

South Australian State and Regional Requirements for Land Management Practices Information

Report for the Bureau of Rural Sciences

Report No 1: State and Regional levels of Drivers and Needs for Land Management
Practices Information

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PROJECT OBJECTIVES

The SA Department of Water Land & Biodiversity Conservation, under contract to the Bureau of Rural Sciences, aims to examine the business needs and priorities that will inform and direct Pilot Projects in South Australia to develop and test a nationally consistent land management practices spatial information framework.

In 2005-2006, Phase 1 of this project aims to

1. Identify the key requirements at the State and regional level for land management practices information to address legislative, catchment and government priorities in managing natural resources and ensuring sustainable agricultural production, and

Phase 2 of the project will aim to:

2. Develop a fully costed proposal to undertake mapping of land management practices in a selected pilot study that will be carried out in the 2006-2007 financial year.

BACKGROUND

This report examines current and emerging South Australian Legislation, Strategic Plans and State Public Sector business objectives on Natural Resource Management and Sustainable production to determine state & regional strategic needs for Land Management practices information. To this end this report considers:

- The implications flowing from some of the objectives and targets in the **South Australian Strategic Plan**,
- Enactment of the **South Australia Natural Resources Management Act 2004** on 1 July 2005 and Regulations governing the implementation of this act,
- The interplay and strategic need for alignment between the SA NRM Act 2004 and the state development and planning legislation and planning strategies. The **SA Development (Sustainable Development) Amendment Bill 2005** was tabled and withdrawn from Parliament this year after substantial debate and the tabling of numerous amendments,
- The release of the consultation draft of the **State NRM Plan** and current redrafting of this plan,
- Roles, Responsibilities and activities of the **8 SA Natural Resources Management Boards** and advisory groups and their emerging role in assuming responsibilities from Soil Conservation Boards, Animal and Pest Plant Control Boards, Catchment Water Management Boards as well as the Integrated Natural Resource Management (INRM) Boards, and

- Rapidly evolving **State and Regional Monitoring, Evaluation and Reporting Frameworks**
- The **changing roles of SA State Agencies** in response to the NRM Act and State NRM Plan
- The Centre for Natural Resource Management's survey of **regional NRM Research priorities**.

SOUTH AUSTRALIA'S STRATEGIC PLAN

South Australia has a clearly articulated state strategic 10 year plan, initially proposed by the Economic Development Board and developed along the lines of the US State of Oregon Strategic planning process. This is a 10 year plan with goals in the following 6 broad areas:

1. **GROWING PROSPERITY**
2. **IMPROVING WELLBEING**
3. **ATTAINING SUSTAINABILITY**
4. **FOSTERING CREATIVITY**
5. **BUILDING COMMUNITIES**
6. **EXPANDING OPPORTUNITY**

and 79 measurable targets against which progress will be reported on every 2 years.

The targets that are of significance to this project can be found within the two following broad objectives:

Objective 1: Growing Prosperity - Targets

Our priority is sustained economic growth resulting in rising living standards, with all South Australians sharing in the benefits through more and better job opportunities and accessible, high quality services.

Selected targets of relevance to this project:

Economic growth:	Exceed the national economic growth rate within 10 years.
Investment:	Match or exceed Australia's ratio of business investment as a percentage of the economy within 10 years.
Total population:	Increase South Australia's population to 2 million by 2050, rather than the projected population decline. [for comparison 30 June 2003 was 1 527 000]
Productivity:	Exceed Australia's average productivity growth within 10 years.
Exports:	Treble the value of South Australia's export income to \$25 billion by 2013, with exporters assisted by the work of the industry-led Export Council that was established in 2004. Industry-agreed sectoral goals that will assist in meeting the overall target include

\$7.5 billion by 2013 by the food industry in meeting the Food Plan target, over \$3 billion nationally by the wine industry by 2010

Performance improvement in the South Australian public sector - quick decision-making:

Lead Australian governments in timely and transparent government decision-making within 5 years.

Objective 3: Attaining Sustainability - Targets

Our priority is to make South Australia world-renowned for being clean, green and sustainable. This will boost community wellbeing, safeguard future generations and contribute to our State's prosperity. The focus will be on protecting our biodiversity, securing sustainable water and energy supplies, and minimising waste.

Selected targets of relevance to this project:

The River Murray:	Increase environmental flows by 500 GL in the Murray-Darling and major tributaries by 2008 as a first step towards improving sustainability in the Murray-Darling Basin, with a longer-term target to reach 1500 GL by 2018.
Land biodiversity:	Have five well-established biodiversity corridors linking public and private lands across the state by 2010.
Marine biodiversity:	Create 19 Marine Protected Areas by 2010.
Native vegetation:	Any clearance of native vegetation being offset by significant biodiversity benefit by 2005. Integrate native vegetation/biodiversity management in South Australia's eight Natural Resource Management regional plans by 2010. Lose no species.

The premier has also established a number of boards that provide strategic leadership and advice on key aspects of the South Australian Strategic plan:

- The **Economic Development Board (EDB)**, supported by the Office of the Economic Development Boards in the Department of Trade and Economic Development. The EDB has a key role in monitoring the implementation of the SA Strategic Plan and benchmarking the State's performance against it
- The **Premier's Round Table on Sustainability**, supported by the Office of Sustainability in the Department of Environment and Heritage makes recommendations aimed at ensuring the SA Strategic plan and its implementation deliver measurable sustainable outcomes for the State and address the challenges of climate change, natural system vulnerability and ecological constraints.
- The **Social Inclusion Board**, and
- The **Premier's Science and Research Council**

While ensuring equity and rising living standards in a population set to increase by 30% in the next 45 years and trebling the value of our export income within the next decade, the challenge will be to achieve this while reducing the state's dependence on the water resources of the Murray Darling system and investing in biodiversity maintenance and re-establishment.

A recurring theme that emerged from this project is the explicitly stated or implicit emerging need for INTEGRATION:

- Concurrently working towards many different ecological sustainable development (ESD) and NRM goals and targets while addressing potentially competing requirements for natural resources
- Business integration: state, regional and local public and private sector, integration of the business objectives and activities of agencies responsible for economic development, natural resource management, conservation and social policy, planning and management
- Ecosystem / landscape / catchment approaches to ESD & NRM and actively addressing the past fragmentation between natural resource sciences, including the social aspects.

