Conference income	**245,131**	-
Publications	**2,060**	5,891
Royalties	**3,205**	2,261
Other	**4,365**	25,277
Total other revenue	**254,761**	33,429

Notes to and forming part of the Financial Statements

	2008 $	2007 $
Note 4: Expenses		
Note 4A: Employee benefits		
Wages and salaries	**4,300,364**	4,081,831
Superannuation:		
Defined contribution plans	**520,774**	473,235
Leave and other entitlements	**216,370**	269,928
Separation and redundancies	**214,640**	-
Other employee benefits	**14,094**	33,150
Total employee benefits	**5,266,242**	4,858,144
Note 4B: Suppliers		
Provision of goods - external parties	**375,964**	322,393
Rendering of services - related entities	**915,368**	291,464
Rendering of services - external parties	**6,534,253**	5,606,599
Operating lease rentals:		
Minimum lease payments	**478,348**	461,592
Workers compensation premiums	**38,127**	30,496
Total supplier expenses	**8,342,060**	6,712,544
Note 4C: Depreciation and amortisation		
Depreciation:		
Plant and equipment	**85,524**	94,995
Leasehold improvements	**154,020**	148,546
Total depreciation	**239,544**	243,541
Amortisation:		
Intangibles - computer software	**149,714**	19,708
Total depreciation and amortisation	**389,258**	263,249
Note 4D: Loss from disposal of assets		
Plant and equipment:		
Carrying value of disposed assets	**1,625**	-
Total net losses from disposal of assets	**1,625**	-
Note 4E: Research and development		
Services from external parties	**20,888,798**	16,853,184
Services from related entities	**3,810,510**	4,904,270
Total research and development	**24,699,308**	21,757,454
Note 5: Total Expenses		
Total expenses are classified by functional type as follows:		
Administration	**3,198,945**	2,914,747
Research and development	**31,986,005**	27,510,581
Portfolio management	**48,863**	194,397
Communication, knowledge and adoption	**3,464,680**	2,971,666
Total expenses	**38,698,493**	33,591,391

Notes to and forming part of the Financial Statements

	2008 $	2007 $
Note 6: Financial Assets		
Note 6A: Cash and cash equivalents		
Cash on hand or on deposit	**17,154,179**	19,003,421
Total cash and cash equivalents	**17,154,179**	19,003,421
Note 6B: Trade and other receivables		
GST receivable from the Australian Taxation Office	**595,774**	45,833
Goods and services	**1,756,878**	1,254,038
Interest	**56,835**	40,409
Other receivables	**10,634**	599
Total trade and other receivables (net)	**2,420,121**	1,340,879
All receivables are current assets.		
Receivables are aged as follows:		
Not overdue	**2,386,318**	1,155,915
Overdue by:		
Less than 30 days	**33,093**	66,550
30 to 60 days	**550**	33,356
61 to 90 days	**-**	68,488
More than 90 days	**160**	16,570
Total receivables (gross)	**2,420,121**	1,340,879

All receivables were reviewed for collectability at balance sheet date and no allowance for doubtful debt is necessary.

Note 7: Non-Financial Assets		
Note 7A: Land and buildings		
Leasehold improvements:		
- work in progress	**6,149**	-
- fair value	**607,700**	722,100
- accumulated depreciation	**(75,650)**	(189,860)
Total leasehold improvements	**538,199**	532,240
Total land and buildings (non-current)	**538,199**	532,240
.		
Note 7B: Plant and equipment		
Plant and equipment:		
- fair value	**110,783**	349,853
- accumulated depreciation	**-**	(209,448)
Total plant and equipment (non-current)	**110,783**	140,405

No indicators of impairment were found for plant and equipment.

All revaluations are conducted in accordance with the revaluation policy stated in Note 1. On 30 June 2008, an independent valuer, the Australian Valuation Office, conducted a revaluation.

Revaluation increments of $124,115 (2007: $nil) for leasehold improvements and $13,737 for plant and equipment (2007: $nil) were credited to the asset revaluation reserve.

Notes to and forming part of the Financial Statements

Note 7C: Analysis of property, plant and equipment

TABLE A - ***Reconciliation of the opening and closing balances of property, plant and equipment (2007 - 2008)***

	Buildings - Leasehold Improvements $	Plant and Equipment $	Total $
As at 1 July 2007			
Gross book value	722,100	349,853	**1,071,953**
Accumulated depreciation and impairment	(189,860)	(209,448)	**(399,308)**
Net book value 1 July 2007	532,240	140,405	**672,645**
Additions:			
by purchase	35,864	42,165	**78,029**
Net revaluation increment	124,115	13,737	**137,852**
Depreciation expense	(154,020)	(85,524)	**(239,544)**
Net book value 30 June 2008	538,199	110,783	**648,982**
Net book value as of 30 June 2008 represented by:			
Gross book value	613,849	110,783	**724,632**
Accumulated depreciation and impairment	(75,650)	-	**(75,650)**
	538,199	**110,783**	**648,982**

TABLE A - ***Reconciliation of the opening and closing balances of property, plant and equipment (2006 - 2007)***

	Buildings - Leasehold Improvements $	Plant and Equipment $	Total $
As at 1 July 2006			
Gross book value	722,100	278,041	**1,000,141**
Accumulated depreciation and impairment	(41,314)	(114,453)	**(155,767)**
Net book value 1 July 2006	680,786	163,588	**844,374**
Additions:			
by purchase	-	71,812	**71,812**
Depreciation expense	(148,546)	(94,995)	**(243,541)**
Net book value 30 June 2007	532,240	140,405	**672,645**
Net book value as of 30 June 2007 represented by:			
Gross book value	722,100	349,853	**1,071,953**
Accumulated depreciation and impairment	(189,860)	(209,448)	**(399,308)**
	532,240	**140,405**	**672,645**

Notes to and forming part of the Financial Statements

	2008 $	2007 $
Note 7D: Intangibles		
Computer software at cost:		
Internally developed - in progress	-	631,015
	-	631,015
Internally developed - in use	**690,463**	329,035
Accumulated amortisation	**(134,399)**	(329,035)
	556,064	-
Externally acquired	**130,773**	151,246
Accumulated amortisation	**(116,417)**	(122,036)
	14,356	29,210
Total intangibles (non-current)	**570,420**	660,225

No indicators of impairment were found for intangible assets.

Notes to and forming part of the Financial Statements

TABLE A - *Reconciliation of the opening and closing balances of intangibles (2007 - 2008)*

	Computer software internally developed $	Computer software purchased $	Total $
As at 1 July 2007			
Gross book value	960,050	151,246	**1,111,296**
Accumulated amortisation and impairment	(329,035)	(122,036)	**(451,071)**
Net book value 1 July 2007	631,015	29,210	**660,225**
Additions:			
by purchase or internally developed	57,127	4,407	**61,534**
Amortisation	(132,078)	(17,636)	**(149,714)**
Disposals:			
Other disposals	-	(1,625)	**(1,625)**
Net book value 30 June 2008	556,064	14,356	**570,420**
Net book value as at 30 June 2008 represented by:			
Gross book value	690,463	130,773	**821,236**
Accumulated amortisation and impairment	(134,399)	(116,417)	**(250,816)**
	556,064	**14,356**	**570,420**

TABLE A - *Reconciliation of the opening and closing balances of intangibles (2006 - 2007)*

	Computer software internally developed $	Computer software purchased $	Total $
As at 1 July 2006			
Gross book value	479,971	151,246	**631,217**
Accumulated amortisation and impairment	(329,035)	(102,328)	**(431,363)**
Net book value 1 July 2006	150,936	48,918	**199,854**
Additions:			
by purchase or internally developed	480,079	-	**480,079**
Amortisation	-	(19,708)	**(19,708)**
Net book value 30 June 2007	631,015	29,210	**660,225**
Net book value as at 30 June 2007 represented by:			
Gross book value	960,050	151,246	**1,111,296**
Accumulated amortisation and impairment	(329,035)	(122,036)	**(451,071)**
	631,015	**29,210**	**660,225**

Notes to and forming part of the Financial Statements

	2008 $	2007 $
Note 7E: Other non-financial assets		
Prepayments	**425,029**	48,983

All other non-financial assets are current assets.

