Australian Government
Land & Water Australia

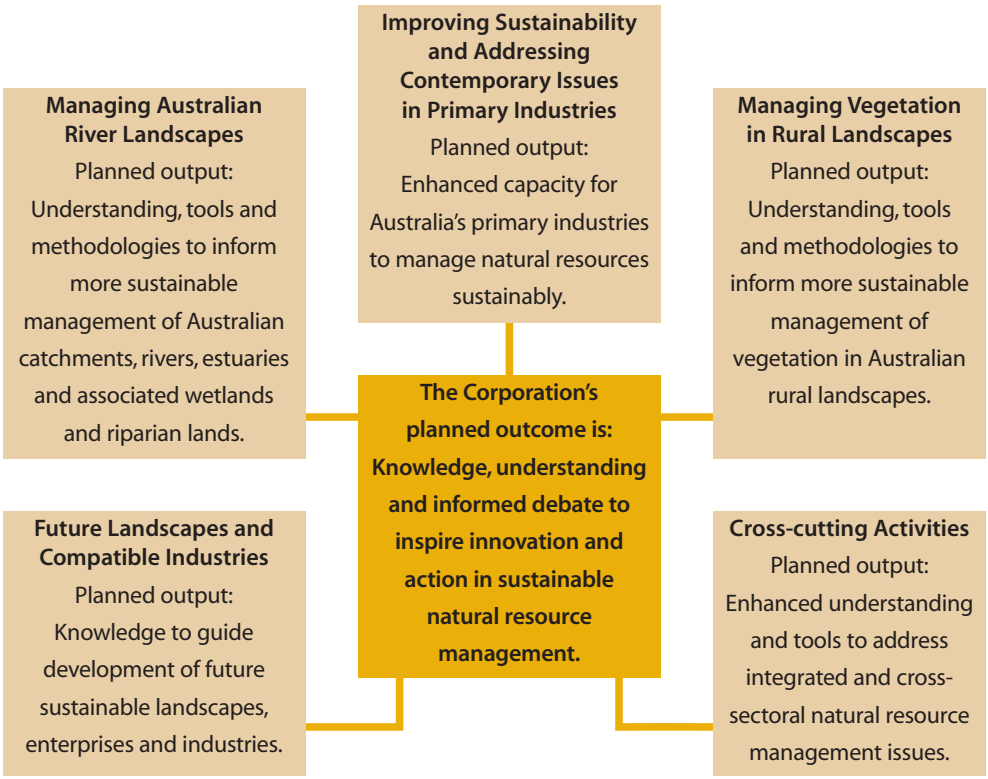
Annual Report

> 2002–03

Land & Water **Australia**

Since 1990, Land & Water Australia (formerly known by its legal title, the Land and Water Resources Research and Development Corporation) has invested in research and development for the productive and sustainable management of Australia's land, water and vegetation resources.

This year, Land & Water Australia directed its Australian Government appropriation of $11.9 million to generate $23.3 million in research and development investments. Such investments underpin the sustainability of dryland cropping, horticulture, sugar, cotton, rice, dairy and grazing industries, whose production was worth $33.6 billion in 2000–01. Irrigation produces some $10 billion of annual agricultural output before value-adding. Of even greater value are the natural resources on which these industries and the whole nation depend. Land & Water Australia seeks to invest in high-quality science to improve the knowledge base for managing these resources sustainably.



These five 'R&D arenas', with the planned outputs shown, presently encompass 15 national R&D programs supported by Land & Water Australia and partner organisations. A diagram of the R&D program structure is on page 30.

Australian Government
Land & Water Australia

1 October 2003

Senator the Hon. Judith Troeth
Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry
Parliament House
CANBERRA ACT 2600

Dear Minister,

Land & Water Australia
Annual Report 2002–03

In accordance with section 28 of the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act), I have pleasure in presenting to you the annual report of Land & Water Australia for 2002–03. The report has been prepared in accordance with the PIERD Act, the *Commonwealth Authorities and Companies Act 1997* and the Commonwealth Authorities and Companies (Report of Operations) Orders 2002.

Yours faithfully,

Roberta Brazil
Chairperson

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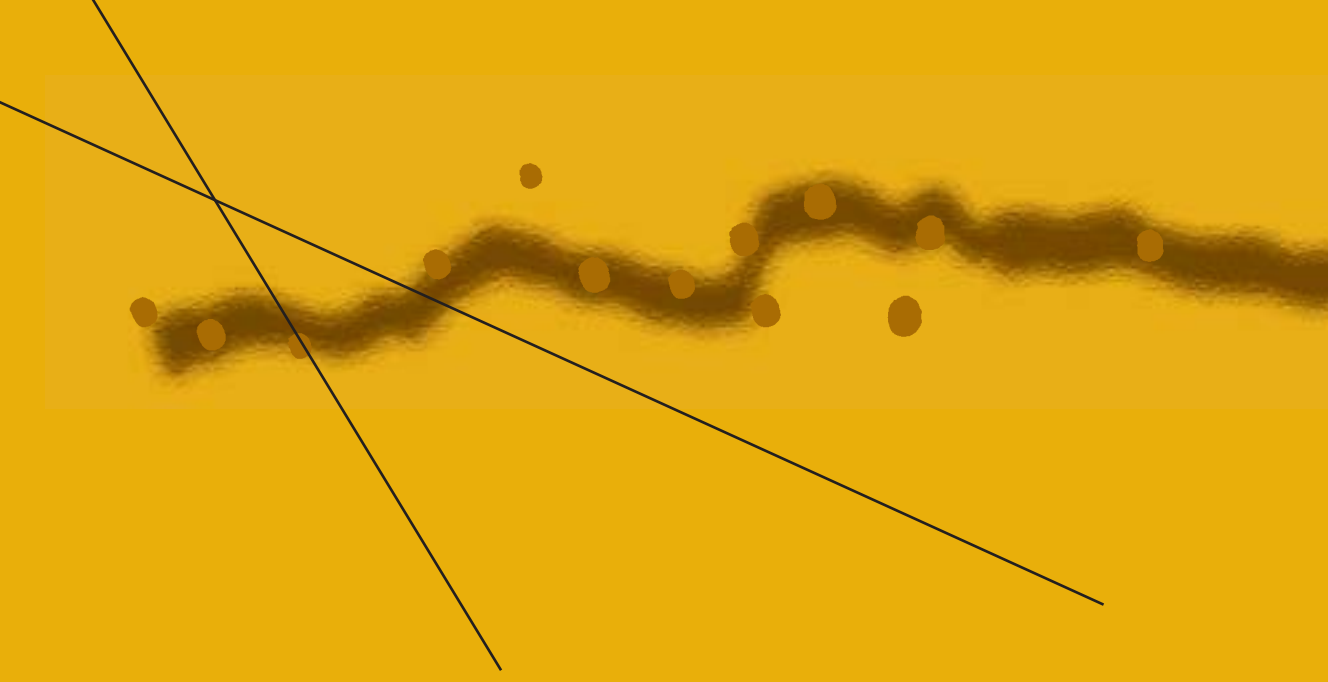
Land & Water Australia

Annual **Report**

> 2002–03

Land & Water Australia's mission is to provide national leadership in generating knowledge, informing debate and inspiring innovation and action in sustainable natural resource management.



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Introduction

>

Photo: Lyn Brazil.

Land & Water Australia Chair, Bobbie Brazil, by the Condamine River with her dog Pluto.

From **the Chair**

Land & Water Australia has had a very busy and successful year, managing its existing research and development (R&D) portfolio, communicating its research outputs, establishing new R&D initiatives, identifying future R&D investments, and developing new roles for the Corporation.

The major strategic discussion around the Board table this year reviewed the role of the Corporation in light of the major changes in our operating environment over the last decade, notably the huge increase in public and political concern about natural resource management issues. The Board identified three distinct roles for Land & Water Australia: our core business as an R&D investor, broker and manager; a national leadership and coordination role across natural resource management research; and provision of R&D brokering and management services under contract to other organisations, where those activities complement our own portfolio. Consistent with all three roles, the Corporation has been exploring the possibility of establishing a foundation partnership with CSIRO for the Healthy Country Flagship Initiative. This partnership has the potential to achieve a substantial critical mass in the science needed to improve water management in Australia.

This has been the first year of the new Board appointed from 1 July 2002. I am delighted with the way new directors have settled in to their roles and with the functioning of the Board as a whole. Our meetings (in Adelaide, Perth and Canberra twice) have invariably been stimulating and productive, albeit arduous at times given the range and complexity of issues. The Board places a very high priority on achieving the highest standards of corporate governance and was pleased to see that Land & Water Australia has been given a clean bill of health in internal and external audits and through the external corporate governance review commissioned by the Australian Government Department of Agriculture, Fisheries and Forestry.

The Board places a very high priority on achieving the highest standards of corporate governance and was pleased to see that Land & Water Australia has been given a clean bill of health in internal and external audits and through the external corporate governance review

The Board participated at a strategic level in identifying four potential new areas of research, chosen through a systematic scoring process against 14 criteria under broad headings of attractiveness and feasibility, from an initial list of 64 possible areas of investment. The scoping of these four areas of research into detailed investment proposals for consideration at our December 2002 meeting has been a very valuable process, allowing us to discuss long-term research needs with a wide range of stakeholders from across Australia. I am confident that these new priorities will ensure that the Corporation's research portfolio continues to meet Australia's key knowledge needs for sustainable natural resource management. From a Land & Water Australia perspective, we were delighted to see the sustainability of land and water resources accorded such a high priority in the Prime Minister's statement on national research priorities.

The Board appreciates that the staff of the Corporation have worked extremely hard during the year, doing a great job in managing the existing portfolio while negotiating the establishment of new initiatives, scoping new areas of research, and developing new roles for the Corporation. It may be a cliché to claim that our people are our greatest asset, but it is nonetheless true, and we value the calibre of our employees very highly.

I would like to make particular mention of Dr Richard Price, who resigned in June after being with the Corporation in a range of management roles since its inception, notably leading our research investments in dryland salinity, climate variability, social and institutional research, and sustainable farming systems. Richard takes on a challenging consultancy contract to Meat and Livestock Australia as coordinator of the Sustainable Grain and Grazing Systems initiative. On behalf of the Board, I would like to record our appreciation to Richard for his tremendous contribution to the Corporation and more broadly to natural resource management research over the last 13 years.

As ever, the coming year promises to be an exciting one: as we commence the development of a new strategic plan; as we see the new initiatives started this year start to gather momentum; as we develop our coordination role; as we finalise the nature and extent of our involvement in Healthy Country; and as we make budget allocations to the future areas of research that have been scoped this year. I'm looking forward to it very much.

Roberta Brazil
Chairperson

Highlights of **2002–03**

The **National Dryland Salinity Program** (NDSP) provided significant methods and tools to planning groups associated with the National Action Plan for Salinity and Water Quality, including:

- groundwater flow system to integrate knowledge about salinity risks, drivers and management options;
- dryland salinity evaluation approach to guide mapping, monitoring and modelling of key biophysical attributes;
- FLOWTUBE model to rapidly appraise salinity risks and timeframes associated with land use options at the catchment scale;
- techniques to estimate recharge and discharge;
- tools to assess afforestation impacts on water yield, impacts of land use changes on groundwater response at regional level, and the time to reach a target salt load and flow concentration in a stream;
- a saline soil management framework based on hydrology, landscape features, drainage and chemistry;
- detailed guidelines for estimating costs of dryland salinity;
- a decision support system on productive use of saline lands, and selection of engineering options for discharge management;
- a decision tree to assess likely ecosystem responses to salinity and possibilities for management or restoration;
- a method for assessing the likely fate of species in areas at risk from waterlogging and saline conditions;
- a basis for a predictive system on salinity tolerances of stream macro-invertebrates;
- a drainage meter to help farmers to evaluate deep drainage (potential recharge); and
- the NAP-List database of catchment assessment and planning models, tools and expertise, and a users' guide that describes the types of tools, models and frameworks used in planning in the states and territories.

The **wool industry** is at the forefront of investment in environmental sustainability in a commercial context. Under way for 15 months, with more than two-thirds of the program in place, Land Water & Wool is a five-year R&D extension initiative by Australian Wool Innovation and Land & Water Australia.

The 2002–03 drought has had a devastating impact on Australian farmers and on land and water resources. Products developed by the **Climate Variability in Agriculture R&D Program** (CVAP) over the last decade have helped more than one in two cotton and sugar cane farmers who adopted seasonal climate forecasts to take advantage of the forecast good seasons to build up reserves for the drought years. The products include:

- SILO, which makes it easier for advisers and land managers to gain access to historical climate information and to interpret it; and
- Whopper Cropper, which analyses opportunities for a summer crop in northern cropping areas, taking into account existing fallow moisture and the rainfall prospects.

Photo: Michael Taylor.

A massive dust storm moved across Griffith, NSW on 12 November 2002. A grim consequence of the worst drought in a century and the highest Australian maximum temperatures on record between autumn and spring.

On completion of the previous phase of CVAP in June 2002, the partnership arrangements for a new program were developed. In addition, 12 short-term, exploratory projects were able to be funded following an allocation of $500,000 from the Natural Heritage Trust. These projects have allowed a better understanding of the current impacts of climate change and applications in water resources.

CVAP has given high priority to improved seasonal forecasts in southern Australia by funding major projects to add Indian Ocean influences to the Bureau of Meteorology operational forecast system. The seasonal forecasts of early 2003, as the El Niño weakened, were influenced by warmer-than-average sea surface temperatures in the Indian Ocean. Previously, seasonal climate forecasts by the Bureau had been based on the Southern Oscillation Index, which in the main reflects the strength of the El Niño or La Niña effect in the Pacific Ocean.

New **irrigation knowledge** generated included:

- better measurement of water use and losses from irrigation channels to paddocks;
- practical application of partial rootzone drying and regulated-deficit irrigation technology to dramatically improve the efficiency of water use in appropriate crops;
- progress towards a national framework for assessing the ecological risk of irrigation schemes at catchment scale;
- a water decision support framework to minimise water use and maximise productivity with permanent horticulture plantings;
- removal of nutrients from irrigation drains using wetlands; and
- development of common language, nationally, for the terms and definitions to describe and understand water use efficiency.

The welcome announcement of a Cooperative Research Centre for Irrigation Futures culminated 12 months of discussion by the National Program for Sustainable Irrigation to ensure a research future focused on addressing the sustainability of irrigation — reducing environmental impact, increasing productivity, and maximising community benefits.

The new Cooperative Research Centre for Irrigation Futures will address the sustainability of irrigation

The **National Rivers Consortium** (NRC) invested in tertiary and vocational training and education courses to start in 2003–04 to increase the capacity and skills of river managers. Vocational education and training has been funded for the Great Southern TAFE (for WA and South Australia) and for TAFE NSW Riverina Institute (riverine course); and for a graduate certificate course in riverine restoration and management at Charles Sturt University.

With funding from the Australian Government Department of Agriculture, Fisheries and Forestry, the Corporation managed two successful research projects on 'Institutional Arrangements for Water Authorities to Drive Water Use Efficiency' and 'Investment Strategies for Transmission Losses'.

The **National Riparian Lands R&D Program**, in collaboration with the Native Vegetation R&D Program and Joint Venture Agroforestry Program, produced guidelines to help people managing the riparian zone to diversify their farming practices so that triple-bottom-line outcomes can be achieved.

For the first time, ecological, physical, chemical and social aspects of riparian zone functioning have been integrated into an easy-to-use model, available at www.rivers.gov.au, that enables people to learn about the science behind how rivers work.

The new, easy-to-use model enables people to learn about the science behind how rivers work

The **National River Contaminants Program** produced technical guidelines on managing nutrients in floodplain wetlands and shallow lakes, river flows and blue green algae, and managing phosphorus in catchments. The program also generated improved knowledge of:

- in-stream and riparian zone nitrogen dynamics,
- catchments nutrients and sediment budgets,
- impacts of contaminants and flow on riverine ecosystem production,
- predicting salinity-induced loss of biodiversity,
- risk-based approaches for managing contaminants in catchments,
- a model of a catchment contaminant cycle,
- innovative techniques for managing multiple threats to high-value aquatic systems,
- a potential paradigm for managing salinised ecosystems, and
- dynamics of colloidal material in a turbid tropical river.

Photo: Glenn Conroy, Land & Water Australia.

John Childs, Land & Water Australia director, launched the book *Managing & conserving grassy woodlands* and congratulated CSIRO for this publishing initiative. Pictured with John are (centre) Katina Heard, a contributing editor to the book, and Dr Jann Williams, previous program coordinator of the Native Vegetation R&D Program, managed by Land & Water Australia, which funded much of the research presented in the book.

The **Native Vegetation R&D Program** published:

- *Managing & conserving grassy woodlands*, which explains the importance of planning at a landscape scale and provides the technical foundations for a set of principles that will enable landholders to maintain or enhance productivity without compromising ecological sustainability.
- *Wildlife on farms*, which outlines how farmers can incorporate wildlife management into normal farming practices so businesses can continue to be run productively while managing the key habitats for native animals, birds, reptiles and frogs.

Some useful native vegetation management guidelines include the finding that in the native pastures of south-east Queensland, large perennial grasses are better indicators of soil stability, infiltration and nutrient cycling than gross indicators such as severe soil erosion.

A major project by CSIRO on the genetic viability of plant species in fragmented landscapes showed that plants in small remnants may have a better chance of survival if they are near a larger source of genetic material. This project is also addressing the quality of the seed in remnants, which is a growing issue for revegetation activities in southern Australia.

Early results from a native vegetation research project in the Gippsland Plains region of Victoria show that for declining woodland bird species, two significant influences are the total vegetation cover and the amount of tree cover in patches of at least 20–100 hectares. Interestingly, the results from this work suggests that diversity of vegetation types, especially streamside vegetation, is a major influence on overall richness and diversity of bird species.

The catalytic nature of native vegetation research is demonstrated by a project on grassy white box woodlands in NSW, which was the genesis of a project that utilised local landholders to deliver small incentives for managing grassy woodland. This project grew into something bigger again when it was merged into a project on conservation management networks. This demonstrates how landholders value the support of extension and incentive programs, especially when delivered through landholders.

Land & Water Australia signed a memorandum of understanding with Queensland's Consortium for Integrated Resource Management to **improve alignment of R&D priorities at the national and state level, enhance knowledge exchange and facilitate collaborative R&D**. The consortium includes Primary Industries, Natural Resources and Mines and the Queensland Environment Protection Authority, CSIRO, the University of Queensland, and Griffith University.

A memorandum of understanding with Queensland's Consortium for Integrated Resource Management will improve alignment of R&D priorities at the national and state level, enhance knowledge exchange and facilitate collaborative R&D

Land & Water Australia, in a new partnership with Federation Press, published two publications based on research from projects in the Corporation's in the Social and Institutional Research Program:

- *Managing Australia's Environment*, which distils the lessons from 30 years of Australian resource and environmental policy;
- *Reinventing the Common*, which provides a practical approach to ecological sustainability and profitable production through common property resource systems.

Photo: Glenn Conroy, Land & Water Australia.

(R–L) 'Managing Australia's Environment' is the first in a series of 'environmental solutions' publications jointly published by Land & Water Australia and Federation Press. Andrew Campbell, Executive Director of Land & Water Australia, launched the book, which distils the lessons from 30 years of Australian resource and environmental policy. The book is authored by Dr Su Wild River and Dr Steve Dovers from the Centre for Resource and Environmental Studies at ANU. Linda Nix and Diane Young from Federation Press (and Su Wild River's daughter Myrtle Wild) lent their support at the book launch.

Photo: Glenn Conroy, Land & Water Australia.

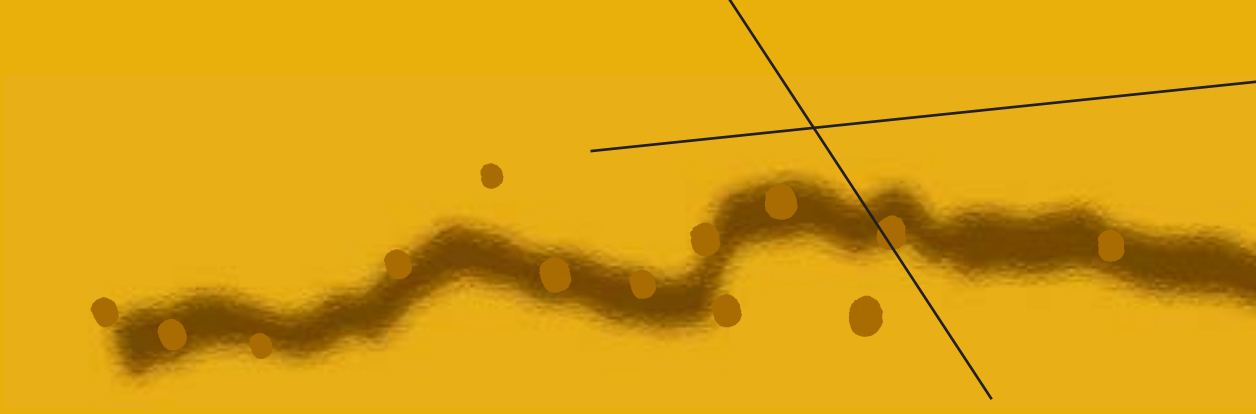
Authors of the book *Reinventing the Common* (left to right), David Brunckhorst, Sima Williamson and (insert) Gerard Kelly, with Phil Coop, who started the Tilbuster group — the subject of the book. Its main theme is cross-boundary farming for a sustainable future. The Tilbuster Commoners, as they like to be known, are property owners on the New England Tableland in NSW who succeeded in making a profit, despite the worst drought in 100 years, through a cooperative approach to sharing property and rotating crops and animal grazing.

Land & Water Australia became a partner in the 'Capacity building for innovation in rural industries' cooperative venture, managed by RIRDC, to enhance the understanding of learning, improve organisational arrangements to support rural human capacity-building, and inspire innovative farming practices.

Futures research from Land & Water Australia, building on the completed Redesigning Agriculture for Australian Landscapes Program, published five free publications which are available to download at www.lwa.gov.au:

- Review of biotechnology issues and opportunities for Australian natural resource management;
- Review of farmer-initiated innovative farming systems;
- Mapping regional metabolism: an essential decision support tool for natural resource management;
- Documenting the concepts of the 'ecosystems farm management' approach; and
- Conceptual framework for landscape redesign.

The **National Groundwater R&D Program** concluded with the publication of a guide on fractured rock aquifers that covers the suitability of groundwater models for simulating flow in fractured aquifers, drawing on three projects in the Clare Valley (South Australia), Atherton Tablelands (Queensland) and Wagga Wagga (New South Wales).



Report of **Operations**

> **Part 1**:

> The directors' review

> of operations and

> future prospects

Part 2, describing operational and financial results,
starts on page 29.

Part 3, describing corporate governance matters,
starts on page 63.

Part 4, describing other corporate management matters,
starts on page 77.

Certificate concerning

the report of operations

The directors of the Land and Water Resources Research and Development Corporation* are responsible, under section 9 of the CAC Act, for preparation of the following report of operations in accordance with the CAC Orders.

This report of operations is made in accordance with a resolution of the directors at their meeting of 5 September 2003.

The date of the report is 1 October 2003.

Roberta Brazil
Chairperson

* Land and Water Resources Research and Development Corporation is the legislated title of Land & Water Australia

The directors' review of operations and future prospects

Land & Water Australia performed well during 2002–03 in relation to its statutory objects and functions, the Strategic R&D Plan 2001–06, and its principal outputs as set out in the 2002–03 Annual Operational Plan.

The overall outcome to which the Corporation is working is encapsulated in the mission statement: to provide national leadership in generating knowledge, informing debate and inspiring innovation and action for sustainable natural resource management.

Land & Water Australia performed well during 2002–03

The strategic directions that the Corporation is taking towards that outcome are set out in the Strategic R&D Plan 2001–06. The 2002–03 year saw very solid progress in all these strategies:

- active development of partnerships with the major rural industries utilising land and water resources;
- work to bridge the gap between natural resource management research and policy;
- more emphasis within the R&D portfolio on work at a landscape scale;
- a more integrated approach to research investment and management across its social, economic and biophysical dimensions;
- managing knowledge and information generated by the Corporation's whole portfolio of investments over the last 13 years, not just current contracts under management; and
- continual improvement in our effort to encourage the adoption of our research outputs.

From the Board's perspective, we have been very pleased to see the commencement of major research initiatives in Sustainable Irrigation, Sustainable Grain and Grazing Systems, and Managing Climate Variability. These new initiatives, along with the Land, Water & Wool program, consolidate our partnerships with the major broadacre industries in Australia, which are now major investors in natural resource management R&D.

Major research initiatives started in sustainable irrigation, sustainable grain and grazing systems, and managing climate variability

We have also managed a number of strategic projects for the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust on behalf of the Australian Government Department of Agriculture, Fisheries and Forestry and Department of Environment and Heritage. It is pleasing to see better engagement between science and policy through such projects.

It is also very heartening to see the impacts of previous Board decisions to enhance the Corporation's communication capacity and effort reflected in dramatic increases in demand for R&D outputs from our established programs.

The sustainability of the resource base on which Australia's primary industries depend is at the core of the Land & Water Australia mandate under the *Primary Industries and Energy Research and Development Act 1989* (PIERD Act). In accord with s.28 of the PIERD Act and s.516 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), we are required to report on Land & Water Australia's contribution to ecologically sustainable development (ESD).

The vast majority of our research portfolio is directed towards improving the knowledge base for sustainable management of natural resources — in particular, land, water and vegetation — so we are well placed to report.

The detailed report on the research portfolio (pages 29–54) outlines how the Corporation is investing in research that will help to minimise or reverse degradation of natural resources; develop more sustainable land use systems; identify priorities for resource protection; and improve management techniques for long-term resource conservation.

Our research portfolio is directed to support both better management of natural resources, and better policies and institutional arrangements more consistent with ESD principles.

The report against outputs as set out in the Annual Operational Plan is tabulated in detail on pages 24–28. It reveals that about 90% of the planned outputs for 2002–03 were achieved across the R&D portfolio. Directors are particularly heartened by the breadth and balance of the Corporation's research portfolio.

About 90% of the planned outputs for 2002–03 were achieved across the R&D portfolio

Generating new knowledge

The Land & Water Australia R&D portfolio contains many examples of new knowledge created through research (see the Innovations Database at www.lwa.gov.au). Knowledge assets created during 2002–03 included research outputs on the following:

- Improved understanding of vegetation clearing thresholds and their relevance to policy.
- The strengths and weaknesses of the 'focal species' approach to landscape design.
- Assessment and quantification of ecosystem services in the Goulburn–Broken catchment.
- Assessing and planning sustainable development at a catchment scale in irrigation regions.
- Integrating ecological risk management practices into the water industry.
- Understanding and analysing the total value of irrigation to the Australian economy.

Photo: Julius, Tower Photographics.

The Hon. Warren Truss, Australian Government Minister for Agriculture, Fisheries and Forestry (second from right) presented two Australian Government Department of Agriculture, Fisheries and Forestry Science & Innovation Awards, sponsored by Land & Water Australia, to Danielle Edwards from Western Australia and Jeff Meggs from Tasmania. Land & Water Australia Chair, Bobbie Brazil, and Executive Director, Andrew Campbell, were also present. 'Coincidentally, both Land & Water Australia award winners will use their science skills and the support of the award to gather information to promote sustainable development in the forestry industries in their home states,' said Ms Brazil.

Danielle will investigate the population dynamics of the sunset frog and Nicholl's toadlet in forest reserves in south-western Australia to determine the most appropriate management practices to ensure the species' survival. Jeff's work in Tasmania has demonstrated that rotting logs and fallen timber should be considered (and managed) as a forest biodiversity asset, rather than just 'waste'. The Science & Innovation Awards for young people are an Australian Government initiative aimed at enhancing the use and recognition of innovation, science and technology in rural industries.

- Understanding the impacts of salinity levels on aquatic biodiversity as a means to underpin water management in salinising landscapes.
- Appreciation of the costs and benefits of salinity management options in cropping regions of Australia.
- Australia's most comprehensive Salt Sensitivity Database, containing some 1500 entries on more than 1200 different taxa, statistically analysed to identify sensitive and tolerant taxonomic groupings.
- Exploration of ways to share, combine and integrate Aboriginal and non-Aboriginal knowledge and information for regional management of natural resources.
- Development of genetic markers within soil bacteria that could be used as indicators of soil health.
- Characterisation of sediment composition, the role of sediments in nutrient cycling, and the relative contribution of organic matter from terrestrial and marine sources in a macro-tidal tropical estuary — the lower Ord River and estuary.
- Development of visualisation tools using virtual reality technology that could help community groups and catchment bodies to 'imagine' future landscapes and to better explore alternative scenarios.

Land & Water Australia's R&D increased the pool of knowledge assets available to the community

Synthesis

Land & Water Australia has drawn on research findings across its portfolio to compile accessible communication products, including:

- *Property: rights and responsibilities* — a compilation of papers by leading Australian thinkers on the highly topical issue of property rights as they relate to management of natural resources (downloadable at www.lwa.gov.au/downloads/PR020440.pdf).
- Models for achieving best practice in natural resource management policy, legislation and institutions — and distillation of lessons in two books in a new series on environmental solutions published by Federation Press, *Managing Australia's Environment* and *Reinventing the Common*.
- Triple bottom line analysis of the outcomes of the National Dryland Salinity Program.
- A national classification of the status of native vegetation.
- *People Make a Difference* — a new magazine exploring the human dimension of natural resource management from different perspectives.
- Current knowledge on water use efficiency collated and widely promoted.
- Two editions of the magazine *Thinking Bush*, which has received much favourable feedback from readers, with its strong practical approach to complex ecological concepts.
- Joint Venture Agroforestry Program (JVAP — managed by RIRDC) guidelines for trees for shelter, and managing farm forestry for biodiversity.
- The first of the Integration Series booklets (*Managing Riparian Lands for Multiple Uses*) pulling together research funded by JVAP, Land & Water Australia and the Murray–Darling Basin Commission.

Good communication products make Land & Water Australia's R&D more accessible

Building capacity

Land & Water Australia also invested to improve the knowledge, skills and capacities of people working in natural resource management at a number of levels, including the following:

- Fourteen community fellowships, funded by a private philanthropist, to assist non-scientists with valuable knowledge and insights gained through their personal experiences in natural resource management to share their stories and learnings with a wider audience.
- Thirty postgraduate scholarships (29 PhD, 1 Master), to help to develop a new generation of researchers in fields related to natural resource management.
- Twelve fellowships for travelling and visiting researchers to assist Australian researchers to tap into leading international work either by travelling overseas or assisting leading international scientists to spend time in Australia.
- The first intake in the new Graduate Certificate in River Restoration and Management (a river managers' training and education program initiated and supported by the National Rivers Consortium), recently advertised by Charles Sturt University.