The Premier's Round Table on Sustainability, in response to what it perceives are the particular trends and challenges that South Australia will face in its future management of its resource base, has proposed six pillars of management of natural resources over the next 50 years:

1. Best available science should be used to set and apply targets for healthy ecosystems and to improve management outcomes. Targets should be based on ecosystem function
2. The integration of government planning and regulation
3. Whole of government partnerships with the community to drive changes in management and resource use, and new tools to help achieve those changes
4. A long-term landscape scale approach to management of our natural systems
5. Aboriginal people as land managers
6. Wide community engagement to generate increased funding

(SA Premiers Round Table on Sustainability, 2005, unpublished)

SOUTH AUSTRALIA NATURAL RESOURCES MANAGEMENT ACT 2004

This is:

“An Act to promote sustainable and integrated management of the State's natural resources; to make provision for the protection of the State's natural resources; to repeal the Animal and Plant Control (Agricultural Protection and Other Purposes) Act 1986, the Soil Conservation and Land Care Act 1989 and the Water Resources Act 1997; and for other purposes.”

This act and its regulations very explicitly reform the South Australian NRM environment, public sector roles and responsibilities and working arrangements.

Broad principles of ESD are included in the first object of the act that states:

“The objects of this Act include to assist in the achievement of ecologically sustainable development in the State by establishing an integrated scheme to promote the use and management of natural resources in a manner that—

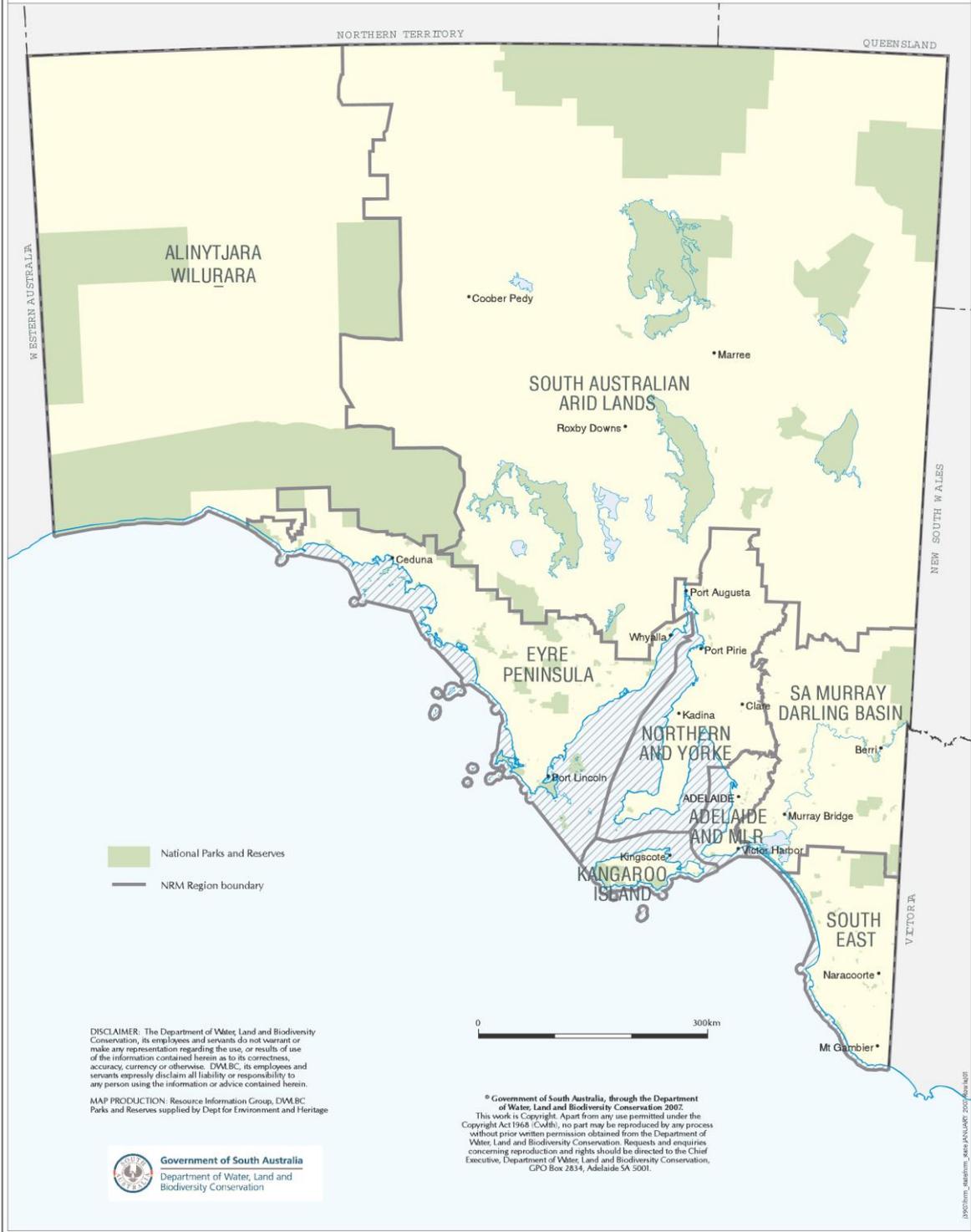
- (a) recognises and protects the intrinsic values of natural resources; and
- (b) seeks to protect biological diversity and, insofar as is reasonably practicable, to support and encourage the restoration or rehabilitation of ecological systems and processes that have been lost or degraded; and
- (c) provides for the protection and management of catchments and the sustainable use of land and water resources and, insofar as is reasonably practicable, seeks to enhance and restore or rehabilitate land and water resources that have been degraded; and
- (d) seeks to support sustainable primary and other economic production systems with particular reference to the value of agriculture and mining activities to the economy of the State; and
- (e) provides for the prevention or control of impacts caused by pest species of animals and plants that may have an adverse effect on the environment, primary production or the community; and
- (f) promotes educational initiatives and provides support mechanisms to increase the capacity of people to be involved in the management of natural resources.”

