

Land & Water Australia (statutorily the Land and Water Resources Research & Development Corporation) is a statutory corporation established under the *Primary Industries and Energy Research and Development (PIERD) Act 1989*, within the Australian Government's Agriculture, Fisheries and Forestry portfolio. The Corporation focuses its activities on the four objects of the *PIERD Act*:

- 1 achieving the sustainable use and sustainable management of natural resources
- 2 increasing the environmental, social and economic benefits to primary industries and the community
- 3 making more effective use of the resources and skills of the scientific and general community
- 4 improving accountability for research and development expenditure

Knowledge for managing Australian landscapes

Our Mission

To invest in knowledge, partnerships, innovation and adoption to underpin sustainable natural resource management

Our Vision

The sustainable use and management of natural resources for the benefit of primary industries and the Australian community

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Introduction

Since 1990, Land & Water Australia has invested in research to generate knowledge to support the long-term sustainable and productive management of Australia's landscapes.

The Government is ceasing funding to Land & Water Australia and has directed the organisation to finalise its responsibilities no later than 31 December 2009. In 2009-10, Land & Water Australia will receive government funding of \$6.7m. A small group of existing Land & Water Australia staff will focus on legacy of the organisation, finalising existing research, and transferring responsibility for ongoing and priority projects to research partners or other agencies.

The majority of this funding will be directed towards staff entitlements, operating expenses (eg rent), and ongoing research programs and projects. There will be no strategic analysis, planning or development activity, and virtually no communication or adoption activity. Funds unexpended by December 31 2009 will be returned to funding parties or the Commonwealth as appropriate.

Ongoing programs

The Minister has requested the following programs be supported with the government funding by being transferred to another agency. Where another agency cannot be found to host a program in its entirety, the projects within the program may be transferred to another agency or terminated.

- ▶ Tropical Rivers and Coastal Knowledge (with LWA's 2009-10 funding intact)
- ▶ National Program Sustainable Irrigation (with LWA's 2009-10 funding intact)
- ▶ Managing Climate Variability (with LWA's 2009-10 funding intact)
- ▶ Australian Agricultural Natural Resources Online (with LWA's 2009-10 funding intact)
- ▶ Weeds Research and Knowledge
- ▶ Climate Change Research Strategy for Primary Industries

Closing programs

All closing programs have been reviewed for priority projects to be supported from the 2009-10 government funding allocation. Closing programs include:

- ▶ Environmental Water Allocation
- ▶ Social and Institutional Research Program
- ▶ Innovations Program (Innovation Call, Postgraduate Scholarships, Senior Research Fellows)
- ▶ Native Vegetation and Biodiversity
- ▶ Strategy Two
- ▶ Strategy Three

The proposed management arrangements for all current projects from closing programs are described in the text. Where a project cannot be managed by LWA to completion or alternative management arrangements cannot be made, it will be terminated.



Strategy One

Ongoing Research Programs

Managing Climate Variability

The Managing Climate Variability program invests in seasonal forecasting and applications to assist farmers and natural resource managers to better manage climate risk. The program invests in research to deliver more-accurate forecasts from multi-week to seasonal and decadal. Applications are developed to translate these forecasts into tools that assist primary producers to make the most of climate opportunities and reduce exposure to climate risk from. The current phase of Managing Climate Variability builds on more than a decade of research collaboration led by Land & Water Australia with partners from the rural Research & Development Corporations and the Australian Government.

Managing Climate Variability's Research and Development Strategy 2008 - 2014 identifies four priority themes of investment:

- ▶ Improved climate forecasts
- ▶ Soil, climate and water resources – predicting availability
- ▶ Agricultural and fisheries applications
- ▶ Knowledge, adoption and communication

Executive Manager Anwen Lovett

Partners

- ▶ Grains Research & Development Corporation
- ▶ Meat & Livestock Australia
- ▶ Dairy Australia
- ▶ Rural Industries Research & Development Corporation
- ▶ Sugar Research and Development Corporation

Program duration 2007-08 to 2013-14

Expected program outcomes

Outcomes against the four themes in the R&D Strategy are:

- ▶ More certainty in climate forecasts for monthly, seasonal, annual and inter-annual to decadal timescales

- ▶ Australians have the knowledge to predict key attributes – for example soil moisture, frost, catchment runoff, wet season duration – over time and across landscapes as our climate varies and changes
- ▶ Climate variability related commodity-specific decision support tools that identify benefits and opportunities for increased profitability and sustainability
- ▶ Increased understanding and uptake of climate-related opportunities that benefit agriculture and Australia’s natural resource condition
- ▶ Improved, quality assured, and readily available fundamental data sets

Total expenditure budget for program

\$4.775 million including anticipated transfer of funds to new Managing Agent

Expenditure budget for 2009–2010

\$2.291million including anticipated transfer of funds to new Managing Agent

Key Performance Indicators	2009–10 Targets
Program continuing	<ul style="list-style-type: none"> • Program successfully transferred to a new Managing Agent, including research contracts. New Managing Agent responsible for delivery of outputs and outcomes.