An important priority of Land & Water Australia is to explore ways to share, combine and integrate Aboriginal and non-Aboriginal knowledge and information for regional management of natural resources. Photo by Kylie Pursche from the Kimberley Land Council of community meeting for Ord Bonaparte Program ethno-biological Plants and Animals project on Kiji and Jaru country.

- Needs analysis and training workshops to help Aboriginal communities in the East Kimberley to become more engaged in regional natural resource management programs.
- Analysis of the opportunities for accrediting training and education modules for the National Action Plan for Salinity and Water Quality.
- A 'Workboot' series book on farm forestry, produced by JVAP, aimed at students who are 8 to 12 years old.

Learning the lessons

One of the key ways in which Land & Water Australia adds value to R&D outputs in its brokering and management roles is through a significant evaluation effort at corporate and program levels. This effort seeks to distil and disseminate the key lessons emerging, and to feed them into future programs.

Reviews distil and disseminate emerging lessons and feed them into future programs

Program-level reviews undertaken during 2002–03 included the following:

- Evaluation of Phase II of the National Dryland Salinity Program, drawing out six key messages:
  - Salinity costs are significant and rising. Protection must be strategic.
  - Profitable options for reversing the trend are lacking (but are under development).

  - There is no single salinity problem. As the ultimate in diffuse pollution, it challenges us to look beyond traditional policy instruments.
  - Integrated catchment management must be seen as only one approach to deal with dryland salinity.
  - Vegetation management remains the key to managing water resources, although the benefit–cost of revegetating catchments requires careful analysis.
  - Lack of capacity is an important but secondary constraint to managing salinity.
- Review of the Native Vegetation R&D Program:
  - The program is seen as very important by a wide range of stakeholders because of the fundamental importance of native vegetation and biodiversity to the sustainability of landscapes.
  - The program is on track and has greater-than-expected achievement of project outputs.
  - The portfolio of projects is making major contributions to the goal, objectives and themes of the program, and is contributing to Land & Water Australia's corporate objectives.
  - The program is meeting all its key management functions and accountabilities.
  - The impact of the program will be enhanced by a greater focus on onground delivery of the R&D results.
  - The key priorities for a future program on native vegetation are:
    - values of native vegetation,
    - landscape change processes,
    - land degradation risks and hazards associated with vegetation management,
    - assessing vegetation condition,
    - greenhouse issues,
    - genetic conservation,
    - primary production benefit–cost analysis,
    - restoration, and
    - incentives and duty of care.
- Mid-term review of the Ord–Bonaparte Program, leading to a significant redesign of the program to better reflect available resources and stakeholder support.

Working with regions and industries

As outlined above, a key strategic direction for the Corporation is the development of significant co-investment partnerships with the major resource-using industries in rural Australia, in particular through our sister R&D Corporations. A complementary new stream of activity is to develop partnerships directly with the new catchment bodies emerging across Australia that will be instrumental in the implementation of the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust.

The Corporation develops co-investment partnerships with the major resource-using industries in rural Australia

Achievements through such partnerships this year included:

- Completion of the Sustainable Grazing Systems harvest year, resulting in the development of tools and training modules for graziers covering management of water, soils, pastures, biodiversity and saline lands.
- Establishment of four producer networks (WA, SA, Victoria and NSW) within Land, Water & Wool to develop and demonstrate on a farm scale better grazing systems for saline lands. About 600 farmers are already directly involved, about half the target, with at least 900 farmers anticipated to be involved by the end of 2003.
- Catchment projects to demonstrate best-practice riparian restoration.
- A project implemented at the regional level to define sustainable development in irrigation regions, engaging all private and public sector interests.
- Industry-specific riparian management guidelines for the wool, sugar, cotton and grains industries.
- A collaborative national research project aimed at dramatically increasing water re-use and recycling in horticulture.

Photo: Peter Walton Photography.

Financial performance

From a Board perspective it was pleasing to note a significant improvement in the Corporation's financial reporting and forecasting performance this year.

The Corporation's revenue increased to just under the five-year target set in the 2001–2006 Strategic R&D Plan — several years ahead of schedule

The financial performance of Land & Water Australia in 2002–03 was also pleasing. The Corporation's revenue in accrued terms for the year was $22.5 million, almost $3 million in excess of budget and just under the five-year target set in the 2001–2006 Strategic R&D Plan — several years ahead of schedule.

This is a significant level of financial leverage on an appropriation from the Australian Government through the Department of Agriculture, Fisheries and Forestry portfolio of $11.9 million. More than 100 new research projects were contracted, attracting $10 million of co-investment in cash and $13.7 million in-kind from research providers. Research investments of $19.7 million also exceeded budget by almost $3 million.

Administration expenditure exceeded budget by $0.3 million, amounting to 7.2% of total expenditure, slightly above the Board's 7% target. The equity or accrued carry-over at year end of $1.7 million was in line with forecast and modest at less than 10% of research expenditure. This was a commendable result, given the three major new research initiatives commencing within the Land & Water Australia portfolio and the slower-than-expected development of the National Land & Water Resources Audit.

Communication performance

The Corporation's performance in communicating its R&D outputs was also very satisfactory, and continues to improve. The 'restumping and rewiring' of our communication effort is now well behind us and paying off handsomely. We now have a superb publications catalogue and distribution system, both in hard copy and electronically. Hot-off-the-press information about programs is also targeted to particular audiences through e-mail bulletins such as *SIRP's Up*, the bulletin for the Social and Institutional Research Program. With minimal promotion, the use of our systems by the general public and the downloading from www.lwa.gov.au and associated R&D program websites of research outputs is increasing exponentially.

As an example of how the Corporation tailors information to meet people's specific needs, and to provide multiple entry points into our research information, www.rivers.gov.au caters for people working in 'rivery' areas. This and other R&D program websites refer people to Land & Water Australia if they require additional natural resource management information.

Downloads from the Land & Water Australia website increased by 175%

Our portfolio, and natural resource management research outputs more generally, are now much more searchable. This functionality is being taken up by large numbers of people, users of our systems who are becoming more sophisticated — knowing what they want and how to get it. Use of the Land & Water Australia web interface more than doubled in early 2003 to more than 300 visits per day, and more than 5,000 searches of our research portfolio took place from January to March 2003. Importantly, there were 10,000 downloads in that period alone — an increase in usage of 175%. We simply could not afford to be printing and distributing our research outputs in such numbers in hard copy. Our perceptions of improving performance in this area are underlined by figures from the stakeholder survey.

Risks and opportunities

The primacy on the national agenda of the issues that underpin our mandate is unprecedented. Australian Government investment on natural resource management issues has grown steadily to about $400 million (not counting R&D) in its own programs each year. Rural industries, often through R&D corporations, are placing more emphasis on natural resource management, and this is being reflected in their research portfolios.

The advent of the cooperative research centre program within the Science portfolio has further added to the overall Australian Government investment in natural resource management science. Including cooperative research centres, rural R&D corporations, CSIRO and other Australian Government agencies, more than 50 other organisations at the Australian Government level contribute to national investment (including state, territory and industry funding) in natural resource management research of more than $300 million annually.

From a Land & Water Australia perspective, the operating environment is ever more crowded, and our relative slice of the public funding cake is modest.

Our appropriation is about 5% of the total funding for natural resource management R&D. We estimate that we directly influence a further 15% of the total through our partnerships.

The spotlight of national attention has illuminated the contested nature of natural resource management issues. Land, water and vegetation management are no longer seen to be just about 'fixing problems', but also about Australian society facing and making difficult choices and managing difficult transitions.

So the things we ask of researchers have also changed. In addition to generating essential technical breakthroughs, science also needs to illuminate choices, relationships, trade-offs and consequences. Research has a key role to ensure that the debates Australia has to have are well informed. Such research differs in nature from the more typical (but still essential) problem-solving mode, and requires different types of engagement with decision-makers. This has very important implications for **Land & Water Australia as the leading national broker of natural resource management research**.

In parallel with these trends in the external operating environment, the balance between the different elements of our core business has also evolved. The proportion of our budget (but not the quantum of funds) allocated to funding research per se has declined. The effort required to broker and manage collaborative programs, to maintain partnerships at the program level, and to package and communicate R&D outputs, has increased. This trend has accelerated over the last two years as we have recognised the need to manage the Corporation's whole portfolio of R&D over the decade, and the need to rethink how science can best inform debate.

Senator Troeth is explicit that **Land & Water Australia is expected to play a leadership, integration and coordination role on natural resource management issues across RDCs**. The Corporation is well placed to take a more proactive leadership and coordination role in natural resource management R&D at the national level.

'Sustainable Australia' has been identified by the Prime Minister as one of four national research priorities. The national priorities process aims to achieve better value from the national investment in science through better coordination and more strategic direction and management of existing funds. Of the 50 or so organisations involved in natural resource management R&D at the national level, Land & Water Australia has arguably the broadest mandate; is disinterested in any particular commodity, region, discipline or research provider(s); and ranges across the biophysical and social sciences.

As the managing agent for the National Land & Water Resources Audit, the Corporation is also best placed to link the best available data and information to its research funding and management.

The Board of Land & Water Australia at its March 2003 meeting considered three possible development 'trajectories' for the Corporation. The first trajectory would refocus on our role as an R&D investor in

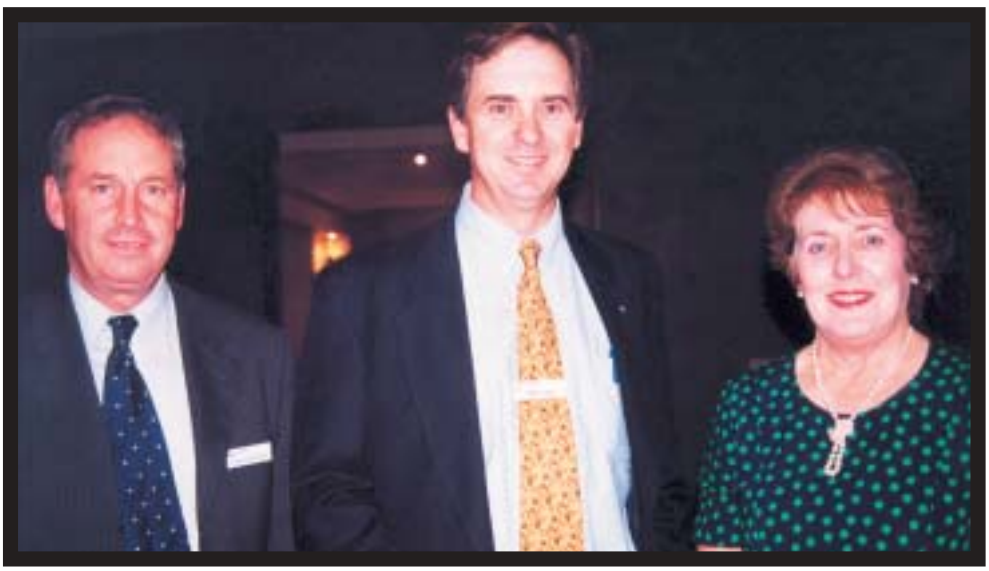


Photo: Glenn Conroy, Land & Water Australia.

The responsibilities of Senator Judith Troeth, Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry, include corporate governance standards of the rural R&D corporations. In doing so, she maintains close contact with corporation boards. Here she is with Land & Water Australia directors Charles Willcocks (Government Director, left) and Mike Logan.

our core R&D portfolio. We would engage in brokering and communication activities only to the extent that they add value to the core portfolio — those research investments identified and initiated solely at the discretion of the Land & Water Australia Board. The likely implications would be a smaller number of R&D programs with fewer funding partners, with greater management input on each program and improved efforts to achieve adoption. We are currently scoping some very exciting new research that will ensure that our core R&D portfolio remains at the leading edge of natural resource management in Australia.

The next of these trajectories would be to improve the Corporation's capacity to play a coordinating role across natural resource management R&D at a national level. It would necessitate greater investment in science policy and in our data-gathering and analytical capacity. It would also mean significant involvement of Corporation managers and directors in ongoing multi-agency processes.

The third trajectory would see the Corporation **expand its capacity to provide, on contract, research management services**. Land, Water & Wool, and the National Land & Water Resources Audit, are two examples of this mode of operation.

The Corporation has also been exploring the possibility of undertaking a contract to CSIRO to provide R&D management services for the Healthy Country Flagship Initiative. This partnership has the potential to achieve a substantial critical mass in the science needed to improve water management in Australia.

These three trajectories are not mutually exclusive. Our core business remains as an investor in R&D on issues identified through our own rigorous processes. The brokering, management and communication activities of the Corporation exist to add value to these core R&D investments.

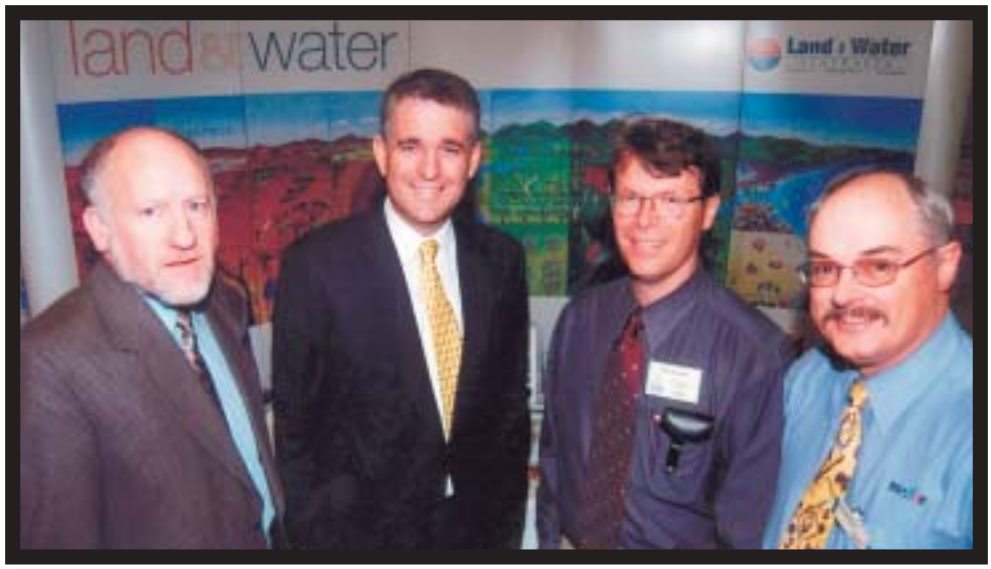


Photo: *Sunraysia Daily* newspaper.

The Hon. John Anderson, Deputy Prime Minister and Minister for Transport and Regional Services (2nd left) and Mr John Forrest, federal Member for Mallee (left), Mr Bill Tatnell, Sunrise 21 (2nd right) and Mr Ian Ballantyne, Victorian Department of Sustainability & Environment, visited the Land & Water Australia display at the National Action Plan for Salinity and Water Quality Roundtable at Mildura in October 2002.

The current process of identifying national research priorities, mapping current effort against these priorities, and trying to better coordinate Australia's overall research effort around them, presents significant opportunities for the Corporation. This underlines the need for us to improve our capacity to develop the second trajectory.

Land & Water Australia is not a 'research manager for hire' contract shop. Equally, however, directors agree that providing contract services can make sense where the activity overlaps with our own priorities and potentially extends the reach of our own portfolio by linking us more closely with end-users. In evaluating involvement in providing contract services, we need to be satisfied that the synergies with our own core R&D portfolio outweigh the opportunity costs of involving our people; that risks can be managed effectively; and that contracting out our services can provide some economies of scale and system enhancements for the benefit of our own portfolio.

Directors agree that to make the most of the opportunities inherent in the dynamic operating environment in natural resource management, and to anticipate and manage risks, the Corporation needs to guard zealously the integrity and quality of its core R&D portfolio. However, this objective can best be achieved if the Corporation does enhance its capacity to play a wider coordination role across natural resource management R&D; and, where synergies can be achieved with our core portfolio, the Corporation contracts its R&D broking and management services to other investors.

The directors' assessment of the **Corporation's performance**, 2002–03

In relation to nominated outputs

The following assessment is against the R&D arena outputs nominated in figure 2 on page 4 of the 2002–03 annual operational plan.

Performance measures	Assessment
Key outputs for each R&D activity (as detailed at chapter 8 of the annual operational plan) are met at 30 June 2003.	Land & Water Australia, in a strong performance, met 90% of its key outputs.

In relation to the Corporation's planned outcome

The following assessments, under headings nominated in figure 1 on page 3 of the 2002–03 annual operational plan, demonstrate the overall effectiveness in achieving Land & Water Australia's planned outcome.

Effectiveness in relation to leadership

To be, and be seen to be, at the forefront of Australian thinking on sustainable natural resource management.

Performance measure	Assessment
Stakeholder feedback through surveys. The extent to which R&D funded by Land & Water Australia puts issues on the national agenda.	**The Land & Water Australia stakeholder survey showed that 62% of respondents perceive the Corporation as 'good to excellent' in leading thinking on natural resource management issues.** Over all, Land & Water Australia is meeting expectation in all measures. The Corporation is performing well above expectation in raising national awareness on natural resource management issues, as shown by an exponential increase during the past year in media coverage of issues identified and supported by the Corporation. Land & Water Australia is also meeting its expectation in processes developed to target critical natural resource management issues. The Corporation is placing new issues on the national research agenda, such as endocrine-disrupting chemicals, northern Australian rivers and integrated approaches to environmental water allocation.

Effectiveness in relation to influence

To maximise the impact of the Corporation's investments, at onground policy and institutional levels, in improving the sustainability of natural resource management.

Performance measures	Assessment
Adoption of R&D funded by Land & Water Australia, measured through analyses and surveys of adoption rates. The ratio of total R&D effort in Land & Water Australia's programs to the core Land & Water Australia investment.	Over all, Land & Water Australia is performing above expectation. **There was a 175% increase in downloads of Corporation products as a result of systematic searches of the web-based Research Portfolio over the last year.** Together with an increased demand for hard-copy products, this figure indicates that the Corporation is delivering knowledge in an increasingly effective manner to potential users. Improved accessibility to products through user-friendly formats, more effective search capacity, and better awareness of available materials through promotional activities has contributed to this increase in adoption. Case studies indicate that there has been a wide range of adoption rates of the Corporation's leading innovations, from close to 100% of the target audience to a very modest proportion. Examples of very high rates include *Cotton best management practices (pesticides)*, *Benchmarking of irrigation water suppliers*, and AUSRIVAS river health assessment protocols. The stakeholder survey found **57% of respondents rated the Corporation's performance as 'good to excellent' in generating knowledge and informing debate on natural resource management**.

Performance measures	Assessment
	During 2002–03, Land & Water Australia achieved a cash leverage of 157%, excluding in-kind contributions. That is, **for every dollar invested by the Corporation other parties provided $1.57. This leverage ratio exceeds the Corporation's target three years ahead of schedule**.

Effectiveness in relation to relevance

To ensure that the Corporation targets investment to where it can make a real difference by meeting critical natural resource policy and management needs.

Performance measures	Assessment
The degree of alignment of Land & Water Australia-funded R&D effort with issues identified by key stakeholders and natural resource management experts as critical national priorities.	**The current Land & Water Australia research portfolio addresses at least 80% of the goals identified under the Prime Minister's number one national research priority 'An Environmentally Sustainable Australia'.**
Stakeholder feedback through surveys.	These include: • Water — a critical resource (five current R&D programs), • Transforming existing industries (three current and one proposed R&D program), • Overcoming soil loss, salinity and acidity (two current programs), and • Sustainable use of Australia's biodiversity (one current and one scoped R&D program). In addition, the Sustainable Industries arena is aligned with the third priority: 'Frontier Technologies for Building and Transforming Australian Industries.' Stakeholder feedback indicates that the Corporation is meeting expectations to help users benefit from research results. Land & Water Australia performed a little under expectation in meeting the community's needs and expectations of research. Over all, Land & Water Australia is meeting expectations in aligning investments to national R&D priorities, policy initiatives and community expectations.

Effectiveness in relation to return on investment

To maximise the return on public funding invested through the Corporation.

Performance measure	Assessment
The average benefit-cost ratio across the R&D and communication effort funded by the Corporation, with a target average of at least 10 to 1.	The return on investment was 3.5:1 (excluding qualitative data on environmental and social benefits) for six leading in-market innovations (66 projects evaluated in 2002–03): 1. Controlled traffic farming. 2. Minimising the impact of pesticides on the riverine environment. 3. Central Highlands Regional Resource Use Planning Project. 4. Improved seasonal forecasting using Indian Ocean information. 5. Benchmarking irrigation water providers in Australia. 6. Riparian lands guidelines. Conservative assumptions have been made regarding the benefits generated and the quantification of these benefits. Where possible, the environmental and social benefits have been identified and documented in in-depth case studies. The Corporation is approaching return on investment analysis with the intent of developing a consistent, rigorous, transparent framework under which to examine and compare investments over time. In previous years, a need to develop environmental and social measurements has emerged as a priority since a large proportion of the returns on the Corporation's investments fall into this category. This aspect, the intrinsically public good nature of the research generated by Land & Water Australia, significant lag times associated with environmental change, and problems of attribution of change have remained a challenge in this analysis.

Effectiveness in relation to accountability

To meet all statutory obligations and accountability requirements in a comprehensive, timely, transparent manner.

Performance measure	Assessment
Independent and internal audit reports; feedback from the Australian Government Department of Agriculture, Fisheries and Forestry and Australian National Audit Office; timeliness of compliance.	Land & Water Australia has complied with statutory obligations and accountability requirements beyond expectations. This is demonstrated by the following: • The ANAO audited end-of-year financials with no significant qualifications or management issues. • Minor instances of non-compliance were identified by the Audit Committee Statutes Review. • All recommendations from internal audit reports have been implemented. • The Australian Government Department of Agriculture, Fisheries and Forestry Corporate Governance Review (2002) identified a range of areas where Land & Water Australia is demonstrating better practice. An external review identified that the Board has sound corporate governance practices in place and risk was being effectively managed.

Report of **Operations**

> **Part 2**:

> The Corporation's

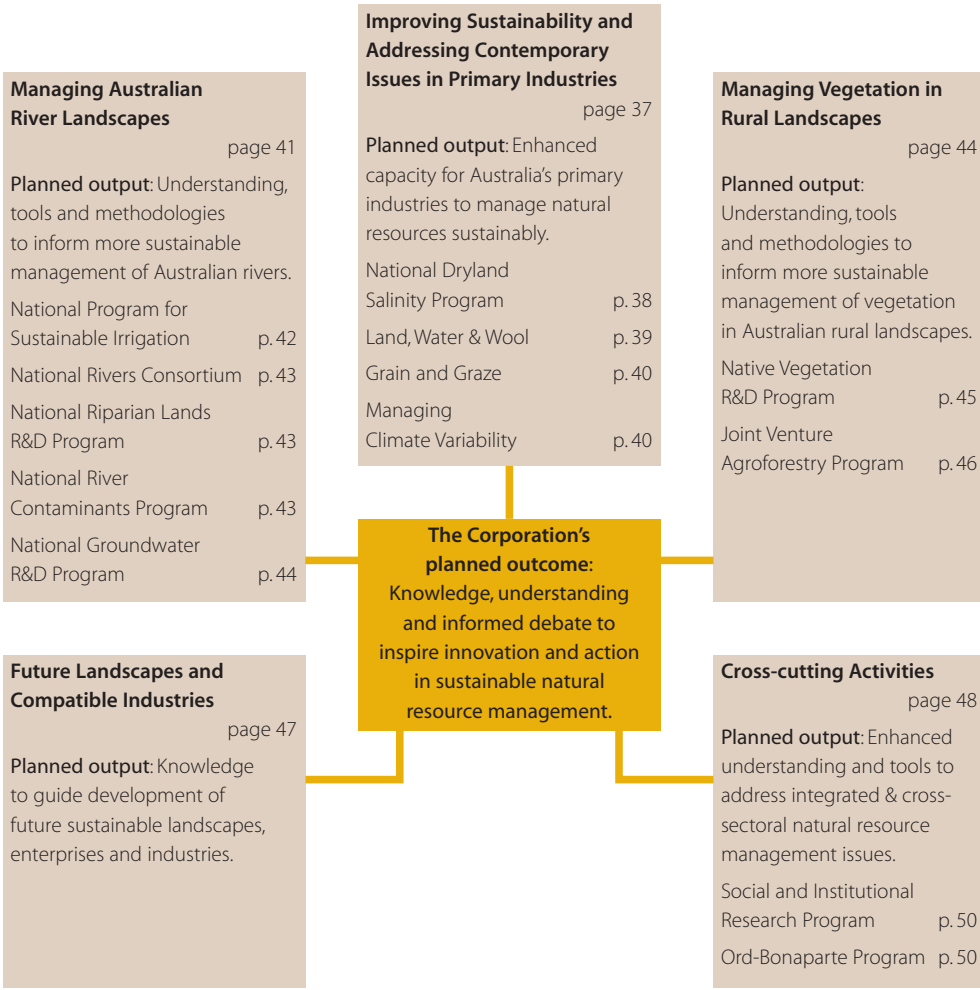
> operational and

> financial results

Part 3, describing corporate governance matters,
starts on page 63.

Part 4, describing other corporate management matters,
starts on page 77.

These five 'R&D arenas', with the planned outputs shown, presently encompass 15 national R&D programs supported by Land & Water Australia and partner organisations.



In addition:

- R&D conducted in response to a general call is on page 51.
- Details of the National Land & Water Resources Audit are on pages 53–54.
- Corporate outputs are described on pages 55–62.

Details of the publicly available databases on which R&D funded by Land & Water Australia is described are at page 68.

The Corporation's **operations**

Land & Water Australia's mission is to provide national leadership in generating knowledge, informing debate and inspiring innovation and action in sustainable natural resource management.

The main funding that the Corporation receives to achieve its mission is an appropriation from the Australian Government of almost $12 million each year. Additional funds are sourced from external partnerships within collaborative programs and other activities. Land & Water Australia also derives minor income from sources such as investments, royalties and sales of products, information and services. A graphical financial summary is on the following four pages.

As detailed in the audited financial accounts, the Corporation has maintained a low surplus of accrued funds of about $1.7 million at 30 June 2003 (2001–02 amount: $2.6 million). The Corporation maintains a small prudential reserve to cover contingencies in its R&D portfolio. All surplus funds are invested on deposit in banks approved by the Australian Government. During the course of the reporting year, the Corporation ensured that it met its debts and obligations as they fell due.

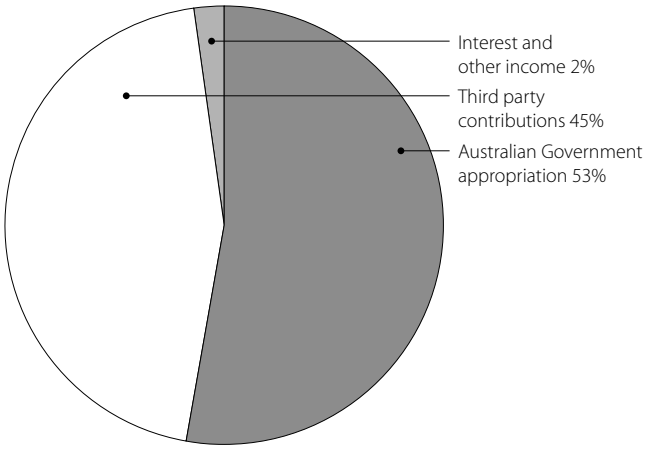
Land & Water Australia's corporate objectives, strategies and performance indicators, as set out in the 2002–03 portfolio budget statement and the Corporation's 2002–03 annual operational plan, are summarised on pages 24 to 28. These indicators were substantially revised in the 2001–2006 Strategic R&D Plan, and subsequently in the 2003–04 annual operational plan and portfolio budget statement. Next year's annual report will summarise performance against them.

The Corporation's R&D activities are in keeping with, among other things, the Australian Government's national research priorities and priorities for rural R&D, the Natural Heritage Trust and the Prime Minister's National Action Plan for Salinity and Water Quality (appendix 1 — page 119) and the *Environment Protection and Biodiversity Conservation Act 1999* (page 36).

The Corporation has developed a comprehensive, robust, consistent evaluation and monitoring strategy. The strategy enables performance and impacts to be tracked at corporate, program, project and systems levels. At a corporate level, the focus has been on the five corporate objectives (leadership, influence, relevance, return on investment and accountability) and their linkage to the 'quadruple bottom line' encompassing economic, environmental, social and accountability benefits. The 'public good' nature of Land & Water Australia's business and its role in encouraging sustainable natural resource management makes the evaluation task difficult. Environmental and social outcomes in particular are difficult to measure, and even more difficult to attribute to particular research investments. Although the Corporation has developed innovative methods and approaches to this challenge, they are still in their early phases of application.

The core business of the Corporation is management of national research programs. These programs, supported by partner organisations and linking with those organisations' programs, aim to bring together resource managers and researchers to jointly identify priorities and to ensure that research findings are adopted and implemented. Development of these programs and their efficient management was core business for Land & Water Australia in 2002–03. The programs are aggregated into five key output 'R&D arenas'.