The minister for the Environment has appointed a State NRM Council of 9 people on the basis of their skills, knowledge and experience to represent the Local Government Association, Conservation Council of SA, South Australian Farmers Federation, Indigenous South Australians and community natural resource managers.

Amongst it's other duties, the council has to draft the State NRM Plan, monitor and evaluate the effectiveness of the NRM Act and State NRM Plan and keep under review the Plans of the 8 South Australian Regional NRM Boards.

NATURAL RESOURCES MANAGEMENT REGIONS

SOUTH AUSTRALIA



Two other aspects of the NRM Act are particularly significant to this project:

- The act provides for the collection of a **Regional NRM levy** on rateable land that will make up the base contribution amount that the constituent local councils have to provide towards the costs of the Regional NRM boards performing their functions under the NRM Act.
- The act outlines **Management Agreements** that might be drafted between the Minister and landholders:

- “(1) The Minister may enter into an agreement (a **management agreement**) relating to—
- (a) the protection, conservation, management, enhancement, restoration or rehabilitation of any natural resources;
 - (b) any other matter associated with furthering the objects of this Act,
- with the owner of any land.
- (2) Without limiting the operation of subsection (1), a management agreement may, with respect to the land to which it relates—
- (a) require specified work or work of a specified kind be carried out on the land, or authorise the performance of work on the land;
 - (b) restrict the nature of any work that may be carried out on the land;
 - (c) prohibit or restrict specified activities or activities of a specified kind on the land;
 - (d) provide for the care, control, management or operation of any infrastructure or works;
 - (e) provide for the management of any matter in accordance with a particular management plan (which may then be varied from time to time by agreement between the Minister and the owner of the land);
 - (f) provide for the adoption or implementation of natural resources protection measures or improvement programs;
 - (g) provide for the testing or monitoring of any natural resources;
 - (h) provide for financial, technical or other professional advice or assistance to the owner of land with respect to any relevant matter;
 - (i) provide for a remission or exemption in respect of a levy under Chapter 5;
 - (j) provide for remission of rates or taxes in respect of the land;
 - (k) provide for the Minister to pay to the owner of the land an amount as an incentive to enter into the agreement.”

An example will be provided later in this report of the Upper SE Biodiversity offset scheme and the management agreements being put in place by landholders trading against the levy imposed for the construction of drains in the Upper SE region of SA.

SA DEVELOPMENT (SUSTAINABLE DEVELOPMENT) AMENDMENT BILL 2005

Not only is the South Australian NRM environment rapidly being transformed, the development and planning legislation and planning strategies are being re-drafted and are evolving rapidly as well. One of the drivers for this is the clear need for the alignment between South Australia's NRM and Development legislation, strategic objectives, strategies, plans and implementation at a state and regional level.

The Development (Sustainable Development) Amendment Bill was introduced to the South Australian State parliament in 2005 to amend the Development Act 1993, the Local Government Act 1999 and the new NRM Act 2004. This bill has been withdrawn and will be re-drafted as 2 separate pieces of legislation.

The first, the Development Miscellaneous Amendments Bill is due to be submitted to parliament by the end of 2005 and one of its functions will be to introduce amendments to the NRM Act and ensure alignment between the NRM and Development legislation and implementation of these Acts. A key amendment, in response to concerns within the planning and local government circles will be to the NRM Act 2004 that currently stipulates that NRM Boards can require the Minister for Planning to make changes to Development plans. NRM Boards under the new amendments will be able to recommend changes to particular development plans.

Primary Industries and Resources South Australia (PIRSA), now includes the Planning department (PlanningSA) and is working with the SA Department of Water Land and Biodiversity Conservation (DWLBC) on first generation NRM modules that will inform the development of new Local government development plans. In this initial phase, it will be proposed that the best NRM elements of the existing 68 development plans will be included in all plans across the state. In SA there are 68 Councils created under the Local Government Act 1999, five outback Aboriginal communities and the Outback Areas Community Development Trust.

DWLBC is also commencing work on more detailed second generation NRM modules to be included in development plans including assessment criteria for the local and regional environmental impacts of the forestry industry.

SA STATE NRM PLAN

The draft document “*Towards SA’s State Natural Resources Management Plan 2005-2010*” was released in May 2005 and a comprehensive consultation process was undertaken within the public sector, peak state and regional bodies and community groups. 109 submissions were received and the NRM council is working with a state government agency writing team in order to release the SA State NRM Plan by the end of 2005.

This plan is the highest-level statutory plan that directs natural resources management in South Australia. The NRM Council is setting a 50-year vision for NRM with short to medium term strategies and targets that will be reviewed and reported on every 5 years.

Under the SA NRM Act (2004)

“The State NRM Plan must—

- (a) (i) assess the *state and condition of the natural resources of the State*; and
 - (ii) identify *existing and future risks of damage* to, or degradation of, the natural resources of the State; and
 - (iii) provide for *monitoring and evaluating* the state and condition of the natural resources of the State on an ongoing basis; and
 - (b) identify *goals, set priorities and identify strategies with respect to the management of the natural resources of the State*; and
 - (c) set out or adopt policies with respect to the protection of the environment and the interests of the community through the operation of this Act, including through the control of *pest species of animals and plants*; and
 - (d) promote the *integrated management* of natural resources; and
 - (e) include or address other matters prescribed by the regulations or specified by the Minister.
- (4) The State NRM Plan must take into account the provisions of the *Planning Strategy* and may identify changes (if any) considered by the NRM Council to be desirable to the Planning Strategy.”

In the new draft of the State NRM plan, the 5 key risks that threaten the condition of SA’s natural resources are the potential for:

1. disintegration / fragmentation of effort
2. using natural resources beyond their ecologically sustainable limits
3. insufficient capacity in communities to achieve desired outcomes
4. biological threats to undermine headway being made, and
5. climate change undoing what might be achieved

Using a triple bottom line approach, Four Goals are defined in the Plan, against which state NRM targets have been set:

GOAL 1

Landscape management that maintains natural systems and is adaptive to climate change

This goal addresses the single largest threat to our natural resources (climate change) by working at the scale required to maintain natural systems. Taking a landscape scale approach will be essential to maintain natural systems as climate change brings many shifts in landscape pattern and function.