Projects within the program *(Lead research providers are named in brackets.)*

- ▶ Improved Seasonal Forecasts for South-West WA (CSIRO)
- ▶ Critical thresholds ('tipping points') and climate change impacts/adaptation in horticulture (Queensland Department of Employment, Economic Development and Innovation)
- ▶ Climate change and variability: Assessing regional impacts of sugar cane production (Reef Catchments Mackay Whitsunday Inc)
- ▶ Assessing and managing heat stress in cereals (SARDI)
- ▶ Extremes, climate modes and reanalysis-based approaches to agricultural resilience (University of Southern Queensland)

The Program, through its new Managing Agent, will focus on delivering to its 2008-2014 R&D Strategy, securing commissioned research particularly in Theme 2 – soil, climate and water resources: predicting availability, and Theme 3 – agricultural and fisheries applications. With the ongoing high interest in climate change and the increasing recognition across the policy sector that smart adaptation is predicated by accurate forecasts and competent tools, Managing Climate Variability program is actively seeking additional partners to increase the R&D investment to the level required to deliver to Australian agriculture’s needs.

National Climate Change Research Strategy for Primary Industries (CCRSPI)

The aim of CCRSPI is to develop a truly nationally coordinated and collaborative strategic research framework for primary industries to prepare for the short and long-term opportunities and risks that will arise due to climate change. The CCRSPI initiative commenced in 2007-08, and moved into its second phase in 2008-2009, and is consistent with the National Research and Development Framework developed under the Primary Industries Ministerial Council and Council of RDC Chairs. A new Managing Agent for the proposed establishment of CCRSPI as a 5-year initiative will need to be found through the partners and approved through the Primary Industries Standing Committee and Council of RDC Chairs.

Executive Manager Anwen Lovett

Partners

The partners are expected to be federal and state agencies responsible for primary industries, the CSIRO, rural Research and Development Corporations, with potential for additional organisations joining.

Program duration 2009-10 to 2010-14

Expected program outcomes

- ▶ A nationally coordinated and collaborative strategic research framework for primary industries, including investment plans and coordinated research effort against priority themes agreed by CCRSPI partners.
- ▶ Increased capacity of program partners to contribute to, and support industry consultation on, national frameworks and plans relating to climate change mitigation and adaptation (in particular, the Department of Climate Change led National Adaptation Research Plan for primary industry, and the Primary Industry Standing Committee led cross-sectoral RDE strategy for climate change).
- ▶ Improved understanding and awareness of issues relating to agriculture's participation in an emissions trading scheme,
- ▶ Improved understanding of, and increased pooling of research investment to address, emerging cross-sectoral priorities for primary industry relating to climate change.
- ▶ Coordination which delivers more effective and industry-relevant outcomes from adaptation research, and supports positive engagement and collaboration amongst key primary industry stakeholders.

Total expenditure budget for program

\$1.236 million including anticipated transfer of funds to new Managing Agent

Expenditure budget for 2009-2010

\$0.499 million including anticipated transfer of funds to new Managing Agent

Key Performance Indicators	2009–10 Targets
Finalise CCRSPI Phase 2	<ul style="list-style-type: none"> Finalise and disseminate CCRSPI Phase 2 outputs by end August.
Program continuing	<ul style="list-style-type: none"> Land & Water Australia facilitates the Program being established with a new Managing Agent through the Primary Industries Standing Committee and the Council of RDC Chairs.

Projects within the program *(Lead research providers are named in brackets.)*

The Primary Industries Adaptation Research Network, hosted by LWA under contract with Griffith University (Managing Agent for the National Climate Change Adaptation Research Facility) has been terminated and will be re-tendered.

- ▶ Climate Project Data Audit (Freelance Global Limited)
- ▶ CCRSPI Phase 2 - AFI Greenhouse Mitigation Policies (Australian Farm Institute)

National Program for Sustainable Irrigation (NPSI)

The National Program for Sustainable Irrigation (NPSI) invests in research to improve the productivity and sustainability of irrigation in Australia. Coordinated investment in irrigation research by Land & Water Australia first commenced through the National Program for Irrigation Research and Development (NPIRD) in 1993-2002, followed by NPSI Phase 1 (2002-2006). NPSI Phase 2 (2007-2010) continues the investment commitment with 14 partners from research and development corporations, government and private industry.

The program delivers new knowledge, tools and techniques and a mechanism for irrigation research investors Australia-wide to collaborate. NPSI Phase 2 will enable irrigation industries to be environmentally responsible and productive users of water. Research results are for use by irrigators, policy makers and planners. Key areas of investment include sustainable production in a water scarce environment; sustainable futures and the environment; and knowledge into practice.

Executive Manager Anwen Lovett

Partners

- ▶ Australian Government Department of Environment, Water, Heritage and the Arts
- ▶ Cotton Research & Development Corporation
- ▶ Gascoyne Water Cooperative & Gascoyne Water Asset Mutual Corporation
- ▶ Goulburn-Murray Rural Water Corporation
- ▶ Grains Research & Development Corporation
- ▶ Harvey Water
- ▶ Horticulture Australia Limited
- ▶ Lower Murray Water
- ▶ Ord Irrigation Cooperative & Ord Irrigation Asset Mutual Cooperative
- ▶ South Australian Research & Development Institute
- ▶ Sugar Research & Development Corporation
- ▶ SunWater
- ▶ Western Australia Department of Water

Program duration 2007-08 to 2009-10 (Phase 2)

Expected program outcomes

- ▶ Improved irrigation water use efficiency and enhanced ability to respond to changing levels of resource availability over time
- ▶ Reduced environmental impacts, more sustainable ecosystems and more prosperous communities
- ▶ Improved skills, knowledge and decision making of end users which leads to practice change, and more efficient and sustainable use and management of water
- ▶ A national approach to irrigation related R& D in Australia, which includes a strong focus on a skilled human resource base and enhanced R&D capacity and collaboration

Total expenditure budget for program

\$5.663 million including anticipated transfer of funds to new Managing Agent

Expenditure budget for 2009–2010

\$1.564 million including anticipated transfer of funds to new Managing Agent

Key Performance Indicators	2009–10 Targets
Program continuing	<ul style="list-style-type: none">• Program successfully transferred to a new Managing Agent, including research contracts. New Managing Agent responsible for delivery of outputs and outcomes.