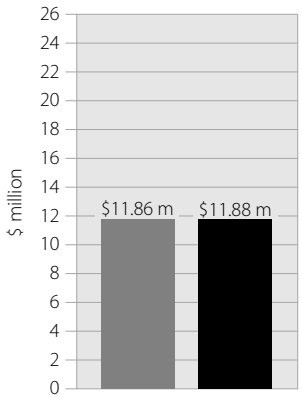
Revenue



BUDGET AGAINST ACTUAL REVENUE, 2002–03

Budget Actual

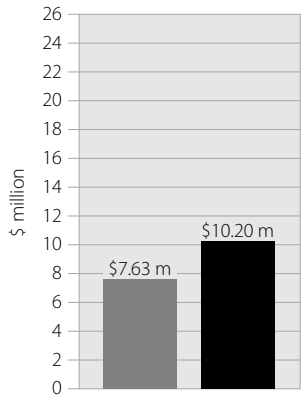
Australian Government appropriation



Trend: positive ▲

Reason for variation: increased indexation

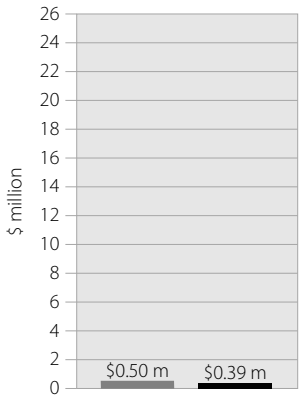
Third party contributions



Trend: positive ▲

Reason for variation: additional revenue sourced from collaborative programs

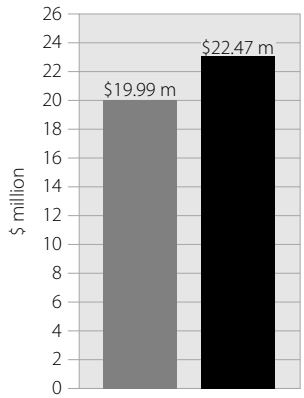
Interest and other income



Trend: negative ▼

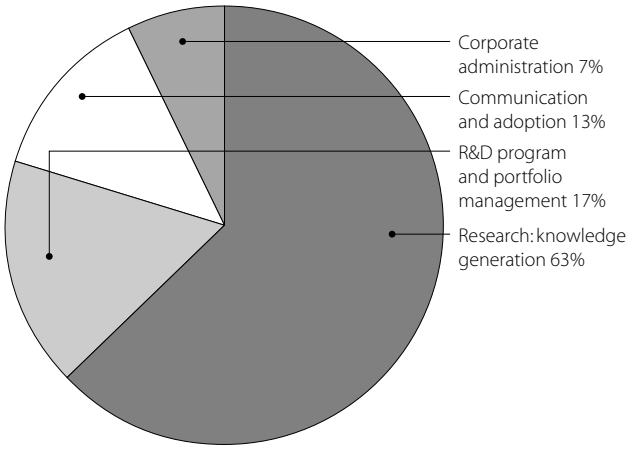
Reason for variation: reduction due to change in policy in treatment of return of R&D funds

Total income



Trend: positive ▲

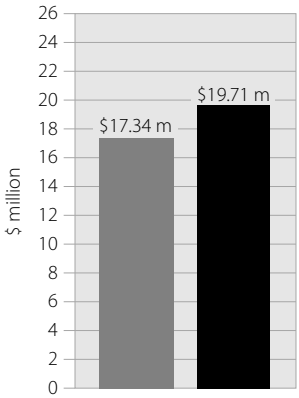
Expenditure



BUDGET AGAINST ACTUAL EXPENDITURE, 2002–03

Budget Actual

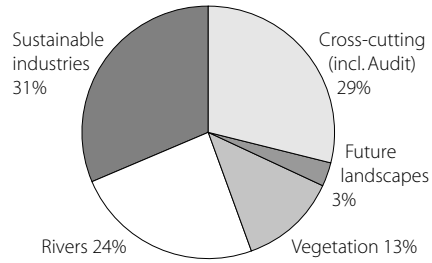
R&D programs



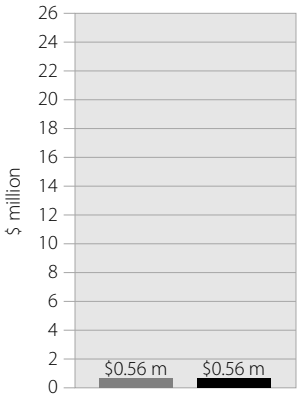
Trend: positive ▲

Reason for variation: excellent performance in additional R&D activity

LWA and third party expenditure across R&D arenas



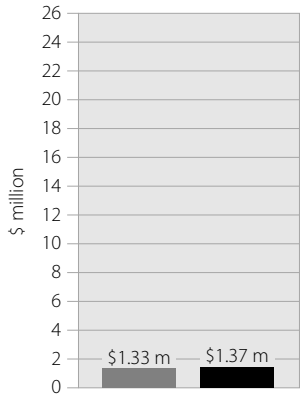
Corporate portfolio management



Trend: positive ▲

On budget

Corporate communication



Trend: positive ▲

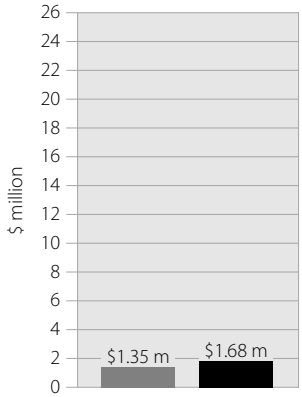
On budget

Expenditure

BUDGET AGAINST ACTUAL EXPENDITURE, 2002–03 (continued)

Budget Actual

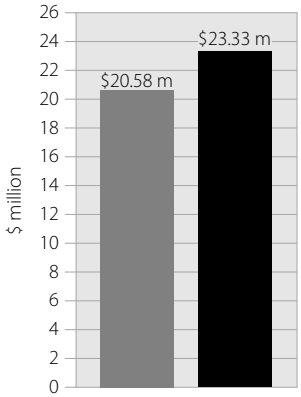
Corporate administration



Trend: negative ▼

Reason for variation: increased expenditure due to additional R&D activity under management and system development activities

Total expenditure

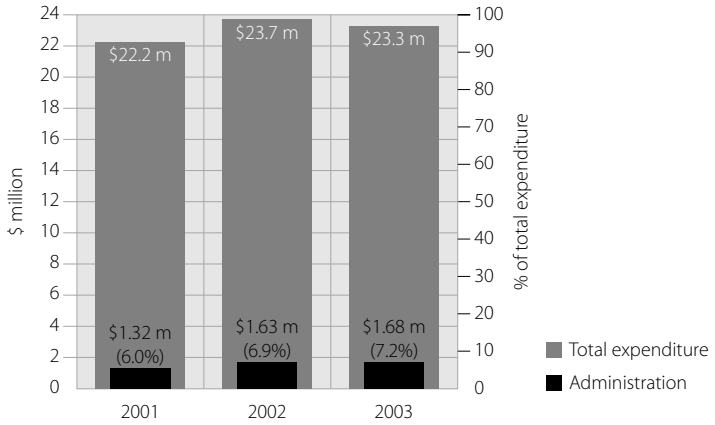


Trend: positive ▲

COMPARISON BETWEEN 2001–02 AND 2002–03 EXPENDITURE

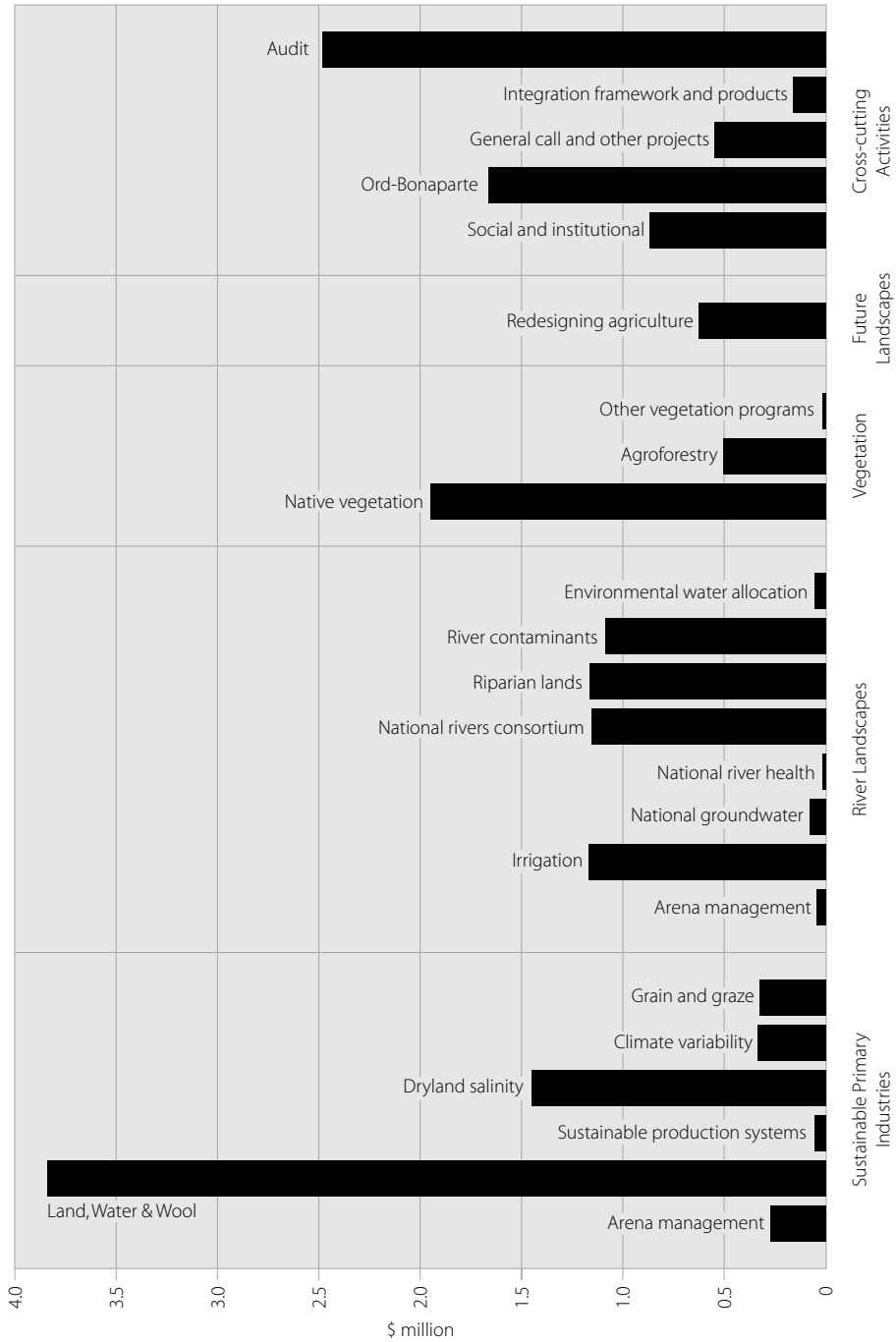
* R&D programs: lower expenditure in NLWRA ($4 m); higher in Sustainable Industries and Rivers Arenas ($3.5 m)

TREND BETWEEN ADMINISTRATION AND TOTAL EXPENDITURE, 2001–03



Expenditure

EXPENDITURE ON R&D PROGRAMS, 2002–03



The Corporation's **planned outcome**

All of Land & Water Australia's activities are directed to achieving this planned outcome:

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

Integrating **themes**

The Strategic R&D Plan for 2001–2006 outlines four *integrating themes* to address a perennial challenge for most natural resource management agencies — that of integration, encompassing:

- perceiving and valuing our environment,
- learning and understanding our landscapes,
- living in and managing our natural resources, and
- organising and governing at a societal level.

This diagram shows the relationship between the five strategic R&D arenas and the four integrating themes.

Complying with the **EPBC Act**

Land & Water Australia requires that sustainability of the natural resource base is the over-riding objective when researchers and others are designing R&D projects and programs. Project contracts have specific clauses requiring providers to minimise environmental impacts. A significant number of projects across the R&D portfolio actively progress the intent of the *Environment Protection and Biodiversity Conservation Act 1999* by enhancing understanding of Australia's unique biodiversity, developing measures to limit or reverse threatening processes, and informing management of biodiversity and its habitat.

A key requirement of the EPBC legislation is to report on the extent to which the activities of Land & Water Australia accorded with the principles of Ecologically Sustainable Development (ESD). The mission and work of the Corporation advances the Government's principles of ESD.

Government rural policy frameworks of particular significance to Land & Water Australia, including those of ESD, are detailed in appendix 1 (page 119).

Investment in R&D activities during 2002–03 was $19.71 million.

R&D arena:
Improving Sustainability and Addressing Contemporary Issues in Primary Industries

More than 60% of the Australian continent is managed by farming and grazing industries. Land & Water Australia works with the primary industries to find ways to ensure that natural resources are used sustainably while supporting profitable farm businesses and thriving rural communities. This involves partnerships between Land & Water Australia and industry, primarily through the commodity R&D Corporations, to ensure that R&D is relevant to and 'owned by' industry, and to take advantage of existing industry-based delivery mechanisms for promoting R&D outputs. Work through this arena focuses on research that addresses the fundamental causes of unsustainability as well as managing their symptoms.

Investment in this arena during 2002–03 was $6.17 million.

Planned output for this R&D arena

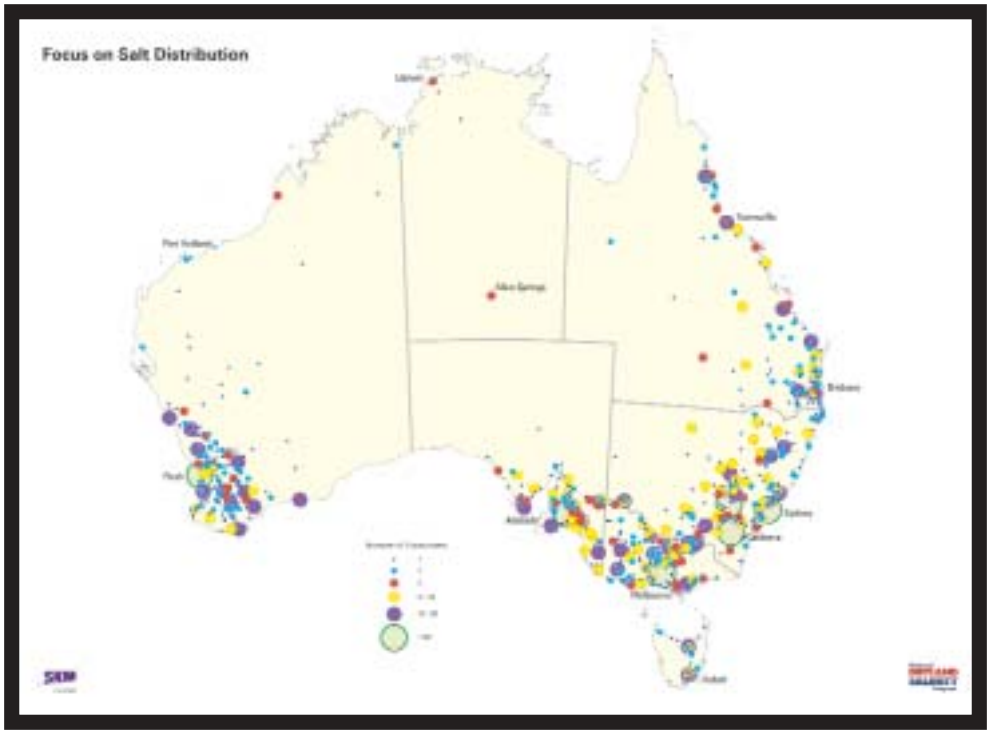
Enhanced capacity for Australia's primary industries to manage natural resources sustainably.

Photo: G.R. Davis.

Blue mallee being harvested for leaf oil at the West Wyalong, NSW property of G.R. Davis Pty Ltd, the major producer of eucalyptus oil in Australia. Although all the oil-bearing eucalypts occur naturally in Australia, there are now virtually no remaining areas of natural bush suitable for development for oil production. Therefore, future production must be based on plantations of the desired species or on harvesting leaves of trees grown for other purposes, such as soil desalinisation.

Program performance

Program	Partners	Key outputs
National Dryland Salinity Program 2002–03 investment: $1.46 million www.ndsp.gov.au	Land & Water Australia CSIRO Department of Agriculture, Fisheries and Forestry Murray-Darling Basin Commission State governments — NSW, Victoria, SA, WA, Qld and Tasmania Grains R&D Corporation Meat and Livestock Australia Rural Industries R&D Corporation	For 10 years, this program has demonstrated that salinity is more than just an agricultural problem. The program's diversified research portfolio has delivered knowledge and understanding that is helping Australia to deal better with declining water quality, loss of environmental assets, increased stress among growers and their families, damage to rural and urban infrastructure, and declining agricultural production. **The methods, tools and frameworks produced should be especially relevant to the planning groups associated with the National Action Plan for Salinity and Water Quality.** They include: • the Groundwater Flow System framework to integrate knowledge about salinity risks, drivers and management options; • a comprehensive framework that provides a dryland salinity evaluation approach to guide mapping, monitoring and modelling of key biophysical attributes and refine understanding of dryland salinity; • FLOWTUBE — a model to rapidly appraise salinity risks and timeframes associated with land use options at the catchment scale; • techniques to estimate recharge and discharge; • tools to assess afforestation impacts on water yield, impacts of land use changes on groundwater response at regional level, and the time to reach a target salt load and flow concentration in a stream; • a saline soil management framework based on hydrology, landscape features, drainage and chemistry; • detailed guidelines for estimating costs of dryland salinity; • a decision support system on productive use of saline lands and selection of engineering options for discharge management; • a decision-tree to assess likely ecosystem responses to salinity and possibilities for management or restoration; • a method for assessing the likely fate of species in areas at risk from waterlogging and saline conditions; • a basis for a predictive system on salinity tolerances of stream macro-invertebrates; • a drainage meter to help farmers to evaluate deep drainage (potential recharge); and • the NAP-List database of catchment assessment and planning models, tools and expertise and a users guide that describes the types of tools, models and frameworks used in planning in the states and territories.



The NDSP reached 65,000 producers through its *SALT* magazine and about 5000 catchment managers, researchers and agency personnel through the *Focus* newsletter.

Program	Partners	Key outputs
Land, Water & Wool 2002–03 investment: $3.83 million www.landwaterwool.gov.au	Australian Wool Innovation Land & Water Australia **Sub-program partners:** Meat and Livestock Australia CRC for Plant-Based Management of Dryland Salinity CSIRO Department of Agriculture, WA South Australian R&D Institute Department of Sustainability & Environment, Victoria NSW Agriculture NSW Department of Infrastructure, Planning and Natural Resources Department of Primary Industries, Water and Environment, Tasmania Queensland Department of Primary Industries University of Tasmania University of New England	The most comprehensive survey of wool producers' understanding of and attitudes to natural resource management ever undertaken provides an excellent basis for targeting research and communication effort. Technical guidelines on key natural resource management issues, including Saltland Pastures Book, Guidelines for Native Vegetation Management and Riparian Management. Grower networks working on productive use of saline land in WA and the development of similar networks in SA, Victoria and NSW. Help for woolgrowers to make more effective use of climate forecasting for grazing management. Review of public and private incentives for wool producers to further adopt native vegetation and biodiversity management practices.

Program	Partners	Key outputs
Grain & Graze 2002–03 investment: $0.31 million www.lwa.gov.au/ R&D Arenas/ Sustainable Industries/ Grain & Graze	Grains R&D Corporation Meat and Livestock Australia Land & Water Australia	During this year, the Boards of Meat and Livestock Australia, Grains R&D Corporation and Land & Water Australia agreed to a business plan setting out the framework for implementing the program from 1 July 2003. The framework includes establishing eight regional research sites corresponding to eight regions of the National Action Plan for Salinity & Water Quality where improved mixed farming systems could help communities to reach regional resource management targets. The program aims to achieve widespread adoption of mixed farming systems to produce: • a 10% increase in mixed farm productivity driven by a 5% increase in grain yields and a 10% increase in livestock production; • improved, or at least stable, condition for the natural resources on mixed farms, in line with regional or catchment targets; and • confident and knowledgeable mixed farmers. The Program expects to influence 6800 mixed farmers within five years.

Program	Partners	Key outputs
Managing Climate Variability 2002–03 investment: $0.33 million www.lwa.gov.au	Grains R&D Corporation Department of Agriculture, Fisheries and Forestry Land & Water Australia Sugar R&D Corporation Rural Industries R&D Corporation Dairy Australia	**Risk management products developed by climate variability research during the last decade have helped to equip managers to cope better with a drought that was among the most severe since the 1901–02 'Federation' drought.** SILO is one such product that makes it easier for advisers and land managers to gain access to historical climate information and to interpret it. The climate record is the starting point for assessing risk. SILO made it possible to complete NSW applications for Exceptional Circumstances with more speed and rigour. The Whopper Cropper product developed in a joint project with the Grains R&D Corporation proved invaluable in analysing opportunities for a summer crop in northern cropping areas, taking into account existing fallow moisture and rainfall prospects. Maps of rainfall deficiencies in previous El Niño developments show a reduced impact in summer in northern NSW and southern Queensland. The National Drought Forum held in April 2003 reported that the increasing proportion of farmers who had used seasonal climate forecasts received some protection from the drought. Part of the benefit comes from taking more advantage of the forecast good seasons — for example, to grow an extra crop. This has helped farmers to build up reserves.

[Managing Climate Variability Program, continued]

Surveys show higher adoption of seasonal climate forecasts in north-eastern Australia. For cotton and sugar cane farmers, adoption was higher than 50%. Lower rates — for example in Western Australia — reflected lower levels of accuracy and relevance of the current forecasts at key decision times.

'There is much more effective information available for farmers and for government compared with previous droughts. Products such as SILO made it possible to complete applications for exceptional circumstances with more speed and rigour.'

— Dr Peter Hayman, Head of Climate Applications in NSW Agriculture

R&D arena: Managing Australian River Landscapes

The vision that guides and inspires this arena is continual improvement in the management of Australia's rivers. Its six objectives are to:

- be a powerful advocate for improved practice in policy development, river protection, restoration and health;
- be a national voice to raise awareness of the benefits, costs and trade-offs of protecting and restoring Australian rivers;
- broker new river research programs and activities, particularly integrating knowledge and skills across disciplines and organisations, and establishing strategic links between scientists and managers;
- establish capacity building and training activities that will assist development of successful strategies and methods in river rehabilitation and protection;
- be a source of information on river management and a provider of knowledge exchange services to members; and
- be a leader in development and implementation of large-scale R&D protection and restoration methodologies.

Investment in this arena during 2002–03 was $4.75 million.

Planned output for this R&D arena

Understanding, tools and methodologies to inform more sustainable management of Australian catchments, rivers, estuaries and associated wetlands and riparian lands.

Photo: Queensland Department of Natural Resources and Mines.

In the Rivers Arena, the National Program for Sustainable Irrigation is researching better management of nutrients in Queensland's Burdekin catchment to lessen the impact on the Great Barrier Reef. Commercial fish, such as these jade perch in tanks at the Ayr sewage treatment plant, can be produced while reducing nutrients in secondary-class reclaimed water. (L–R) Queensland Department of Natural Resources and Mines officers Des McGarry, Ted Gardner and Peter Gilbey discuss the finer points of effluent reclamation in a prototype aquaculture pond.

Program performance

Program	Partners	Key outputs
National Program for Sustainable Irrigation 2002–03 investment: $1.17 million www.npsi.gov.au	Department of Agriculture, Fisheries, Forestry Department of Natural Resources and Mines (Queensland) SunWater (Qld) Goulburn-Murray Water (Vic) Sunraysia Rural Water Authority (Vic) Wimmera-Mallee Water Authority (Vic) Dept of Land, Water and Conservation (SA) Water and Rivers Commission (WA) Department of Agriculture Western Australia Ord Irrigation Cooperative Harvey Water (WA) Water Corporation WA Murray Irrigation Ltd (NSW) Horticulture Australia Ltd Cotton R&D Corporation	Better understanding of how to measure water use and losses from irrigation channels to paddocks, including with different soil types. Progress towards a national framework for assessing the ecological risk of irrigation schemes at catchment scale. Practical application of partial rootzone drying and regulated deficit irrigation technology to dramatically improve the efficiency of water use in appropriate crops. A water decision support framework to minimise water use and maximise productivity with permanent horticulture plantings. Practical application of current scientific and field knowledge of more efficient technologies and practices for water use. Removing nutrients from irrigation drains using wetlands. Common language, nationally, for the terms and definitions to describe and understand water use efficiency. Many improvements in knowledge management and communication under the Knowledge Management Strategy.

Program	Partners	Key outputs
National Rivers Consortium 2002–03 investment: $1.15 million www.rivers.gov.au	Land & Water Australia CSIRO Land and Water Murray-Darling Basin Commission WA Water and Rivers Commission NSW Department of Infrastructure, Planning and Natural Resources SA Catchment and Water Management Boards	Training and education to increase the capacity and skills of river managers. A regional, catchment-based, best-practice research and demonstration project. A large-scale project in the Murrumbidgee region to improve the condition of Murrumbidgee floodplain wetlands. Catchment assessment techniques project. Two projects on institutional incentives and disincentives to improve water-use efficiency. Development of methods to evaluate changes in the health of ephemeral rivers.

Program	Agency	Key outputs
National Riparian Lands R&D Program 2002–03 investment: $1.16 million www.rivers.gov.au	Land & Water Australia	Translating complex science into innovative, relevant and useful products for people to apply on-farm and in-the-river. Guidelines to assist in managing the riparian zone. Easy-to-use model of how the riparian zone functions. The *RipRap* newsletter presenting information from across the Rivers Arena.

Program	Partners	Key outputs
National River Contaminants Program 2002–03 investment: $1.09 million www.lwa.gov.au/R&D Arenas/rivers	Land & Water Australia Murray-Darling Basin Commission	New research initiated during the year will add to Australia's knowledge base on river contaminants through projects covering: • in-stream and riparian zone nitrogen dynamics; • catchment nutrients and sediment budgets; • impacts of contaminants and flow on riverine ecosystem production; • predicting salinity-induced loss of biodiversity; • developing risk-based approaches for managing contaminants in catchments; • modelling a catchment contaminant cycle; • innovative techniques for managing multiple threats to high-value aquatic systems; and • understanding the dynamics of colloidal material in turbid tropical rivers.

Program	Partners	Key outputs
National Groundwater R&D Program 2002–03 investment: $0.07 million www.lwa.gov.au/R&D Arenas/rivers	Land & Water Australia National Groundwater Management Committee under the Standing Committee on Agriculture and Resource Management	This national R&D program concluded during 2002–03 with the publication of a guide on fractured rock aquifers. The program led to the implementation of policies in all jurisdictions and groundwater management agencies for protecting ecosystems dependent on groundwater. Vegetation complexes that rely on groundwater for their survival, and stygofauna that live in groundwater, are now better protected. New techniques and models were developed and transferred to management agencies to assist in groundwater quantity assessments and understanding of salinisation processes.

R&D arena: Managing Vegetation in Rural Landscapes

Vegetation performs an essential role in all aspects of the environment. Almost all organisms are in some way dependent on vegetation for survival. Although some ecosystem functions can be supported by exotic forms of vegetation such as introduced crops, pastures and plantations, many others cannot.

Native vegetation resources are under great pressure in many rural landscapes. Vegetation management has a major role to play in the prevention of rising watertables and dryland salinity in those parts of Australia that have not yet been extensively cleared, and in the restoration of hydrological balance in landscapes that have been extensively cleared.

The depletion, degradation and fragmentation of Australia's native vegetation cover is the most important single cause of dryland salinity, the single biggest driver of biodiversity loss, and among the largest single contributors to net greenhouse gas emissions.

This arena concerns not only native vegetation but vegetation management in all rural landscapes. Linkages with complementary R&D dealing with management of non-native vegetation for commercial purposes are actively pursued. Native vegetation management is a useful test-bed for investigation and development of new institutions such as market instruments to encourage better management.

The key strategies employed through this arena include:

- research to determine the functional values and ecosystem services provided by native vegetation over different scales;
- development and active promotion of practical guidelines, tools and methodologies to improve vegetation management at a landscape scale; and
- development of better tools and processes to measure, monitor and report on the condition of native vegetation, consistent with the National Vegetation Information System.

Investment in this arena during 2002–03 was $2.46 million.

Photo: RIRDC – Joint Venture Agroforestry Program.

High pruned spotted gums over pasture at Don Jowatt's farm in western Victoria. The stand still provides grazing opportunities.

Planned output for this R&D arena

Understanding, tools and methodologies to inform more sustainable management of vegetation in Australian rural landscapes.

Program performance

Program	Partners	Key outputs
Native Vegetation R&D Program 2002–03 investment: $1.95 million www.lwa.gov.au/native vegetation	Land & Water Australia CSIRO Sustainable Ecosystems CSIRO Plant Industries Murray-Darling Basin Commission	A finding that in the native pastures of south-east Queensland, large perennial grasses are better indicators of soil stability, infiltration and nutrient cycling than gross indicators such as severe soil erosion. A finding that thresholds for management are important, since ecological relationships are complex, often vary regionally, especially across different predominant land uses. A finding that for declining woodland bird species, two significant influences are the total vegetation cover and the amount of tree cover in patches of at least 20–100 hectares. To assist whole-farm and regional-scale planning, research is addressing the link between the costs and benefits of managing native vegetation and biodiversity, and farm-scale profitability.

[Native Vegetation R&D Program, continued]

The Phase One catalytic project on grassy white box woodlands in NSW became the genesis of a project that involved local landholders to deliver small incentives for managing grassy woodlands. This project then merged with other research on conservation management networks which demonstrated how landholders value the support of extension and incentive programs, especially when delivered through other landholders.
Two books were published:

- *Managing and conserving grassy woodlands* explains the importance of planning at a landscape scale and provides the technical foundations for a set of principles that will enable landholders to maintain or enhance productivity without compromising ecological sustainability, while at the same time maintaining a substantial proportion of native flora and fauna.
- *Wildlife on farms* looks at the key habitats that occur on farms and the range of roles they play for many native animals, birds, reptiles and frogs. Importantly, this book also outlines ways of incorporating management of these habitats into normal farming practices.

Program	Partners	Key outputs
Joint Venture Agroforestry Program 2002–03 investment: $0.50 million www.rirdc.gov.au/ Our programs/ Agroforestry and Farm Forestry	Rural Industries R&D Corporation (managing agency) Land & Water Australia Forest and Wood Products R&D Corporation Murray–Darling Basin Commission Natural Heritage Trust Australian Greenhouse Office Grains R&D Corporation	Systematic evaluation of financially viable species and provenances for agroforestry systems and products — in particular for low–medium rainfall areas. Species matching for a range of site types, and species selection for saline areas. Publication of: • *AcaciaSearch — evaluation of Acacia as a woody crop option for southern Australia*. • *Trees for saline landscapes*. • *Potential productivity assessment*. • Species profiles. Research into potential new Australian species and products for low rainfall areas. Research products will allow landholders to consider sustainable planting and harvesting of woody species for diversification of their farm business. Release of *Trees for shelter* and completion of *Trees and biodiversity: an Australian guide to farm forestry*. These new guidelines outline the decisions involved in designing and managing farm forestry for both commercial and other outcomes. Research for integration of woody plant production into agricultural systems — for example, phase farming or oil mallee production on farms. Coordination of Bioenergy Australia, support of Markets for Ecosystem Services projects, and active role in communication and production of publications to promote uptake of research outcomes.

[Joint Venture Agroforestry Program, continued]

Commissioned a review of tree planting research for salinity outcomes and initiated planning for increased communication effort for JVAP's 11-year portfolio of research outcomes.
JVAP has also been strong in providing technical advice on species–site matching and requirements for tree breeding for low–medium rainfall areas. The next generation of catchment and regional plans will need to incorporate this information into landscape-scale planning and management.

R&D arena: Future Landscapes and Compatible Industries

The future as well as the past will inform the present. This arena seeks to enhance Australia's understanding of, and potential for, long-term sustainability of rural landscapes — with a timeframe of at least 10 to 100 years. All landscape attributes are explored — not only agriculture. Quantum leaps in sustainability are sought, rather than just incremental change.

This arena will contribute directly to Land & Water Australia's mission of being at the forefront of Australian thinking on natural resource management, through research on:

- current and future drivers of landscape change and their implications for sustainable natural resource management;
- critical uncertainties and difficult choices facing natural resource management now and in the future;
- human and organisational perspectives, values and world-views;

Photo: Glenn Conroy, Land & Water Australia.