No indicators of impairment were found for other non-financial assets.

Note 8: Payables

Note 8A: Suppliers		
Trade creditors	**437,537**	268,842
Total supplier payables	**437,537**	268,842

All supplier payables are current liabilities.

Settlement is usually made net 30 days.

Note 8B: Other Payables		
Suppliers:		
Accrued expenses	**476,827**	246,873
Operating lease incentive	**76,626**	106,256
Research and development:		
Accrued expenses	**2,745,099**	3,207,500
Revenue in advance	**1,134,869**	1,965,460
Other	**4,351**	-
Total other payables	**4,437,772**	5,526,089
Other payables are represented by:		
Current	**4,390,776**	5,449,463
Non-current	**46,996**	76,626
Total other payables	**4,437,772**	5,526,089

Note 9: Provisions

Note 9A: Employee provisions		
Salaries and wages	**285,791**	280,748
Leave	**712,048**	611,616
Superannuation	**9,844**	7,545
Total employee provisions	**1,007,683**	899,909
Employee provisions are represented by:		
Current	**858,989**	730,437
Non-current	**148,694**	169,472
Total employee provisions	**1,007,683**	899,909

The classification of current includes amounts for which there is not an unconditional right to defer settlement by one year, hence in the case of employee provisions the above classification does not represent the amount expected to be settled within one year of reporting date. Employee provisions expected to be settled within twelve months from the reporting date are $814,997 (2007: $600,295), and in excess of one year $192,686 (2007: $299,614).

Notes to and forming part of the Financial Statements

	2008 $	2007 $
Note 9B: Other provisions		
Provision for 'makegood'	**160,000**	160,000

All other provisions are non-current liabilities.

The Corporation currently has an agreement for the leasing of premises which has provisions requiring the Corporation to restore the premises to their original condition at the conclusion of the lease. The Corporation has made a provision for 'makegood' to reflect the present value of this obligation.

Note 10: Cash Flow Reconciliation

Reconciliation of cash and cash equivalents as per Balance Sheet to Cash Flow Statement

Report cash and cash equivalent as per:		
Cash Flow Statement	**17,154,179**	19,003,421
Balance Sheet	**17,154,179**	19,003,421
Difference	**-**	-
Reconciliation of operating result to net cash from operating activities:		
Operating result	**166,574**	1,625,414
Depreciation / amortisation	**389,258**	263,249
Loss from disposal of assets	**1,625**	-
(Increase) in net receivables	**(1,079,242)**	(205,663)
(Increase) / decrease in prepayments	**(376,046)**	60,402
Increase in employee provisions	**107,774**	48,556
Increase / (decrease) in supplier payables	**168,695**	(281,529)
Increase / (decrease) in other payables	**(1,088,317)**	660,464
Net cash from / (used by) operating activities	**(1,709,679)**	2,170,893

Note 11: Contingent Liabilities and Assets

As at 30 June 2008 there are no quantifiable or unquantifiable contingencies (2007: $nil).

Notes to and forming part of the Financial Statements

Note 12: Director Remuneration

				2008	2007
The number of directors of the Corporation included in these figures are shown below in the relevant remuneration bands:					
$Nil	to	$14 999		**-**	1
$15 000	to	$29 999		**6**	6
$45 000	to	$59 999		**1**	1
$90 000	to	$104 999		**-**	1
$150 000	to	$164 999		**-**	1
$205 000	to	$219 999		**1**	-
Total number of directors of the Corporation				**8**	10
Total remuneration received or due and receivable by directors of the Corporation				**$ 420,043**	$ 474,692

Note 13: Related Party Disclosures

Loans to Directors and Director related entities

There were no loans made to Directors or Director related entities.

Other Transactions with Directors or Director related entities

Research and development expenses were paid to the following Director related entities. The Directors involved took no part in the relevant decisions of the Board. In the interests of transparency, all transactions with Director-related entities are disclosed. These disclosures relate to involvement in honorary, part-time advisory roles with respect to the University of Southern Queensland and CSIRO. With respect to payments to other Director related entities, payments made to these entities were not associated with the areas of responsibility of the relevant Directors.

Mrs R Brazil	Chancellor, University of Southern Queensland.
Prof P Cullen	Visiting Fellow, CSIRO Land & Water.
Mrs D Bentley	Director, Cotton Catchment Communities CRC.
Prof T Lefroy	Director, Centre for Environment, University of Tasmania.

	2008	2007
	$	$
Department of Agriculture, Fisheries and Forestry	**-**	50,000
University of Southern Queensland	**103,233**	104,357
CSIRO Land and Water	**831,582**	716,964
CRC for Irrigation Futures	**-**	350,000
University of Tasmania	**177,048**	271,020
Cotton Catchment Communites CRC	**337,593**	440,000
Total other transactions with Directors or Director related entities	**1,449,456**	1,932,341

Notes to and forming part of the Financial Statements

Note 14: Executive Remuneration

	2008	2007
The number of senior executives who received or were due to receive total remuneration of $130,000 or more:		
$130 000 to $144 999	**-**	1
$145 000 to $159 999	**1**	-
$160 000 to $174 999	**1**	5
$175 000 to $189 999	**1**	-
Total executive remuneration	**3**	6
The aggregate amount of total remuneration of executives shown above	**$ 492,971**	$ 978,181

The executive remuneration includes all senior executives concerned with or taking part in the management of the Corporation during 2007-08 except the Executive Director. Details in relation to the Executive Director have been incorporated into Note 12: Director Remuneration.

Note 15: Remuneration of Auditors

	2008 $	2007 $
Financial statements audit and other services are provided to the Corporation by the Auditor General.		
The fair value of audit services provided was:		
The Corporation	**31,000**	31,000
The fair value of other services provided was:		
Audit of individual Corporation programmes	**39,500**	12,000

Notes to and forming part of the Financial Statements

	2008 $	2007 $
Note 16: Financial Instruments		
Note 16A: Categories of financial instruments		
Financial Assets		
Loans and receivables financial assets		
Cash and cash equilvalents	**17,154,179**	19,003,421
Trade and other receivable (excluding GST receivable)	**1,824,347**	1,295,046
Carrying amount of financial assets	**18,978,526**	20,298,467
Financial Liabilities		
Other financial liabilities		
Suppliers	**437,537**	268,842
Revenue in advance	**1,134,869**	1,965,460
Carrying amount of financial liabilities	**1,572,406**	2,234,302

The carrying amounts of financial assets and financial liabilities are a reasonable approximation of fair value.