Projects within the program *(Lead research providers are named in brackets.)*

- ▶ Open hydroponics (SARDI)
- ▶ Long term sustainability of precision irrigation (University of Adelaide)
- ▶ Optimising delivery & benefits of aerated irrigation water (Centre for Plant & Water Science, CQU)
- ▶ Managing soil salinity for wine quality in groundwater-irrigated vineyards (PIRSA-SARDI)
- ▶ Soil Management for Australian Irrigated Agriculture (Soils Research Pty. Ltd.)
- ▶ Channel evaporation mitigation (Goulburn-Murray Water)
- ▶ Quantifying surface water - groundwater exchange using thermal & chemical measurements (Water Research Lab UNSW)
- ▶ The effect of changing irrigation strategies on biodiversity (CSIRO)
- ▶ Farm dam management (CRC for Irrigation Futures)
- ▶ Adaptive learning through five strands of root-zone knowledge (CRC for Irrigation Futures)
- ▶ Review of precision irrigation technologies & their application (National Centre for Engineering in Agriculture)
- ▶ Knowledge and tools to manage fertigation technologies in highly productive citrus orchards for minimal environmental footprint (NSW DPI)
- ▶ Increasing the resilience of eastern Australian irrigated farm businesses (Qld Department of Employment, Economic Development and Innovation / CSIRO)
- ▶ Water smart cotton and grains in NSW (NSW Department of Primary Industries)
- ▶ Informing future irrigation and water management at the Ord River (Brolga's Environmental Consulting)
- ▶ Knowledge Harvest (PR Day Resource Strategies)
- ▶ NPSI Phase 2 Monitoring and Evaluation (Qualdata)
- ▶ Impact of minimal vineyard irrigation (PhD)

Travel Fellowship and Undergraduate Scholarships

- ▶ Travel Fellowship (National Program for Sustainable Irrigation and Irrigation Australia Limited)
- ▶ The effect of irrigation management on nitrate movement under a lettuce crop (University of Southern Queensland)

Tropical Rivers and Coastal Knowledge (TRaCK)

The aim of TRaCK is to provide the science and knowledge that governments, communities and industries need to make better decisions for the sustainable use and management of Australia's tropical rivers, estuaries and coasts. Further information can be found at www.track.gov.au.

TRaCK brings together a multidisciplinary consortium to focus on the rivers and estuaries between the tip of Cape York Peninsula and Broome.

Established in 2007, most projects within the program (unless otherwise noted in the list below) will continue throughout 2009-10. The focus in 2009-10 will be on consolidating the program of research, communicating the new insights and findings emerging from the research projects and planning the future dissemination of results and next phase of a longer term research and development program.

Executive Manager Jim Donaldson

Partners

- ▶ The Australian Government through the Commonwealth Environment Research Facilities Program
- ▶ The National Water Commission's Raising National Water Standards Program
- ▶ The Queensland Government's SmartState Program
- ▶ Research institutions and state and territory governments which form the TRaCK consortium. They include Charles Darwin University, the University of Western Australia, Griffith University, CSIRO and the North Australia Indigenous Land and Sea Management Alliance.

Program duration 2006-07 to 2010-11

Expected program outcomes

- ▶ Increased understanding of the important natural assets and ecosystem services provided by tropical rivers and coasts
- ▶ Developed methods and tools to assess the implications of potential developments
- ▶ Identified opportunities to develop genuinely sustainable enterprises
- ▶ Enhanced capacity and knowledge of the community to engage in management planning processes

Total expenditure budget for program

\$14.167 million including anticipated transfer of funds to new Managing Agent

Expenditure budget for 2009-2010

\$2.081 million including anticipated transfer of funds to new Managing Agent

Key Performance Indicators	2009–10 Targets
Program continuing	<ul style="list-style-type: none"> • Program successfully transferred to a new Managing Agent, including research contracts. New Managing Agent responsible for delivery of outputs and outcomes.

Projects within the program *(Lead research providers are named in brackets.)*

- ▶ Scenarios for tropical rivers and coasts (Charles Darwin University)
- ▶ Capacity building tools for effective planning and decision-making in Indigenous contexts (Charles Darwin University)
- ▶ Development of planning tools (Griffith University)
- ▶ Valuing and managing the ecosystem (CSIRO)
- ▶ Indigenous values and river flows (CSIRO)
- ▶ Socio-economic activity and water use in the tropical rivers region (James Cook University)
- ▶ Biophysical classification of riverscapes across northern Australia (Griffith University)
- ▶ Ecohydrological regionalisation of Australia (Griffith University)
- ▶ Catchment water budgets and water resource assessment (CSIRO)
- ▶ Regional scale sediment and nutrient budgets (CSIRO)
- ▶ Impacts of land management on productivity in the Daly and Flinders rivers (CSIRO)
- ▶ Bedload transport in large tropical rivers and effects on dry season pool habitats (Griffith University)
- ▶ Bottom-up and top-down control of riverine food webs (Charles Darwin University)
- ▶ Refugial pools in tropical rivers (Griffith University)
- ▶ River flood plain food webs (Griffith University)
- ▶ Effects of urbanisation and catchment development on ecosystem health in estuaries (Griffith University)
- ▶ Flow and ecology relationships; biodiversity and ecosystem processes (University of Western Australia)
- ▶ Flow impacts on estuarine fin fish of the Gulf of Carpentaria (Qld Department of Employment, Economic Development and Innovation)
- ▶ Environmental flow tools for northern rivers (University of Western Australia)
- ▶ Bio-regionalisation, conservation priorities and predictive models of aquatic biodiversity (Griffith University)
- ▶ Sustainable economic development in northern riverine and coastal environments (North Australia Indigenous Land and Sea Management Alliance)
- ▶ TRaCK integration, knowledge and adoption (Charles Darwin University)