Australia's future rests in the hands of today's youth. Land & Water Australia through its Futures Arena produced futures workshops for the Australian Science Festival. Janelle McFarlane (left), Administrative Assistant, and Nick Schofield (right), Science Manager Land & Water Australia, help students from Glenunga High School in South Australia to work on their media report on what their future in 2050 would be like.

- scenarios for future landscape evolution and their implications;
- production systems and other land uses compatible with the Australian environment;
- concepts of sustainability applicable to evolving landscapes; and
- tools and methods to assess the sustainability of alternative landscape options.

Investment in this arena during 2002–03 was $0.61 million.

Planned output for this R&D arena

Knowledge, tools and processes to guide development of future sustainable landscapes, enterprises and industries.

Program performance

Program	Agency	Key outputs
Future Landscapes 2002–03 investment: $0.61 million www.lwa.gov.au/R&DArenas/future landscapes	Land & Water Australia	Building on the completed Redesigning Agriculture for Australian Landscapes Program, the Futures Arena, with its 10-to-100-year perspective, produced: • futures tools, skills and knowledge to inform the broader Land & Water Australia R&D portfolio; • well-articulated future scenarios providing the context for natural resource management R&D; • analyses of global to local drivers of change; • interpretations of current trends expressed in landscape evolution; • review of biotechnology issues and opportunities for Australian natural resource management; • documentation of the concepts of the 'ecosystems farm management' approach; • a conceptual framework for landscape redesign; and • review of farmer-initiated innovative farming systems.

R&D arena: Cross-cutting Activities

The need for integration of environmental, social and economic considerations in research, policy and management and for integration of community interests is widely recognised as the core of sustainable natural resource management.

The arena incorporates two major R&D programs — the Social and Institutional Research Program and the Ord–Bonaparte Program — and a suite of cross-cutting activities under the title 'Integration Initiative'. This initiative supports processes and outputs that help people share information and work in a genuinely integrated way across program and issue boundaries. For example, a Spatial Data and Metadata Management Strategy has been developed. Land & Water Australia has formed an alliance with ANZLIC — the Spatial Information Council — to coordinate best-practice arrangements for improved data access and information provision and communication across the Land & Water Australia R&D portfolio. These will give effect to Australian Government policy on data management, hopefully setting an example for all RDCs and other research funding agencies.

Investment in this arena during 2002–03 was $2.69 million.

Photo: Brian Prince, CEO, Ord-Bonaparte Program.

Dr Ramsis Salama (centre) from CSIRO Land and Water speaking with traditional owners about the installation of water monitoring bores and where they would be located in the Ord irrigation area. The Ord-Bonaparte Program is a major integrated natural resource management R&D program seeking to underpin ecologically sustainable development in the East Kimberley region of north-western Australia. To find the best way for development to proceed without repeating the mistakes that have proved so costly in the Murray-Darling Basin and elsewhere in southern Australia, it is essential to draw on the accumulated knowledge of local people.

Photo: Peter Manson, Queensland Department of Natural Resources and Mines.

Bobbie Brazil, Land & Water Australia Chair, and Professor Paul Greenfield, Senior Deputy Vice-Chancellor, the University of Queensland — on behalf of Queensland's Consortium for Integrated Resource Management (CIRM) — signed a memorandum of understanding between Land & Water Australia and CIRM. The consortium includes the Queensland Departments of Primary Industries and Natural Resources and Mines and the Queensland Environment Protection Authority, CSIRO, the University of Queensland, and Griffith University. The consortium facilitates collaborative research across and beyond the partnership. The memorandum of understanding aims to improve alignment of R&D priorities at the national and state level, enhance knowledge exchange and facilitate collaborative R&D.

Planned output for this R&D arena

Enhanced understanding and tools to address integrated and cross-sectoral natural resource management issues.

Program performance

Program	Partners	Key outputs
Ord-Bonaparte Program 2002–03 investment: $1.66 million www.lwa.gov.au/obp	Land & Water Australia CSIRO WA Department of Agriculture WA Department of Environment, Water and Catchment Protection Department of Agriculture, Fisheries and Forestry WA Department of Conservation and Land Management Kimberley Land Council Ord Land and Water	Launched in September 2001, this program adopts an integrated natural resource management approach to underpin ecologically sustainable development in the East Kimberley region of north-western Australia. Research outputs during the year included: • best utilisation of water resources, and minimisation of off-site impacts of pesticides, for the Ord River Irrigation Area; • characterisation of rangeland resources; • gauging responses of the Lower Ord River and Estuary to management of catchment flows and sediment and nutrient loads; • applying Aboriginal conservation knowledge and ethno-biological research concerning plants and animals of Kija and Jaru country, in the upper Ord catchment; • providing data access and information, and GIS and cultural mapping, in the upper Ord; and • facilitating capacity-building and two-way learning for Miriuwung–Gajerrong and Balangarra people in the lower Ord catchment.

Program	Agency	Key outputs
Social and Institutional Research Program 2002–03 investment: $0.87 million www.lwa.gov.au/sirp	Land & Water Australia	The Social and Institutional Research Program (SIRP) fills a nationally recognised need for the social sciences to contribute more to understanding natural resource management challenges and to create new, better procedures for producing knowledge. The program's 'Research meets Policy' strategy, designed to strengthen collaborative relationships in the policy, science and industry communities, resulted in increased demand for SIRP communication products, including a new CD-ROM, books and fact sheets on social and institutional policy research findings for improved natural resource management. 'Property: Rights and Responsibilities' — a set of papers from leading researchers and analysts on natural resources rights and responsibilities, which examines issues relating to property rights and markets as policy instruments. *People making a difference* magazine, with stories of key research, was distributed to 3000 people.

[Social and Institutional Research Program, continued]

The 'environmental solutions' publications series with Federation Press published:

- *Managing Australia's Environment* distils the lessons from 30 years of Australian resource and environmental policy.
- *Reinventing the Common*, a practical approach to ecological sustainability and profitable production through common property resource systems.

SIRP has joined with the Australian Government Department of Agriculture, Fisheries and Forestry to research water property, the relationship with existing property rights, and the development of a workable system of water property titles.

SIRP has formed a partnership with the Consortium for Integrated Resource Management in Queensland to facilitate collaborative consultation research into Social and Community Dimensions of Natural Resource Management. Research has commenced to develop practical frameworks and institutional arrangements to connect regional natural resource management plans and targets with physical onground action.

Through SIRP, Land & Water Australia has become a partner in the 'Capacity building for innovation in rural industries' cooperative venture involving most RDCs, the Department of Agriculture, Fisheries and Forestry and the Murray–Darling Basin Commission, which is being coordinated by the Rural Industries R&D Corporation. Land & Water Australia's particular interest is in research to re-think traditional approaches to extension.

General **Call**

Investment during 2002–03 was $0.38 million.

Objectives

The majority of the Corporation's R&D investment is through commissioned research programs. Although the commissioning process provides substantial benefit in achieving desired outcomes, the Corporation accepts that it is also a process that locks longer-term investment into tightly defined priorities. To ensure that the Corporation can respond to emerging issues, and to provide an opportunity for researchers to propose new or untried approaches to understanding and managing land, water or vegetation resources, an annual General Call is also used.

A General Call ensures that Land & Water Australia can respond to emerging issues and that researchers can propose new or untried approaches to land, water or vegetation issues

In 2002–03, Land & Water Australia called for projects to start 1 July 2003. The key research priorities for this General Call included:

- highly innovative research on new and emerging issues in natural resource management,
- research issues emanating from the National Land & Water Resources Audit,
- implications of climate change for natural resource management, and
- management of biodiversity in agricultural landscapes.

Although the General Call elicits projects that may otherwise be overlooked in a process dominated by commissioned programs, one-off focused projects resulting from the General Call are at risk of being isolated from a broader context that would help to facilitate adoption of results. For this reason, Land & Water Australia expects all projects, including General Call projects, to have a substantial consultation and communication component and preferably to have third-party support from agencies with interest in the project outcomes. Where appropriate and where research objectives overlap, the Corporation manages General Call projects within its commissioned programs.

Partners

Most General Call projects include third-party support from a wide range of agencies and groups. Some projects, especially those testing novel concepts, are funded solely by Land & Water Australia.

Achievements

The seven projects selected from the 150 applications for the 2003–04 General Call were as follows:

Project	Principal investigator
Biodiversity of riverine landscapes: the role of patches and connectivity	Assoc Prof Martin Thoms
Incorporating climate change in catchment management strategies	Dr Geoffrey Syme
Understanding long-term climate risks to water resources	Dr Roger Jones
Extending Audit outcomes to enhance rural local government environmental capacity	Dr Su Wild River
Co-understanding place, people and water in Central Australia	Dr Libby Robin
Fire versus clearing for maintaining structure and production in eucalypt woodlands	Dr Rod Fensham
The endocrine-disrupting chemicals in the Australian riverine environment	Dr Rai Kookana

Future directions and opportunities

The General Call priorities for 2004-05 are:

- Opportunities and risks of biotechnology application to natural resource management.
- Indigenous management of Australian landscapes.
- Management of fire for natural resource management outcomes.

Preliminary assessment of past General Call projects has demonstrated particularly high performance in returns on investment. This return will be further enhanced by the continuing improvement in the Corporation's strategic analyses and environmental scanning capabilities

Each year, more time and effort is being taken to ensure a high-quality process for administering the General Call process and building improved relationships with the R&D community. In addition, more attention is now being given to identifying important new issues for the R&D community to target — this is increasingly being enhanced through the Futures Arena.

All projects selected under the General Call have a communication component to ensure the best chance of having the research results adopted.

Further information: www.lwa.gov.au/R&D Arenas/cross-cutting activities

National Land & Water **Resources Audit**

Investment during 2002–03 was $2.49 million.

Objectives

The Audit is a program of the Natural Heritage Trust. It was initially established in 1997 to provide Australia-wide assessments of land, water and vegetation resources to facilitate improved decision-making on land and water management. The series of landmark reports produced through the first phase of the Audit can be found at www.nlwra.gov.au

The Natural Heritage Trust Board approved a continuation of Audit activity until 2007 with a renewed focus and specific objectives, namely:

- assisting in the identification of natural resource management priorities; and
- allowing the progress of natural resource management investments to be assessed through the development and maintenance of accurate, cost-effective and timely data and information on the nation's natural resources.

A particular focus of Audit activity will be the collation of information underpinning the monitoring and evaluation needs of the Natural Resource Management Ministerial Council.

The Audit continues to be collocated with Land & Water Australia, which provides administrative support to the Audit Management Unit. Collocation promotes interaction between the Audit and the Corporation's R&D programs.

Partners

The Audit Advisory Council has representatives of the Australian Government, all states and the Northern Territory, CSIRO, the Australian Bureau of Statistics and ANZLIC — the Spatial Information Council. Land & Water Australia has observer status at Council meetings.

Achievements

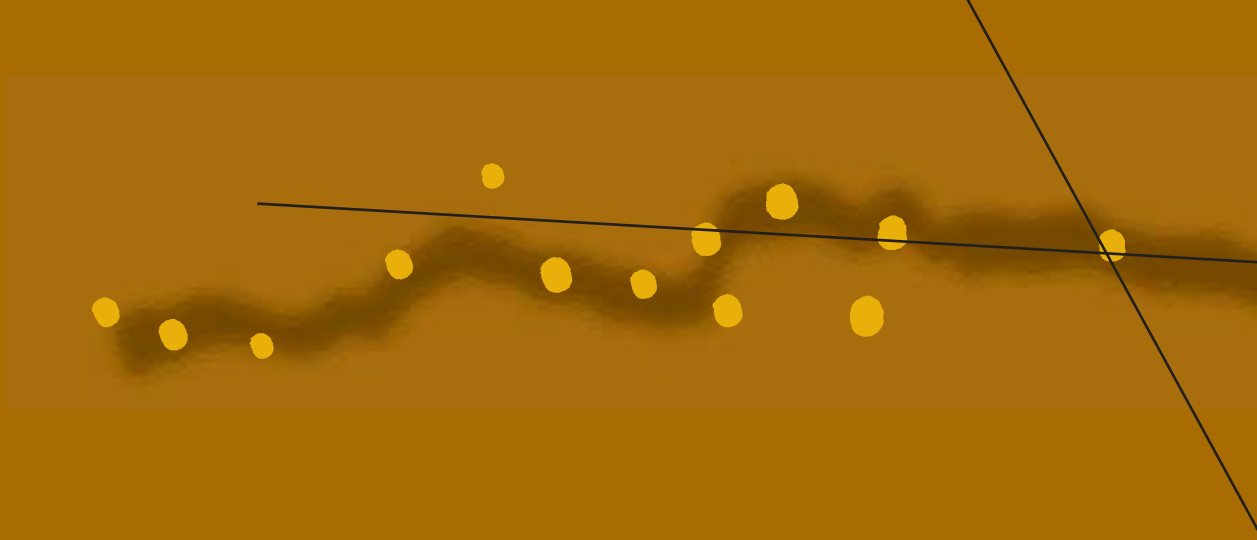
2002–03 was a year of planning, establishment of the new Audit management team, clarification of renewed roles and responsibilities and the development of a strategic plan and associated operational plan that meet the needs of the Australian Government and other partners.

As a legacy from the previous Audit activity, the final report of the Audit 1997–2002 was released with specific recommendations related to natural resource information collection and to future Audit activity. The Terrestrial Biodiversity Report — the final of the Theme reports — was also released.

The Australian Natural Resources Atlas/ Australian Natural Resources Data Library

The Australian Natural Resource Atlas and the Australian Natural Resources Data Library remain central to the Audit's activities. They provide access to all Audit assessments and a conduit to the Audit's partners and their data and information resources. During the year, significant funding allowed the continued development of these facilities to meet the requirements of natural resource data management.

Further information: www.environment.gov.au/atlas



Corporate **outputs**

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Portfolio **management**

Objectives

Portfolio management aims, through systematic inquiry, to increase the value and application of knowledge to sustainable natural resource management.

The Corporation now has a clear articulation of its priority investments and, after identifying and analysing relevant issues and opportunities, is well prepared to capitalise on future opportunities

Achievements

A new Investment Planning Framework was implemented for the first time during 2002–03. It involves environmental scanning, investment decision analysis, scoring, scoping processes and program planning.

The priority investment scoring process also generated high-quality summaries of key natural resource management issues, authored by leading thinkers in each area. A scoping guideline was developed to support the scoping of R&D investment opportunities, building on the information assembled for the scoring phase. Scoping provides the Land & Water Australia Board with an in-depth analysis of the R&D investment opportunities, including potential for funding partnerships. It is a critical first step in the engagement strategy with stakeholders and potential partners.

Four areas for potential investment have been scoped: tropical rivers; social and institutional; low-rainfall vegetation; and biodiversity.

Tropical rivers

The Gulf of Carpentaria and Timor Drainage Divisions are a comparatively little-studied part of Australia's ecology but are extremely valuable for their cultural, fisheries and biodiversity assets. The assessment phase is already under way through a partnership between the Australian Government Department of Environment and Heritage and Land & Water Australia. Datasets on this area's tropical rivers are being compiled within the Australian Natural Resources Atlas. This is essential background information for scientists; and for regional communities as they plan their investment under the Natural Heritage Trust.

Social and institutional

The following themes emerged from an extensive scoping and consultation process with more than 300 people.

- *Values and aspirations for sustainability* — this centres around developing capacity to manage the tensions which flow from competing value sets, such as conservation, profit, growth, accommodation and spiritual connection to the landscape. Debate on this issue extends to ideas of needing to reinvent the cultural identity of rural Australia, and designing research that would track values and aspirations in rural and urban settings.

- *Finding the appropriate contexts for regulation and voluntary approaches* — this centres around the need for knowledge that assists in understanding the most appropriate contexts for the application of voluntary and regulatory approaches in order to create sustainable change.
- *Understanding institutions, governance and power relationships in natural resource management* — this theme is framed around the need for effective change strategies based on influencing, negotiating, stewardship, leadership and creating the environment in which change can occur. An important issue is the need to understand more about how definitions of 'markets' and 'property' shape the choice of solutions, and ways of surfacing and exploring issues of power and relationships.
- *Developing effective, multi-level change strategies* — this concerns the development of knowledge and models which supported futures-oriented social and institutional research: that is, using data and research to identify pressure/leverage points and respond with research that alters the natural resource management system. Food requirements, climate change, urban agriculture, community-based enterprise, and marketing change through informal networks are all issues that have been identified as significant leverage points. The common element of issues under this theme is that social and institutional research is seen as a catalyst for change itself.

Using vegetation to enhance landscape sustainability in lower rainfall areas of Australia

The seven research investment priorities identified in stakeholder and expert workshops to date are:

- Institutional arrangements for managing Australian landscapes — for example, are the current systems of land tenure, planning and management appropriate in the current and future context to ensure sustainable resource management?
- Improving capacity of resource managers to assess ecological and landscape processes, access relevant information and plan more appropriate and integrated management through providing policy-relevant information on working with regional natural resource management committees, Aboriginal landowners, conservation agencies, industry groups, RDCs and state agencies.
- Development of visualisation tools and other techniques that assist in articulating alternative landscape scenarios based on an understanding of causalities, projections and feasibility of change.
- Design and documentation of large-scale adaptive management projects working to achieve integrated cultural, economic and environmental objectives at a regional scale.
- Improved ecological risk assessment based on understanding of ecological condition, pressures and societal responses at a range of spatial scales.
- Understanding ecological processes that result in transition/transformation of vegetation communities — for example, from grazing lease to national park, mining lease or Aboriginal use.
- Understanding changing demographics, industry structure and land-use objectives or motivations of managers in both the intensive and extensive use zones in order to design more effective and appropriate incentive and regulatory regimes.

Biodiversity

The four research investment priorities identified in stakeholder and expert workshops to date are:

- Understanding the role and function of terrestrial and aquatic biodiversity, particularly the links to the maintenance of ecosystem services.
- Assessment of the impacts of threatening processes on biodiversity and the cost-effectiveness of management actions to address threats.
- Development of techniques for the assessment of condition and trend for a range of ecological attributes together with the identification of ecological thresholds.
- Understanding the ecological requirements for restoration and landscape reconstruction to maintain and enhance biodiversity and ecosystem services.

A further area recognised as highly significant was understanding the trade-offs and synergies for biodiversity associated with different land uses and management regimes. This includes fully accounting for external environmental costs and the development of new land uses and management strategies to protect and value biodiversity.

Evaluation

Land & Water Australia is developing an integrated evaluation framework with the capacity to include qualitative and inter-disciplinary methodologies for the assessment of social, environmental and economic impacts of natural resource management R&D. Efforts have focused on developing elements of the evaluation strategy and improving human resource and IT capabilities in portfolio analyses and reporting. To build a more in-depth view of the outputs, adoption and lessons learned over time across the R&D portfolio, eight innovation case studies are progressing:

- riparian lands guidelines,
- Prograze,
- improved seasonal forecasting using Indian Ocean information,
- controlled traffic farming,
- minimising the impact of pesticides on the riverine environment,
- benchmarking irrigation water providers in Australia,
- AUSRIVAS (Australian River Assessment System), and
- Central Highlands Regional Resource Use Planning Project.

An update of the Innovations Database (accessible through www.lwa.gov.au) is under way. Current innovations are being refreshed to include new adoption or development material and new innovations are being added. The data in the Innovations Database provides an invaluable reference for the identification of information relevant to various portfolio analyses.

Science leadership

Strategic science reviews were undertaken examining the natural resource management implications and potential research needs arising from environmental water allocation, endocrine-disrupting chemicals and genetically modified organisms. These reviews have led to a new environmental water allocation R&D program being developed within the Rivers Arena, a General Call project on endocrine disruptors (the first serious research to be undertaken on this topic in Australia), and the implications of biotechnology for natural resource management being one of four priorities in this year's General Call.

Land & Water Australia's Implementation Plan for National Research Priorities was developed and submitted to the Australian Government. The first priority, 'An Environmentally Sustainable Australia', is core business for the Corporation.

Communication

Objectives

Land & Water Australia's communication effort is aimed at delivering information to target audiences in ways that assist their decision-making on sustainable natural resource management.

Strategies

The detailed communication strategy for Land & Water Australia can be found at www.lwa.gov.au/about us/communication. It sets out an increased emphasis on engagement with key stakeholders — most notably regional groups and industry — to improve the 'demand pull' for the Corporation's R&D outputs. The Corporation is also working to make those outputs more attractive, accessible and useful for their target audiences.

Achievements

The stakeholder survey undertaken in February 2003 confirmed that, over all, the Corporation's communications are rated highly. The magazines, newsletters and website are highly regarded and in tune with the main ways in which respondents wish to receive communication. As outlined in the directors' review of operations and future prospects, use of the website has more than doubled during the year, and downloads of Land & Water Australia publications have increased exponentially.

E-mail in particular was the most highly preferred communication vehicle among respondents, and the medium in which the Corporation most needs to improve. Use of e-mail through the *SIRP's UP* bulletin for the Social and Institutional Research Program has increased, alerting stakeholders and providing links to hot-off-the-press research.

Recent communications that most impressed respondents included several Land & Water Australia products, such as *RipRap*, *SALT*, CD-ROMs with compiled research reports, *Streamline* and the ABC television documentary on dryland salinity, *Silent Flood*. A significant highlight this year has been the very enthusiastic reception for *Thinking Bush*, the magazine aimed at people interested in vegetation management.

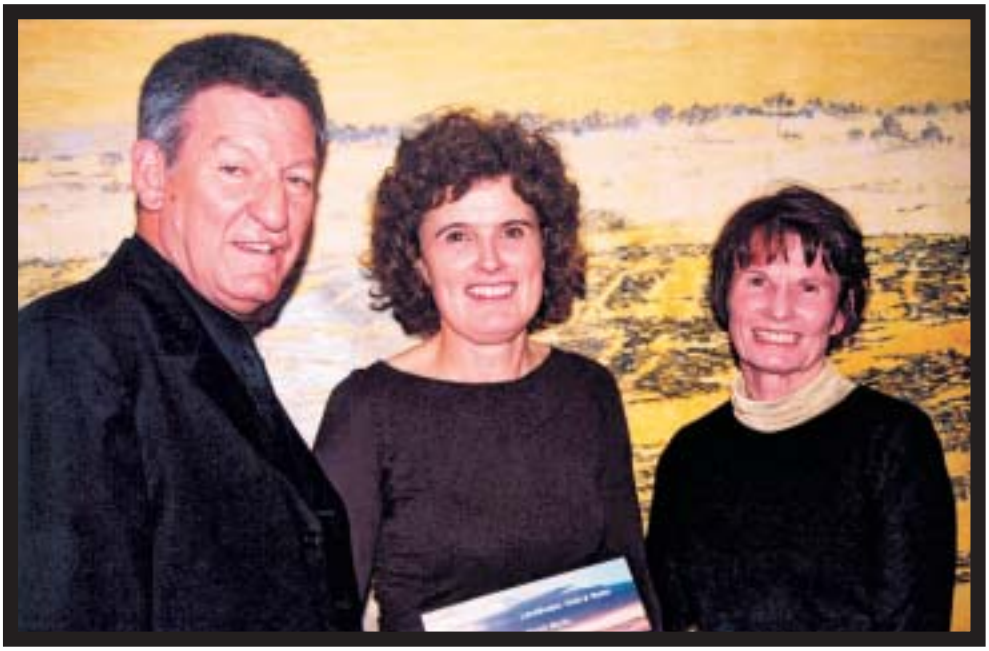


Photo: Glenn Conroy, Land & Water Australia.

(R–L) Water is as valuable a resource as gold in Australia. Bobbie Brazil, Chair of Land & Water Australia opened the 'Gold & Water' art exhibition by nationally and internationally exhibited visual artist Mandy Martin, a Visiting Fellow at the ANU School of Art. Mandy's most prominent work is *Red Ochre Cove* in the Main Committee Room, Parliament House, Canberra. Professor David Williams, Director of the School of Art, congratulated Mandy on being one of 12 Land & Water Australia's community fellows in 2002. Bobbie said Land & Water Australia is pleased to be associated with such inspirational people so obviously enthusiastic and proud of their part of the country.

The 'Gold & Water' exhibition was curated by Mandy Martin and included work by many local artists, sharing their life experiences in living and working with the land. The exhibition focused on the story of the Cadia/Ridgeway Gold Mine in the Lachlan River catchment. It aims to contribute to the debate about the short-term benefits of mining against the long-term benefits of protecting biodiversity and natural habitat and maintaining environmental flows for the river. Valuing landscape for its aesthetic qualities and visualising the outcome of significant interventions is an important role artists can play in the debate.

"The lessons each of the Land & Water Australia Community Fellows has learned will help other natural resource managers to realise their own dreams in other parts of Australia. They add an important dimension to our understanding of how to improve our management of Australia's natural resources," said Bobbie Brazil.

As a practitioner involved with implementing Biodiversity Action Planning in the south-west of the Goulburn–Broken catchment, I found the latest issue of Thinking Bush *very opportune — it drew together issues currently being discussed about thresholds for biodiversity.*

— Ann Jelinek, Goulburn–Broken Catchment Management Authority

Thinking Bush uses a combination of innovative graphics and illustrations along with more traditional photographs and cartoons to underscore the outcomes of research. A similar format was adopted for *People Making a Difference*, a magazine highlighting recent social research, which has been received with similar acclaim.

Photo: Glenn Conroy, Land & Water Australia.

(L–R) Andrew Campbell, Land & Water Australia Executive Director, and Carl Binning, Chief Executive of Greening Australia, signed a memorandum of understanding between the two organisations.

During the year Land & Water Australia signed a memorandum of understanding with Greening Australia. This partnership provides opportunities for Land & Water Australia to extend its reach through Greening Australia's extensive regional networks, and for Greening Australia to influence research priorities and become more engaged in the research process. The Corporation jointly hosts the *Science in the paddock* breakfasts, which provide senior policy managers with an opportunity to interact with speakers from traditional and community science perspectives. The breakfasts have proved successful in bringing community-based people into the policy sphere (and vice versa). The audience continues to grow.

Land & Water Australia has significantly increased the functionality of the www.lwa.gov.au website by introducing an on-line research portfolio — the first time that the total efforts of research over the last decade have been available. This portfolio, linked to the *Innovations* database, *Streamline* and *ARRIP*, allows people to search for a particular topic and find the level of information they need about that project.

Land & Water Australia's focus on community science continues through its management of the Community Fellowship Awards on behalf of the scheme's philanthropic benefactor. Interest in the fellowships has grown from last year, and this year there were more than 100 applications vying for $100,000. Products of the fellowships are beginning to appear in the form of booklets, manuals, catalogues, websites and presentations.

Land & Water Australia's investment in web analysis, media monitoring, surveys and distribution analysis is enabling the Corporation to make increasingly sophisticated decisions about user needs. This in turn is feeding into each of the programs and scoping activities, providing useful intelligence on how particular communication approaches can provide the best outcomes.

Business **management**

Objective

To run the business operations of the Corporation in an efficient and effective manner so that R&D funds are invested well, and to meet all statutory obligations and accountability requirements in a comprehensive, timely and transparent manner.

Strategies and achievements

Land & Water Australia further enhanced its systems approach to R&D investment and contract management during 2002–03. The Board endorsed a Systems Policy and Development Plan, based on the principles of continual improvement both in meeting user requirements and capitalising on changes in technology.

The Corporation remained certified to standard AS/NZS ISO 9001:2000 and maintained its commitment to continual improvement and the highest level of client service and accountability. (More information on quality management is at page 75.)

The Corporation remained certified to quality management standard AS/NZS ISO 9001:2000

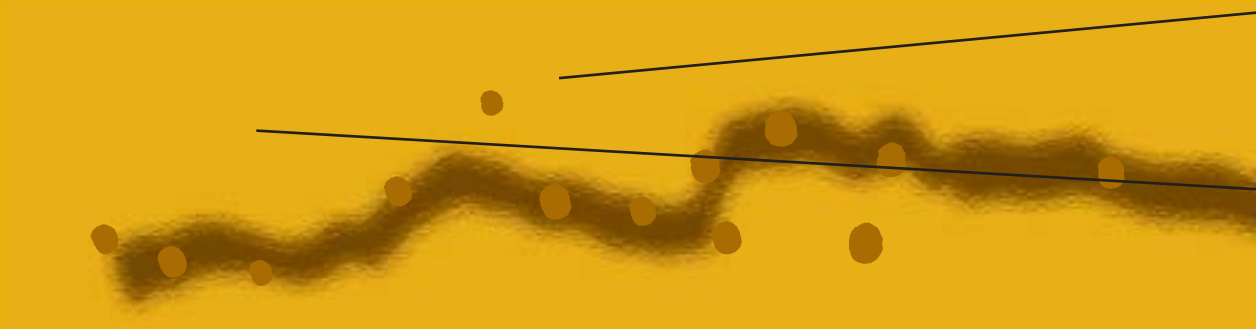
As detailed in appendix 2 on page 132, Land & Water Australia demonstrated high standards of accountability and corporate governance. The Corporation contributed to an Australian Government Department of Agriculture, Fisheries and Forestry review on corporate governance that judged it to have an effective framework for continual improvement that meets a number of areas of better practice.

Administration expenditure for 2002–03 exceeded budget at year-end, mainly due to the higher level of funds under management and the costs in enhancing a number of systems. Revenue and expenditure each exceeded budget by about $3 million, and this increased activity was reflected in slightly higher administration costs.

Future directions and opportunities

Business management within Land & Water Australia will continue to reflect the highest standards of accountability and corporate governance. Priorities for 2003–04 are:

- to significantly improve financial forecasting and reporting systems;
- to enhance a number of the Corporation's information systems, including effective document management, implementation of electronic contract management and enhanced portfolio analysis and reporting; and
- to establish commercialisation strategies for appropriate projects to enhance adoption.



Report of **Operations**

> **Part 3**:

> Corporate

> governance

Part 4, describing other corporate management matters,
starts on page 77.

This section describes the processes by which Land & Water Australia is directed and controlled in support of effective accountability for good performance outcomes.

Corporate **status**

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 PIERD Act, 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 CAC Act, which applies high standards of accountability while providing for the independence required by the Corporation's focus on national R&D Programs.

The rural R&D corporations model on which Land & Water Australia is based

- The rural R&D corporations (RDCs) take a leading national role in planning, investing in and managing R&D for their respective industries.
- RDCs are not research 'grant' agencies. Their enabling legislation requires them to treat R&D as an investment in economic, environmental and social benefits to their industries and to the people of Australia.
- Rather than focusing mainly on generating new knowledge for its own sake, RDCs strive to deliver high rates of return on R&D investment by influencing the full range of interactions along the innovation chain.
- Striving for high returns on investment also leads RDCs to apply significant resources to translating research outputs into practical outcomes.
- RDCs are required to conduct their activities in accordance with strategic R&D plans and annual operational plans that take account of the R&D needs of end-users and other stakeholders. The plans are approved at ministerial level.
- Although RDCs fund basic research, a high proportion of activity is applied R&D — both short-term and long-term.
- RDCs are accountable to their major stakeholders and to the wider community.