'Landscape' includes freshwater systems, coasts, estuaries and the sea.

Management at a landscape scale addresses the protection and management of biodiversity, ecosystem functions, catchment management, marine and coastal protection.

GOAL 2

Prosperous communities and industries using and managing natural resources within ecologically sustainable limits

This goal deals with the allocation and use of natural resources within their 'ecological' limits so that industries and their communities can prosper.

Prosperity is about our quality of life and includes economic development and employment, recreation and social needs. The term 'ecological limits' is used here to mean natural limits beyond which natural resources may be damaged and unable to recover. It can include land capability, sustainable water allocations, maintenance of biodiversity and ecosystem processes and sustainable harvesting of wild resources. This goal relates to activities at a variety of scales relevant to the natural resources in question.

GOAL 3

Communities, governments and industries with the commitment, capacity and connections to manage natural resources in an integrated way

This goal addresses two important areas for successful natural resource management – enabling communities to have the skills, connections and commitment they need to contribute and recognising that our natural resources are integrated and need to be managed in an integrated way.

GOAL 4

Integrated management of biological threats to minimise risks to natural systems, communities and industry

Biological threats are a specific and major risk to natural resources, public health, and industries. The risks they pose to our terrestrial and aquatic ecosystems, and the natural and productive systems which depend on these, is likely to increase unless addressed comprehensively because of climate change, global trade and travel.

(Draft SA State NRM Plan 2005)

SA NATURAL RESOURCE MANAGEMENT BOARDS

The minister for the Environment has appointed the members and chairperson of the 8 South Australian NRM Boards.

The key functions of the boards are to prepare a regional plan, implement it and keep it under review.

While the INRM plans prepared in 2003 are still the prescribed plans, the boards are now preparing Initial Plans, due for completion by the end of 2005. One of the key functions of these initial plans is to incorporate the plans, objectives and functions of the INRM groups, Soil conservation boards, Catchment Water Management Boards and Animal and Pest Plant Control Boards. The initial plans are also required by the NRM Act 2004 for the collection of levies by local government councils to fund the operations of the NRM Boards.

Appendix A provides an overview of SA Regional NRM Board objectives, business needs and drivers for Land Management Practices Information. This report, completed by Dawn Hawthorn-Jackson and Geoff Hodgson of Rural Solutions SA, also presents a more detailed review of the Northern and Yorke NRM Region information requirements as a representative case study.

Land management practice information is needed to support regional programs that inform and build the capacity of landholders to implement sustainable management practices including:

- Contour banking of agricultural land susceptible to water erosion
- Revegetation to enhance habitat and manage salinity
- Identify and protect prime agricultural land, in particular from urbanisation
- Manage and protect water resources and water dependent ecosystems
- Remove and prevent the spread of pest plant and animal species
- Amelioration of soil acidity & water repellence,
- Conservation tillage practices to reduce risk of wind erosion.
- Adaptive management practises for climate change and variability
- Management of exceptional circumstances

During 2006, the 8 SA Regional Boards will commence development of the comprehensive Plans that are required under the NRM Act 2004 to underpin the regional investment frameworks for 2008-2009 and beyond.

STATE & REGIONAL MONITORING, EVALUATION & REPORTING FRAMEWORKS

The framework for South Australian State Monitoring, Evaluation and Reporting is currently being incorporated into the State NRM Plan.

The regions have appointed Monitoring & Evaluation officers and are revising their Resource Condition Targets and Management Action Targets.

Land management practices and contextual information is needed for the evaluation of:

- The consequences of land management practice and/or the advantages of one practice over alternative practices – To what extent is it possible to directly measure the environmental impacts of alternative practices. What constitutes sustainable practice and what practices are non-sustainable?
- The consequences of land management practices on the environmental, social and economic parameters as outlined in the State NRM Goals and Targets
- To what extent have existing management practices changed from non-sustainable to sustainable practice?
- What impact have the changes in management practice had on resource condition?
- To what extent has the investment in projects or programs changed management practices from non-sustainable to sustainable practice?
- To what extent has the investment in programs or projects met the goals and contributed towards the targets in the South Australian strategic and SA State NRM Plans?

Regional boards, state agencies and other interested partners including educational & research institutions and private companies will increasingly need to define their own business objectives and negotiate their respective roles, responsibilities and capacities to resource the collection of information. Land management practices information will be useful for the evaluation of programs and targeting of investment as well as for monitoring the impact of management on natural resource condition at farm, landscape, regional and state scales.

STATE AGENCIES

The South Australian Public Sector works to fulfil the SA Strategic Plan and the departments within the Environment Portfolio (DWLBC, DEH & EPA) and PIRSA have particular roles and responsibilities for implementing the new NRM legislation.

Current state agency strategic business, with the Environment Portfolio agencies and PIRSA highlighted, is outlined in the table below.

South Australian Public Sector Departments

Administrative & Information Services (DAIS) is South Australia's major "common service agency with the job to provide services that help the SA Government deliver sustainable economic and social value to the general public

Environment & Heritage (DEH) is responsible for environment policy, biodiversity conservation, heritage conservation, **environmental sustainability** and animal welfare, and is a custodian of information and knowledge about the State's environment. The Environment Protection Agency (EPA) is SA's primary environmental regulator & promotes ecologically sustainable development. The Office for sustainability supports the Premier's round table on Sustainability and is responsible for the SA State of the Environment Report.

Families and Communities has a broad mandate to work with those in need who, through circumstance, may be poor, vulnerable, at risk of harm or isolated and disconnected. It means working together, and with others, to connect individuals, families and communities to choices and opportunities

Education & Children's Services is dedicated to engaging every child and student so that they achieve the highest possible level of their learning and well-being, through quality care and teaching. The organisation is committed to supporting and enhancing public education and care in SA

Further Education, Employment, Science & Technology (DFEEST) is committed to developing science, research and information economy opportunities to enable SA to capitalise on current expertise and create partnerships and opportunities for growth

Justice's vision is for SA to be a safe, fair and just place to live, work, visit and conduct business. The Department is the coordinating entity for the provision of justice services to the community and Government of South Australia.