Weeds Research and Knowledge Exchange

Land & Water Australia formally completed its contract for managing the Defeating the Weeds Menace R&D program on behalf of the Australian Government in 2008-09. Also during 2008-09, the Corporation was awarded a grant of \$93,900 from the Australian Weeds Research Centre to continue communicating the results of the research generated by the former program so as to maximise its benefits.

In 2009-10, Land & Water Australia aims to work with Weed Societies in each state, relevant state and territory agencies, WONS Coordinators and researchers to conduct a series of knowledge assimilation forums bringing together scientists, policy-makers and land managers (both public and private) to share the knowledge generated and to identify the preferred ways of integrating that knowledge into weeds management at a landscape scale.

The focus of Land & Water Australia's weeds research has been on weed issues across Australia that are having impacts on extensive land management systems and conservation areas, where the benefits are largely to the community as a whole.

Executive Manager Jim Donaldson

Partners

- ▶ Australian Government Department of Agriculture, Fisheries and Forestry
- ▶ The National Water Commission's Raising National Water Standards Program
- ▶ The Queensland Government's SmartState Program
- ▶ Research institutions and state and territory governments which form the TRaCK consortium. They include Charles Darwin University, the University of Western Australia, Griffith University, CSIRO and the North Australia Indigenous Land and Sea Management Alliance.

Program duration 2009-10

Expected program outcomes

The focus of Land & Water Australia's weeds research has been on weed issues across Australia that are having impacts on extensive land management systems and conservation areas, where the benefits are largely to the community as a whole.

- ▶ Lowering the rate of emergence of new weed problems
- ▶ Reducing the impacts of existing weed problems of national priority
- ▶ Increasing the national capacity to manage weeds
- ▶ Improving decision-making on resource allocation to manage weeds

Total expenditure budget for program

\$0.093 million

Expenditure budget for 2009-2010

\$0.093 million

Key Performance Indicators	2009–10 Targets
Engagement with key audiences (Weed Societies, state agencies, WONS Coordinators and researchers) through a series of knowledge assimilation forums and dissemination of information products leading to enhanced capacity to manage weed problems and reduce the impact of weeds	<ul style="list-style-type: none"> ● Conduct full-day forums in 6 locations (one each in regional centres in WA, NT, Qld, NSW, Vic and Tas) ● Disseminate research publications through forums and otherwise to policy advisors, regional NRM bodies and weed managers ● Prepare a policy directions paper aimed at informing the Australian Weeds Research Centre about future national research gaps and priorities

Projects within the program *(All projects will be completed during 2009-10.)*

- ▶ All research projects have been completed.
- ▶ This adoption project will be administered by Land & Water Australia: Maximising knowledge for adoption: Building on recent weeds research.



Strategy One

Non-Ongoing Research Programs

Environmental Water Allocation

The goal of the Environmental Water Allocation Program is to provide research which enables the benefits of water allocated for environmental purposes to be better assessed and understood. More effective use of water resources is required in Australia to achieve the multiple aims of viable agriculture, industries, communities and the environment.

The Environmental Water Allocation Program aims to engage with policy advisors, water managers and regional communities to build upon the knowledge required for managing our rivers and waterways in a healthy state.

Executive Manager Jim Donaldson

Partners

- ▶ Australian Government Department of the Environment, Water, Heritage and the Arts
- ▶ Murray Darling Basin Authority

Program duration 2004-05 to 2009-10 (formally 2010-11)

Expected program outcomes

- ▶ Improved methods for monitoring and evaluating environmental water allocation
- ▶ More-effective engagement of researchers with managers in designing environmental allocations
- ▶ Improved ability for policy-makers, planners and managers, particularly regional groups, to make decisions on water allocation
- ▶ Improved understanding of water needs of aquatic ecosystems across Australia
- ▶ Improved understanding of the opportunities and threats to water availability

Total expenditure budget for program

\$4.190 million

Expenditure budget for 2009–2010

\$0.179 million

Key Performance Indicators	2009–10 Targets
Program Wound-up	<ul style="list-style-type: none"> All projects either transferred to another agency, terminated or completed.

Projects within the program *(Lead research providers are named in brackets.)*

- ▶ Adaptive management of environmental flows in the regulated Macquarie River (University of NSW). *To be transferred to new Managing Agent.*
- ▶ Flow requirements and resource delivery to the lower Murray lakes and northern Coorong (University of Adelaide). *Managed by LWA to completion.*
- ▶ Water regime dependence of fish in the wet-dry tropics (Charles Darwin University). *Managed by LWA to completion.*

Native Vegetation and Biodiversity

The management of native vegetation and biodiversity is a priority issue for research investment by Land & Water Australia because of the critical role of vegetation in providing ecosystem services, improving landscape function, enhancing production and mitigating climate change through carbon sequestration.

The aims of the Native Vegetation and Biodiversity program are to:

- ▶ Understand and value the role of native vegetation and biodiversity in the delivery of ecosystem services
- ▶ Underpin the effective and efficient retention and restoration of native vegetation to improve the conservation of native plants and animals
- ▶ Identify management regimes for native vegetation that improve biodiversity values and ecosystem services at the landscape scale
- ▶ Build capacity for adoption and application of knowledge to achieve the maintenance or restoration of healthy landscapes.