Corporate **governance principles**

The Board is committed to the highest standards of corporate governance, in accordance with required statutes and principles. The Board provides strategic direction to the Corporation and oversees the implementation of Board decisions and directions by the Corporation's managers.

The Board places a very high priority on achieving the highest standards of corporate governance and was pleased to see that Land & Water Australia has been given a clean bill of health in internal and external audits and through the external corporate governance review

The Board relies on a range of measures to ensure that the Corporation is operating according to the accountability provisions of the CAC Act, including induction training and continuing training for directors; compliance checks and internal and external audits; a due diligence check and code of conduct for directors; effective processes for disclosure and management of (or perceptions of) conflicts of interest; a risk identification and management framework; and effective systems for monitoring performance and ensuring that the Corporation can meet its debts and other obligations as they fall due. The Corporation has in place a framework for evaluating Board performance in accordance with corporate governance principles and the Board's charter.

This annual report includes a comprehensive summary of corporate governance matters, including a description of how strategic directions, policies and processes have been applied during the year. The Board continually reviews policies and processes concerning all major areas of Board operations. A number of Board committees (including Finance, Audit and Communication), and other committees of the Board as deemed necessary from time to time, act on the Board's behalf.

Appropriate R&D Program Management Committees are also established to oversee program design and management, ensuring that desired program outputs are being met and that partnership and government funds are spent wisely.

Implementation of **PIERD Act objects**

The paramount authority for Land & Water Australia's activities is section 3 of Land & Water Australia's enabling legislation (the PIERD Act), which specifies the legislative objects of the R&D corporations. The objects are essentially to fund and administer research and development with a view to carrying out:

- development of primary industries,
- sustainable use and sustainable management of natural resources,
- more effective use of the resources and skills of the community, and
- improved accountability for expenditure.

A tabular presentation in appendix 3 (page 135) lists the four objects and outlines the way in which the strategies described in the R&D plan address them.

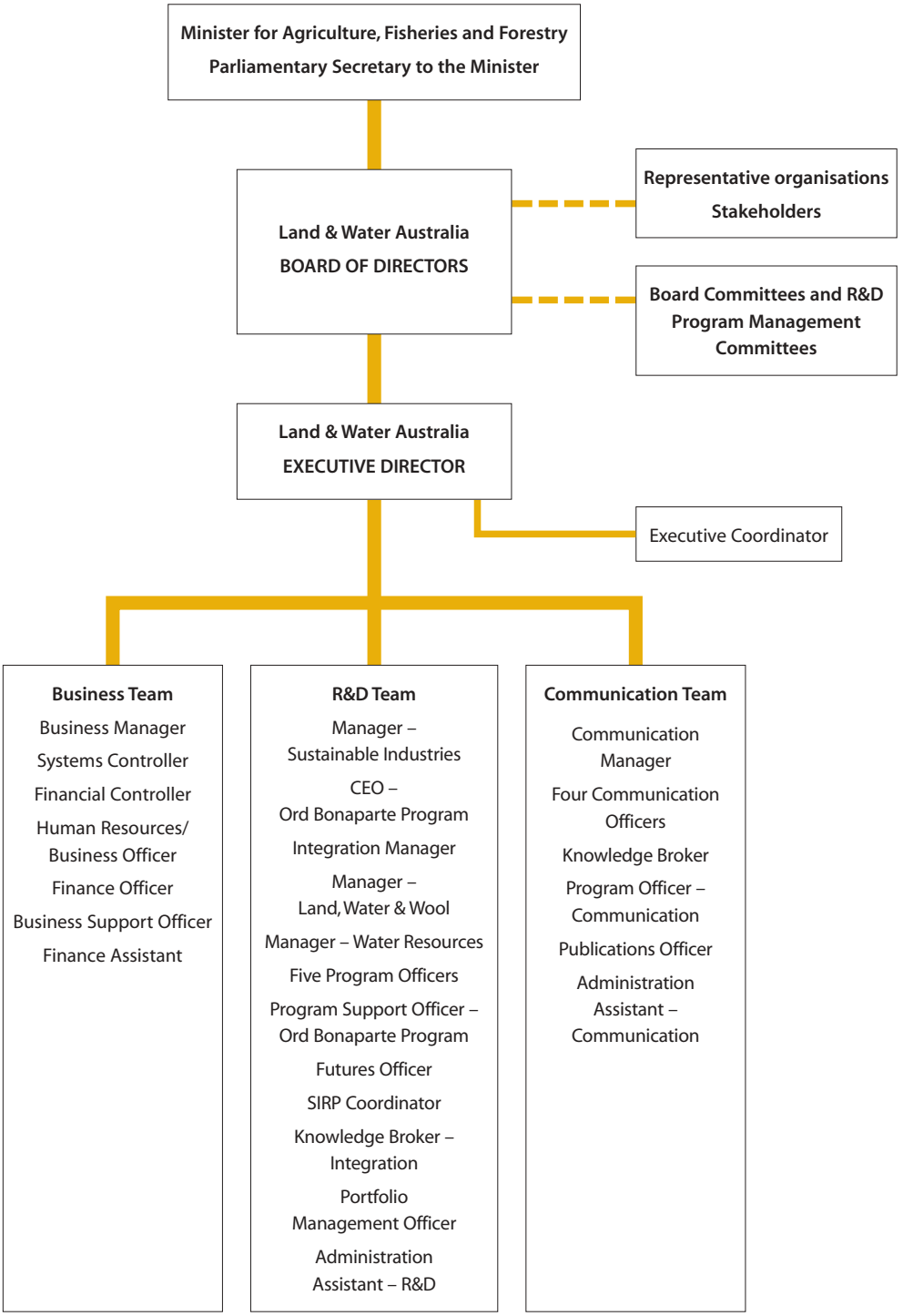
[The URL for the PIERD Act is: www.austlii.edu.au/au/legis/cth/consol_act/piaerada1989531/]

Functions **and powers**

The functions and powers of Land & Water Australia are listed in appendix 3 (page 136).

Organisation

Land & Water Australia's organisation is as follows.



Accountability to **Parliament**

The Corporation is accountable to the Minister for Agriculture, Fisheries and Forestry and to the Parliamentary Secretary to the Minister — and, through them, to Parliament.

The Minister is empowered by the PIERD Act to:

- approve the Corporation's five-year Strategic R&D plan, annual operational plan and variations to both of these plans, assessed against the objects set out in the Act;
- select and appoint the Chairperson and Government Director to the Board, and appoint the Presiding Member and other members to the Selection Committee for nominated Board positions;
- approve the nominees for membership on the Board; and
- transfer contracts, agreements and assets held in the name of the Australian Government to the Corporation.

Under the CAC Act, the Minister must table the Corporation's annual report in Parliament.

The Minister is responsible for the Corporation's enabling legislation and in turn is answerable to Parliament. The Minister also has other discretionary powers (provided through section 143 of the PIERD Act) to give written directions to the Corporation as to the performance of its functions and the exercise of its powers. The Corporation is also obliged to ensure compliance with any policies of the Australian Government of which it is notified by the Minister under section 28 of the CAC Act.

Responsible **ministers**

Throughout the year the responsible ministers were:

- the Hon. Warren Truss, MP, Minister for Agriculture, Fisheries and Forestry; and
- Senator the Hon. Judith Troeth, Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry.

Compliance with Australian Government **statutes and policies**

The Corporation's compliance with statutes and policies of the Australian Government is detailed in appendix 2 (page 132).

Notifications of Government general policies and administrative matters by the Minister for Agriculture, Fisheries and Forestry or the Parliamentary Secretary in previous years had continuing effect. The Minister for Agriculture, Fisheries and Forestry issued a notification on 14 April 2003 in respect of cost recovery policy and on 21 August 2002 in respect of the requirement that portfolio agencies adopt the Australian Government Fraud Control Guidelines.

Important Australian Government **rural policy frameworks**

Four policy frameworks are particularly significant to Land & Water Australia:

- Australian Government national research priorities,
- Australian Government priorities for rural research and development,
- the Australian Government's Natural Heritage Trust, and
- the Prime Minister's National Action Plan for Salinity and Water Quality.

Although activities in relation to these frameworks are described throughout this annual report, they are also addressed explicitly in appendix 1 (page 119).

Accountability to **representative organisations**

Land & Water Australia is accountable to two representative organisations, with memberships comprising key natural resource users and managers. They are:

- the Australian Conservation Foundation, 340 Gore Street, Fitzroy VIC 3065; and
- the National Farmers' Federation, PO Box E10, Kingston ACT 2604.

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.infoscan.com.au/id/profile/searchbrowse.htm) which contains Australian Rural Research in Progress, the Australian Bibliography of Agriculture, and *Streamline*. 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 entered on to *Streamline*. *Streamline* can also be provided on CD-ROM. Further information on *Streamline* is available from Infoscan Pty Ltd (tel: 02 6236 6267; fax: 02 6236 6440; e-mail: pamela@infoscan.com.au).

Stakeholders

Land & Water Australia sees its stakeholders as:

- the Australian Government and other governments and their agencies that provide collaborative support within commissioned R&D Programs;
- the two representative organisations;
- landholders, community groups and state and local government organisations involved in conservation and management of Australia's land, water and vegetation resources;
- research organisations, researchers, consultants and advisers who provide advice and direction and new knowledge on improved management of Australia's land, water and vegetation resources; and
- the general community, as owners and beneficiaries of natural resources and as taxpayers who fund the Corporation.

Collaborating organisations within commissioned R&D Programs are listed in the R&D Programs summaries starting on page 37. The organisations listed are the co-investing partners at research program level; there are many more at the level of individual research projects. At any one time, the Corporation is usually funding more than 50 different research providers.

The **Board**

In accordance with section 16 of the PIERD Act, the Board comprises a Chairperson and a Government Director selected and appointed by the Minister, six 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 Chairperson and other directors (except for the Government Director and Executive Director) are appointed for a term not exceeding three years and are eligible for re-appointment. The Government Director holds office during the Minister's pleasure and the Executive Director holds office during the Board's pleasure.

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.

Directors can be contacted through the office of Land & Water Australia, GPO Box 2182, Canberra ACT 2601 or by e-mail (public@lwa.gov.au).

Left to right, standing: Charles Willcocks, Andrew Campbell, Mike Logan, John Childs, David Pannell. Seated: Peter Cullen, Warwick Watkins, Roberta Brazil, Tim Fisher. This photo and individual photos: David Coward Photography.

Directors' **biographies**

Note: Directors' memberships of Board committees are shown on page 74.

Ms Roberta Brazil
Chair (non-executive)

Appointed as Chair from 1 July 2001 to 30 June 2004.
Member of the Audit Committee.
BA, LLB., LLM. (UQ), Grad.Dip.L.P. (QUT).

Roberta (Bobbie) Brazil is a former lawyer and a partner with her husband in large-scale mixed farming and pastoral businesses on Queensland's Darling Downs and in the Northern Territory. Bobbie brings to the Board an excellent understanding of catchment management and extensive experience on a range of natural resource management and other bodies. Currently she is a member of the Queensland Great Artesian Basin Ministerial Council. Bobbie is also the Queensland community representative on the Australian Landcare Council.

Warwick Watkins
Deputy Chair (non-executive)

Appointed from 1 July 1996, re-appointed 2002 until 30 June 2005.
Deputy Chair of the Board.
Chair of the Audit Committee.
AMP:ISMP (Harv.); B.Nat.Res. (UNE); Dip.Sci.Agr. (UNE); HDA (Hons).

Warwick Watkins is Director-General of the NSW Department of Lands and is Surveyor General and Register General of New South Wales. He is also Chair of the ANZLIC — the Spatial Information Council; Pro Chancellor of the University of Technology, Sydney; Director of the Cooperative Research Centre for Spatial Information; and a member of the National Land & Water Resources Audit Advisory Council. Formerly Commissioner of Soil Conservation for NSW, Warwick has particular skills and experience in natural resource management, land and spatial information and organisational management.

Andrew Campbell
Executive Director

Appointed from 1 March 2000 until 30 June 2005.
Member of the Finance Committee and Communication Committee.
MSc (Wageningen), B.ForSc (Hons) (Melb), Dip.For (Creswick).

Andrew Campbell has been Executive Director of the Corporation since March 2000. He has been involved at the cutting edge of natural resource management in Australia for 20 years. Previously a senior executive of Department of Environment and Heritage from 1996, he was responsible for the Bushcare Program funded through the Natural Heritage Trust. He was instrumental in the development of Landcare as Australia's first National Landcare Facilitator from 1989–92. In the mid-1980s Andrew managed the Potter Farmland Plan, a philanthropic initiative that sought to demonstrate, using real farms, how conservation and production can be complementary activities through a whole farm planning approach. Andrew's family has been farming in Western Victoria since the 1860s and he has been managing the family farm since 1987.

Andrew is a fellow of the Australian Institute of Company Directors.

John Childs:
Director (non-executive)

Appointed from 1 July 2002 until 30 June 2005.
Member of the Finance Committee.
M.Agr.Sc (Melb), B.Rural Science (UNE), Dip.Ag.Econ (UNE).

John is a director of Queensland-based Bush Business Consulting Pty Ltd and a member of the Northern Territory Pastoral Land Board and the Australian Rangelands Society. He has a broad range of skills and experience in natural resource management, adult education and communication, with a special understanding of the situation in northern Australia through his role as the former Director of the Tropical Savannas Cooperative Research Centre. John also has significant experience working with Aboriginal communities and the sheep and cattle grazing industries.

Peter Cullen:
Director (non-executive)

Appointed from 1 July 2002 until 30 June 2005.
Chair of the Communication Committee.
M.Agr.Sc. (Melb), B.Agr.Sc. (Melb), Dip.Ed. (Melb).

Professor Peter Cullen recently retired as Chief Executive of the CRC for Freshwater Ecology and Professor of Resource and Environmental Science at the University of Canberra. He has worked for more than 30 years in the water quality and catchment management fields.

Peter is a director of Landcare Australia Limited and the Gungahlin Development Authority. He has served on many committees and boards, and has been an adviser to state and federal governments, including: Chair, ACT Natural resource management Committee; member, Natural Heritage Trust Advisory Council; member, Community Advisory Committee, Murray-Darling Ministerial Council; and Chair, Scientific Advisory Panel to the Lake Eyre Basin Ministerial Forum. Peter is a fellow of the Australian Academy of Technological Sciences and Engineering; a life member of the Australian Society of Limnology; and a member of the Ecology Institute, the American Water Resource Association, the Ecological Society of America, the Environmental Institute of Australia and the International Water Academy.

Peter was awarded the Prime Minister's Prize for Environmentalist of the Year in 2001 for his work on the National Action Plan for Salinity and Water Quality.

Tim Fisher:
Director (non-executive)

Appointed from 1 July 2002 until 30 June 2005.
Member of the Audit Committee.
BA (Monash).

Tim has spent the past 11 years with the Australian Conservation Foundation, most recently as coordinator of its Land and Water Ecosystems Program. He has considerable experience working with farmers and farmer organisations at the local and national level on issues as diverse as catchment management, water resource planning and socio-economic assessments.

Mike Logan
Director (non-executive)

Appointed from 1 July 1999, re-appointed 2002 until 30 June 2005.
Chair of the Finance Committee.
B.Bus (Kuring-gai CAE).

Mike Logan is a cotton, cereal and beef producer from Narrabri, NSW. He was instrumental in introducing an environmental best management practice program into the cotton industry and is probably the first commercial farmer in Australia to have achieved ISO 14001 certification of the environmental management system for his farm.

Mike is a fellow of the Australian Institute of Company Directors and is an accredited ISO 14000 auditor.

David Pannell: Director (non-executive)

Appointed from 1 July 2002 until 30 June 2005.
Member of the Communication Committee.
PhD (UWA), B.Ec. (UWA), B.Sc.Agric. (Hons) (UWA).

David is Associate Professor in Agricultural and Resource Economics at the University of Western Australia and leader of the People, Land and Water Program of the CRC for Plant-Based Management of Dryland Salinity. He has expertise in resource economics, farmer adoption of land conservation practices, technology transfer, communication, policy evaluation, risk management and the economics of science.

David has a broad understanding of Australia's rural industries and brings a multi-disciplinary approach to sustainability issues. He was a member of the WA Government's Salinity Taskforce in 2001, and is a past President of the Australian Agricultural and Resource Economics Society.

Charles Willcocks: Government Director (non-executive)

Member of the Audit Committee.
Appointed from 1 July 1997; holds office during the Minister's pleasure.
B.Rural Science (Hons) (UNE), Dip. Economic Development (Glasgow).

Charles is the General Manager, Landcare and Sustainable Industries, Natural Resource Management Division, in the Australian Government Department of Agriculture, Fisheries and Forestry.

Committees of **the Board**

In 2002–03, committees to deal with the matters affecting the Board were:

- the Audit Committee, comprising four non-executive directors and the Business Manager, which monitors the financial systems, operations and accounts of the Corporation;
- the Finance Committee, comprising two non-executive directors, the Executive Director and the Business Manager, which considers financial matters affecting the Corporation; and
- the Communication Committee, comprising three non-executive directors, the Executive Director and the Communication Manager, which develops a communication strategy and oversees its longer-term implementation.

The Board has also set up other committees to assist in the management of specific R&D Programs.

Board and committee **membership and attendance**

The numbers of Board meetings and Board committee meetings attended by directors and officers during 2002–03 were as follows:

	Board meetings	Audit Committee meetings	Finance Committee meetings	Communication Committee meetings
No. of meetings held →	4	4	10	2
Roberta Brazil	4	4		
Andrew Campbell	4		10	2
John Childs	4		8	
Peter Cullen ‡	4			2
Tim Fisher	4	3		
Mike Logan Δ	4		10	
David Pannell	3			2
Warwick Watkins §	4	4		
Charles Willcocks	4	3		
Christine Ellis (Communication Manager)				2
Sandy Lolicato (Business Manager)		4	10	

‡ Chair of Communication Committee.

Δ Chair of Finance Committee.

§ Chair of Audit Committee.

Directors' interests **policy**

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

Quality **management system**

Land & Water Australia has built on its ISO 9000 quality management certification, achieved in 1996, through to AS/NZS ISO 9001:2000 achieved in July 2001. These achievements indicate the Corporation's commitment to continual improvement and the highest level of client service and accountability. The Corporation's total quality management commitment underpins many factors that are critical to the highest standards of corporate governance.

The Corporation's quality management systems were last audited in August 2002 by SGS International Certification Services Pty Ltd.

Service **charter**

To promote a greater focus on its stakeholders, Land & Water Australia has developed a service charter as part of its quality management system. The principles of the service charter are that:

- the Corporation shall verify that the requirements of stakeholders are identified and satisfied in a competent and professional manner;
- Land & Water Australia products and processes shall be reviewed and aligned to reflect the needs of its stakeholders — achieved through close consultation and feedback with key stakeholders; and
- any variances to stakeholder requirements shall be dealt with in a timely manner, in accordance with the quality system.

During the year, the Corporation demonstrated effective conformance to these principles through ongoing ISO certification and positive feedback from a stakeholder survey.

Risk **management**

Land & Water Australia's risk management policy is integrated into its quality management system and internal audit program. The policy seeks to protect the Corporation's public and commercial position and its employees, information and property. A risk register identifies each risk, describes its probability, likely severity 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* (ANAO Audit Report No. 39 of 1996–97), which seeks to minimise the likelihood and impact of fraud. The policy is a standing item at each Board meeting and 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

No incidence of fraud was detected during 2002–03.

Indemnities and insurance **premiums for officers**

The Corporation has comprehensive insurance cover with the Australian Government insurer, Comcover, for its directors and officers. In accordance with the contract of insurance with Comcover, the Corporation is prohibited from disclosing details of insurance.

Photo: David Coward Photography.

Land & Water Australia staff: Back row from left — Gill Whiting, Dianne Flett, Jenny Nitschke, Felicity Madin, Melanie King, Penny Cook, Christine Ellis, Warren Mortlock, Jennifer Bruce, Alana Burt, Glenn Conroy, Catherine Viljoen, Anwen Lovett. Front row from left — Sandy Lolicato, Nick Schofield, Andrew Campbell, Catherine Mobbs, Richard Price. Absent — Brian Prince, Paula Cooney, Fleur Flanery, Drusilla Patkin, Chris Louis, Kerri Price, Rebecca Barnes, Betsy Vucetic, Elizabeth Ann, Joanne Barbaro.

Report of **Operations**

> **Part 4**:

> Other corporate

> management

> information

Location of the Corporation's **major activities and facilities**

Land & Water Australia's office is in Canberra. Location and contact details are on the reverse of the first page of this report.

People **management**

Land & Water Australia staff support the establishment and management of R&D programs, and effective business and communication services. Staff are employed on terms and conditions determined by the Corporation. During 2002–03, 29 full-time and seven part-time staff were employed:

Executive Director	Andrew Campbell
Water Resources Manager	Colin Creighton
Communication Manager	Christine Ellis
Business Manager	Sandy Lolicato
Manager, Land, Water & Wool	Anwen Lovett
Integration Manager	Catherine Mobbs
Manager, National Dryland Salinity Program	Richard Price
Science Manager	Nick Schofield
Executive Coordinator	Sylvia Graham
Portfolio Management Officer	Elizabeth Ann
Program Officer, Research and Development	Joanne Barbaro
Financial Controller	Rebecca Barnes
Knowledge Broker — Integration	Amanda Bigelow
Administration Assistant — Communication (part-time)	Jane Briggs
Publications Officer	Jennifer Bruce
Administration Assistant — Communication (part-time)	Samantha Burt
Communication Officer	Glenn Conroy
Program Officer, Research and Development	Penny Cook
Program Support Officer (OBP) (part-time)	Paula Cooney
Futures Officer — Seconded from CSIRO	Steve Cork
Communication Officer (part-time)	Fleur Flanery
Knowledge Broker (part-time)	Dianne Flett
Business Support Officer	Deborah Gaudie
Program Officer, Research and Development	Melanie King
Communication Officer	Tim Lester

Program Officer — Communication	Chris Louis
Finance Assistant (part-time)	Felicity Madin
Administrative Assistant, Research and Development (part-time)	Janelle McFarlane
Communication Officer	Warren Mortlock
Human Resources/Business Officer	Jenny Nitschke
Systems Controller	Kerri Price
CEO, Ord-Bonaparte Program	Brian Prince
Social and Institutional Research Program Coordinator	Alice Roughley
Program Officer, Research and Development	Catherine Viljoen
Finance Officer	Betsy Vucetic
Program Officer, Research and Development	Gill Whiting

External, part-time consultant Program Coordinators were also contracted:

National Program for Sustainable Irrigation	Murray and Liz Chapman
Primary Industries Arena	Peter Day
National Rivers Consortium	Brendan Edgar, Phil Price
National River Contaminants Program	Brendan Edgar
Riparian Lands Program	Siwan Lovett
Social and Institutional Research Program	Ken Moore
Managing Climate Variability R&D Program	Barry White
Native Vegetation R&D Program	Jann Williams
Land, Water & Wool	Russell Pattinson, Warren Mason, Jann Williams, Siwan Lovett, Barry White

Two full-time persons were employed as part of the National Land & Water Resources Audit Management Unit, phase 2:

Executive Director (seconded from the Department of Agriculture, Fisheries and Forestry)	Blair Wood
Project Officer	Alana Innes

Four full-time persons were employed in the initial phase of the National Land & Water Resources Audit Management Unit, which concluded in June 2002:

Executive Director	Colin Creighton
Project Manager	Rochelle Lawson
Information Specialist	Maria Cofinas
Business Manager	Sylvia Graham

Remuneration **policy**

Land & Water Australia's salary banding structure is based on four broad salary bands. Work value indicators are used to evaluate the level of a position and its place in the appropriate band. Any increase in staff remuneration after a position has been placed within a band is based on performance. Land & Water Australia has a comprehensive performance management system, which includes annual and mid-term reviews of performance. The General Terms and Conditions of Employment detail employee remuneration benefits and performance obligations.

Staff **development**

Land & Water Australia is in the knowledge business — investing in, brokering and managing R&D. In the process the Corporation generates, transforms, utilises and works with knowledge — some of it formal, but much of it tacit, informal, experiential and intangible. Although the Corporation's portfolio of 1500 or so projects during the last decade represents a considerable asset, the talents, experience, skills and know-how of staff represent probably the Corporation's greatest knowledge asset. Accordingly, the Corporation places priority on recruiting, developing and retaining people of high quality, commensurate with its national leadership role and very challenging mandate. The table below shows the formal qualifications of the Corporation's staff and, importantly, the high proportion of staff who are undertaking further study as part of their training and development plans.

	PhD	Master's degree	Bachelor's degree	Graduate diploma or certificate
Completed	5	6	11	8
In progress	0	1	6	4

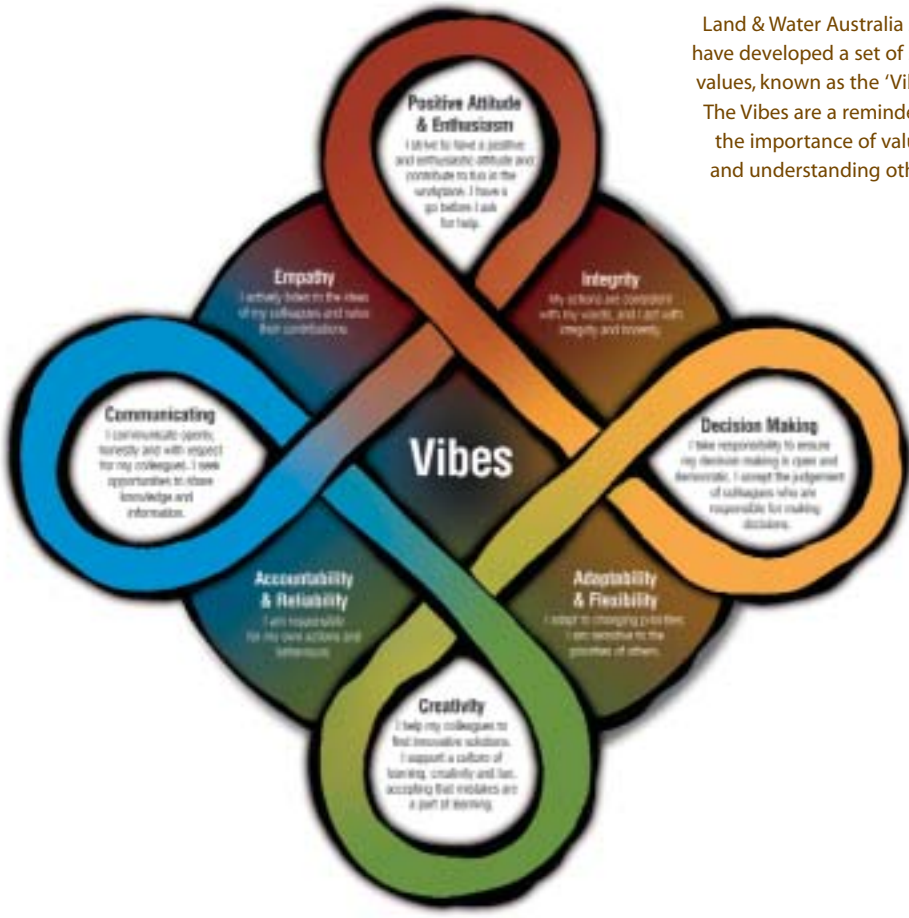
Each staff member's performance management agreement incorporates a training and development plan in which areas for development and activities or training are nominated. A budget is set aside for training and development of staff.

The Corporation is currently reviewing the induction process for incoming staff.

Organisational **health**

Land & Water Australia promotes a friendly, supportive and continual learning environment. Some activities during the year that have contributed to promoting the health and morale of the organisation included:

- appointment of a Human Resources/Business Officer,
- development of a social committee,
- a staff workshop on the theme of 'shared leadership', and
- the development of a colleagues' charter, called 'Vibes'.



Land & Water Australia staff have developed a set of staff values, known as the 'Vibes'. The Vibes are a reminder of the importance of valuing and understanding others.

Compliance with **human resource statutes**

An independent review of the Land & Water Australia compliance requirements concluded that the Corporation has demonstrated compliance across a range of statues, and identified areas of review and enhancement. Further details are in appendix 2 (pages 132–134).

Occupational **health and safety**

Land & Water Australia is obliged to comply with the *Occupational Health and Safety (Commonwealth Employment) Act 1991* (the 'OH&S Act') and the ACT *Occupational Health and Safety Act 1989*. The Corporation's occupational health and safety (OH&S) policy sets out staff obligations with respect to OH&S and establishes an OH&S Officer. The Corporation recently conducted an OH&S review of the office to inform future accommodation changes.

There have been no reports of accidents or dangerous incidents during the year that arose out of the conduct of undertakings of Land & Water Australia and that required notice to be given under section 68 of the OH&S Act. No investigations were conducted during the year.

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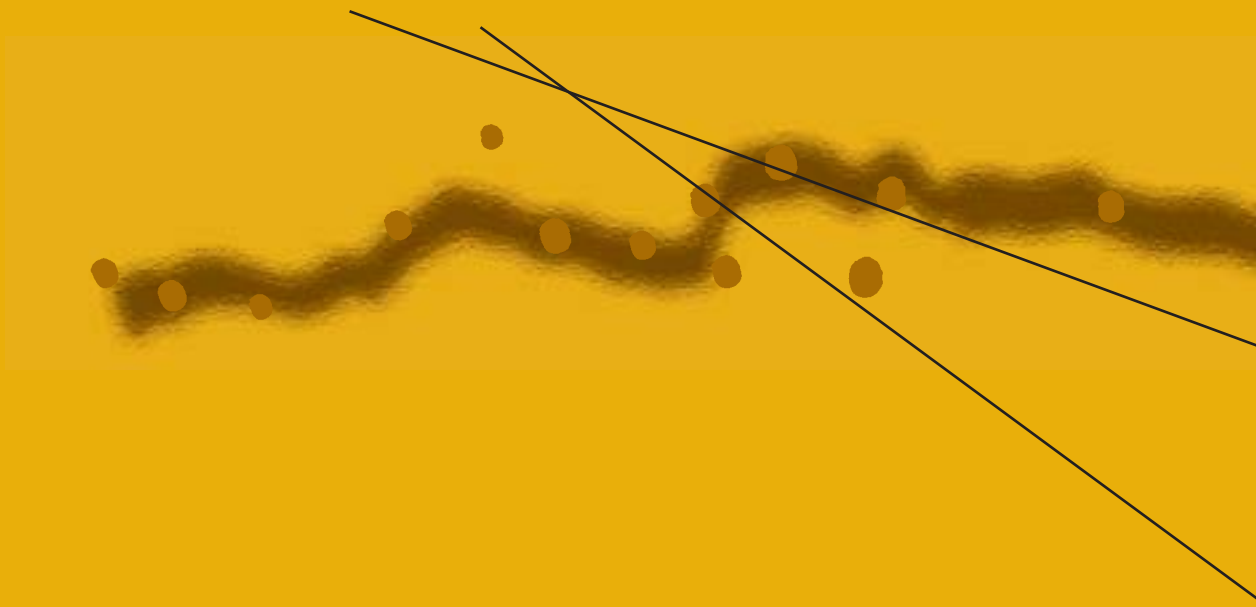

Auditor-General's **Report**

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INDEPENDENT AUDIT REPORT

To the Minister for Agriculture, Fisheries and Forestry

Matters relating to the Electronic Presentation of the Audited Financial Report

This audit report relates to the financial report of the Land and Water Resources Research and Development Corporation for the year ended 30 June 2003 included on the Land and Water Resources Research and Development Corporation's web site. The Board is responsible for the integrity of the Land and Water Resources Research and Development Corporation's web site.