Health is committed to ensuring the sound health and wellbeing of all South Australians. It is responsible for setting directions, policies, planning and monitoring performance of our State's public health, hospital and community based health services

Primary Industries & Resources SA (PIRSA) is a key government agency whose mission is to foster the growth and development of innovation and internationally competitive industries that support **environmental sustainability** and contribute to the prosperity of regional communities. [PIRSA now incorporates the business of **Planning SA**]

Premier & Cabinet's mission is to support the Premier as the head of government and contribute to the economic, cultural and environmental development of the State in a socially inclusive manner, consistent with South Australia's Strategic Plan

Trade & Economic Development is the South Australian Government's key agency for economic and industry development policy. Its primary role is to contribute to ongoing economic growth and wealth creation in South Australia. The office of the Economic Development Board supports the Premier's Economic Development Board.

Transport, Energy & Infrastructure has diverse responsibilities in relation to the transport system and services, energy policy regulations, and infrastructure planning for South Australia

Treasury & Finance provides economic, policy and financial advice to the Government, manages the whole of Government financial management processes, including preparation of the State Budget, and provides finance-related services across Government

Water, Land & Biodiversity Conservation (DWLBC) is responsible for **sustainable development** and getting the balance right.

APPENDIX B provides an overview, by Dr Geoffrey Bishop, of the SA State Agencies and some non-government organisations with business objectives that relate to natural resource management and sustainability.

NRM RESEARCH

The Centre for Natural Resource Management, South Australia's broker of NRM Research, has consulted with research agencies and regional representatives to identify regional NRM priorities

Current research that aims to address gaps in knowledge about management practice and its impact on natural resources includes:

- Irrigation and fertiliser management impacts on water and nutrient movement within and below the rootzone of irrigated vines
- Understanding and ameliorating sub-soil limitations and improve water quality in agricultural catchments; testing the efficacy of best-bet ameliorative treatments
- Management of horticultural production in saline environments
- Lower Murray landscape futures
- Evaluation of actual and potential adaptive management strategies designed to mitigate the impact of climate change and variability on wheat production and irrigated agriculture in the MDB
- Identification of soil constraints to introduction of lucerne phases to intensive cropping systems in Mallee dryland grazing systems
- Effects of irrigation on soil physical, chemical and biological properties and water use efficiency gains in grapevines and citrus
- Quantitative evaluation of threats to groundwater dependent ecosystems posed by different land and water management scenarios

EXISTING INFORMATION MANAGEMENT PROGRAMS

Existing programs that gather, manage and report on land management practices in South Australia include:

1. The South Australian Biodiversity Assessment Tool (SABAT) is a spatial mapping application that is being used by the Upper South East Dryland Salinity program to map biodiversity management activities of landholders who elect to trade negotiated management agreements against levies imposed due to construction of new drains to manage salinity in the region. This spatial tool is now being adapted and incorporated into market based instruments in other regions of the state.
2. NRM Tracker is a Microsoft Access Database that is used by regional project officers in South Australia to gather information for reporting on investments in on-ground works. A spatial mapping capability has been programmed for use with NRM Tracker, in particular for use in mapping re-vegetation activities using the SA Revegetation framework. This spatial capability is rarely used and the database is used primarily for reporting on investment rather than for monitoring and evaluation, ecological modelling or to inform land management planning
3. The SA Land Condition Monitoring project gathers information in a bi-annual land manager survey by means of a phone-based survey. Information is collected on tillage practice and the management of salinity, water and wind erosion, acidity, water repellence, revegetation as well as activities relating to soil testing, formal & informal training and farm business management tools
4. The Primary Industries Information Management system (PIIMS) was commissioned by PIRSA in 2002 and records some information on primary industry management practice. This includes information on livestock and pest plant and animal management practices. This web based spatial database enables PIRSA's regional officers to input and report on data remotely.
5. The Apple and Pear Growers Association of SA, based in the Adelaide Hills, is currently undertaking a project that investigates participating landholders on-farm recording of management activities for EMS purposes and determines the links between this information and the information that is needed for regional NRM monitoring, evaluation and reporting purposes.

CONCLUSIONS

The current SA NRM environment, especially in the implementation of the SA Strategic Plan and the NRM Act 2004, provides a very challenging platform to define and test the use of land management practices information.

The state and regional strategic drivers for the use of accurate and timely NRM information, including land management practices include:

- The requirement for an integrated approach to NRM
- The need for alignment between NRM and development planning strategies
- Implementation of plans: making the new NRM arrangements work
- Information needs for evaluation of programs and Investment strategies
- Information needs to evaluate the impact of land management activities on resource condition
- Ecologically sustainable development requirements for profitable, resource efficient industries as well as good NRM outcomes.
- Information to inform early, planning stage, resolution of potentially competing program objectives, for example forestry and irrigation development versus water and soil conservation and management

Opportunities for future collaboration and testing of land management mapping projects exist:

- Major new sustainable development programs that address the state strategic plan targets, for example the sustainable irrigation development program.
- Better definition and integrity in current data collection programs, for example the spatial location of NRM Tracker data and Land Condition Monitoring managers' surveys
- As part of the state and regional integrated monitoring evaluation and reporting frameworks
- To address the emerging business needs of the 8 South Australian regional boards as part of the process to develop their comprehensive plans. This planning activity is expected to occur during 2006 and 2007

REFERENCES

Government of South Australia (2005, unpublished) "Living within our Means" South Australia's Natural Resource Management Plan.

McCord, A.K. (2005) Land Manager Survey (February 2005). Pers. comm

McCord, A.K. & Payne, R.A. (2004) Report on the Condition of Agricultural Land in South Australia. Government of South Australia

SA Natural Resources Management Council (2005) "Towards SA's State Natural Resources Management Plan 2005-2010" SA State NRM Plan Consultation Draft

RSSA (2004) Rangelands Integrated Natural Resources Management Plan and Investment Strategy: Indigenous Community Consultation Report

South Australian Soil Conservation Council (2005) Soil Conservation and Land Management Directions for the Agricultural Lands of South Australia.