Executive Manager Jim Donaldson

Partners

- ▶ CSIRO
- ▶ Greening Australia

Program duration 2004-05 to 2009-10

Expected program outcomes

- ▶ Improved understanding and valuing of the role of native vegetation and biodiversity in the delivery of ecosystem service
- ▶ Effective and efficient retention and restoration of native vegetation to improve the conservation of native plants and animals
- ▶ Management regimes for native vegetation that improve biodiversity values and ecosystems services at the landscape scale
- ▶ Greater capacity for adoption and application of knowledge to achieve the maintenance and restoration of healthy landscapes

Total expected budget expenditure for the program

\$5.372 million

Expenditure budget for 2009–2010

\$0.404 million

Key Performance Indicators	2009–10 Targets
Program Wound-up	<ul style="list-style-type: none"> All projects either transferred to another agency, terminated or completed.

Projects within the program *(All projects will be completed during 2009-10.)*

- ▶ Capturing the pest control services of native vegetation (Cotton Catchment Communities Cooperative Research Centre). *To be transferred to new Managing Agent.*
- ▶ Working with Indigenous communities to manage fire in tropical woodlands for improved ecological, economic and social outcomes (Tropical Savannas Management Cooperative Research Centre). *To be transferred to new Managing Agent.*
- ▶ Designing agricultural landscapes in the monsoon tropics to maintain biodiversity and ecosystem services (Tropical Savannas Management Cooperative Research Centre). Due for completion December 2009. *Managed by LWA to completion.*
- ▶ Determining appropriate fire mosaics for biodiversity conservation in Mallee ecosystems (La Trobe University). *To be transferred to new Managing Agent.*

Social and Institutional Research

This program invests in research, knowledge and adoption activities concerning the social and institutional dimensions of land and water issues. Our portfolio of work focuses on understanding, supporting and informing people working in natural resources management (NRM) including policy development.

Land & Water Australia believes that people, culture and institutions are an integral part of sustainable landscapes, and our investment in the People Arena is driven by activities that build human and social capital for productive and sustainable landscapes.

Executive Manager Jim Donaldson

Partner

- ▶ The National Water Commission (NWC)

Program duration This is an ongoing program under the 2005-2010 Strategic Plan

Expected program outcomes

- ▶ Social and institutional knowledge for primary industry adaptation strategies and managing the socio-economic impacts of climate change and water availability
- ▶ The advancement of knowledge and practice that facilitates and improves the participation of Indigenous Australians in natural resource management
- ▶ The advancement of knowledge and provision of options for the creation of markets and best regulatory practice for environmental goods and services
- ▶ Building the capacity of NRM regions (including regional NRM and industry groups, catchment management authorities and shires) in planning, managing, monitoring and evaluating natural resource use and conservation, and adapting NRM governance, investment and practice

Total expenditure budget for the program

\$6.955 million over the life of the program under the 2005-2010 Strategic R&D Plan

Expenditure budget for 2009-2010

\$0.647 million

Key Performance Indicators	2009–10 Targets
Program Wound-up	<ul style="list-style-type: none"> All projects either transferred to another agency, terminated or completed.

Projects within the program *(All projects will be completed during 2009-10.)*

- ▶ Investing in natural resource management practice change (Hassall and Associates Pty Ltd). *To be transferred to new Managing Agent.*
- ▶ Monitoring and evaluating the Social and Institutional Research Program (Su Wild River). *Managed by LWA to completion.*
- ▶ Water planning tools (Griffith University Consortium). *To be transferred to new Managing Agent.*

Innovations

This program addresses the need to provide information, knowledge and build capacity for achieving step-wise gains in the management of soil, vegetation, water and biodiversity. It articulates specific problems that managers and policy makers face or will face, and then gets the best researchers to solve the problem. It also fosters integrated research to provide solutions that are joined-up from the user's perspective. In a typical year, about 10 new research investments are made through this program using nationally competitive procurement processes. Managing the transfer of new knowledge into practice is a key activity of this program.

There are three subprograms: Innovation Call, Postgraduate Scholarships and Senior Research Fellows.

Innovation Call

This sub-program provides breakthrough research that aims to solve key natural resource management problems. These problems are articulated through engagement with resource managers, researchers and policy-makers. Each year through a highly competitive national call the best researchers from all over Australia are selected to work on these specified problems. In 2008-09 these included research to measure and report tropical soil carbon, evidence to guide investments using better metrics for market-based instruments, developing quality adjusted life years for natural resource management and ways to reduce transaction costs in natural resource markets. The projects are typically three years in duration and produce outputs that include peer-reviewed research publications.

Postgraduate Research Support Scholarships

This sub-program invests in the next generation of Australia's researchers. It selects through a national call the best students, research trainers and research institutions to address significant knowledge gaps through postgraduate projects of three years. By enabling this research training we are both building Australia's productivity and sustainability research capacity and providing internationally significant contributions to knowledge for managing agricultural landscapes.

Senior Research Fellows

This sub-program supports experienced researchers to bring together and share knowledge. This addresses the need to build capacity for achieving step-wise advances in management of soil, vegetation, water and biodiversity. The Fellows also foster integrated research to address problems. For example in 2009 Prof Derek Eamus has developed useful synthesis publications of groundwater dependent ecosystems and the hydrological effects of woody revegetation.