The audit report refers only to the statements named below. It does not provide an opinion on any other information which may have been hyperlinked to/from the audited financial report.

If the users of this report are concerned with the inherent risks arising from electronic data communications they are advised to refer to the hard copy of the audited financial report to confirm the information included in the audited financial report presented on this web site.

Scope

I have audited the financial statements of Land and Water Resources Research and Development Corporation for the year ended 30 June 2003. The financial statements comprise:

- Statement by Directors;
- Statements of Financial Performance, Financial Position and Cash Flows;
- Schedules of Commitments and Contingencies; and
- Notes to and forming part of the Financial Statements.

The Directors of the Land and Water Resources Research and Development Corporation are responsible for the preparation and presentation of the financial statements and the information they contain. I have conducted an independent audit of the financial statements in order to express an opinion on them to you.

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

The audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards, to provide reasonable assurance as to whether the financial statements are free of material misstatement. Audit procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the financial statements and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken to form an opinion as to whether, in all material respects, the financial statements are presented fairly in accordance with Accounting Standards and other mandatory professional reporting requirements in Australia and statutory requirements so as to present a view which is consistent with my understanding of the Land and Water Resources Research and Development Corporation's financial position, its financial performance and its cash flows.

The audit opinion expressed in this report has been formed on the above basis.

Audit Opinion

In my opinion the financial statements:

(i) have been prepared in accordance with Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*; and

(ii) give a true and fair view, in accordance with applicable Accounting Standards and other mandatory professional reporting requirements in Australia and the Finance Minister's Orders, of the financial position of Land and Water Resources Research and Development Corporation as at 30 June 2003, and its financial performance and cash flows for the year then ended.

Australian National Audit Office

David C. McKean
Executive Director

Delegate of the Auditor-General

Canberra
11 September 2003

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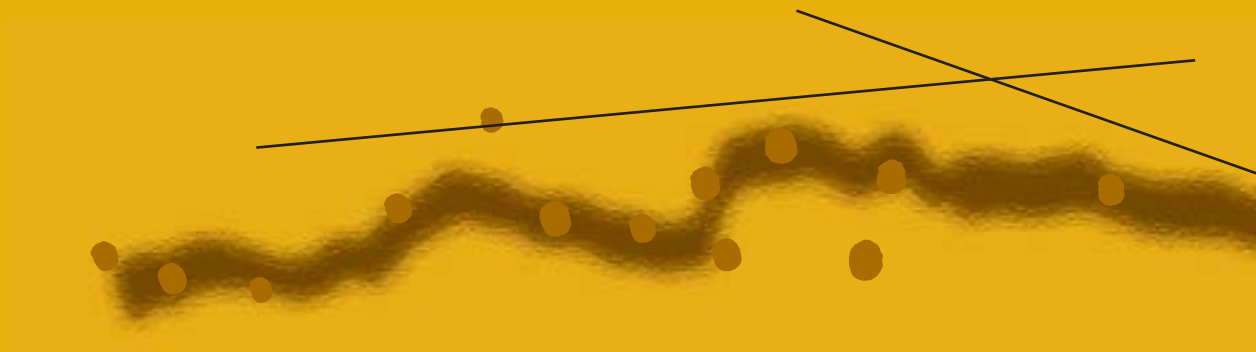

Financial **Statements**

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Statement by directors

In our opinion, the attached financial statements for the year ended 30 June 2003 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.

Roberta Brazil
Chairperson

5 September 2003

Andrew Campbell
Executive Director

5 September 2003

LAND & WATER RESOURCES RESEARCH & DEVELOPMENT CORPORATION
STATEMENT OF FINANCIAL PERFORMANCE
For the year ended 30 June 2003

	Notes	2003 $	2002 $
REVENUE			
Revenues from ordinary activities			
Revenue from Government	5A	**11,875,000**	11,586,000
Third party contributions utilised	4	**10,203,942**	12,023,636
Interest income	5B	**341,170**	291,302
Revenue from sale of assets	5C	**910**	432
Other income	5D	**46,804**	93,943
Revenues from ordinary activities		**22,467,826**	23,995,313
EXPENSE			
Expenses from ordinary activities			
Employees	6A	**3,486,078**	3,504,721
Suppliers	6B	**3,535,806**	3,419,830
Research and Development	7	**15,995,319**	16,464,331
Depreciation and amortisation	6C	**260,157**	272,683
Write down of assets	6D	**47,516**	439
Value of assets sold	5C	**1,090**	187
Expenses from ordinary activities	8	**23,325,966**	23,662,191
Operating surplus/(deficit) from ordinary activities		**(858,140)**	333,122
Net surplus/(deficit)		**(858,140)**	333,122
Net credit to asset revaluation reserve	13	**-**	115,254
Total revenues, expenses and valuation adjustments attributable to the Commonwealth and recognised directly in equity		**-**	115,254
Total changes in equity other than those resulting from transactions with owners as owners		**(858,140)**	448,376

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

LAND & WATER RESOURCES RESEARCH & DEVELOPMENT CORPORATION
STATEMENT OF FINANCIAL POSITION
as at 30 June 2003

	Notes	2003 $	2002 $
ASSETS			
Financial assets			
Cash	**14B**	**4,346,448**	5,324,526
Receivables	**9A**	**1,550,528**	2,395,981
Investments	**9B**	**1,136,135**	590,102
Total financial assets		**7,033,111**	8,310,609
Non-financial assets			
Infrastructure, plant and equipment	**10A**	**372,930**	447,565
Intangibles	**10B**	**109,266**	175,541
Other	**10D**	**7,970**	4,200
Total non-financial assets		**490,166**	627,306
Total assets		**7,523,277**	8,937,915
LIABILITIES			
Provisions			
Employees	**11A**	**304,164**	424,645
Research & Development	**11B**	**591,838**	-
Total provisions		**896,002**	424,645
Payables			
Employees	**12A**	**477,078**	345,188
Suppliers	**12B**	**283,326**	204,150
Research & Development	**12C**	**4,167,093**	5,406,014
Total payables		**4,927,497**	5,955,352
Total liabilities		**5,823,499**	6,379,997
NET ASSETS		**1,699,778**	2,557,918
EQUITY			
Parent entity interest			
Reserves	**13**	**115,254**	115,254
Accumulated surplus	**13**	**1,584,524**	2,442,664
Total parent entity interest		**1,699,778**	2,557,918
Total equity		**1,699,778**	2,557,918
Current assets		**7,041,081**	8,314,809
Non-current assets		**482,196**	623,106
Current liabilities		**5,689,611**	6,055,357
Non-current liabilities		**133,888**	324,640

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

LAND & WATER RESOURCES RESEARCH & DEVELOPMENT CORPORATION
STATEMENT OF CASH FLOWS
For the year ended 30 June 2003

	Notes	2003 $	2002 $
Operating Activities			
Cash received			
Sale of goods and services		**51,484**	1,454,950
Appropriations		**11,875,000**	11,586,000
Interest		**358,878**	268,802
Third party contributions		**12,388,379**	10,897,356
GST received from ATO		**624,876**	520,919
Total cash received		**25,298,617**	24,728,027
Cash used			
Employees		**(3,474,669)**	(3,184,739)
Suppliers		**(3,780,376)**	(5,465,901)
Research & Development expenses		**(18,351,557)**	(14,133,596)
Total cash used		**(25,606,602)**	(22,784,236)
Net cash from/(used by) operating activities	**14**	**(307,985)**	1,943,791
Investing Activities			
Cash received			
Proceeds from sales of infrastructure, plant and equipment		**910**	432
Proceeds from sale of financial instruments		**590,102**	-
Total cash received		**591,012**	432
Cash used			
Purchase of infrastructure, plant and equipment and intangibles		**(124,970)**	(118,310)
Purchase of financial instruments		**(1,136,135)**	(28,484)
Total cash used		**(1,261,105)**	(146,794)
Net cash (used by) investing activities		**(670,093)**	(146,362)
Net increase/(decrease) in cash held		**(978,078)**	1,797,429
Cash at the beginning of the reporting period		**5,324,526**	3,527,097
Cash at the end of the reporting period	**14**	**4,346,448**	5,324,526

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

LAND & WATER RESOURCES RESEARCH & DEVELOPMENT CORPORATION
SCHEDULE OF COMMITMENTS
as at 30 June 2003

	2003 $	2002 $
By Type		
Other commitments		
Operating lease [1]	**537,084**	720,246
Other commitments [2]	**19,955,084**	15,848,785
Total other commitments	**20,492,168**	16,569,031
Commitments receivable	**(1,862,922)**	(1,506,276)
Net commitments	**18,629,246**	15,062,755
By Maturity		
Operating lease commitments		
One year or less	**287,722**	244,462
From one to five years	**200,539**	410,307
Over five years	**-**	-
Net operating lease commitments	**488,261**	654,769

N.B. Commitments are GST inclusive where relevant.

1. Operating lease is exclusively in relation to office accommodation for a fixed rental lease to March 2005.

2. As at 30 June 2003 other commitments comprise future commitments to research organisations and for jointly funded projects and programs managed by other funding agencies in respect of which the recipient is yet to either perform the services required or meet eligibility conditions.

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

LAND & WATER RESOURCES RESEARCH & DEVELOPMENT CORPORATION
SCHEDULE OF CONTINGENCIES
as at 30 June 2003

	2003 $	2002 $
Contingent liablilities	-	-
Total contingent liablilities	-	-
Contingent assets	-	-
Net contingent liablilities	-	-

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

LAND & WATER RESOURCES RESEARCH & DEVELOPMENT CORPORATION
NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS
For the year ended 30 June 2003

Note 1: Summary of Significant Accounting Policies

1.1 Basis of Accounting

The Land and Water Resources Research and Development Corporation (the 'Corporation'), trading as Land & Water Australia, is required by Section 20 of the Commonwealth Authorities and Companies Act 1997 to provide proper accounts and records of the transactions and affairs of the Corporation in accordance with accounting principles, generally applied in commercial practice.

The financial statements 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 statements have been prepared in accordance with:
- Finance Minister's Orders (being the *Commonwealth Authorities and Companies (Financial Statements for reporting periods ending on or after 30 June 2003)* Orders);
- Australian Accounting Standards and Accounting Interpretations issued by the Australian Accounting Standards Board; and
- Consensus Views of the Urgent Issues Group.

The statements have been prepared having regard to:
- The Explanatory Notes to Schedule 1 issued by the Department of Finance and Administration; and
- Finance Briefs issued by the Department of Finance and Administration.

The Corporation's Statements of Financial Performance and Financial Position have been prepared on an accrual basis and are in accordance with historical cost convention, except for certain assets, which as noted, are at valuation. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position.

Assets and liabilities are recognised in the Statement of Financial Position when and only when it is probable that future economic benefits will flow and the amounts of the assets or liabilities can be reliably measured. Assets and liabilities arising under agreements equally proportionately unperformed are however not recognised unless required by an Accounting Standard. Liabilities and assets that are unrecognised are reported in the Schedule of Commitments and the Schedule of Contingencies.

Revenues and expenses are recognised in the Statement of Financial Performance when and only when the flow or consumption or loss of economic benefits has occurred and can be reliably measured.

1.2 Changes in Accounting Policy

The accounting policies used in the preparation of these financial statements are consistent with those used in 2001-02, except in respect of:

- measurement of certain employee benefits at nominal amounts (refer Note 1.5).
- the adoption of the fair value basis for property, plant and equipment (refer Note 1.11)
- the imposition of an impairment test for non-current assets carried at cost (refer Note 1.12)

1.3 Reporting by Outcomes

A comparison of Budget and Actual figures by outcome specified in the Appropriation Acts relevant to the Corporation is presented in Note 22.
Any intra-government costs included in the figure 'net cost to Budget outcomes' are eliminated in calculating the actual budget outcome for the Government overall.

1.4 Revenue

The revenues described in this Note are revenues relating to the core operating activities of the Corporation.

Interest revenue is recognised on a proportional basis taking into account the interest rates applicable to the financial assets.

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

Revenue from the rendering of a service is recognised by reference to the stage of completion of contracts or other agreements to provide services to other bodies. The stage of completion is determined according to the proportion that costs incurred to date bear to the estimated total costs of the transaction.

The Corporation receives revenue from third parties for the management of collaborative programs and projects.

Revenues from Government – Output Appropriations

The full amount of the appropriation for the Corporation's outputs for the year is recognised as revenue.

Resources Received Free of Charge

There were no resources received free of charge during 2002-03 (2001-02: nil).

1.5 Employee Benefits

Benefits

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

Liabilities for wages and salaries (including non-monetary benefits), annual leave, sick leave are measured at their nominal amounts. Other employee benefits expected to be settled within 12 months of their reporting date are also to be measured at their nominal amounts.

The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability. This is a change in accounting policy from last year required by initial application of a new Accounting Standard AASB 1028 from 1 July 2002.

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 entitlements 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 an 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.

Separation and Redundancy

Provision is made for separation and redundancy payments in circumstances where the Corporation has formally identified positions as excess to requirements and a reliable estimate of the amount of the payments can be determined.

No separation or redundancy payments were made during 2002-03.

Superannuation

Employees are members of the Commonwealth Superannuation and Public Sector Superannuation Schemes, or of another selected scheme in accordance with the Superannuation Guarantee levy.

The liability for superannuation recognised as at 30 June 2003 represents outstanding contributions for the final fortnight of the year.

1.6 Leases

Operating lease payments are expensed on a basis which is representative of the pattern of benefits derived from the leased assets. The net present value of future net outlays in respect of surplus space under non-cancellable lease agreements is expensed in the period in which the space becomes surplus.

1.7 Research & Development expenses

Research & Development expenses are expensed as incurred.

The Corporation has debited all items of expenditure against each individual R&D program account where a program management committee has been formed. These items include funding for research and development projects, scoping reviews, communications and other ad hoc management expenses related directly to the research (see Note 7).

The Corporation recognises research and development provisions and liabilities as follows. Most research and development agreements require the grantee to perform services or provide facilities, or to meet eligibility criteria. In these cases, 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 & Development monies are paid in advance of performance or eligibility, a prepayment is recognised. Where the research and development agreement has been executed by the Corporation but not yet by the grantee, a provision for any initial payment to be made on execution is recorded.

There are no cases where grant agreements are made without conditions to be monitored.

1.8 Cash

Cash means notes and coins held and any deposits held at call with a bank or financial institution.

1.9 Financial instruments

Accounting policies in relation to financial instruments are stated at Note 20.

1.10 Acquisition of assets

Assets are recorded at cost on acquisition. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken.

1.11 Infrastructure, Plant and Equipment

Asset Recognition Threshold

Purchases of infrastructure, plant and equipment are recognised initially at cost in the Statement of Financial Position, 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). Assets purchased from project funds which are greater than the threshold of $5,000, may revert to the Corporation at the end of the project period. As at 30 June 2003, no reversions took place. All sundry equipment transferred from the Commonwealth has been written off.

Revaluations

Infrastructure, plant and equipment are carried at valuation. Revaluations undertaken up to 30 June 2002 were done on a deprival basis at three year intervals for all assets. Under Australian Accounting Standard AASB 1041 *Revaluation of Non-Current Assets,* the Corporation has applied the transitional provisions for progressive revaluations and will conduct the next revaluation at 30 June 2005 on a fair value basis. As a result there is no financial effect of the new fair value basis in 2002-03.

Deprival values for each class of assets are determined as shown below:

Asset Class	Deprival Value Measured at:
Leasehold improvements	Depreciated replacement cost
Plant & Equipment	Market selling price

Under deprival value, assets which are surplus are measured at their net realisable value.
At 30 June 2003 the Corporation held no surplus assets: (30 June 2002: nil)

No revaluations were undertaken in 2002-03. Infrastructure, plant and equipment were revalued in 2001-02.

Conduct

All valuations are conducted by an independent qualified valuer.

Recoverable amount test

From 1 July 2002, Schedule 1 no longer requires the application of the recoverable amount test in AAS 10 *Recoverable Amount of Non-Current Assets* to the assets of Corporations when the primary purpose of the asset is not the generation of net cash inflows.

No property, plant and equipment assets have been written to recoverable amount as per AAS 10. Accordingly the change in policy has had no financial effect.

Depreciation and Amortisation

Depreciable infrastructure, plant and equipment 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. Leasehold improvements are amortised on a straight line basis over the lesser of the estimated useful life of the improvements or the unexpired period of the lease.

Depreciation/amortisation rates (useful lives) and methods are reviewed at each balance date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate. Residual values are re-estimated for a change in prices only when assets are revalued.

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

	2003	2002
Leasehold improvements	lease term	lease term
Plant and equipment	3-8 years	3-8 years

The aggregate amount of depreciation allocated for each class of asset during the reporting period is disclosed in Note 6C.

1.12 Intangibles

The Corporation's intangibles comprise externally acquired and internally developed software. The assets are carried at cost.

From 1 July 2002, Schedule 1 no longer requires the application of the recoverable amount test in Australian Accounting Standard AAS10 Recoverable Amount of Non-Current Assets to the assets of the Corporation when the primary purpose of the asset is not the generation of net cash inflows.

However Schedule 1 now requires such assets, if carried on the cost basis, to be assessed for indications of impairment. The carrying amount of impaired assets must be written down to the higher of its net market selling price or depreciated replacement cost.

All software assets were assessed for impairment as at 1 July 2002 and were found to be fully operational and meeting the needs of the Corporation. None were found to be impaired.

Intangible assets are amortised on a straight line basis over their anticipated useful lives.

Useful lives are:

	2003	2002
Externally acquired software	3-4 years	3-4 years
Internally developed software	3-4 years	3-4 years

1.13 Taxation

The Corporation is liable to pay payroll tax, fringe benefits tax, stamp duty and the goods and services tax. The Corporation is exempt from the payment of income tax under clause 46(1) of the *Primary Industries and Energy Research and Development Act 1989 (PIERD Act)* .

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.

1.14 Insurance

The Corporation has insured risks through the Government's insurable risk managed fund, called 'Comcover'. Workers compensation is insured through Comcare Australia.

1.15 Reclassification of liabilities for certain employee benefits

The liabilities for wages and salaries, annual leave and related on-costs expected to be settled within 12 months of reporting date have been reclassified from provisions to interest bearing liabilities and other creditors in the current year as a result of the adoption of the new accounting standard, AASB 1044 Provisions, Contingent Liabilities and Contingent Assets. The directors do not believe there are any significant uncertainties relating to the amount and timing of future payments included in the liabilities for these employee benefits, therefore they do not meet the definition of a provision under the new standard. Comparative amounts have also been reclassified to ensure comparability with the current reporting period.

1.16 Comparative figures

Where necessary, comparative figures have been reclassified to conform with the current financial year's presentation

Note 2: Economic Dependency

The Corporation was established under the provisions of the *PIERD Act* and is controlled by the Commonwealth of Australia.

The Corporation is dependent on appropriations from the Parliament of the Commonwealth for its continued existence and ability to carry out its normal activities.

Note 3: Events Occuring After Reporting Date

Since balance date, the Corporation is not aware of any events that have occurred which will affect the amounts disclosed in the 2002-03 Financial Statements.

Note 4: Third Party Contributions

Third party contributions were received for the following programs and projects in which the Corporation was a participant and managed the activity on behalf of other funding agencies:

ACTIVITY	**Utilised 2003**	Utilised 2002	**Not yet Utilised 2003**	Not yet Utilised 2002
	$	$	**$**	$
Industries arena coordination	**-**	40,000	**-**	-
Land, water & wool	**3,749,208**	1,818,901	**281,890**	1,381,099
Sustainable production systems	**-**	222,479	**-**	77,521
National dryland salinity R&D	**306,145**	319,037	**32,079**	-
Climate variability in agriculture	**-**	500,849	**-**	-
Social & institutional R&D	**126,553**	-	**82,083**	-
Ord-Bonaparte program	**844,755**	666,154	**134,091**	180,664
NRM climate variability	**285,620**	-	**214,380**	-
Sustainable grain and graze	**77,521**	-	**-**	-
Irrigation R&D	**520,906**	858,686	**445,935**	111,841
River contaminants	**394,639**	119,642	**238,208**	282,847
National rivers consortium	**630,871**	528,037	**699,662**	93,228
Riparian lands	**47,600**	110,000	**-**	-
National vegetation R&D	**624,930**	630,735	**46,707**	71,637
National land and water resources audit	**2,289,384**	6,034,543	**1,849,402**	1,056,891
Other research and development projects	**305,810**	174,573	**-**	110,354
Total	**10,203,942**	12,023,636	**4,024,437**	3,366,082

Of the third party contributions received, $10,203,942 has been recognised as income at balance date (2001-02: $12,023,636).

Notes to and Forming Part of the Financial Statements

Note 5: Operating Revenues

	2003 $	2002 $
5A: Revenues from Government		
Appropriations for outputs	**11,875,000**	11,586,000
Total revenues from Government	**11,875,000**	11,586,000
5B: Interest Income		
Deposits	**341,170**	291,302
Total interest revenue	**341,170**	291,302
5C: Net Gain from Sale of Assets		
Infrastructure, plant and equipment:		
Proceeds from sale	**910**	432
Net book value of assets disposed	**(1,090)**	(187)
Write offs (note 6D)	**(4,633)**	(439)
Net gain/(loss) from disposal of infrastructure, plant and equipment	**(4,813)**	**(194)**
5D: Other Income		
Publication sales	**7,286**	6,150
Other sundry items	**39,518**	87,793
Total other revenue	**46,804**	**93,943**

Note 6: Operating Expenses

	2003 $	2002 $
6A: Employee Expenses		
Wages and Salaries	**3,066,816**	2,975,080
Superannuation	**328,886**	334,816
Leave and other entitlements	**5,773**	112,678
Other employee benefits	**68,500**	73,816
Total employee benefits expenses	**3,469,975**	3,496,390
Workers compensation premiums	**16,103**	8,331
Total employee expenses	**3,486,078**	3,504,721
6B: Supplier Expenses		
Goods from external entities	**815,368**	878,323
Services from related entities	**85,554**	35,071
Services from external parties	**2,318,926**	2,230,468
Operating lease rentals	**315,958**	275,968
Total supplier expenses	**3,535,806**	3,419,830
6C: Depreciation and Amortisation		
Depreciation of property, plant and equipment	**98,984**	130,371
Amortisation of infrastructure	**43,849**	43,482
Amortisation of computer software	**117,324**	98,830
Total depreciation and amortisation	**260,157**	272,683
The aggregate amounts of depreciation or amortisation expensed during the reporting period for each class of depreciable asset are as follows:		
Plant and equipment	98,984	130,371
Infrastructure	43,849	43,482
Intangibles	117,324	98,830
Total depreciation and amortisation	**260,157**	272,683
6D: Write-Down of Assets		
Bad and doubtful debts expense	**42,883**	-
Plant & equipment – write off on disposal	**4,633**	439
Total write-down of assets	**47,516**	439

Note 7: Operating Expenses - Research & Development Expenses

	2003 $	2002 $
Research & Development expenses to non-profit institutions	**12,122,518**	11,443,960
Research & Development expenses to commercial entities	**3,872,801**	5,020,371
Total	**15,995,319**	16,464,331

Note 8: Total Operating Expenses

	2003 $	2002 $
Total operating expenses are classified by functional type as follows:		
Administration	**1,683,370**	1,628,497
Research & Development funding	**19,711,670**	20,239,735
Portfolio Management	**561,507**	609,668
Communication	**1,369,419**	1,184,291
Total	**23,325,966**	23,662,191

Note 9: Financial Assets

	2003 $	2002 $
9A: Receivables		
Goods and services	**1,023,937**	2,006,495
Less: Provision for doubtful debts	**-**	-
	1,023,937	2,006,495
Interest receivable	**4,793**	22,501
GST receivable	**521,798**	366,985
Total receivables (net)	**1,550,528**	2,395,981
All receivables are current assets.		
Receivables (gross) which are aged as follows:		
Not Overdue	**906,311**	389,486
Overdue by:		
Less than 30 days	**443,368**	1,895,680
30 to 60 days	**-**	-
60 to 90 days	-	11,435
More than 90 days	**200,849**	99,380
	644,217	2,006,495
Total receivables (gross)	**1,550,528**	2,395,981
9B: Investments		
Term deposits	**1,136,135**	590,102
Total investments	**1,136,135**	590,102
All investments are current assets.		

Note 10: Non-Financial Assets

	2003 $	2002 $
10A: Infrastructure, plant and equipment		
Office equipment		
- at cost	**88,726**	17,245
- Accumulated depreciation	**(21,334)**	-
- 2002-05 valuation (deprival)	**252,485**	257,995
- Accumulated depreciation	**(70,702)**	(49)
Total office equipment	**249,175**	275,191
Furniture and fittings		
- at cost	**2,169**	-
- Accumulated depreciation	**(208)**	-
- 2002-05 valuation (deprival)	**51,774**	51,774
- Accumulated depreciation	**(6,731)**	-
Total furniture and fittings	**47,004**	51,774
Leasehold improvements		
- 2002-05 valuation (deprival)	**120,600**	120,600
- Accumulated depreciation	**(43,849)**	-
Total leasehold improvements	**76,751**	120,600
Total Infrastructure, Plant and Equipment (non-current)	**372,930**	447,565

The revaluations were in accordance with the revaluation policy stated at note 1.11 and were completed by an independent valuer (Australian Valuation Office).

Movement in Asset Revaluation Reserve		
Increment for Infrastructure, Plant and equipment	-	115,254
	-	115,254
10B: Intangibles		
Computer software:		
Externally acquired – at cost	**89,458**	59,915
Accumulated amortisation	**(48,958)**	(42,356)
	40,500	17,559
Internally developed – at cost	**329,623**	308,117
Accumulated amortisation	**(260,857)**	(150,135)
	68,766	157,982
Total intangibles (non-current)	**109,266**	175,541

10C: Analysis of Infrastructure, Plant, Equipment and Intangibles

TABLE A1 - Reconciliation of the opening and closing balances of infrastructure, plant and equipment and intangibles

Item	Office equipment $	Furniture and fittings $	Leasehold improvements $	Computer software $	TOTAL $
Gross value as at 1 July 2002					
Gross book value	275,240	51,774	120,600	368,032	815,646
Accumulated depreciation / amortisation	(49)	-	-	(192,491)	(192,540)
Net book value	275,191	51,774	120,600	175,541	623,106
Additions					
by purchase	71,752	2,169	-	51,049	124,970
from acquisitions of operations	-	-	-	-	-
Net revaluation increment/decrement	-	-	-	-	-
Depreciation/amortisation expense	(92,045)	(6,939)	(43,849)	(117,324)	(260,157)
Recoverable Amount write-downs					
Disposals					
From disposal of operations	(5,723)	-	-	-	(5,723)
Other disposals	-	-	-	-	-
As at 30 June 2003					
Gross book value	341,211	53,943	120,600	419,081	934,835
Accumulated depreciation / amortisation	(92,036)	(6,939)	(43,849)	(309,815)	(452,639)
Net book value	**249,175**	**47,004**	**76,751**	**109,266**	**482,196**

Table B – Assets at valuation

Item	Office equipment $	Furniture and fittings $	Leasehold improvements $	Computer software $	TOTAL $
As at 30 June 2003					
Gross value	252,485	51,774	120,600	-	424,859
Accumulated depreciation/amortisation	(70,702)	(6,731)	(43,849)	-	(121,282)
Net book value	181,783	45,043	76,751	-	303,577
As at 30 June 2002					
Gross value	257,995	51,774	120,600	-	430,369
Accumulated depreciation/amortisation	-	-	-	-	-
Net book value	257,995	51,774	120,600	-	430,369

10D: Other Non-Financial Assets

	2003 $	2002 $
Prepayments	**7,970**	4,200
Total other non-financial assets (current)	**7,970**	4,200

Note 11: Provisions

	2003 $	2002 $
11A: Employee Provisions		
Leave	**304,164**	424,645
Aggregate employee entitlement liability	**304,164**	424,645
Workers' compensation premiums	**-**	-
Aggregate employee benefit liability and related on costs	**304,164**	424,645
Employee provisions are categorised as follows:		
Current:	**170,276**	100,005
Non-current:	**133,888**	324,640
Aggregate employee benefit liability and related on costs	**304,164**	424,645
11B: Research and Development		
Provision for Research and Development contract payments	**591,838**	-
Total provision for Research and Development (current)	**591,838**	-

Note 12: Payables

	2003 $	2002 $
12A: Employee Payables		
Salaries and wages	**326,101**	308,767
Annual leave	**150,977**	24,722
Superannuation	**-**	11,699
Total supplier payables	**477,078**	345,188

All employee payables are current.

12B: Supplier Payables		
Trade creditors	**283,326**	204,150
Total supplier payables	**283,326**	204,150

All supplier payables are current.

12C: Research & Development Payables		
Non-profit institutions	**142,656**	1,537,432
Contributions not yet utilised (see Note 4)	**4,024,437**	3,366,082
Contributions in advance	**-**	502,500
Total research and development payables	**4,167,093**	5,406,014

All research and development payables are current.