Note 16B: Net income and expense from financial assets		
Loans and receivables		
Interest revenue	1,157,897	955,713
Net gain from financial assets	**1,157,897**	**955,713**

Note 16C: Credit risk

The Corporation is exposed to minimal credit risk as the majority of financial assets are cash or cash equivalents. The maximum exposure to credit risk is the risk that arises from potential default of a debtor. This amount is equal to goods and services receivables (2008: $1,756,878 and 2007: $1,254,038). The Corporation has assessed the risk of the default on payment and $nil (2007: $nil) allowance for doubful debts is considered necessary.

The Corporation manages its credit risk by undertaking appropriate background and credit checks prior to allowing a debtor relationship. In addition, the Corporation has policies and procedures that guide employees debt recovery techniques that are to be applied.

The Corporation holds no collateral to mitigate against credit risk.

Ageing of financial assets that are past due but not impaired for 2008

	0 to 30 days $	31 to 60 days $	61 to 90 days $	90+ days $	Total $
Trade and other receivables	33,093	550	-	160	**33,803**
Total	**33,093**	**550**	**-**	**160**	**33,803**

Ageing of financial assets that are past due but not impaired for 2007

	0 to 30 days $	31 to 60 days $	61 to 90 days $	90+ days $	Total $
Trade and other receivables	66,550	33,356	68,488	16,570	**184,964**
Total	**66,550**	**33,356**	**68,488**	**16,570**	**184,964**

No assets have been individually assessed as impaired.

Notes to and forming part of the Financial Statements

Note 16D: Liquidity risk

The Corporation's financial liabilities are supplier payables and revenue in advance. The exposure to liquidity risk is based on the notion that the Corporation will encounter difficulty in meeting its obligations associated with financial liabilities. This is highly unlikely due to available funds on hand, future Government funding and internal policies and procedures put in place to ensure there are appropriate resources to meet its financial obligations. The Corporation has no past experience of default.

The following tables illustrates the maturities for financial liabilities.

	On demand 2008 $	within 1 year 2008 $	1 to 5 years 2008 $	> 5 years 2008 $	Total 2008 $
Suppliers	-	437,537	-	-	**437,537**
Revenue in advance	-	1,134,869	-	-	**1,134,869**
Total	-	**1,572,406**	-	-	**1,572,406**

	On demand 2007 $	within 1 year 2007 $	1 to 5 years 2007 $	> 5 years 2007 $	Total 2007 $
Suppliers	-	268,842	-	-	**268,842**
Revenue in advance	-	1,965,460	-	-	**1,965,460**
Total	-	**2,234,302**	-	-	**2,234,302**

Notes to and forming part of the Financial Statements

Note 16E: Market risk

The Corporation holds basic financial instruments that do not expose it to 'currency risk', or 'other price risk'.

Interest Rate Risk

Interest rate risk refers to the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Corporation is exposed to interest rate risk primarily from managed funds.

The table below details the interest rate sensitivity analysis of the Corporation at the reporting date, holding all other variables constant. A 100 basis point change is deemed to be a possible change and is used when reporting interest rate risk.

			Effect on	
	Risk variable	Change in risk variable %	Profit and loss 2008 $'000	Equity 2008 $'000
Interest rate risk	Interest Rate	1.00	**167,000**	**167,000**
Interest rate risk	Interest Rate	(1.00)	**(167,000)**	**(167,000)**

			Effect on	
	Risk variable	Change in risk variable %	Profit and loss 2007 $'000	Equity 2007 $'000
Interest rate risk	Interest Rate	1.00	**159,000**	**159,000**
Interest rate risk	Interest Rate	(1.00)	**(159,000)**	**(159,000)**

The method used to arrive at the possible change of 100 basis points was based on the analysis of the absolute nominal change of the Reserve Bank of Australia (RBA) monthly issued cash rate. Historical rates indicate that for the past five years, there was a bias towards an increase in interest rates ranging between 0 to 100 basis points. It is considered that 100 basis points is a ‘reasonable possible’ estimate as it accommodates for the maximum variations inherent in the interest rate movement over the past five years.

Notes to and forming part of the Financial Statements

Note 17: Reporting of Outcomes

The Corporation is structured to meet one outcome:

Knowledge, understanding and informed debate to inspire innovation and action in sustainable natural resource management.

Six outputs are identified for this outcome. These are:

Output 1: Landscapes

Output 2: People

Output 3: Industries

Output 4: Innovation

Output 5: Collaborative and Strategic Analysis

Output 6: Knowledge into Practice

Note 17A: Net Cost of Outcome Delivery

	Outcome 1		Total	
	2008 $	2007 $	**2008** $	2007 $
Expenses				
Administered	**-**	-	**-**	-
Departmental	**38,698,493**	33,591,391	**38,698,493**	33,591,391
Total expenses	**38,698,493**	33,591,391	**38,698,493**	33,591,391
Costs recovered from provision of goods and services to the non-government sector				
Administered	**-**	-	**-**	-
Departmental	**-**	-	**-**	-
Total costs recovered	**-**	-	**-**	-
Other external revenues				
External contributions	**24,433,409**	21,476,663	**24,433,409**	21,476,663
Interest	**1,157,897**	955,713	**1,157,897**	955,713
Other	**254,761**	33,429	**254,761**	33,429
Total Departmental	***25,846,067***	*22,465,805*	***25,846,067***	*22,465,805*
Total other external revenues	**25,846,067**	22,465,805	**25,846,067**	22,465,805
Net cost of outcome	**12,852,426**	11,125,586	**12,852,426**	11,125,586

Note 17B: Major Classes of Departmental Revenues and Expenses by Output Groups and Outputs

Outcome 1	Output Group 1		Output Group 2		Output Group 3	
	Output 1.1.1		Output 1.2.1		Output 1.3.1	
	2008 $	2007 $	**2008** $	2007 $	**2008** $	2007 $
Departmental expenses						
Employees	**797,784**	568,604	**258,805**	437,120	**1,237,108**	1,140,365
Suppliers	**901,928**	793,636	**291,177**	402,161	**3,142,886**	2,413,592
Research and development	**9,803,588**	5,075,168	**585,619**	1,283,074	**7,811,193**	10,478,732
Depreciation and amortisation	**115,529**	48,917	**11,405**	16,128	**122,999**	109,080
Loss from disposal of assets	**488**	-	**48**	-	**517**	-
Total departmental expenses	**11,619,317**	6,486,325	**1,147,054**	2,138,483	**12,314,703**	14,141,769
Funded by:						
Income from Government	**4,021,751**	4,097,842	**1,062,227**	1,691,168	**2,914,889**	2,369,571
External contributions	**6,555,660**	5,883,091	**960,000**	211,831	**8,880,659**	8,267,902
Interest	**444,694**	287,021	**2,217**	-	**503,526**	580,754
Other income	**7,694**	11,983	**-**	-	**250,293**	3,340
Total departmental revenues	**11,029,799**	10,279,937	**2,024,444**	1,902,999	**12,549,367**	11,221,567