Executive Manager Anwen Lovett

Program duration

This is an ongoing program under the 2005-2010 Strategic Plan, with many three-year projects resulting in a pipeline of research outputs currently underway and some contracted for final delivery to 2012. This makes the program highly responsive to emerging knowledge needs and allows rapid incorporation of what has been learnt across the whole field of natural resource management.

Partners

This program collaborates closely with the research community including Australian and state government agencies, universities and private researchers. It also invests in roundtable meetings, pilot projects and investment fora to develop collaborative research investment opportunities between the research community and policy makers and implementers. The collaboration of research organisations and users through the projects, postgraduates and senior research fellows is a key part of making the funded research more adoptable and building trust throughout this community.

Expected program outcomes

The program develops the evidence available to natural resource managers through deliberate investment in the scientific knowledge needed to manage soil, water, vegetation and biodiversity. It provides the people, knowledge assets and technology to solve and ameliorate land and water management problems. The outcomes are measured using Land & Water Australia's independent evaluator who completes a triple-bottom-line return on investment. In 2009 the Senior Research Fellow Dr Rick Evans and Indigenous natural resource management are being independently evaluated using this approach.

Total expenditure budget for the program

\$9.816 million over the life of the program under the 2005-2010 Strategic R&D Plan

Expenditure budget for 2009–2010

\$2.221 million

Key Performance Indicators	2009–10 Targets
Program Wound-up	<ul style="list-style-type: none">All projects either transferred to another agency, terminated or completed.

Projects within the program *(Lead research providers are named in brackets.)*

Innovation Call Projects

- ▶ Irrigation futures for the Murray (CSIRO Land and Water). *Managed by LWA to completion.*
- ▶ Modelling impacts of vegetation cover change on regional climate (University of Queensland). *Managed by LWA to completion.*
- ▶ Changing the ownership-management paradigm in broadacre farming (The University of Western Australia). *Managed by LWA to completion.*
- ▶ A rapid genetic approach for assessing sediment biodiversity and functioning (CSIRO Entomology). *To be transferred to new Managing Agent.*

Innovation Call Projects [CONTINUED]

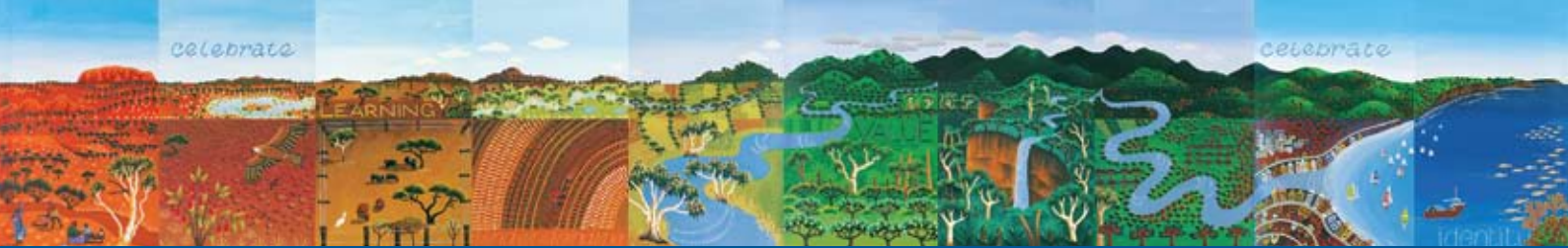
- ▶ Climate Witness - a dispersed, national observer network for NRM phenology (Earthwatch Institute). *To be transferred to new Managing Agent.*
- ▶ Oil vulnerability in peri-urban and rural Australia (Griffith University). *To be transferred to new Managing Agent.*
- ▶ Treated Effluent as Environmental Flows: A Climate Change Response (CSIRO). *To be transferred to new Managing Agent.*
- ▶ The recent Western Victorian drought and its impact: without precedent? (University of Ballarat). *To be transferred to new Managing Agent.*

Postgraduate Research Projects (all PhDs will be managed as Grants through the host University)

- ▶ Ecosystem services from grasslands - effects on tree regeneration processes (Charles Sturt University)
- ▶ Optimising river flow management for environmental and economic sustainability (University of New England)
- ▶ Fire regimes and biodiversity conservation in the Murray Mallee (Deakin University)
- ▶ Maximising woodland bird diversity in Brigalow Belt Forests (University of Southern Qld)
- ▶ Salinity processes in Lake Eyre Basin Rivers (University of Melbourne)
- ▶ Impact of chemicals used in irrigation agriculture on macro invertebrate biodiversity (University of Technology Sydney)
- ▶ Water and Catchment Planning: Incorporating Demography and Population (Australian National University)
- ▶ Flooding Tolerance of Plants in Australian Wetland Ecosystems (The University of Western Australia)
- ▶ Applying justice frameworks to environmental decision-making (Australian National University)
- ▶ Sustainable Management of Connected Water Resources: Robbing Peter to pay Paul (Australian National University)
- ▶ Effects of river flows on downstream productivity in Tropical Rivers (Griffith University)
- ▶ If you build it, will they come? Reptile recolonisation following plant community restoration (Murdoch University)
- ▶ Quantifying acid and trace metal fluxes in aquifers under anthropogenic influence. (Flinders University)
- ▶ A Spatial Dynamic Framework to Integrate Regional Water use Efficiency and Energy Consumption Nexus (Charles Sturt University)
- ▶ Function and resilience of box woodland and related floodplain systems in agricultural landscapes (University of Southern Queensland)
- ▶ Ecosystem services: a concept linking management actions and ecosystem outcomes (University of Technology Sydney)
- ▶ Cross-tenure landscape management: integrating multiple values and institutions (Australian National University)
- ▶ How do floodplain habitats support fish biodiversity in tropical rivers? (Griffith University)