Note 13: Equity

13A: Analysis of Equity

Item	Accumulated results		Asset revaluation reserve		TOTAL EQUITY	
	2003 $	2002 $	2003 $	2002 $	2003 $	2002 $
Opening balance 1 July	2,442,664	2,109,542	115,254	-	2,557,918	2,109,542
Net surplus/deficit	(858,140)	333,122	-	-	(858,140)	333,122
Net revaluation increment/(decrement)	-	-	-	115,254	-	115,254
Closing balance as at 30 June	1,584,524	2,442,664	115,254	115,254	1,699,778	2,557,918
Total equity attributable to the Commonwealth	1,584,524	2,442,664	115,254	115,254	1,699,778	2,557,918

Note 14: Cash Flow Reconciliation

	2003 $	2002 $
14A: Reconciliation of Operating Surplus to Net Cash from Operating Activities		
Reconciliation of operating surplus to net cash from operating activities		
Operating surplus/(deficit)	**(858,140)**	333,122
Non-Cash Items		
Depreciation and amortisation	**260,157**	272,683
(Gain) / loss on disposal of assets	**180**	(245)
Net write down of non-current assets	**4,633**	439
Changes in Assets and Liabilities		
(Increase)/decrease in receivables	**845,453**	(1,162,097)
(Increase)/decrease in prepayments	**(3,770)**	-
Increase/(decrease) in employee provisions	**(120,481)**	319,982
Increase/(decrease) in provision for grants	**591,838**	-
Increase/(decrease) in employee payables	**131,890**	-
Increase/(decrease) in supplier payables	**79,176**	(150,828)
Increase/(decrease) in research & development expenses payable	**(1,238,921)**	2,330,735
Net cash from/(used by) operating activities	**(307,985)**	1,943,791
14B: Reconciliation of Cash		
Cash balance comprises:		
Cash on hand	**878**	1,056
Deposits at call	**4,345,570**	5,323,470
Total cash	**4,346,448**	5,324,526
Balance of cash as at 30 June shown in the Statement of Cash Flows	**4,346,448**	5,324,526

Note 15: Director Remuneration

	2003	2002
The number of directors of the Corporation included in these figures are shown below in the relevant remuneration bands:		
$ Nil - $9,999	**1**	1
$ 10,000 - $19,999	**-**	-
$ 20,000 - $29,999	**6**	6
$ 30,000 - $39,999	**1**	1
$130,000 - $139,999	**-**	-
$160,000 - $169,999	**-**	-
$180,000 - $189,999	**1**	1
Total number of directors of the Corporation	**9**	9
	$	$
Aggregate amount of superannuation payments in connection with the retirement of directors	**30,150**	12,684
Other remuneration received or due and receivable by directors of the Corporation	**325,000**	332,225
Total remuneration received or due and receivable by directors of the Corporation:	**355,150**	344,909

The part time directors of the Corporation received remuneration and allowances as determined by the Remuneration Tribunal. In accordance with the *PIERD Act*, the part time directors are appointed by a selection committee. The Executive Director is the only full time director of the Corporation.

Note 16: Related Party Disclosures

Directors of the Corporation

The Directors of the Corporation during the year were (appointment dates during the year are shown):

Mrs R Brazil	Chairperson	(01/07/01)
Mr A Campbell	Executive Director	
Mr J Childs	Director	(01/07/02)
Prof. P Cullen	Director	(01/07/02)
Mr T Fisher	Director	(01/07/02)
Mr M Logan	Director	(01/07/02)
Ass.Prof D Pannell	Director	(01/07/02)
Mr W Watkins	Director and Deputy Chair	(01/07/02)
Mr C Willcocks	Government Director	

The aggregate remuneration of Directors is disclosed in Note 15.

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 & development expenses were made to the following Director related entities. The Directors involved took no part in the relevant decisions of the board.

Mr C Willcocks	General Manager, Landcare and Regional Capacity, Natural Resource Management, Agriculture, Fisheries and Forestry Australia Member, Advisory Committee, Centre for Resource and Environmental Studies, Australian National University.
Ass.Prof D Pannell	Associate Professor, School of Agriculture and Resource Economics, Faculty of Natural and Agriculture Sciences, University of Western Australia. Program Leader, Economics and Social Assessment, Cooperative Research centre for Plant Based Management of Dryland Salinity. Visiting fellow, CSIRO Land and Water. Visiting fellow, Bureau of Rural Science.

The Corporation provided research funding to the above agencies. These transactions occurred within the normal terms and conditions of research and development expenses.

Research & development expenses were provided to Director related entities as follows:

	2003	2002
	$	$
Australian National University	**332,150**	333,405
CSIRO Land and Water and Biodiversity Sectors	**-**	2,732,046
Griffith University	**-**	165,924
Bureau of Rural Sciences	**397,045**	-
CSIRO Land & Water	**1,249,327**	-
University of Western Australia	**966,871**	-
Total	**2,945,393**	3,231,375

The Corporation has also received contributions from director related entities to jointly funded projects with the Natural Heritage Trust, Agriculture, Fisheries and Forestry Australia. These transactions occurred within the normal terms and conditions of research and development agreements.

Note 17: Remuneration of Officers

	2003	2002
The number of officers who received or were due to receive total remuneration of $100,000 or more:		
$100,000 - $109,999	**1**	-
$110,000 - $119,999	**-**	2
$120,000 - $129,999	**4**	1
$130,000 - $139,999	**2**	3
$140,000 - $149,999	**1**	3
$190,000 - $199,999	**-**	1
Total	**8**	10
	$	$
The aggregate amount of total remuneration of officers shown is:	**1,013,500**	1,385,988

The officer remuneration includes all officers concerned with or taking part in the management of the Corporation during 2002-03, except the Executive Director. Details in relation to the Executive Director have been incorporated in Note 15: Director Remuneration.

Note 18: Remuneration of Auditors

	2003 $	2002 $
Amounts Received or due and receivable by the Australian National Audit Office (ANAO) as auditors of the Corporation.	**18,000**	14,500

PricewaterhouseCoopers has been contracted by the ANAO to provide audit services on the ANAO's behalf. Fees for these services are included above.

No other services were provided by the ANAO during the reporting period.

Note 19: Average Staffing Levels

	2003	2002
The average staffing levels for the Corporation during the year were:	**32**	32

Notes to and Forming Part of the Financial Statements

Note 20: Financial Instruments

20A: Terms, conditions and accounting policies

Financial Instrument	Notes	Accounting Policies and Methods (including recognition criteria and measurement basis)	Nature of Underlying Instrument (including significant terms & conditions affecting the amount, timing and certainty of cash flows)
Financial assets		Financial assets are recognised when control over future economic benefits is established and the amount of the benefit can be reliably measured	
Cash	14B	The balance is recognised at the nominal amount. Interest is credited to revenue as it accrues. A negative balance arises when unpresented cheques exceed the current bank balance and this is disclosed as an overdraft.	Temporarily surplus funds, mainly from quarterly draw downs of appropriation, are placed in a cheque account with the Commonwealth Bank. Interest is earned on the daily balance at the prevailing daily rate for money on call and is paid at month end. CBA Bank Rating: AAA
Deposits at call	14B	Deposits are recognised at their nominal amounts. Interest is credited to revenue as it accrues	Temporarily surplus funds, mainly from quarterly draw downs of appropriation, are placed on deposit at call with the Commonwealth Bank of Australia and Bankers Trust. Interest is earned on the daily balance at the prevailing daily rate for money on call and is paid at month end. Commonwealth Bank of Australia rating: AAA. Bankers Trust Bank rating: AAA
Receivables for goods and services	9A	These receivables are recognised at the nominal amounts due less any provision for bad and doubtful debts. Provisions are made when collection of the debt is judged to be less rather than more likely.	Credit terms are net 7-14 days (2001-2002: 7-14 days)
Term deposits	9B	The term deposit is recognised at cost. Interest is accrued as it is earned.	Term deposit is with Adelaide Bank, maturing in 2003-2004, and earns an effective rate of interest of 5.55%. Interest is payable on maturity. Adelaide Bank rating A2
Financial Liabilities		Financial liabilities are recognised when a present obligation to another party is entered into and the amount of the liability can be reliably measured.	
Trade creditors	12B	Creditors and accruals are recognised at their nominal amounts, being the amounts at which the liabilities will be settled. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).	Settlement is usually made net 14 days.
Research & development payables: non-profit institutions	12C	The Corporation recognises a liability on the signing of grant agreements. The amount of the liability is for the total of all payments under the agreement, which are no longer at the Corporation's discretion. The part of the liability recognised in the Balance Sheet comprises payments, which are more rather than less likely to be made.	Grant payments are made in instalments according to the grantee meeting agreed milestones and subject to funds being appropriated annually by the Parliament. The Corporation does not necessarily appropriate the benefits of the research to itself and any benefit it receives will only coincidentally approximate in value the grant made.
Contributions not yet utilised and in advance	12C	The Corporation brings income to account in the same period as expenditure is incurred; therefore any contributions not utilised are recorded as a liability.	There are agreements with third party contributors that contributions will be spent on R&D projects and other activities relating to specified programs. The Corporation is the administrator of the funds.

Notes to and Forming Part of the Financial Statements

Note 20: Financial Instruments

20B: Interest Rate Risk

Financial instrument	Notes	Floating Interest Rate		Fixed Interest Rate		Non-Interest Bearing		Total		Weighted Average Effective Interest Rate	
		2003 $	2002 $	2003 $	2002 $	**2003** $	2002 $	**2003** $	2002 $	**2003** $	2002 $
Financial Assets											
Cash on hand	14B	**-**	-	**-**	-	**878**	1,056	**878**	1,056	**1.05**	1.05
Deposits at call	14B	**4,345,570**	5,323,470	**-**	-	**-**	-	**4,345,570**	5,323,470	**4.00**	3.56
Receivables for goods and services	9A	**-**	-	**-**	-	**1,550,528**	2,395,981	**1,550,528**	2,395,981	**N/A**	N/A
Term deposits	9B	**-**	-	**1,136,135**	590,102	**-**	-	**1,136,135**	590,102	**5.38**	5.70
Total		**4,345,570**	5,323,470	**1,136,135**	590,102	**1,551,406**	2,397,037	**7,033,111**	8,310,609		
Total Assets								**7,523,277**	8,937,915		
Financial Liabilities											
Trade creditors	12B	**-**	-	**-**	-	**283,326**	204,150	**283,326**	204,150	**N/A**	N/A
Research & development payables: non-profit institutions	12C	**-**	-	**-**	-	**142,656**	1,537,432	**142,656**	1,537,432	**N/A**	N/A
Contributions not yet utilised and in advance	12C	**-**	-	**-**	-	**4,024,437**	3,868,582	**4,024,437**	3,868,582	**N/A**	N/A
Total		**-**	-	**-**	-	**4,450,419**	5,610,164	**4,450,419**	5,610,164		
Total Liabilities								**5,823,499**	6,379,997		

Notes to and Forming Part of the Financial Statements

Note 20: Financial Instruments

20C: Net Fair Values of Financial Assets and Liabilities

	Notes	2003 Total carrying amount	2003 Aggregate net fair value	2002 Total carrying amount	2002 Aggregate net fair value
Financial Assets					
Cash on hand	14B	**878**	**878**	1,056	1,056
Deposits at call	14B	**4,345,570**	**4,345,570**	5,323,470	5,323,470
Receivables for goods and services	9A	**1,550,528**	**1,550,528**	2,395,981	2,395,981
Term deposit	9B	**1,136,135**	**1,136,135**	590,102	590,102
		7,033,111	**7,033,111**	8,310,609	8,310,609
Financial Liabilities					
Trade creditors	12B	**283,326**	**283,326**	204,150	204,150
Research & Development payables: non-profit institutions	12C	**142,656**	**142,656**	1,537,432	1,537,432
Contributions not yet utilised and in advance	12C	**4,024,437**	**4,024,437**	3,868,582	3,868,582
		4,450,419	**4,450,419**	5,610,164	5,610,164

Financial assets
The net fair values of cash, deposits on call, receivables for goods and services and term deposit approximate their carrying amounts.

Financial liabilities
The net fair values contributions not yet utilised and in advance, trade creditors and research & development payables are approximated by their carrying amounts.

20D: Credit Risk Exposures

The Corporation's maximum exposures to credit risk at reporting date in relation to each class of recognised financial asset is the carrying amount of those assets as indicated in the Statement of Financial Position.

The Corporation has no significant exposures to any concentration of credit risk.

Note 21: Appropriations

Particulars	Corporation's Outputs		Total	
	2003	2002	**2003**	2002
	$	$	**$**	$
Year ended 30 June 2003				
Appropriation Acts 1 and 2	**11,875,000**	11,586,000	**11,875,000**	11,586,000

Note 22: Reporting of Outcomes

22A: Outcomes of the Corporation

The Corporation is structured to meet one outcome:

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

Five outputs are identified for this outcome. These are:

Output 1: Sustainable primary industries
Output 2: River landscapes
Output 3: Vegetation
Output 4: Future landscapes & compatible industries
Output 5: Cross-cutting activities

22B: Net Cost of Outcome Delivery

	Outcome 1		Total	
	2003	2002	**2003**	2002
	$	$	**$**	$
Administered expenses	**-**	-	**-**	-
Departmental expenses	**23,325,966**	23,662,191	**23,325,966**	23,662,191
Total expenses	**23,325,966**	23,662,191	**23,325,966**	23,662,191
Costs recovered from provision of goods and services to the non-government sector				
Departmental expenses	**-**	-	**-**	-
Total costs recovered	-	-	-	-
Other external revenues				
Departmental				
Interest	**341,170**	291,302	**341,170**	291,302
Revenue from sale of assets	**910**	432	**910**	432
Industry contributions	**5,260,383**	3,479,873	**5,260,383**	3,479,873
Other	**46,804**	93,943	**46,804**	93,943
Total Departmental	**5,649,267**	*3,865,550*	**5,649,267**	*3,865,550*
Total other external revenues	**5,649,267**	*3,865,550*	**5,649,267**	*3,865,550*
Net cost/(contribution) of outcome	**17,676,699**	*19,796,641*	**17,676,699**	*19,796,641*

22C: Revenues and Expenses by Output Groups and Outputs

	Output 1		Output 2		Output 3		Output 4		Output 5		Non attributable		Total	
	2003	2002	**2003**	2002	**2003**	2002	**2003**	2002	**2003**	2002	**2003**	2002	**2003**	2002
	$	$	**$**	$	**$**	$	**$**	$	**$**	$	**$**	$	**$**	$
Operating expenses														
Employees	**475,125**	351,404	**238,064**	184,419	**49,886**	59,717	**80,223**	331,266	**688,750**	1,006,354	**1,954,030**	1,571,561	**3,486,078**	3,504,721
Suppliers	**619,836**	458,676	**601,955**	435,377	**84,838**	133,830	**139,872**	13,021	**1,074,005**	1,103,311	**1,015,300**	1,275,615	**3,535,806**	3,419,830
Grants	**5,077,619**	2,846,898	**3,906,104**	3,357,446	**2,327,669**	2,110,899	**392,336**	402,457	**3,955,385**	6,818,967	**336,206**	927,664	**15,995,319**	16,464,331
Depreciation & amortisation	-	-	-	-	-	-	-	-	-	-	**260,157**	272,683	**260,157**	272,683
Write down of assets	-	-	-	-	-	-	-	-	-	-	**48,606**	626	**48,606**	626
Total operating expenses	**6,172,580**	3,656,978	**4,746,123**	3,977,242	**2,462,393**	2,304,446	**612,431**	746,744	**5,718,140**	8,928,632	**3,614,299**	4,048,149	**23,325,966**	23,662,191
Funded by:														
Revenues from Government	**1,633,468**	1,497,984	**3,654,029**	1,340,088	**1,795,427**	1,144,562	**502,336**	231,341	**2,185,333**	1,976,268	**2,104,407**	5,395,757	**11,875,000**	11,586,000
Industry contributions	**4,418,495**	2,901,266	**1,594,016**	1,616,364	**624,930**	630,735	-	-	**3,566,501**	6,875,271	-	-	**10,203,942**	12,023,636
Other non-taxation revenues	**92,306**	49,071	**82,612**	84,496	**26,061**	18,622	-	-	**59,697**	91,549	**128,208**	141,939	**388,884**	385,677
Total operating revenues	**6,144,269**	4,448,321	**5,330,657**	3,040,948	**2,446,418**	1,793,919	**502,336**	231,341	**5,811,531**	8,943,088	**2,232,615**	5,537,696	**22,467,826**	23,995,313

Appendix 1:

> Government rural
> policy frameworks of
> particular significance

Four policy frameworks are particularly significant to Land & Water Australia:

- Australian Government national research priorities,
- Australian Government priorities for rural R&D,
- the Natural Heritage Trust, and
- the Prime Minister's National Action Plan for Salinity and Water Quality.

Although activities in relation to these frameworks are described throughout this annual report, they are addressed explicitly as follows.

National research **priorities**

In July 2002 the Australian Government's Department of Education, Science and Training (DEST) released the document *Developing National Research Priorities, an Issues Paper (May 2002)*. The specified objectives of the national research priorities are:

1. To identify and address areas of strength, opportunity or need where an increase in research effort — including collaboration, coordination or investment — would make a significant contribution to national wealth and/or wellbeing.
2. To determine what shift in research effort is needed, what new or improved research activities are required, and how the targeting of research effort can best be achieved.

The framework for national priority setting maintains the existing priority setting approaches of research institutions and funding bodies. It has, however, added a new dimension: the recognition that thematic priorities are multidisciplinary and require a mix of science, engineering, technology, social science and humanities research. This dimension is already well embraced by Land & Water Australia, which is a national leader in social and institution research, and holistic and integrated approaches to natural resource management. In addition, Land & Water Australia has led the field in achieving national collaboration between researchers, policy developers, resource managers and resource users, and emphasised the critical importance of effectively communicating research outputs in forms appropriate to different target audiences. Land & Water Australia is now adding a new dimension of futures analysis to its priority setting, recognising that ways of comprehending emerging trends, issues and opportunities, both locally and globally, are increasingly critical to achieving a more sustainable Australia.

On 5 December 2002 the Prime Minister announced the four national research priorities and their associated priority goals:

1. An Environmentally Sustainable Australia
2. Promoting and Maintaining Good Health
3. Frontier Technologies for Building and Transforming Australian Industries
4. Safeguarding Australia.

Land & Water Australia's charter fits clearly into the first priority, but all the other priorities are important to strategic thinking and investment analyses. As an example, current food and fibre production systems may well be supplanted by radically new technologies in the foreseeable future, potentially enhancing the Corporation's capacity to achieve sustainable landscapes. Similarly the maintenance of good health in the Australian community will increasingly rely on maintaining a healthy environment, currently stressed by unsustainable practices and a more rapid than expected onset of climate change.

Contribution to research priorities

A Department of Agriculture, Fisheries and Forestry-related national research priority relevant to Land & Water Australia is 'An Environmentally Sustainable Australia'. The priority goals relevant to Land & Water Australia are:

1. *Water — a critical resource*. Ways of using less water in agriculture and related industries, providing increased protection of rivers and groundwater and the re-use of urban and industrial waste waters.
2. *Transforming existing industries*. New technologies for resource-based industries to deliver substantial increases in national wealth by reducing environmental impacts on land and sea.
3. *Overcoming soil loss, salinity and acidity*. Identifying causes and solutions to land degradation using a multidisciplinary approach (for example, incorporating hydrology, geology, biology and climatology) to restore land surfaces.
4. *Sustainable use of Australia's biodiversity*. Managing and protecting Australia's terrestrial and marine biodiversity to develop long-term use of ecosystem goods and services ranging from fisheries to ecotourism.

Land & Water Australia plans and activities relevant to these goals are summarised below.

Priority 1: Water — a critical resource

Land & Water Australia identified rivers as one of its five R&D arenas in its 2001–06 Strategic R&D Plan. This arena also covers irrigation industries and related water resource issues more generally. In terms of the priority goal, Land & Water Australia has and will continue to implement R&D into ways of using less water in agriculture and provide increased protection to rivers and groundwater resources. Land & Water Australia will provide a smaller contribution to recycling wastes as this is seen as the primary responsibility for urban water utilities and industries.

The major national initiatives that are/will be implemented to meet the water priority goals include:

- The National Program for Sustainable Irrigation (NPSI) (www.lwa.gov.au/irrigation/) is aiming to build an effective nationally coordinated R&D network across 30 or more organisations to deliver a sustainable industry for the future.
- The National Rivers Consortium (NRC) (www.rivers.gov.au/research/nrc) is a strategic collaboration between policy makers, river managers and scientists aiming to:
  - protect rivers with retained natural values,
  - restore degraded rivers,
  - train river managers,
  - turn research into practical river management solutions, and
  - undertake regional and catchment demonstration projects.

The NRC has already launched a major best practice demonstration project in Western Australia, reviewed national legislative and regulatory bases for river management, and funded workshops, education and training programs (see www.rivers.gov.au).

The National River Contaminants Program (www.rivers.gov.au/research/contaminants/index.htm) is a new program aiming to contribute to healthy river systems by reducing the ecological impact of land-sourced river contaminants (primarily salinity, sediments and nutrients). This program will add value to the National Action Plan for Salinity and Water Quality and the MDBC's Integrated Catchment Management Program as well as addressing the water, soil and salinity national priorities (see www.lwa.gov.au).

The National Riparian Lands Program (www.rivers.gov.au/research/rlrd/) aims to assist communities to implement, monitor and evaluate practices for ecologically and economically sound management of riparian lands. The program is currently focusing on 11 key issues identified through extensive consultation, including: stream bank stabilisation, trapping of sediments and nutrients in riparian zones, re-introduction of large woody debris to support biodiversity, and management of domestic stock and feral animals. This program has produced world-leading knowledge products (interactive CD-ROMs, technical guidelines, factsheets and the very popular *RipRap* magazine) for managing riparian lands and rehabilitating degraded rivers (see www.rivers.gov.au).

Priority 2: Transforming Existing Industries

A fundamental goal of Land & Water Australia is to move existing rural resource-based industries, particularly agriculture, towards a more sustainable footing. The Strategic R&D Plan has Sustainable Primary Industries as one of its five R&D arenas. The current programs associated with achieving the national research priority goal of new technologies to reduce environmental impacts are described below:

Land Water & Wool (LWW) (www.landwaterwool.gov.au) is a major natural resource management initiative for the Australian wool industry, funded by Australian Wool Innovation Ltd and managed by Land & Water Australia, focusing on designing sustainable and productive management solutions for the wool industry.

The extreme variability of the Australian climate is a fundamentally important driver of ecosystem processes and a fundamental parameter influencing the design of Australian farming systems. Most land and water degradation occurs during climatic extremes. The most recent phase of the Climate Variability in Agriculture program (CVAP) (www.lwa.gov.au/) was completed in 2002, and Land & Water Australia has now secured significant co-investment in a new Managing Climate Variability initiative. The first round of research projects within the new initiative is commencing in 2003. The primary outcome for the new proposed program is:

> Managers increasing profitability and sustainability by using climate variability information and products in applications in agriculture, fisheries, forestry and natural resources.

The Redesigning Agriculture for Australian Landscapes (RAAL) R&D Program specifically aimed to address the mismatch between current production systems and the functioning of Australian landscapes. This initiative has completed its first phase, and new R&D investments in this area will be funded within Land & Water Australia's Future Sustainable Landscapes and Compatible Industries Arena. Many of the important outputs from the RAAL program are still to be widely disseminated and actions are currently under way to achieve this. Importantly, the program has identified the criteria that any production system would need to meet in terms of achieving sustainable utilisation of water and nutrients (see www.lwa.gov.au).

The Future Sustainable Landscapes and Compatible Industries Arena (2001–2006) is another groundbreaking area of research for Land & Water Australia. The need for a futures approach first emerged within the development of the current Strategic R&D Plan, to respond to an ever faster pace of societal change and the consequent need to develop forward-looking R&D strategies to maximise emerging opportunities and address emerging issues.

Land & Water Australia is a partner with the Grains Research & Development Corporation and Meat and Livestock Australia in a major new collaborative R&D program: *Sustainable Grain & Grazing Systems*. This major initiative aimed at 66,000 mixed farms in the cereal/grazing belt, has the mission to '*provide mixed farming enterprises in Australia with new whole farm knowledge, tools and capability to adopt management changes that will increase production of crops, pastures and animals while maintaining or enhancing the natural resources which sustain them*'.

Priority 3: Overcoming Soil Loss, Salinity and Acidity

Land & Water Australia has supported substantial R&D on these topics over the last 10 years. The National Dryland Salinity Program (NDSP) (www.ndsp.gov.au/) is Australia's leading knowledge broker for research, development and extension efforts to combat the risk of dryland salinity to Australia's land and water resources. The program researches, develops and extends practical approaches to effectively managing dryland salinity across Australia. One of the most important contributions of the NDSP has been raising public awareness through a national network of communication coordinators. The program distributes 65,000 copies of the *SALT* magazine (www.ndsp.gov.au/15_publications/15_salt_newsletter/Salt_08/SALT_8_whole.pdf) each year, maintains a very popular website (www.ndsp.gov.au/), and produces high quality tools and decision support systems. The NDSP has been influential in placing salinity on the national political agenda, embraces all state governments, and has well-developed partnerships with the majority of salt-affected industries.

The Joint Venture Agroforestry Program (JVAP) (www.rirdc.gov.au/programs/aft.html) managed by RIRDC, and the Land, Water & Wool Initiative both have extensive components seeking new solutions to either reducing the impact or maximising the productive use of salinising landscapes.

Priority 4: Sustainable Use of Australia's Biodiversity

Land & Water Australia's major current contribution to biodiversity goals in the National Research Priorities is via its Native Vegetation R&D program (NVP) (www.lwa.gov.au/nativevegetation/default.asp). This program aims to assist government agencies, community groups and landholders to better manage and conserve native vegetation and its associated biodiversity in rural landscapes.

The program has to date been successful in understanding the levels and causes of continued degradation of native vegetation and in developing practical methods of reversing these trends. Notable outputs include understanding the biodiversity values of remnants within plantation landscapes and plantations themselves, principles for grazing remnants, farmers' perceptions of native vegetation, and tax incentives for conservation. Communication products such as *Thinking Bush* (www.lwa.gov.au/downloads/PN030455.pdf) and biodiversity guidelines for the cattle industry recently released in *Prograzier* (published by Meat and Livestock Australia) are ensuring important messages are reaching target audiences.

In December 2002 the Land & Water Australia Board identified biodiversity as a critical ongoing issue for future R&D investment. The Corporation is now scoping this topic with an emphasis on biodiversity conservation at a landscape scale and from a management perspective.

Cross-Cutting Research & Development

In addition to the four discrete national priorities above, Land & Water Australia recognises the importance of holistic, multi-disciplinary R&D to address natural resource management issues typically characterised by multiple issues, multiple objectives and multiple solutions. Initiatives within Land & Water Australia's Cross-Cutting Arena include the Social and Institutional Research Program (SIRP), which is focusing on:

- Building the knowledge base of the social and institutional factors that impact on natural resource management.
- Producing social and institutional R&D services and products that facilitate changed practice.
- Building critical mass in the awareness of social and institutional factors so that change occurs and R&D results are adopted.
- Developing Australian R&D capacity in the social and institutional dimensions of natural resource management.

SIRP is in its fourth year and is scoping its future path of research investment during 2003 taking into account the National Research Priorities in this process.

The Ord-Bonaparte Program (OBP) is a major integrated natural resource management R&D program seeking to underpin ecologically sustainable development in the East Kimberley region of north-western Australia. The program is innovative in its scope and integrated approach to natural resource management. It is committed to effective community participation and capacity building, and integrates biophysical, social and economic research. The R&D plan focuses on:

- Regional resource futures
- Rangeland systems
- Water resources planning and management
- Coastal, estuarine and marine resources
- Aboriginal management and planing for Country.

'Research outputs are already influencing natural resource management in the region. For example, the community is looking to the Ord–Bonaparte Program scientists to provide the information needed to help develop a range of appropriate strategies to manage groundwater in the irrigation area.'

— Dr George Gardiner, local grower and Kimberley Development Commission Chair

The *Integration Initiative (2002–2006)* will, *inter alia*, fund methodological and theoretical development in integration, strengthen cross-sectoral, inter-disciplinary and participatory capacity; and enhance the availability of information technologies that help communities understand choices in complex decision situations. This, coupled with Land & Water Australia's role as the host agency for the National Land & Water Resources Audit, will facilitate integrated solutions to catchment and regional natural resource management demands.

Other national priorities

Whilst Land & Water Australia is clearly and predominantly chartered to the first national research priority 'An Environmentally Sustainable Australia', it is highly cognisant of the other national priorities relating to human health, frontier technologies and safeguarding Australia. The Land & Water Australia Implementation Plan indirectly supports these other priorities. For example, creating healthier landscapes through improving water quality, better management of chemicals, reduction of toxins and more amenable micro-climates will flow on to improved human health. The Corporation is also actively examining the potential of frontier technologies such as biotechnology and nanotechnology to enhance sustainability in the medium to longer term. Australian landscapes are complex biophysical and social systems that will require advances in complex systems theory to help derive workable solutions. Land & Water Australia is taking an increasingly wide and inter-sectorial view of opportunities and issues, whilst maintaining a strong focus on core issues, to maximise benefits for Australia.

Contribution to developing critical mass

Land & Water Australia routinely considers critical mass in terms of human and financial resources when selecting and implementing R&D initiatives. The Corporation is also increasingly focusing on enhancing the capacity of resource users, communities, resource managers and policy developers to address the range of natural resource management issues and opportunities. The Corporation is building its communication capability and approaches to improving adoption of sustainable practices. The key strategies for developing critical mass are:

Partnerships

Since 1992 Land & Water Australia has pioneered the utilisation of partnerships with relevant funding agencies and clients to simultaneously improve collaboration, generate consensus on vision and priorities, gain critical funding mass and enhance the probability of adoption of the outputs. A wide range of partners across industries, resource management agencies, regulators, policy departments and other R&D funders have financially contributed to Land & Water Australia's programs (current partners at a program level number about 50).

Communication and adoption strategy

Land & Water Australia aims to set a new benchmark in Australian science communication by translating its R&D into integrated services and products that promote, inform and encourage implementation of sustainable natural resource management practices.

Capacity building activities

Land & Water Australia is involved in a wide range of capacity building activities, including:

- Land & Water Australia is a partner in the Cooperative Venture for Capacity Building for Innovation in Rural Industries. Other partners include RIRDC, Dairy Australia, GWRDC, SRDC, the Department of Agriculture, Fisheries and Forestry, MDBC, MLA, GRDC. The Cooperative Venture is coordinating a program of R&D to ensure an effective rural industries' research, education and extension system.
- Australia-wide assessments of water, soil health and biodiversity status made available through an interactive website and The Australian Natural Resources Atlas and Data Library (http://audit.ea.gov.au/ANRA/atlas_home.cfm) provided by the National Land & Water Resources Audit.
- A wide range of manuals and guidelines on sustainable natural resource management practices for diverse natural resource management audiences.
- National databases including *Streamline* (www.infoscan.com.au/id/web/searchstreamline.htm), *Australian Rural Research In Progress, Australian Bibliography of Agriculture* as well as the Corporation's own website and Innovations Database (www.infoscan.com.au/id/web/browse.htm).
- Thirty postgraduate students, most pursuing PhD degrees in important areas of future skill needs for Australia including a substantial contribution of knowledge to stimulate debate and inform natural resource management policy as well as onground management.
- Travelling Fellowships allowing young Australian researchers to access knowledge and skills not readily available in Australia. Overseas researchers, with specialist skills absent in Australia, are also invited to Australia to transfer knowledge and skills.

- Training programs for resource managers.
- Close liaison with industries, providing direct knowledge and technology transfer to producers through well-established existing industry mechanisms.
- Community Fellowships give non-scientists the opportunity to share insights and experiences in natural resource management with a wider audience. The fellowships, funded by a philanthropic trust, have attracted great interest from community groups and the media.