Notes to and forming part of the Financial Statements

Outcome 1	Output Group 4		Output Group 5		Output Group 6		Outcome 1 Total	
	Output 1.4.1		Output 1.5.1		Output 1.6.1			
	2008 $	2007 $	**2008** $	2007 $	**2008** $	2007 $	**2008** $	2007 $
Departmental expenses								
Employees	**211,667**	144,956	**1,270,847**	1,132,132	**1,490,031**	1,434,967	**5,266,242**	4,858,144
Suppliers	**159,734**	102,785	**1,728,795**	1,330,296	**2,117,540**	1,670,074	**8,342,060**	6,712,544
Research and development	**1,587,424**	1,277,922	**4,780,934**	3,519,025	**130,550**	123,533	**24,699,308**	21,757,454
Depreciation and amortisation	**19,673**	11,593	**81,046**	52,084	**38,606**	25,447	**389,258**	263,249
Loss from disposal of assets	**83**	-	**330**	-	**159**	-	**1,625**	-
Total departmental expenses	**1,978,581**	1,537,256	**7,861,952**	6,033,537	**3,776,886**	3,254,021	**38,698,493**	33,591,391
Funded by:								
Income from Government	**2,362,370**	1,568,372	**853,932**	924,010	**1,803,831**	2,100,037	**13,019,000**	12,751,000
External contributions	**-**	-	**6,161,823**	5,224,545	**1,875,267**	1,889,294	**24,433,409**	21,476,663
Interest	**-**	-	**139,835**	83,601	**67,625**	4,337	**1,157,897**	955,713
Other income	**-**	-	**(3,226)**	18,106	**-**	-	**254,761**	33,429
Total departmental revenues	**2,362,370**	1,568,372	**7,152,364**	6,250,262	**3,746,723**	3,993,668	**38,865,067**	35,216,805

Administration income and expenditure has been allocated across outputs, proportionally, based on output income and expenditure. The net costs shown include intra-government costs that would be eliminated in calculating the Budget outcome.

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Appendix 1 — Projects Operating During the Year

National Land and Water Australia Resources Audit		
Project Title	Research body	Due for completion
A synthesis report on the Audit's integrated catchment and regional reporting projects	HCO	30/06/2008
Biodiversity assessment 2008 — South Australia	DEH	24/07/2008
Biodiversity assessment 2008 — Victoria	DSE	27/07/2008
Biodiversity assessment 2008 — New South Wales	DONR	26/07/2008
Biodiversity assessment 2008 — Northern Territory	DNA	30/06/2008
Biodiversity assessment 2008 — Queensland	EPQ	28/07/2008
Biodiversity assessment 2008 — Tasmania	DPIW	26/07/2008
Biodiversity assessment 2008 — Western Australia	CCM	1/06/2008
Development of an interactive visual representation of the 2008 national biodiversity assessment	GEQ	29/07/2008
Evaluation of responses to biodiversity threats	KIR	1/08/2008
Exploring the potential of national data sets to map the socio-economic adaptive capacity of Australian land managers	CSE	30/11/2007
Invasive plants mapping	CAU	31/05/2008
Signposts for Australian agriculture — stage 3c review and populate the stage 3 framework	ABS	30/08/2007
Signposts for Australian agriculture — stage 4a completion of six industry profiles	BRR	1/07/2008
Signposts for Australian agriculture — stage 4b industry report for cotton	HAS	1/07/2008
Signposts for Australian agriculture — stage 4b industry reports for grains, dairy, horticulture and beef.	KIR	30/06/2008
Signposts for Australian agriculture — stage 4b industry report for wine grapes	SRH	30/06/2008
Soil invertebrate biodiversity and ecosystem function	CEN	1/06/2008

National Land and Water Australia Resources Audit		
Project Title	Research body	Due for completion
Tasmanian integrated catchment reporting project	NRMN	30/04/2008
Triple bottom line indicators for a Victorian catchment management authority	VPI	1/05/2008
Australian natural resources data library maintenance and development	BRR	1/07/2008
Australia's resources online — application development	DET	1/07/2008
Australia's resources online Implementation	GPL	30/06/2008
Developing a first draft national report on 'fundamental data for NRM'	BTG	30/04/2008
Management of the NLWRA atlas 06/07 and 07/08	DET	1/07/2008
Trialling a framework and indicators for wetland extent, distribution and condition in Western Australia	CCM	30/06/2008
Aerial surveys of waterbirds — assessing wetland condition	UNS	1/04/2008
Assessment of social and economic data for the national NRM monitoring and evaluation framework	KPM	1/07/2008
Australian shallow waters spectral library: coastal field work to support remote sensing based condition and trend assessments	CLW	30/06/2008
Coastal — remote sensing & field work	CAU	1/02/2008
Coastal projects: development of contract schedules and negotiation for purchase of satellite imagery	CAU	31/05/2008
Data pre-processing support for native vegetation extent mapping activities	SPL	30/06/2008
Development and trial of methodology for rapid identification, mapping and updating the extent of native vegetation using eCognition	GHD	31/05/2008
Development of a national wetlands data and information work plan	EDG	1/07/2008
Development of national wetlands indicators for extent, distribution and condition	QNR	1/08/2007
Development of web pages to trial local and national level reporting on estuaries in Burnett Mary NRM region	FRI	30/04/2008
Discussion paper on satellite image analysis techniques for native vegetation extent extrapolation	SPL	31/03/2008
Estuaries report card pilot project for Western Australia	WWA	1/07/2008

National Land and Water Australia Resources Audit		
Project Title	Research body	Due for completion
Estuarine report card pilot project for Victoria	DUV	1/05/2008
Evaluation of BioSIRT for reporting against the national monitoring and evaluation framework invasive species indicators	CAU	30/06/2008
Facilitation of Land Tenure national workshop and developing a national classification scheme	SPS	1/03/2008
Fundamentals and frontiers of floodplain research and management.	DONR	1/07/2008
Funding management of the Australian collaborative land evaluation program	CLW	30/09/2008
Griffith University soil condition trials — wind erosion modelling and development of the dust storm index method for monitoring wind erosion	GRU	1/09/2007
Integrated web access to key estuarine, coastal and marine indicator information and data for NRM	AGS	1/07/2008
Invasive vegetation (weeds) status of natural resource information	RWP	31/05/2008
Invasive vertebrate species status of natural resource information	IAL	30/04/2008
Land tenure classification and dataset project	PSM	30/06/2008
Land use status of natural resource information	GEO	29/02/2008
Moving forward on 'marine habitat integrity' assessments within the national NRM framework: a round table discussion	DSE	31/03/2008
National strategy to improve the sustainable use and management of Australia's soil and land resources	THC	31/05/2008
National estuarine assessment framework round table project	DUV	31/12/2007
National inventory and synthesis of current estuarine, coastal and marine habitat condition monitoring and assessment.	TAFI	31/03/2008
National R&D coordinator for estuarine, coastal and marine information	UTI	1/07/2008
New South Wales native vegetation extent baseline and monitoring	DONR	30/06/2008
New South Wales soil condition trials. monitoring: wind erosion in the lower Murray CMA, organic carbon in the Border Rivers/Gwydir CMA and soil erosion in the Murray CMA	DONR	30/09/2007
Northern Territory native vegetation extent baseline and monitoring project	DNA	1/06/2008
Northern Territory soil condition trials. monitoring water erosion in the Daly Douglas region	DNA	29/02/2008
Queensland native vegetation extent baseline and monitoring project	EPQ	31/10/2007