Senior Research Fellows

- ▶ A new charter for exploring Australia's 'hidden' Natural Resource, the Soil Biota (Department of Primary Industries Victoria). *Managed by LWA to completion.*
- ▶ Integrating agricultural production and biodiversity conservation (Australian National University). *To be transferred to new Managing Agent.*
- ▶ Linking plant evaporative demand and pan evaporation (Australian National University). *To be transferred to new Managing Agent.*



Strategy Two

Collaboration and Strategic Analysis

Strategy Two leads the Corporation's strategic thinking and strategic initiatives. In 2009-10 there will be no new activity in this Strategy. A budget of \$0.027m is required to finalise one existing project regarding Return on Investment analysis.



Strategy Three

Knowledge into Practice

Knowledge into Practice maximises the adoption of existing and new knowledge through engaging and building links between researchers, extension agents and those who have potential to adopt research results, including landholders, primary producers, policymakers and advisors, catchment management authorities and others.

In 2009-2010, the Corporation will focus on maximising research activity and the legacy of the Corporation, while sacrificing significant communication and adoption activity at the program and Corporation level.

There will be a significant focus on legacy. We will work hard to ensure that research reports are converted to at least web-based publications, all publications and products are on the web-site and that the website is maintained for at least two years after LWA's wind-up, and all projects are listed on AANRO.

Finally, LWA will work to transfer AANRO to a new Managing Agent after the development and testing of the redeveloped AANRO is complete.

Knowledge and Adoption

Executive Manager Bruce Wright

Program duration This is an ongoing program within the 2005-2010 Strategic Plan

Expected program outcomes

Better informed policy making and improved practices in natural resource management through the uptake by policy makers and land and water managers of the findings of research funded by LWA.

Total expenditure budget for the program

\$7.627 million over the life of the program under the 2005-2010 Strategic R&D Plan

Expenditure budget for 2009-2010

\$0.390 million

Key Performance Indicators	2009-10 Targets
Research reports converted to web publications	<ul style="list-style-type: none"><li>• 10 completed
Web site ongoing	<ul style="list-style-type: none"><li>• Web-site transferred to a new agency for at least two years

Australian Agricultural and Natural Resources Online

Program Objectives

The Australian Agricultural and Natural Resources Online (AANRO) is an online service integrating three databases, Australian Agricultural Research in Progress (ARRIP), Australian Bibliography of Agriculture (ABOA) and Streamline (the national water research database). It is being redeveloped as an online full-text digital repository of research to assist sustainable and productive management of agriculture and Australia's land and water resources.

Land & Water Australia is managing the administration and redevelopment of AANRO on behalf of the program partners. Land & Water Australia will manage AANRO until the redevelopment is complete and then facilitate the transfer of AANRO in 'maintenance and promotion mode' to a new Managing Agent. AANRO is jointly funded by the Primary Industries Standing Committee, the Natural Resource Management Standing Committee, and the Rural Research and Development Corporations.

Executive Manager Bruce Wright

Partners

- ▶ Australian Egg Corporation
- ▶ Australian Local Government Association
- ▶ Australian Pork Ltd
- ▶ Australian Wool Innovation Ltd
- ▶ Bureau of Meteorology
- ▶ Cotton Research & Development Corporation
- ▶ CSIRO
- ▶ Dairy Australia
- ▶ Department for Environment and Heritage
- ▶ Department of Agriculture and Food (Western Australia)
- ▶ Department of Agriculture, Fisheries & Forestry
- ▶ Department of Environment & Climate Change (NSW)
- ▶ Department of Environment & Conservation (Western Australia)
- ▶ Department of Environment, Water, Heritage and the Arts
- ▶ Department of Fisheries (Western Australia)
- ▶ Department of Infrastructure, Energy and Resources (Tasmania)
- ▶ Department of Natural Resources & Water (Queensland)
- ▶ Department of Natural Resources, Environment and The Arts (Northern Territory)
- ▶ Department of Primary Industries (Victoria)
- ▶ Department of Primary Industries, Water & Environment (Tasmania)
- ▶ Department of Employment, Economic Development and Innovation (Queensland)
- ▶ Department of Primary Industry, Fisheries and Mines (Northern Territory)

- ▶ Department of Sustainability & Environment (Victoria)
- ▶ Department of Territory and Municipal Services (ACT)
- ▶ Department of Water (Western Australia)
- ▶ Department of Water and Energy (NSW)
- ▶ Department of Water, Land & Biodiversity Conservation (South Australia)
- ▶ Fisheries Research & Development Corporation
- ▶ Forest and Wood Products Australia
- ▶ Forest Products Commission
- ▶ Grains Research & Development Corporation
- ▶ Grape & Wine Research & Development Corporation
- ▶ Horticulture Australia
- ▶ LiveCorp Ltd
- ▶ Meat and Livestock Australia
- ▶ NSW Department of Primary Industries
- ▶ Primary Industries & Resources South Australia
- ▶ Rural Industries Research & Development Corporation
- ▶ Sugar Research & Development Corporation

Program duration 2007-08 to 2009-10

Expected program outcomes

An online full-text digital repository of research relevant to agriculture and natural resources to assist the national management of agriculture and natural resource management.

Total expenditure budget for program

\$1.202 million

Expenditure budget for 2009–2010

\$0.192 million

Key Performance Indicators	2009–10 Targets
Program continuing	<ul style="list-style-type: none"> • Program successfully transferred to a new Managing Agent, including contracts. New Managing Agent responsible for delivery of outputs and outcomes.