The Advertiser CareerOne Guide (Saturday 30th October 2005) South Australian Public Sector Career Opportunities

The Premiers Round Table on Sustainability (2004) Three, Four, Five: 3 Challenges, 4 Principles, 5 Actions for a Sustainable Future. Report to the Government of South Australia on implementing the State Strategic Plan.

The Premiers Round Table on Sustainability (2005, unpublished) Comment on "Towards SA's State Natural Resources Management Plan 2005-2010" SA State NRM Plan Consultation Draft.

APPENDIX A

South Australian Regional Requirements for Land Management Practices Information

Report for the Department of Water Land and Biodiversity Conservation: Regional Business Needs and Current and Continuing Projects

1. BACKGROUND

The Department of Water Land and Biodiversity Conservation has, over the past decade, worked closely with the Bureau of Rural Sciences, and agencies in the other states and territories, to define spatial data frameworks and to manage field mapping projects for the collection of regional land use information. DWLBC is currently engaged in a project for the Bureau that aims to define and test a nationally consistent land management practices spatial information framework that will be of use in evaluation, reporting, policy development and planning, for national, state and regional natural resource management.

2. PROJECT OBJECTIVES AND METHODOLOGY

An immediate need exists for the existing and potential future needs and priorities of Regional Boards, Agencies, and peak bodies for land management practices information to be described. This project seeks to document: primary production threatening processes, the relationship between the threatening processes and the development of sustainable land management practices, emerging issues that may potentially impact on primary production resources, required information, knowledge and support and exceptional circumstance threats that have been identified by key people with experience in the Northern and Yorke Natural Resource Management region.

For the purposes of this project, land management practices include any sustainable or non-sustainable primary production practice that might occur in South Australia but excludes mining and off-shore fisheries. To understand the needs and priorities of a Regional Board, currently available plans and other documents pertaining to the Northern and Yorke Region were sourced and examined. The Northern and Yorke region was chosen for this project as it is perceived to represent a diversity of primary production issues and challenges, many of which are present in other regions.

This project was inspired by discussions pertaining to the primary production land management practice needs and drivers required by Natural Resource Management Boards. Natural Resource Management Boards are currently addressing an array of threatening processes and land management practice issues. Whilst the Integrated Natural Resource Management Groups developed Natural Resource Management Plans, the methodologies used by regional groups to develop their plans and highlight threatening processes and land management practice issues vary. Thus, a considerable amount of time was dedicated to defining and prioritising achievable objectives that could be addressed within a short project time period and at a time when regional staff are extremely busy with governance and project management issues. To ensure minimal disturbance to regional staff a few key people with experience in the Northern and Yorke region were interviewed about threatening processes, sustainable and non-sustainable

management practices, emerging or potential exceptional circumstance threats, knowledge gaps and business needs. It is important to note that the information presented in this report represents a snapshot of selected information from sources and key contact people. Further consultation and research is deemed important in order to develop a comprehensive insight into the primary production sustainability issues and business needs for the region.

3. INTRODUCTION TO THE NORTHERN AND YORKE REGION

The Northern and Yorke region covers over three million hectares, contains a population of approximately 90,000 and provides for one quarter of the State's agricultural-based earnings. The region consists of the Lower, Mid and Upper North agricultural areas, Yorke Peninsula and parts of the Adelaide Plains and Barossa Valley. Appendix 1. (Northern and Yorke Agricultural District Integrated Natural Resource Management Committee Inc., 2003).

Agricultural pursuits occur in approximately 80% of the Northern and Yorke region (Northern and Yorke Agricultural District Integrated Natural Resource Management Committee Inc., 2003). Significant landclearing has occurred in the region and much of the landscape is susceptible to water erosion, wind erosion, soil acidity dryland salinity, declining soil fertility, water repellence and declining soil structure (South Australian Soil Conservation Council, 2005).

Due to the longevity of primary productivity enterprises in the region, a wealth of management information and documentation is believed to exist within government agencies such as Primary Industries and Resources South Australia, Rural Solutions South Australia and The Department of Water, Land and Biodiversity Conservation. Advice and documentation is perceived to be easily accessed by contact with Land Management Consultants that are employed by the above organisations (Kent, pers comm.).

4. IDENTIFIED THREATENING PROCESSES AND ENHANCED SUSTAINABLE MANAGEMENT

The Integrated Natural Resource Management Committee Incorporated has identified many threatened processes to be addressed as priorities by the new Natural Resource Management Board. Other regions have also identified many of the threatening processes. Appendix 2. Several regions have identified priorities and categorised them against resources/assets. These include the Northern and Yorke, Kangaroo Island and Mount Lofty Ranges. The Aboriginal Lands region categorised issues as high, medium or low. The high categories have been used for the purposes of the table in Appendix 1. Indicated or perceived implied threatening processes have been taken from the Summary Table: Aboriginal Lands INRM Region Plan. The Murray Darling Basin, Rangelands and South East Integrated Natural Resource Management Groups used different processes and thus were not included in this report.

Soil and water threatening processes are deemed to be high priorities for the Northern and Yorke region. Thus it is not surprising that the enhancements of sustainable management practices for the threatening process areas of soil health and cropping have been identified (Miles pers Comm.). New or improved land management practices being implemented, recommended or trialled in the Northern and Yorke region include:

- Rotational grassland grazing

- Contour banking
- Chemical fallow (rather than mechanical fallow)
- Minimum tillage
- Clay spreading trials
- Liming
- Planting sorghum as a summer crop
- Fencing to land class
- Planting of saltbush on sites that have the potential for high wind erosion
- Planting of saltbush on semi saline land
- Planting of lucerne on creek flats

Soil Boards were appointed to represent the community. They have identified current unsustainable land management practices and have been instrumental in developing field days pertaining to best management practice for the land management practices as described above and educational and onground programs for landholders.

5. *EMERGING PRIMARY PRODUCTION ISSUES*

Upon discussion with key people with experience in the Northern and Yorke region, emerging issues that have the potential to impact on primary production and information, knowledge and support needs have been identified. Refer to Table 1.

Table 1: Emerging Issues that are perceived to potentially impact on primary production resources within the Northern and Yorke region.