National Land and Water Australia Resources Audit		
Project Title	Research body	Due for completion
Queensland soil condition trials — Condamine catchment water erosion monitoring trial	QNR	31/01/2008
Review of wetland mapping and wetland inventory information and standards and protocols for an Australian wetland inventory	CAU	1/07/2008
Remote sensing for coastal habitat extent, condition and trend assessment	CLW	30/06/2008
Scoping a national system for reporting land use change	CRCI	31/10/2007
Socio-economic workplan project — a nationally coordinated industry survey of landmanagers' capacity to change and adopt sustainable management practices	ABA	30/06/2008
Socio-economic workplan project — the development and pilot of a set of indicators, survey methodology and tools to assess land manager's capacity to change and adopt sustainable management practices	BRR	31/07/2007
South Australia native vegetation extent baseline and monitoring	DEH	1/03/2008
South Australia soil condition trials — monitoring wind erosion in the Murray lands region	DEP	29/02/2008
Survey of regional NRM bodies	EBC	31/03/2008
Tasmania native vegetation extent baseline and monitoring project	DPIW	1/07/2008
Tasmania soil condition trials — monitoring carbon in the Cradle Coast (North West) Region	DPIW	30/11/2007
Trialling a framework and indicators for wetland extent, distribution and condition at the regional level	DNA	1/07/2008
Trialling resource condition indicators for the South Australian coast	DEH	30/09/2007
Trialling resource conditions indicators for the New South Wales coast.	DONR	1/04/2008
Western Australia native vegetation extent baseline and monitoring	DWA	30/09/2007
Western Australia soil condition trials. monitoring soil acidification in the Avon catchment and wind erosion in the northern agricultural catchment council	DAW	1/04/2008
Wetland catchment disturbance index — trial and guidelines	DSE	1/07/2008
Wetlands extent, distribution and condition indicators — South Australia trials	DEP	1/07/2008
Helping followers to become leaders	GUN	1/08/2007
Products for rivercare facilitators and agricultural consultants	SIW	31/07/2007

Climate Change Research Strategy for Primary Industries		
Project Title	Research body	Due for completion
CCRSPI emissions consultancy with the Australian Farm Institute	AFI	30/04/2008
CCRSPI exposure consultancy CSIRO	CSE	31/05/2008

Defeating the Weed Menace		
Project Title	Research body	Due for completion
Best practice for on-ground property weed detection	UNE	1/10/2008
Biological control and ecology of alligator weed	CEN	1/10/2008
Boneseed rust: a highly promising candidate for biological control	CEN	1/10/2008
Cost-effective surveillance of emerging weeds using robotic aircraft	USY	1/10/2008
Developing a model for environmental weed management in fragmented landscapes: a case study.	DEH	1/10/2008
Development effect of land use and peri-urban on aquatic weeds	CEN	1/10/2008
Development of new biocontrol agents for parkinsonia	CEN	1/10/2008
Ecological, economic and social considerations of spray control on hymenachne	UCQ	1/10/2008
Elucidating relationships between disturbance and invasion in riparian zones	VPI	1/10/2008
Enhancing noogoora burr biocontrol in northern Australia	CEN	1/10/2008
Evaluating the environmental benefits from managing natural ecosystems	CEN	1/10/2008
Exploring agents of change to peri-urban weed management	UMCC	1/10/2008
Importation and release of a new biological control agent for scotch broom	VPI	1/10/2008
Importation, rearing and field release of the cape broom psyllid	SARD	1/09/2008
Improving management of salvinia in temperate aquatic ecosystems	UWO	1/10/2008
Land use effects on soil nutrient enrichment: risks for weed invasion	CEN	1/09/2008

Defeating the Weed Menace		
Project Title	Research body	Due for completion
Managing weeds under future scenarios for environmental flows in the Murray River	CEN	1/10/2008
Modelling climate change impacts on sleeper and alert weeds	CEN	1/09/2008
Optimising management of core mesquite infestations across Australia	CEN	1/10/2008
Pathway risk analysis for weed spread within Australia	UNE	1/10/2008
Pinus radiata in bushland: assessing the issue in the green triangle.	DEH	1/10/2008
Quantification of the environmental costs of weeds	NTU	1/10/2008
Quantifying costs and benefits of buffel grass	CSE	1/10/2008
Serrated tussock: managing native pastures to prevent invasion	CSU	1/10/2008
Understanding and determining mechanisms to prevent invasion in coastal vegetation	UWO	1/10/2008

Environmental Water Allocation		
Project Title	Research body	Due for completion
Adaptive management of environmental flows in the regulated Macquarie River	UNS	1/05/2014
Environmental flows required to sustain macroinvertebrate species in ephemeral streams	DUV	1/06/2009
Flow requirements and resource delivery to the Lower Murray Lakes and Northern Coorong	UAD	1/10/2009
Flows and aquatic plants: an historical and experimental approach	UME	30/10/2011
Knowledge synthesis for watering wetlands	CST	30/09/2007
National assessment of river and wetland health business case and indicators	EDG	19/12/2008
Water allocation to River Murray wetlands: a basin wide modelling approach	UAD	1/01/2009
Water regime dependence of fish in the wet-dry tropics	NTU	1/06/2009
With the wisdom of hindsight: reconsidering institutional arrangements for water	UAD	1/09/2009

Grain & Graze		
Project Title	Research body	Due for completion
Biodiversity project: Avon	DAW	30/06/2008
Biodiversity project: Border Rivers	QMD	30/06/2008
Biodiversity project: Corangamite — Glenelg/Hopkins	SFS	1/05/2008
Biodiversity project: Eyre Peninsula	SAR	30/06/2008
Biodiversity project: Mallee	MAL	1/05/2008
Biodiversity project: Murrumbidgee	MCMA	30/06/2008
Biodiversity project: Northern Agricultural Region	DAW	30/06/2008
Biodiversity in Grain and Graze: spatial analysis, soil and invertebrates	UTA	1/10/2008
Database development and support	UNE	1/10/2008
Development and implementation of a Grain & Graze program evaluation	VRA	30/06/2008
R&D forum facilitation	RST	9/12/2008
Regional adaptation of Ley Grain for Grain & Graze	QPI	1/03/2008
Regional initiative: Avon Region	DAW	1/10/2008
Regional initiative: Border Rivers	QMD	1/10/2008
Regional initiative: Central West — Lachlan	DAN	8/06/2011
Regional initiative: Corangamite — Glenelg/Hopkins	SFS	1/10/2008
Regional initiative: Eyre Peninsula	UAD	1/08/2008
Regional initiative: Mallee	MAL	10/10/2008
Regional initiative: Maranoa Balonne	QPI	1/10/2008
Regional initiative: Murrumbidgee	FAR	1/10/2008

Grain & Graze		
Project Title	Research body	Due for completion
Regional initiative: Northern Agricultural Region	NOR	1/10/2008
Scoping future R&D priorities in mixed farming	URS	30/06/2008
Social dimensions of managing complex mixed-farming systems, for Grain & Graze	RMG	1/10/2008
Whole farm economic analysis of sustainable mixed farming systems, for Grain & Graze	FSS	1/10/2008
Whole farm feed base distribution and utilisation to reduce risks and maximise the sustainability of mixed farming systems, for Grain & Graze	CSE	1/10/2008