Income and expenditure in the 2009–2010 financial year

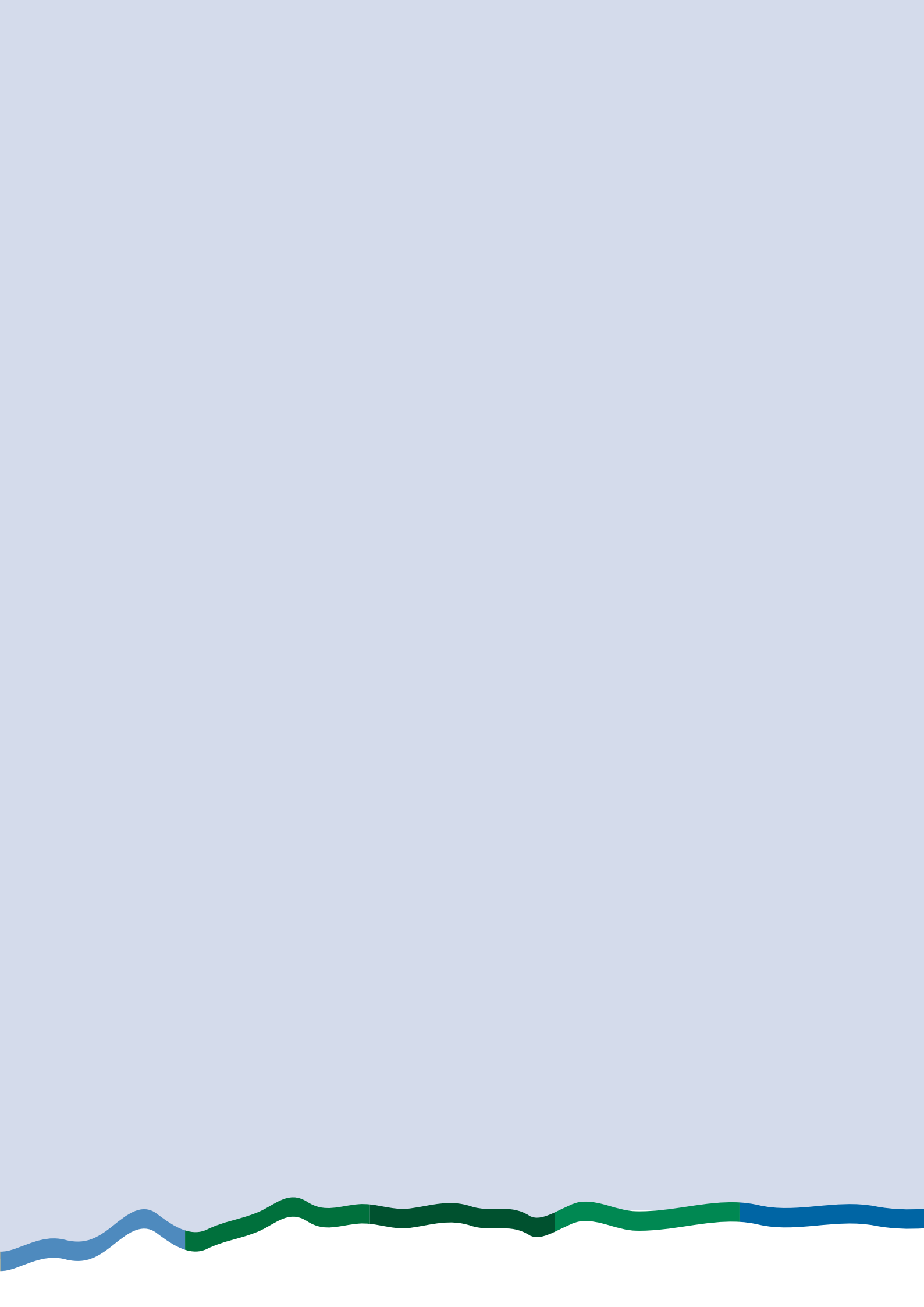
The Commonwealth has confirmed funding of \$6.700m for the 2009-2010 financial year.

Forecast income and expenditure is detailed below, including all items as required under Section 33 of the *PIERD Act 1989*.

LAND & WATER AUSTRALIA 2009-2010 BUDGET

Revenues	\$,000s
Revenue from Government	6,700
Interest & other income	100
Total revenue	6,800
Expenses ¹	
Strategy 1 Research Investment	
Tropical Rivers and Coastal Knowledge	2,081
Environmental Water Allocation	179
Native Vegetation & Biodiversity	404
Weeds Research & Knowledge Exchange	93
Social and Institutional Research	647
National Program for Sustainable Irrigation	1,564
Managing Climate Variability	2,291
National Climate Change Research Strategy for Primary Industries	499
Innovation	2,221
Other	346
Sub-TOTAL	10,325
Strategy 2 Collaboration & Strategic Analysis	27
Strategy 3 Knowledge into Practice	
Knowledge and Adoption	390
Australian Agricultural and National Resources Online	192
Sub-TOTAL	582
Corporate enabling functions	2,323
Total expenses	13,258
Net surplus (deficit)	(6,458)
Accumulated surplus at beginning of reporting period	6,458
Total accumulated results	0
CAPITAL BUDGET	0

¹ Expenses include the anticipated transfer of funds to new managing agents.





Australian Government
Land & Water Australia

Knowledge for managing Australian landscapes



Annual Operational Plan 2009–2010

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