Government priorities for **rural R&D**

The Australian Government has indicated its ongoing financial commitment to R&D and recognition that the system of rural research and development corporations plays a critical role in 'taking science into the paddock'. In December 1999, the Minister wrote to all RDCs outlining the Government's priorities for rural R&D to increase the competitiveness of Australia's rural industries. Those priorities were reaffirmed in a letter of 11 May 2001 and have recently been updated in a letter from Senator Troeth on 12 March 2003. The Corporation's response against each of the seven priority areas is as follows:

Sustainable natural resource management

The Corporation's core business relates to protecting and enhancing the natural resource base that underpins rural Australia.

Improving competitiveness through a whole-of-industry approach

The Corporation ensures a whole-of-industry approach in all its collaborative activities with RDCs, such as incorporating ecological sustainability into the PROGRAZE farming systems package and the natural resource management kits to be developed as part of the Land, Water & Wool Program.

Maintaining and improving confidence in the integrity of Australian agricultural food, fish and forestry products

The emergence of 'clean green' marketing, and the threat of non-tariff trade barriers being imposed on Australia's exports, make Land & Water Australia's research very important to winning and maintaining overseas markets and increasing farm productivity.

Land & Water Australia has minimal direct R&D responsibility for food safety. However, the Corporation cooperates with the commodity-based R&D Corporations (which have direct food safety responsibility) to ensure food is sustainably produced through effective management of natural resources.

Improved trade and market access

Land & Water Australia programs, in association with other RDCs, are helping landholders to diversify and produce new and improved high-value products that satisfy the needs of both environmental sustainability and domestic and export markets, such as agroforestry products and productive use of saline lands.

Use of frontier technologies

Land & Water Australia is completing a review of the potential opportunities and impacts of biotechnology on production systems and the natural resource base. In the near future the Corporation will be working with all the RDCs on this topic. Other frontier technologies capable of influencing the sustainability of rural landscapes are currently being assessed in the Corporation's Future Sustainable Landscapes Arena.

Protecting Australia from invasive diseases and pests

Land & Water Australia's involvement in this topic has primarily been via the National Land & Water Resources Audit (for example, analysis of threatening processes to biodiversity) and a range of specific projects with program partners. The topic was assessed as one of 20 critical issues for new R&D investment in December 2002 but was not ranked in the top four now being scoped.

Creating an innovative culture

Land & Water Australia is highly focused on innovation and building capacity in the rural communities (see previous sections). The Corporation is developing a new science and innovation policy which will build on the lessons learnt from the wide range of innovations accessible through Land & Water Australia's *Innovations Database* and incorporate the new directions highlighted in the National Research Priorities. The Corporation is also establishing a new series of evaluation case studies which will examine in detail the adoption profiles over time of Land & Water Australia's research. Adoption is a central component of the corporate communication plan and IP management is well addressed in the new commercialisation strategy.

Natural **Heritage Trust**

The Australian Government's Natural Heritage Trust (NHT) has provided a substantial boost to the level of onground work in environmental management. Land & Water Australia has worked during the first phase of the NHT to establish good links between its R&D programs and those of the NHT. The aim is to make sure that research findings are available to onground managers in a readily accessible form, and that the information needs of those managers are being taken up and incorporated within R&D programs. Successful linkages with the Trust have been developed in a range of programs including the National Land & Water Resources Audit, National Dryland Salinity Program, National Rivers Consortium and the Riparian Lands R&D Program.

The National Dryland Salinity Program has supported the development of catchment strategies and subsequent Landcare projects across Australia. The major NHT management agencies, including the Department of Agriculture, Fisheries and Forestry and the MDBC, together with state agencies and industry RDCs, are vital participants in the current phase of the National Dryland Salinity Program. Their participation ensures that that there will be close linkages between R&D and onground works in this area of land and water degradation. Land & Water Australia has also established linkages with

Photo: Landcare Australia Limited.

John Claringbould AM, Chairman of Landcare Australia Limited and Bobbie Brazil, Chair of Land & Water Australia, discussed the Land & Water Australia supported research underpinning the report 'Landcare Farming: Securing the Future for Australian Agriculture', launched by Landcare Australia during National Landcare Week to show the benefits of landcare farming and its vital contribution to the future of agriculture in Australia. The report authored by Land & Water Australia director Professor Peter Cullen; Dr John Williams, retiring CSIRO Chief of Land and Water; and Dr Allan Curtis, Bureau of Rural Sciences — calls for the adoption of landcare practices by all Australian farmers and financial incentives to landcare farmers for on-farm nature conservation.

the National Rivercare Initiative through supporting the First National Assessment of River Health. The Riparian Lands R&D Program has published a set of technical guidelines on riparian management and an Australian Manual and CD-ROM on Stream Rehabilitation. These guidelines are helping catchment and community groups to plan and implement works that will lead to improved management of rivers and waterways.

Prime Minister's National Action Plan **for Salinity and Water Quality**

Under the National Action Plan for Salinity and Water Quality (NAP), there is an expectation that planning, implementation and monitoring of integrated natural resource management at the regional level will be underpinned by good science. The NAP provides opportunities for Land & Water Australia to target its priorities, research activities and communication effort towards regions where significant partnership investment can be focused. Land & Water Australia is well-placed to broker collaborative R&D programs within NAP regions with other R&D investors, and in particular with the commodity RDCs. The Department of Agriculture, Fisheries and Forestry and the Department of Environment and Heritage approached Land & Water Australia to coordinate the scoping of a number of research and capacity issues in implementing the NAP — including mapping regional capacity, identifying regional planning skills and desalinisation technologies. The Corporation prepared a Science and Information strategy to support the National Action Plan in February 2003. As with the NHT, Land & Water Australia will continue to investigate ways to forge stronger partnerships with the Department of Agriculture, Fisheries and Forestry, the Department of Environment and Heritage, state agencies and regional bodies to generate and exchange new knowledge and information.

Impact **performance measures**

Land & Water Australia's evaluation framework aims to assess the Corporation's performance against its Strategic R&D Plan 2001–2006. It is designed with the dual purpose of demonstrating and tracking the overall impact of its R&D (at a project, program and corporate level), and providing linkages with the performance reporting strategies of other RDCs.

The evaluation framework is based on a standard planning log-frame as recommended by the Department of Finance and Administration's evaluation guide. The input-output-outcome framework combines *ex ante* and *ex post* analysis.

The *ex ante* evaluation measures the extent to which the objectives/desired outcomes of Land & Water Australia's activities align with its corporate goals. Components of this analysis include an annual Stakeholder survey, strategic issues analysis and Board analysis of potential and current investment opportunities.

The *ex post* evaluation of effectiveness measures the extent to which Program outcomes are achieving Program objectives. Evaluation of cost-effectiveness measures the relationship between inputs and outcomes expressed in dollar terms. Contributing to each analysis is the evaluation of adoption of R&D outputs, and impact outcomes. The tools used in this exercise include goal attainment scoring and benefit–cost analysis of return on investment.

The RDCs have jointly agreed to report on inputs, outputs and outcomes in respect to economic, social, environmental corporate accountability aspects of their activities:

- *Economic*: Return-on-investment reporting, including internal rate of return and benefit–cost ratios, adoption performance and productivity changes.
- *Environmental*: Reporting on environmental aspects focuses on water quality, environmental flows, water use efficiency, salinity, biodiversity and sustainable resource management. Outcomes are reported in a qualitative form until more advanced methods have been developed.
- *Social*: Performance focuses on occupational health and safety, human resource capacity and capability development, capacity to change and contributions to the development of viable rural and regional communities. Outputs and outcomes are reported descriptively.
- *Corporate*: Reporting on institutional, process and financial performance reflects the Corporation's effectiveness and efficiency in administrating and delivering public funds for R&D investment. Measures of performance include increased levels of funding attracted from partners, and improved resource allocation due to better targeting of funds.

Evaluating non-market benefits

Land & Water Australia recognises the difficulties associated with evaluating the environmental and social benefits of R&D. The Corporation is taking a leading role among the RDCs to develop a robust and defensible common framework for measuring non-market benefits. A national workshop on this topic was held in July 2003.

Impediments to capacity to respond **to national research priorities**

To maximise its return on investment, the Corporation has aggressively pursued collaborative partnerships, and enhanced its performance capability to be seen as an attractive investment vehicle. In the last two years this strategy has proven successful, with the Corporation achieving its five-year leverage target in the first year of its R&D plan. The Corporation is also increasing its strategic intelligence capability to ensure optimal targeting of scarce resources. Strategically the Corporation is moving towards a stronger role in leading natural resource management thinking, national coordination of R&D activity, enhanced communication and adoption, and development of a national knowledge management capability. The Corporation now has a higher capacity to undertake these national roles than at any previous time.

Land & Water Australia also recognises that R&D is not in itself a solution to the nation's natural resource management issues. Strong policy positions need to be developed and supported through high quality science. Accordingly the Corporation has led the development of a Social and Institutional Research Program (SIRP), targeting important policy dimensions and needs.

Mechanisms for **identifying research priorities**

Land & Water Australia is required under the PIERD Act to develop Strategic R&D Plans on a five-yearly basis. In the past this planning has been conducted through wide consultation with clients and stakeholders and the use of specialist consultants. In the future, strategic planning will be more of a continuous process, embedding principles of strategic navigation within the five-year Strategic R&D Plan. This involves: more regular assessment of strategic directions and priorities; more sophisticated environmental scanning; active use of futures methods to improve foresight; robust and regular evaluation; increased flexibility to meet emerging demands (as opposed to locking in too much investment for too long a period); and active listening to stakeholder needs.

As a first step, Land & Water Australia is developing a new *annual investment planning* process that sits within the broader Strategic R&D Plan. This annual assessment of priorities is enabling ongoing evaluation of priorities and a faster response to identified needs. The process has several key steps:

- *Scanning*: an ongoing process of scanning the business environment by all staff and Board members, with particular emphasis on new and emerging issues and opportunities. All potential R&D investments are collated and submitted to the Land & Water Australia Board each September.
- *Scoring*: a process in which the Board evaluates around 20 selected critical issues/opportunities and shortlists these to around four for more detailed scoping. The assessment currently employs a process of scoring each issue/opportunity against 10 criteria on attractiveness and feasibility dimensions. Two-page critical issue sheets are prepared by subject experts for each topic, against the criteria. The scoring, undertaken in December, informs a robust Board debate from which the priorities are selected.

- *Scoping*: this is the detailed investigation of the issue/opportunity according to a specified template. The template covers: a detailed description of the investment opportunity (answering a range of questions); issue and key player analysis; solution or opportunity development analysis; designing the investment strategy; strategy testing; summary & recommendations. Scoping is conducted from December to June.
- *Program planning*: this phase focuses on the development of partnerships and the construction of a detailed, sound program plan. The plan is submitted to the Boards of Land & Water Australia and partners around December for funding approval.

The major positional and strategic guidance for the Corporation is captured within its Strategic R&D Plan. The Corporation is already beginning to design a process for preparing the Strategic R&D Plan 2006–2011. The National Research Priorities will be incorporated within this process.

Conclusion

Land & Water Australia is playing a leading role in delivering the science needed to manage Australian landscapes more sustainably. In addition to an existing portfolio of more than 1500 completed R&D projects, the Corporation has a significant research portfolio of 292 projects in 15 programs involving 44 partners already in train, five new R&D initiatives getting under way this year, and four further new initiatives being scoped. The large number of partnerships that the Corporation manages, and the fact that more than 50% of the Corporation's total expenditure is third party funds, indicates that Land & Water Australia is playing a critical broking and coordination role in natural resource management R&D. Importantly, the Corporation is adding value to this impressive research effort with:

- a strategic and focused communication effort aimed at improving adoption of research outputs,
- leading-edge web-based tools to assist people to interrogate the entire research portfolio, and
- catalytic investments to build long term innovation capacity in natural resource management.

Land & Water Australia is already implementing the Department of Agriculture, Fisheries and Forestry National Research Priorities 'An Environmentally Sustainable Australia'. Moreover the Corporation has a new annual investment planning and decision-making process that enables a rapid response to new priorities, and each aspect of the Department of Agriculture, Fisheries and Forestry priorities will be immediately incorporated into this process. The National Research Priorities reinforce the importance of the strategic directions Land & Water Australia is already pursuing. Land & Water Australia has a strong track record in assisting progress towards an environmentally sustainable Australia. The Corporation is well placed, through its forward thinking strategies and exceptional human resources, to play a larger role in leading R&D work on this critical national priority.

Appendix 2:

> Compliance with
> Australian Government
> statutes and policies

The following table provides a summary of Land & Water Australia's compliance with specific statutes and government policies. A compliance index, showing the numbers of the pages on which information is provided in response Australian Government legislation and policies, is on page 145.

Statute/Government policy	Obligation	Compliance (see note 1)
PIERD Act	Various	Fully compliant — demonstrated through completed compliance checklist
PIERD Act section (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)	Report if Land & Water Australia applied for or commercially exploited a patent or was granted a licence under a patented invention, had interests in a company or in forming a company, undertook activities to form a company, or transacted significant acquisitions or disposals of real property	Nothing to report during the year
PIERD Act section 28(1)(a)(iv)	Details of Land & Water Australia research projects	See pages 37–54
PIERD Act section 143	Ministerial directions	No Minister has notified the Corporation of a Ministerial direction
CAC Act and Auditor-General Act 1997	Various	Fully compliant — demonstrated through completed compliance checklist reviewed by the Corporation's legal advisers and Audit Committee
CAC Act section 15	Significant events	Nil reported during period
Division 3 section 16 of the Commonwealth Authorities and Companies (Report of Operations) Orders 2002	Disclosure of insurance cover	The Corporation has comprehensive insurance cover with the Australian Government insurer, Comcover, for its directors and officers. In accordance with the contract of insurance with Comcover, the Corporation is prohibited from disclosing details of insurance

Statute/Government policy	Obligation	Compliance (see note 1)
Environment Protection and Biodiversity Conservation Act 1999	Reporting obligations as specified at Section 516A	Compliant; see page 36
Freedom of Information Act 1982		See appendix 4 (page 137)
A New Tax System (Goods and Services) Act 1999		Compliant
Occupational Health and Safety (Commonwealth Employment) Act 1991	Compliance with occupational health and safety policy	Compliant; see page 81
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
Government priorities for rural research		See page 126
Payments made to representative organisations related to consultation		Nothing to report. No expenditure is planned during 2003–04.
Energy efficiency statement		Land & Water Australia supports the Australian Government's enhanced Energy Management Program and energy management guidelines. The guidelines call for improved energy efficiency in relation to vehicles, equipment and building design. The Corporation leases offices as part of a large office complex and does not own large, energy-consuming equipment or commercial vehicles. The Corporation commissioned an energy audit of its premises during the year to identify efficiency measures.

Statute/Government policy	Obligation	Compliance (see note 1)
Fraud control	Preparation of fraud risk assessments and fraud control plans	Compliant
Management of frequent flyer points	All frequent flyer points accumulated by directors and staff on Land & Water Australia business must only be redeemed for the benefit of the Corporation	Compliant
Commonwealth Disability Strategy		Land & Water Australia implemented the strategy to an extent appropriate to the functions and size of the Corporation.
		The Corporation implements the strategy on two levels: as a provider of services resulting from R&D and as an employer.
		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 that may be contributed for 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:

1. Where 'compliant' appears in this column, details of the actions or policy that constitutes compliance are available on request from the Corporation (public@lwa.gov.au, facsimile 02 6257 3420 or telephone 02 6257 3379).

Appendix 3:

> The Corporation's

> legislative foundation

Enabling **legislation**

Land & Water Australia was established on 2 July 1991 under the *Primary Industries and Energy Research and Development Act 1989* (the PIERD Act).

Objects

The legislated objects of all 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 ecologically sustainable development to which the R&D Corporations direct their efforts. Sub-section 3(d) encompasses accountability.

This table lists the four PIERD Act objects and outlines the way in which Land & Water Australia addresses them.

Object (PIERD Act section 3)		Corresponding Land & Water Australia 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 planned output for the first of the Corporation's five R&D arenas — 'Enhanced capacity for Australia's primary industries to manage natural resources sustainably' — encompasses this object. The Corporation works with primary industries (particularly through kindred R&D Corporations) towards increasingly sustainable use of natural resources through profitable farming systems.
(b)	Achieving the sustainable use and sustainable management of natural resources.	This object underpins the entire spectrum of the Corporation's business, as evidenced by the Corporation's mission ('to provide national leadership in generating knowledge, informing debate and inspiring innovation and action in sustainable natural resource management') and the planned outputs of the five R&D arenas.
(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 R&D Programs and projects. The Corporation's communication strategy has a specific objective to equip present and future land managers, policy makers, educators and others with the knowledge and tools to expand their capabilities in achieving sustainable natural resource management.
(d)	Improving accountability for expenditure on R&D activities in relation to primary industries.	The Corporation's accountability activities are directed to meeting all statutory obligations and accountability requirements in a comprehensive, timely and transparent manner.

Functions

The functions of Land & Water Australia, deriving from section 11 of the PIERD Act, are to:

- investigate and evaluate the requirements for research and development 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;
- prepare an annual operational plan for each financial year;
- coordinate or fund the carrying out of research and development activities that are consistent with the annual operational plan;
- monitor, evaluate and report on natural resource management research and development activities that are coordinated or funded, wholly or partly, by the Corporation to the Parliament; the Minister and its representative organisations;
- facilitate the dissemination, adoption and commercialisation of the results of its research and development in relation to the activities in respect of which the Corporation was established; and
- such other functions as are conferred on the Corporation by the PIERD Act or any other Act.

Powers

Section 12 of the PIERD Act grants powers to Land & Water Australia to:

- enter into agreements for carrying out research and development activities;
- make applications for and deal with patents vested in the Corporation;
- charge for work or services rendered by the Corporation;
- accept gifts, grants and bequests, and act as a trustee of money or property vested in the Corporation;
- acquire, hold and dispose of real and personal property;
- join in the formation of a company; and
- do anything incidental to any of its powers.

The URL for the PIERD Act is: www.austlii.edu.au/au/legis/cth/consol_act/piaerada1989531/

Appendix 4:

> Freedom of
> information
> statement

As an Australian Government statutory authority, the Corporation is subject to the *Freedom of Information Act 1982*.

Categories of documents

Documents relating to research and development activities funded by the Corporation are held at the office in Canberra, including the following.

Category	Nature	Customarily made available	Not customarily made available*
Planning documents including R&D plan, annual operational plan and annual report	Files		✔
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 research and development	Files		✔
R&D plan	Files Publications	✔	✔
R&D reports and occasional papers	Files Publications	✔	✔
Staff administration & personnel	Files		✔

* For privacy or commercial-in-confidence reasons

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 Corporation's office in Canberra by contacting the Business Manager on (02) 6257 3379. 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 2003.

Appendix 5:

> Program Management

> Committees membership

Membership is as at 30 June 2003.

Placement of committees in R&D programs reflects the 2002–03 committee structure.

* denotes Chair of the committee in 2002–03.

A list of abbreviations is on page 143.

Improving Sustainability and Addressing Contemporary Issues in Primary Industries

Program	Name	Organisation
Land, Water & Wool (Sustainable Wool Advisory Group)	M. Arthur	AWI producer nominee
	A. Campbell	Land & Water Australia
	W. Crozier *	AWI producer nominee
	P. Day	Land & Water Australia consultant
	T. Dunbabin	Land & Water Australia producer nominee
	L. Hogan	AWI manager
	M. Lloyd	Land & Water Australia producer nominee
	A. Lovett	Land & Water Australia
	W. Merriman	AWI producer nominee
Grain & Graze	M. Blumenthal	GRDC
	R. Price *	Land & Water Australia
	B. Russell	MLA
Sustainable Irrigation	M. Logan *	Land & Water Australia
	A. McCrea	WA WRC
	S. Mills	Irrigator & ANCID
	E. Gardner	Qld DNRM
	G. Sadler	Qld SunWater
	R. Dalton	Department of Agriculture, Fisheries and Forestry
National Dryland Salinity	R. Brazil	Land & Water Australia
	S. Butters	Vic DSE
	P. Cole	PIRSA
	I. Cox	Bank of Melbourne
	K. Goss *	MDBC
	G. Latta	GRDC
	M. Lee	Department of Agriculture, Fisheries and Forestry
	B. Nulsen	WA Agriculture
	G. Pinkard	Tas DPIWE
	M. Poole	CSIRO
	R. Price	Land & Water Australia
	B. Vandersee	Qld DNRM
	R. Williams	NSW DIPNR

Managing Australian River Landscapes

Program	Name	Organisation
National Rivers Consortium	D. Blackmore	MDBC
	P. Cullen *	Land & Water Australia
	L. Boully	—
	G. Fishburn	NSW DIPNR
	V. Klemm	WA WRC
	K. Bowmer	CSIRO Land and Water
	K. Good	Northern Adelaide & Barossa Catchment Water Mgt Board
National Riparian Lands (Management Committee)	T. Fisher	Land & Water Australia
	I. Prosser	Land & Water Australia
National Riparian Lands (Advisory Group)	J. Amprimo	Qld DNRM
	R. Applegate	NT DIPE
	M. Askey-Doran	Tas DPIWE
	R. Denham	NSW DIPNR
	T. Fisher *	Land & Water Australia
	J. Doolan	Vic DSE
	L. Hunt	Department of Agriculture, Fisheries and Forestry
	V. Klemm	WA WRC
	J. Lovett	Environment ACT
	N. Power	SA DWLBC
National River Contaminants	T. McCloud	MDBC
	C. Creighton *	Land & Water Australia
National Groundwater R&D	B. Harris	SA DME
	N. Schofield *	Land & Water Australia
	H. Ventriss	WA WRC
	J. Verhoeven	NSW DIPNR

Managing Vegetation in Rural Landscapes

Program	Name	Organisation
Native Vegetation R&D	J. Childs *	Land & Water Australia
	J. Burdon	CSIRO Plant Industry
	A. Kearns (until May 2003)	CSIRO Sustainable Ecosystems
	B. Keating (from June 2003)	CSIRO Sustainable Ecosystems
	P. Sattler	MDBC
	N. Schofield	Land & Water Australia
Joint Venture Agroforestry (managed by RIRDC)	A. Campbell *	Land & Water Australia
	S. Davis	MDBC
	G. Kile	FWPRDC
	S. Hearn	RIRDC
	R. Clark	RIRDC
	M. Dadswell	Department of Agriculture, Fisheries and Forestry
	S. Barlow	University of Melbourne
	D. Laing	DEH
	W. Ragg	Australian Forest Growers
	D. Pannell	University of WA
	Observers:	
	A. Campbell	CRC for Plant Based Management of Dryland Salinity
	P. Byrne	National Farm Forestry Coordinator

Future Landscapes and Compatible Industries

Program	Name	Organisation
Redesigning Agriculture for Australian Landscapes R&D	J. Alexandra *	Land & Water Australia
	N. Schofield	Land & Water Australia
	R. Stirzaker	CSIRO Land and Water
	J. Williams	CSIRO Land and Water

Cross-cutting Activities

Program	Name	Organisation
Ord-Bonaparte	J. Butters	Community rep; no organisational affiliation
	J. Childs	Land & Water Australia
	B. Prince	CEO
	R. Dalton	Department of Agriculture, Fisheries and Forestry
	R. Edmondson *	Independent; no organisational affiliation
	J. Gooding	Community rep; no organisational affiliation
	D. Hartley	Department of Agriculture Western Australia
	F. Bolten	Community rep; no organisational affiliation
	M. Middap	Community rep; no organisational affiliation
	S. Morton	CSIRO Sustainable Ecosystems
	S. Worley	WA WRC
Social and Institutional Research	J. Gordon	CIE
	C. Mobbs	Land & Water Australia
	D. Pannell *	Land & Water Australia

Other

Program	Name	Organisation
General Call, Scholarships and Fellowships	D. Clarke	EFECT Pty Ltd
	C. Ellis	Land & Water Australia
	N. Schofield *	Land & Water Australia
	R. Shaw	CRC for Coastal Zone, Estuary and Waterway Management
National Land & Water Resources Audit Advisory Council	R. Edwards	Australian Bureau of Statistics
	G. Gorrie *	Independent; no organisational affiliation
	G. Izmir	NSW Department of Infrastructure, Planning & Environment
	G. Leach	Northern Territory Department of Infrastructure, Planning & Environment
	B. Nulsen	Department of Agriculture Western Australia
	C. O'Connell	Department of Environment and Heritage
	C. Robson	Department of Natural Resources and Mines, Queensland
	A. Schaap	Tasmania Department of Primary Industry, Water & Environment
	P. Sutherland	Victorian Department of Sustainability and Environment
	R. Wickes	South Australia Department of Water, Land & Biodiversity Conservation
	J. Williams	CSIRO Land and Water
	W. Watkins	NSW Department of Information Technology & Management
	B. Wonder	Department of Agriculture, Fisheries & Forestry
	Observer:	
	A. Campbell	Land & Water Australia

List of abbreviations

AFG	Australian Forest Growers
ANAO	Australian National Audit Office
ANU	Australian National University
ANZLIC	ANZLIC — the Spatial Information Council (formerly known as the Australian and New Zealand Land Information Council)
ARRIP	Australian Rural Research in Progress
Audit	National Land & Water Resources Audit
CAC Act	*Commonwealth Authorities and Companies Act 1997*
CIE	Centre for International Economics
COAG	Council of Australian Governments
CRC	Cooperative Research Centre
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CVAP	Climate Variability in Agriculture R&D Program (now Managing Climate Variability Program)
DIPE	Department of Infrastructure, Planning and Environment (Northern Territory)
DIPNR	Department of Infrastructure, Planning and Natural Resources (NSW)
DME	Department of Mines and Energy (SA)
DNRM	Department of Natural Resources and Mines (Queensland)
DPI	Department of Primary Industries (Queensland) Department of Primary Industries (Victoria)
DPIWE	Department of Primary Industries, Water and Environment (Tasmania)
DSE	Department of Sustainability and Environment (Victoria)
DWLBC	Department of Water, Land and Biodiversity Conservation (SA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESD	ecologically sustainable development
FWPRDC	Forest and Wood Products Research and Development Corporation
GIS	geographic information system
GRDC	Grains Research and Development Corporation
ISO	International Standards Organization
JVAP	Joint Venture Agroforestry R&D Program

LWA	Land & Water Australia (legislated title: Land and Water Resources Research and Development Corporation)
MDBC	Murray–Darling Basin Commission
MLA	Meat and Livestock Australia
NAP	National Action Plan for Salinity and Water Quality
NDSP	National Dryland Salinity Program
NFF	National Farmers' Federation
NHT	Natural Heritage Trust
NPSI	National Program for Sustainable Irrigation
NRC	National Rivers Consortium
NR&M	[Department of] Natural Resources and Mines (Queensland)
PIERD Act	*Primary Industries and Energy Research & Development Act 1989*
PIRSA	Primary Industry and Resources South Australia
PTAA	Plantation Timber Association of Australia
R&D	research and development
RDC	research and development corporation
RIRDC	Rural Industries Research and Development Corporation
SIRP	Social and Institutional Research Program
SRDC	Sugar Research and Development Corporation
WRC	Water and Rivers Commission (WA)
www	World Wide Web

Compliance index

This index shows the numbers for pages on which information is provided in response Australian Government legislation and policies. A table providing a summary of Land & Water Australia's compliance with specific statutes and government policies is at appendix 2 on page 132.

When this annual report has not addressed a compliance subject (usually because no activity occurred under that heading during the year), the subject entry is followed by '—' rather than by a page number.

PIERD Act

CAC Act

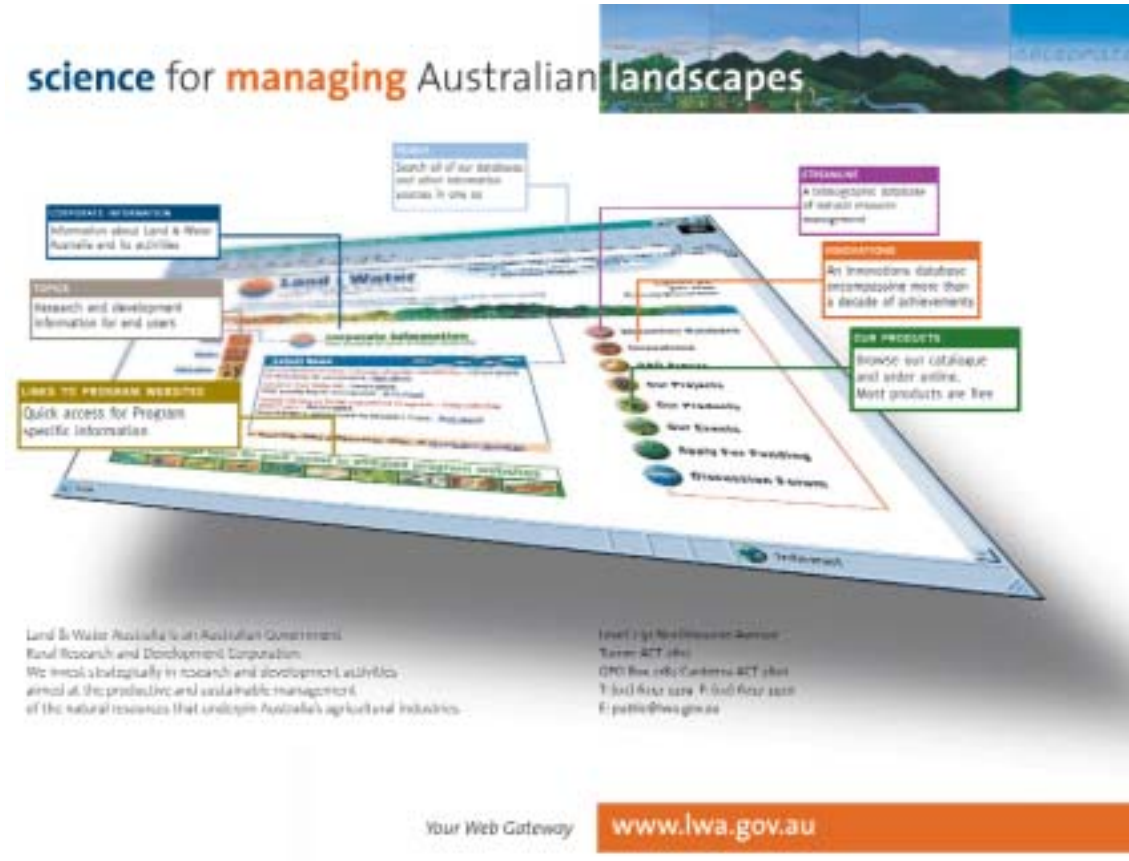
CAC Orders for the Report of Operations

Other reporting requirements

Alphabetical index

www.lwa.gov.au

Our electronic **window**



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Land & Water Australia (legislated title: Land and Water Resources Research and Development Corporation) is a statutory authority of the Australian Government Department of Agriculture, Fisheries and Forestry