Healthy Soils for Sustainable Farms		
Project Title	Research body	Due for completion
Accelerating adoption of integrated soil management practices in irrigated cotton and grain	COC	1/09/2008
Accounting for nutrients on Australian dairy farms	DRD	17/09/2008
Defining and promoting soil health for sustainable production systems	UQT	1/10/2008
Delivering workshops on low input farming approaches to soil health management for landholders in south east Queensland	BFA	1/09/2008
Development and implementation of the knowledge bank framework for the *Healthy soils for sustainable farms* program.	EAS	7/12/2007
Evaluation of the *Healthy soils for sustainable farms* program	HAS	30/06/2008
HSSF knowledge bank website development	ICE	30/06/2008
Identify farm management practices that promote healthy soils and investigate the use of a soil health index to monitor changes in soil health	SOT	1/08/2008
Improving soil health in Western Australian farming systems	UWA	1/11/2008
Managing landscapes — matching soils, climate and enterprises	DAN	1/09/2008
Soil health — leaving a legacy for south eastern Australia for the *Healthy soils for sustainable farms* program	VPI	1/10/2008
Support for implementation of the monitoring and evaluation framework for the *Healthy soils for sustainable farms* program	HAS	30/06/2008
Sustainable farming practices in the mid-Loddon sub-catchment	MID	31/12/2008

Healthy Soils for Sustainable Farms		
Project Title	Research body	Due for completion
Sustainable soil health management workshops for northern broadacre cropping industries.	QPI	1/12/2008
Ute guide and soil health interpretation courses for vegetable growers	AVG	1/08/2008

Innovation		
Project Title	Research body	Due for completion
A new charter for exploring Australia's 'hidden' natural resource, the Soil Biota	VPI	1/10/2008
A rapid genetic approach for assessing sediment biodiversity and functioning	CEN	1/05/2010
A spatial dynamic framework to integrate regional water use efficiency and energy consumption nexus	CSU	1/06/2010
Advanced airborne technologies for mapping and monitoring native Australian vegetation	UFL	1/10/2008
Agriculture land retirement as an environmental policy	UWA	1/10/2007
Applying justice frameworks to environmental decision-making	ANU	1/10/2009
Breaking through the equity barrier in environmental policy	UWA	30/09/2007
Capture and synthesis of hydrology and water quality knowledge from Queensland catchment studies	QNR	1/08/2007
Changing the ownership-management paradigm in broadacre farming	UWA	1/10/2009
Characterising southwest Australia's rainfall variability using speleothems and climate models	ANU	1/05/2009
Characterising the effects of river regulation on longitudinal trophic pathways	DWE	1/03/2010
Climate Change and NRM in Australia's grazing lands	QNR	1/05/2008
Climate Witness — a dispersed, national observer network for NRM phenology	EWT	1/10/2010
Dr Larry Barber — Land & Water Australia International Fellow	CLW	10/05/2009
Dr Burghard Meyer and Dr Ralf Grabaum — Land & Water Australia International Fellows	DSE	22/03/2009
Dynamic non market valuation of ecosystem services	UWA	1/10/2008

Innovation		
Project Title	Research body	Due for completion
Dynamics of sediment and nutrient fluxes from burnt forest catchments	DSE	1/04/2008
Ecohydrological regionalisation of Australia: a tool for management and science	GRU	1/06/2008
Ecosystem services from grasslands — effects on tree regeneration processes	CSU	1/03/2009
Effects of river flows on downstream productivity in tropical rivers	GRU	1/06/2011
Empowering land managers with wireless soil monitoring	CDS	1/10/2009
Endocrine disrupting chemicals in the Australian riverine environment	CLW	30/07/2007
Exploiting Australia's Isoscape: novel methodology to underpin climate change modelling	CSE	1/10/2010
Fire, fragmentation and small mammals; synergistic impacts on ecosystem dynamics	UMU	1/04/2008
Fire regimes and biodiversity conservation in the Murray mallee region	DUV	1/10/2009
Flooding tolerance of plants in Australian wetland ecosystems	UWA	1/06/2010
Frogs as bio-indicators for chemical use in irrigation-based agriculture	DEC	1/02/2009
Fundamentals and frontiers of floodplain research and management	UOC	31/10/2007
Healthy catchments through detection and remediation of contaminants with novel technologies	RMI	17/04/2009
If you build it, will they come? Reptile re-colonisation following plant community restoration	UMU	1/06/2011
Impact of chemicals used in irrigation agriculture on macro-invertebrate biodiversity	UTS	1/10/2009
Improving integration in NRM: learning from health, security and innovation.	ANU	1/10/2008
Improving private sector conservation using tax-effective instruments	UNE	31/12/2007
Inland river floodplains: the role of sediment and nutrient exchanges	UOC	1/08/2008
Insectivorous bats, irrigated cotton production and Indigenous vegetation remnants	CRD	1/06/2008
Interactive effects of salinity and water regime on ecologically significant water plants	UMO	1/09/2009

Innovation		
Project Title	Research body	Due for completion
Investigating adoption processes for sustainable farming practice: Potter Project case study	RMI	30/09/2009
Maximising woodland bird diversity in Brigalow Belt forests	UQL	1/11/2009
Modelling impacts of vegetation cover change on regional climate	UQL	1/10/2009
New paradigms to find solutions to intractable NRM problems	UMU	30/10/2008
Novel in situ desalination of low quality groundwater	UWA	30/10/2007
Oil vulnerability in peri-urban and rural Australia	GRU	1/10/2010
Optimising river flow management for environmental and economic sustainability	UNE	30/09/2009
Quantifying acid and trace metal fluxes in aquifers under anthropogenic influence	UFL	1/03/2011
Recognition of Indigenous values and rights in water management procedures	NTU	1/04/2008
Re-thinking rural Australia	VPI	31/08/2007
Salinity processes in Lake Eyre basin rivers	UME	1/02/2010
Sustainability of fresh water lenses under major rivers	UME	1/04/2009
Sustainable management of connected water resources: robbing Peter to pay Paul?	ANU	1/06/2011
Testing ecological models in Australia's northern tropical rivers	GRU	28/10/2008
The ecohydrology of Australian landscapes: an analysis and synthesis	UTS	1/12/2009
The lower Murray floodplain seed bank: status and response to flooding	UAD	1/09/2008
The scientist's garden: reflections on food and water	CLW	1/11/2008
Transition to a biofuel economy in Australia	CSE	1/06/2008
Understanding alternative landscape design options for planning more sustainable regions	UNE	30/09/2008
Use of Bayesian decision support tools in sustainable management	UMO	1/03/2009

Innovation		
Project Title	Research body	Due for completion
Water and catchment planning: incorporating demography and population	ANU	1/06/2010
What's around the bend for Murray Darling Basin river system? Implications of climate and resource management change for the state of the basin's river ecosystems	FWS	1/12/2009

National Program for Sustainable Irrigation — Phase 1		
Project Title	Research body	Due for completion
Irrigation futures of the Goulburn-Broken catchment	VPI	31/01/2008
Long term sustainability of precision irrigation	UAD	1/08/2009
Northern Australian irrigation futures: providing new knowledge, tools and processes to support debate and decision making regarding irrigation in northern Australia	CDS	31/05/2008
Impact of open hydroponic irrigation in the citrus industry	SRD	1/04/2010
Root zone water, salinity and nutrient management under precision irrigation	SRD	30/12/2008
Sustainable irrigation ANCID sponsorship	CID	1/02/2008
Sustainable irrigation ANCID travel fellowship	CID	1/01/2009
The impact of minimal vineyard irrigation strategies on soil and plant sustainability	USQ	1/05/2009