Item Number	Emerging Issues That Have The Potential To Impact On Primary Production Resources	Beneficial Information And Knowledge Support	Beneficial Staff Support
1.	Dispersal and management of weeds. (Virtue, pers comm.).	1. Risk Management Assessment Database required. 2. Priority setting of weeds and their potential impacts required. GIS information required to map locations of weed species, populations and control techniques (eg: biological control releases, fire etc.)	1. Officer to develop database and prioritise weed current and emerging impacts. 2. NRM Officer to detect, monitor, manage and report on weed issues within the region. 3. GIS Officer to develop and maintain GIS weed database.
2.	Ineffective regional planning. (Kent, pers comm.).	Appropriate and effective Ecological Sustainable Development information for the region.	Specialist advice.
3.	Limited or reduced access to water. (Kent, pers comm.).	As per Items 2 and 4.	As per Items 2 and 4.
4.	Impact of climate change on land management use. (Kent, pers comm.).	Alternative or adaptive land management practices information.	Specialist advice.
5.	Urban expansion on primary production land. (Kent, pers comm.).	As per Item 2. Information on alienation of agricultural land (eg: Mount Lofty Ranges Outer Metropolitan Planning Strategy Zoning).	As per Item 2.
6.	Ineffectively defined Resource Condition Targets. (Kent, pers comm.). Lack of a conceptual model for the regional Monitoring and Evaluation Reporting Framework.	Teaching aids pertaining to writing effective Resource Condition Targets and reporting on them effectively in the available time frame.	Specialist advice and training.

Item Number	Emerging Issues That Have The Potential To Impact On Primary Production Resources	Beneficial Information And Knowledge Support	Beneficial Staff Support
7.	Increased soil erosion due to removal of contour banks (Kent, pers comm.).	Primary producer educational program to highlight the importance and need for contour banks particularly in wet years.	Officer to develop educational program.
8.	Changes in habitat and landscape condition due to adoption of revegetation strategy. (Miles, pers comm.).	GIS information required to map locations of revegetation plantings.	Officer to develop and maintain GIS database and monitor and evaluate salinity and habitat condition in revegetation zones.

6. EXCEPTIONAL CIRCUMSTANCE THREATS

Exceptional circumstance threatening processes that have the potential to impact on primary production have been identified. These include but are not thought to be limited to climate change, disease, drought, pest plagues and fire.

It is perceived that changes associated with climate change and/or drought will require landholders to assess their land management practices, particularly in regions north of the Goyder line where opportunity cropping is practiced. Landholders may require assistance and support to: determine the viability of such land, adapt to changing climatic conditions, develop new drought tolerant enterprises or to leave the property if deemed necessary. Monetary assistance may also be required. The recently advertised Envirofund Exceptional Circumstances grants scheme has attracted considerable interest in the region with 37 landholders (Hyde, pers comm.) submitting applications for financial support to undertake projects that will enable them to adopt or enhance sustainable land management practices (Kent, pers comm.). This represents approximately 73% of the South Australian applications received by the Australian Government.

Significant disease and pest plagues if and when they occur are likely to cause extensive damage to crops and thus result in yield reductions. Under such circumstances, primary producers may require monetary assistance and agricultural technical advice and support. Examples of pest plagues include infestations of locusts and/or grasshoppers. Plagues of these insects are not uncommon and as a general rule locust and grasshopper populations and densities are monitored. If extensive infestations are reported, a working group consisting of Primary Industries and Resources South Australia Officers and members of Community Reference Groups will develop regional meetings and coordinate the chemical control of the pests. The State has considerable expertise in managing such events and has been doing so for over thirty years. Emergency response management plans are available during times of need and these have been implemented for a number of emergency events including: the recent bushfire on the Eyre Peninsula (Singh, pers comm.).

As a result of the recent bushfires on the Eyre Peninsula, a “Bushfire Re-establishment Program” has been developed. The aim of this program is to “encourage the adoption of sustainable production practices with a significant emphasis on natural resource management and protection” by providing landholders with advice, strategies, guidelines, technical and monetary support. (Australian and State Government Landholder Information Pack). It is deemed that the expertise and knowledge gained from the management of the Eyre Peninsula Bushfires would be invaluable to landholders that experience future catastrophes.

7. CONCLUSION

This report has identified threatening processes, land management practice information, knowledge and staff support requirements, and areas of enhanced sustainable management practices that are currently being addressed in the Northern and Yorke NRM region.

The current emphasis on sustainable land management practice appears to relate to cropping and grazing areas within the region. This is likely to be associated with the input of Soil Conservation Board community members.

The high number of the Drought Envirofund applications submitted by the region, indicates that drought is a current exceptional threat that is affecting primary producers.

It appears that while there is some spatial information available on some of the aspects of land use and land management in the region, it would be beneficial to have a coordinated approach for collation and collection of current and outstanding information. Much of the current information is held in various State Government agencies, in various stages of completion and accessibility.

Specialist technical advice and training is also required for progressing the implementation of changes in land management practices.

The current development of an NRM Monitoring and Evaluation Reporting Framework will assist in identifying measurable Management Action Targets for achieving regional priority NRM objectives, including the identification of base levels of information (and gaps), and methods of measuring change.

8. APPENDIX A REFERENCES

Australian and State Government Landholder Information Pack. Lower Eyre Peninsula Bushfire Re-establishment Program.

Hyde B. (pers comm.). Australian Government Facilitator - Biodiversity SA - Natural Resource Management Team.

Kent S. (pers comm.). Regional Natural Resource Management Liaison Officer for the Northern and Yorke Natural Resource Management Region, South Australia. Department of Water, Land Biodiversity and Conservation.

Miles C (pers comm.). Environmental Design & Management Consultant, Rural Solutions SA.

Northern and Yorke Agricultural District Integrated Natural Resource Management Committee Inc. (2003), Integrated Natural Resource Management Plan.

Singh A. (pers comm.). Principal Consultant Livestock and Emergency Management, Rural Solutions SA.

South Australian Soil Conservation Council (2005), Soil Conservation and Land Management Directions for the Agricultural Lands of South Australia.

Virtue J. (pers comm.). Senior Weed Ecologist, Department Water, Land Biodiversity and Conservation.