Joint Venture Agroforestry Program		
Project Title	Research body	Due for completion
Joint venture agroforestry program — LWA contribution	RDC	1/10/2009

Land, Water & Wool		
Project Title	Research body	Due for completion
Continuing data collection — New South Wales sites — SGSL sub-program — Land, Water & Wool	UWA	29/02/2008
Continuing data collection — Queensland sites — native vegetation and biodiversity sub-program — Land, Water & Wool	USQ	1/03/2009
Continuing data collection — Tasmanian sites — native vegetation and biodiversity sub-program — Land, Water & Wool	UTA	31/10/2007
Continuing data collection — Western Australia sites — SGSL sub-program — Land, Water & Wool	UWA	31/05/2008
Integrating paddock and catchment planning: a woolgrower driven approach to sustainable landscape management.	USQ	29/02/2008
Managing gully erosion in the New South Wales tablelands to improve water quality and maintain productive wool pastures for Land, Water & Wool	CLW	30/09/2007
Mitchell grass death in Queensland: extent, economic impact and potential for recovery.	MLA	30/09/2007
New South Wales producer network for the sustainable grazing on saline land sub-program of Land, Water & Wool	DAN	2/07/2007
Productive and sustainable salt-tolerant pastures for South Australia and Victoria, for the salinity sub-program of Land, Water & Wool	UWA	31/07/2007
SGSL — assessment of the economics of the 'fence & graze' option for saline land	FSS	30/06/2008
What to plant where: effectively positioning plants in saline/waterlogged landscapes	UWA	30/09/2007

Managing Climate Variability		
Project Title	Research body	Due for completion
Appling seasonal climate forecasting for profitable sustainable resource use	USY	1/12/2008
Australia's regional climate drivers	CAR	30/06/2008
Building effective climate risk management in the Western Australia grain belt	DAW	1/08/2008
Climate science for better NRM in western New South Wales	DAN	30/08/2007
Communication and evaluation of MCVP grain projects	SRD	30/07/2007
Enabling NRM decision makers to make better use of climate science	SRD	1/07/2008

Managing Climate Variability		
Project Title	Research body	Due for completion
Growing capacity in seasonal climate risk management in the South-East	VPI	1/09/2008
Horses for courses: using the best tools for managing climatic risk	MIG	30/07/2008
Improving prediction of the northern Australian wet season	EPAQ	1/08/2008
Increasing success of tree establishment by using seasonal climate forecasts	CSE	30/09/2007
Integrating NRM implications into a production based system	CSE	1/05/2008
Managing natural resource issues in a variable and changing climate	CSE	30/11/2007
National Whopper Cropper — delivering risk management to agricultural advisors	QPI	30/09/2007
Oceans to grains: a new approach to targeted seasonal forecasts	CMR	30/09/2007
Seasonal climate forecasts to improve dairy farmers' feed base management	DAN	1/11/2007
Stimulating the adoption of Aussie Grass in the Northern Territory	DFN	1/07/2007
Yield Prophet — expanding capabilities for farmers' risk management	BCG	1/06/2008
Improved seasonal climate forecast information on the Internet	BOM	1/12/2008
Scoping northern Australian seasonal climate knowledge R&D initiative	USQ	1/08/2008

National River Consortium		
Project Title	Research body	Due for completion
Habitat heterogeniety and carbon dynamics in semi-arid floodplain river systems	UOC	30/06/2007
Improving the management of wetlands on the Murrumbidgee River floodplain	MCMA	2/09/2008

Native Vegetation and Biodiversity		
Project Title	Research body	Due for completion
A new ecological synthesis to improve the effectiveness of resource management and conservation research and its uptake.	ANU	30/09/2009
Achieving coordinated landscape scale outcomes with auction mechanisms	CSE	1/08/2008
Assessing biodiversity outcomes from water point management in the arid rangelands	CSE	1/09/2009
An on-line guide to native vegetation in the south east NRM region.	GAS	1/04/2008
Bio-diversity and the community: how it affects you	WIN	1/09/2007
Biodiversity values and functional ecology of regrowth vegetation in modified landscapes	EPQ	1/09/2009
Building an InCreMent-al research base	ABH	1/05/2009
Bushland management manual for northern Australia (The Bush Book)	GNT	29/02/2008
Capturing the ecosystem service of pest control from native vegetation	COT	1/02/2010
Connecting communities caring for the Yarra	GAV	31/12/2007
Defining successional patterns and biodiversity values of north Australian eucalypt forests	TRC	30/06/2008
Determining appropriate fire mosaics for biodiversity conservation in Mallee ecosystems	ULA	1/04/2010
Ecological restoration in an urban catchment	OCCA	31/12/2007
Enhancing and utilising landscape heterogeneity to meet multiple ecosystem objectives	CSE	1/10/2009
EVC restoration — a decision makers forum	GAV	1/07/2008
Fire management in northern Australia: integrating ecological, economic and social outcomes	TRC	1/07/2010
Indigenous use of fire for biodiversity management in arid Australia	NAC	1/10/2007
Knowledge exchange and workshop on NRM delivery within the Murray catchment	MCM	31/08/2007
Landscape design for maintaining ecosystem services in tropical agricultural landscapes	TRC	1/12/2009
Mastering vegetation management for both conservation and profit	UME	1/10/2009

Native Vegetation and Biodiversity		
Project Title	Research body	Due for completion
Maximising woodland bird diversity in Brigalow Belt forests	USQ	30/11/2008
Multi-scale vegetation management and restoration for rehabilitating degraded catchments	UQL	31/03/2008
Restoring landscapes with confidence — an evaluation of the science, the methods and their on-ground application.	SIW	30/06/2008
Revegetation field guide — booklet	EGL	30/06/2008
Systematic review of landscape connectivity in Australia	CSE	1/03/2009
Sustainable water-use workshops in the Swan Hill region	NCS	31/05/2008
The fourth dimension: incorporating time into landscape-level biodiversity assessments	DUV	1/07/2008

Riparian Lands		
Project Title	Research body	Due for completion
Biodiversity of riverine landscapes: the role of patches and connectivity	UOC	1/09/2007
Hydraulic habitat of inland rivers: the role of large woody debris	UOC	1/09/2007

River Contaminants		
Project Title	Research body	Due for completion
Innovative techniques for managing multiple threats to high value aquatic systems	UMO	30/06/2008
Linking paddock scale nitrogen processes to catchment nutrient targets	DWA	1/10/2008
Sediment dynamics in a large tropical river system	JCU	1/10/2007

Social and Institutional Research Program		
Project Title	Research body	Due for completion
A bio-economic analysis of the duration of conservation contracts	UWA	1/07/2008
An agreement-based approach to customary law governance in water resource management	NTU	15/10/2008
Change and continuity in peri urban Australia: scenarios and strategies for sustainability	RMI	1/07/2008
Development of Indigenous knowledge capacity across north Australia	TRC	30/06/2008
Developing institutional arrangements for Indigenous participation in the national water initiative	TRC	6/06/2008
Identifying and characterising the social assets of the NRM system	EBC	30/08/2008
Improving NRM program and project design, implementation and evaluation	ANU	1/12/2008
Investigation of a conservation economy model for Indigenous northern Australia	ACF	31/07/2007
Investing in NRM practice change stage 2	HAS	1/05/2010
Institutional change enabling kangaroo harvest to promote sustainable rangeland landscapes	UAD	30/06/2008
Monitoring and evaluating Land & Water Australia's social and institutional research program	SWR	1/11/2009
Pathways to good practice in regional NRM governance	UTA	1/02/2009
The regulation of Indigenous rights through environmental legislation	ANU	30/06/2008
The sustainability of sustainable limits to water	ANU	2/07/2007
Understanding landholder constraints to the uptake of market-based instruments	CSU	26/06/2008
Voluntarism, democracy, administration and the evolution of future landscapes	CLW	31/10/2007
Water planning processes: lessons, gaps and adoption — project manager	EDG	15/07/2008

National Program for Sustainable Irrigation — Phase 2		
Project Title	Research body	Due for completion
Lake Tutchewop sustainable salt management	RMI	1/12/2008
Soil management for Australian irrigated agriculture	SRP	1/05/2011

Tropical Rivers and Coastal Knowledge		
Project Title	Research body	Due for completion
A remote sensing approach for mapping and classifying riparian gully erosion in tropical Australia	GRU	1/07/2008
Australia's tropical rivers — an integrated data assessment and analysis	DET	30/06/2008
Development and trial of a methodology for total water resource assessment in tropical Australia	SKP	1/03/2008
Development of a riparian condition assessment protocol for northern gulf rivers using remote sensing and ground survey	GRU	30/04/2008
Flow impacts on estuarine finfish fisheries of the Gulf of Carpentaria	QPI	1/09/2010
Valuing and managing the ecosystem services of tropical river systems	CSE	1/08/2009

Appendix 2 — Abbreviations and Acronyms

ID	Research body
ABA	Australian Bureau of Agricultural and Resource Economics
ABH	Australian Bush Heritage Fund
ABS	Australian Bureau of Statistics
ACF	Australian Conservation Foundation
AFI	Australian Farm Institute
AGS	Geoscience Australia
ANU	Australian National University
AVG	AUSVEG Ltd
BCG	Birchip Cropping Group
BFA	Biological Farmers of Australia
BOM	Bureau of Meteorology
BRR	Bureau of Rural Sciences
CAR	CSIRO Marine and Atmospheric Research
CCM	Department of Environment and Conservation WA
CDS	CSIRO Land and Water
CEN	CSIRO Entomology

ID	Research body
CID	Australian National Committee on Irrigation & Drainage
CLW	CSIRO Land and Water
CMR	CSIRO Marine Research
COC	CRC Cotton Catchment Communities
COT	Cotton Catchment Communities CRC
CRCSI	Cooperative Research Centre for Spatial Information
CRD	The Cotton Catchment Communities CRC
CSE	CSIRO Sustainable Ecosystems
CSU	Charles Sturt University
DAN	NSW Department of Primary Industries
DAW	Department of Agriculture and Food Western Australia
DEC	Department of Environment and Conservation NSW
DEH	Department for Environment and Heritage South Australia
DEP	Department of Water, Land and Biodiversity Conservation SA
DET	Department of the Environment, Water, Heritage and the Arts
DFN	Department of Primary Industry, Fisheries and Mines NT
DNA	Department of Natural Resources, Environment & the Arts NT

ID	Research body
DONR	Department of Environment and Climate Change New South Wales
DPIW	Department of Primary Industries and Water Tasmania
DRD	Dairy Australia
DSE	Department of Sustainability and Environment Victoria
DUV	Deakin University
DWA	Department of Agriculture Western Australia
DWE	Department of Water and Energy NSW
EAS	EA Systems
EBC	Environment & Behaviour Consultants
EGL	Far East Victoria Landcare Inc
EPAQ	Environmental Protection Agency Queensland
EPQ	Environmental Protection Agency Queensland
EWT	Earthwatch Institute
FAR	Farmlink Research Ltd
FRI	FARI Australia Pty Ltd
FSS	Farming Systems Analysis Service

ID	Research body
FWS	Freshwater Systems
GAS	Greening Australia SA
GAV	Greening Australia Victoria
GEO	GeoRIA Associates Pty Ltd
GEQ	GeoQik Pty Ltd
GHD	GHD Pty Ltd
GNT	Greening Australia NT
GPL	Geometry Pty Ltd
GRU	Griffith University
HAS	Hassall and Associates Pty Ltd
HCO	Hyder Consulting Pty Ltd
IAL	Invasive Animals Ltd
JCU	James Cook University
KIR	Kiri-Ganai Research Pty Ltd
KPM	KPMG
MAL	Mallee Sustainable Farming Inc

ID	Research body
MCM	Murray Catchment Management Authority
MCMA	Murrumbidgee Catchment Management Authority
MID	Mid-Loddon Sub-Catchment Management Group
MIG	Mingenew-Irwin Group Inc Western Australia
MLA	Meat & Livestock Australia
NAC	Ngaanyatjarra Aboriginal Council Land Management Unit
NCS	National Centre for Sustainability
NOR	Northern Agricultural Catchments Council
NRM	natural resource management
NRMN	NRM North Tasmania
NTU	Charles Darwin University
NWC	National Water Commission
NWI	National Water Initiative
OCCA	Oxley Creek Catchment Association QLD
PSM	Public Sector Mapping Agency
QMD	Queensland Murray Darling Committee Inc
QNR	Department of Natural Resources and Water QLD
QPI	Department of Primary Industries and Fisheries QLD

ID	Research body
RDC	Rural Industries Research and Development Corporation
RMI	Royal Melbourne Institute of Technology
RST	Peter R Day Resource Strategies Pty Ltd
SAR	SARDI Plant Research Centre
SARD	South Australian Research and Development Institute
SFS	Southern Farming Systems Ltd
SKP	Sinclair Knight Merz
SOT	SoilTech Soil and Pasture Consulting
SPL	Spatial 3i Pty Ltd
SPS	Spatial Strategies
SRD	SA Research & Development Institute
SRH	Scholefield Robinson Horticultural Services Pty Ltd
SRP	Soils Research Pty Ltd
SWR	Su Wild River
TAFI	Tasmanian Aquaculture and Fisheries Institute
TRC	Tropical Savannas Management Cooperative Research Centre
UAD	The University of Adelaide
UCQ	Central Queensland University

ID	Research body
UFL	Flinders University
ULA	La Trobe University
UMCC	Upper Murrumbidgee Catchment Committee
UME	University of Melbourne
UMO	Monash University
UMU	Murdoch University
UNE	University of New England
UNS	University of New South Wales
UOC	University of Canberra
UQL	University of Queensland
UQT	Queensland University of Technology
URS	URS Australia Pty Ltd
USQ	University of Southern Queensland
USY	University of Sydney
UTA	University of Tasmania
UTI	UTAS Innovation Ltd
UTS	University of Technology Sydney
UWA	The University of Western Australia
UWO	University of Wollongong
VPI	Department of Primary Industries Victoria
VRA	Viv Read & Associates
WWA	Department of Water WA

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