9. APPENDIX A BIBLIOGRAPHY

EXAMPLES OF BEST MANAGEMENT PRACTICE GUIDES

Draft Plantation Design Guidelines for Farm Forestry (2004)

Environmental Management Guidelines for Plantation Forestry in South Australia (ForestrySA - 1997)

Guidelines for Establishing and Managing Commercial Forest Plantations in South Australia (ForestrySA - 1998)

Planning Bulletin - Development in Rural Areas (Planning SA - 2001)

Guide for Applicants - Commercial Forestry, published by Planning SA (2002).

Regulations under the Electricity Act 1996 - re plantation setbacks from powerlines.

APPENDIX B

SOUTH AUSTRALIAN NRM STATE AGENCY AND PEAK NGO's NEW AND EMERGING BUSINESS NEEDS regarding SUSTAINABLE PRIMARY PRODUCTION PRACTICE

1. SOUTH AUSTRALIAN STATE REPORTS

State of the Environment Report 2003

Issues highlighted include:

Water – River Murray salinity; irrigation agriculture; water extraction for various uses including primary production

Land – soil acidification; soil erosion; loss of productive land to non-agricultural uses; changes in land use; soil contamination; dryland salinisation

Biodiversity – condition of vegetation communities; threats to biodiversity from pest plants and animals.

Signposts to the Future (1999)

Identifies Condition, Pressure and Response indicators for a range of topics including water, land and biodiversity. These have been used in the SOE Report 2003.

Three, Four, Five: 3 Challenges, 4 Principles, 5 Actions for a Sustainable Future (2004)

Prepared by the Premier's Round Table on Sustainability in response to the *State Strategic Plan*. Sustainability in use of natural resources is covered in both Principles and Actions.

Principles:

- Recognise absolute ecological limits to development and keep all economic activity within those limits.
- Reflect the costs that economic activity and consumption impose on future South Australians.
- Financially reward those acts that improve environmental outcomes and are part of the solution.
- Remove all impediments and barriers to improvement of environmental outcomes.

Actions:

'...that the State Strategic Plan be revised to include state-wide targets for healthy ecosystems and the sustainable use of resources, based on good science. These targets should be developed for the state's agricultural, rangeland and marine ecosystems.'

Green Print SA 2003

Issues identified include sustainable primary production. Specific issues include:

- Protection of bioregions (natural biodiversity).

- Water - River Murray salinity; water diversion from natural flows; irrigation water use efficiency.
- Dryland salinity.

Towards South Australia's State Natural Resources Management Plan 2005-2010: Draft Natural Resources Management Plan (2005)

The Plan sets resource condition targets and management action targets for natural resources.

Issues raised in comments on the draft Plan include the following:

- Need to manage climate change per se as it is a major threat to NRM.
- The links between land, soil and water are not adequately recognised.
- Best management practices are not being adopted by land managers at a sufficient rate.
- There is a need for an on-going salinity monitoring program to provide reliable baseline data.
- Need to set irrigation efficiency targets.
- Need to set effective, useful monitoring and evaluation procedures.
- Soil condition is generally improving but soil erosion is still an issue (this is not given adequate recognition).

2. GOVERNMENT AGENCIES

DEPARTMENT FOR WATER, LAND AND BIODIVERSITY CONSERVATION

DWLBC Corporate Plan 2005-2010

Mission Statement includes:

- Improved health and productivity of our biodiversity, water, land and marine resources.
- Wise resource allocation provides for the best social, environmental and economic outcomes.

Strategic Priorities include:

- Restore the health of the River Murray.
- Deliver effective reporting on the state and condition of the State's natural resources.
- Halt the decline in both the quality and extent of native vegetation.
- Protect and enhance the natural resources of the Mount Lofty Ranges.
- Sustainable agricultural landscapes.

Sustainable agricultural landscapes relates to improvements in farming practices. Key issues include the continuing loss of native species and ecosystems, declining capacity

of the soil resource, climate change, water management, species selection, invasive plant and animal species, and market creation and access.

Programs:

Upper South East Native Vegetation Trading Scheme – protection of local water resources and remnant native vegetation, and salinity management.

Incentive packages to encourage landholders to maintain their current remnant native vegetation and engage in strategic revegetation (Mount Lofty Ranges).

DEPARTMENT FOR ENVIRONMENT AND HERITAGE

Department for Environment and Heritage Corporate Plan (2005)

Goals: the goals are very general and include ‘Move South Australia towards a sustainable future’ and ‘Conserve, value and celebrate South Australia’s natural and cultural heritage.’

Move South Australia towards a sustainable future – Communities need to find more sustainable ways of living and interacting with the environment.

Programs and other initiatives include:

- Greenhouse Strategy
- Ecological footprint
- Greening of Government Operations
- Green City Program
- NatureLinks

and

- Influence the effectiveness of the planning system to contain adverse impacts on the environment.
- Support the Premier’s Round Table on Sustainability and its contribution to delivery of South Australia’s Strategic Plan.
- Contribute to the effectiveness of the Natural Resources Management process.

NatureLinks is being developed as the underlying foundation for a landscape scale approach to conservation, land and natural resources management programs. It provides a vision and framework for an ecologically sustainable future for the state. It involves the forming of partnerships to integrate biodiversity management with regional development and natural resources management.

ENVIRONMENT PROTECTION AUTHORITY

Strategic Plan 2005-2008

One of the *Objectives* stated is ‘attaining sustainability’ – the EPA promotes ecologically sustainable development when making decisions, developing policy and delivering programs.

The EPA’s *Environmental Goals* include:

Goal 2: water quality that meets agreed environmental values.

Goal 4: sustainable land use.

Its role in relation to sustainable land use mainly relates to compatibility of land uses, integration of different land uses and site contamination. It also seeks to address impacts on sensitive environments.

PRIMARY INDUSTRIES AND RESOURCES SOUTH AUSTRALIA

PIRSA's Strategic Directions 2003-2006

Values include:

Commitment – we are committed to responsible and sustainable growth of our primary industries and resources.

Strategic Focus includes:

Sustainability. Using, conserving and enhancing the community's resources so that ecological processes on which wealth generation depends are maintained, and the total quality of life, now and in the future, can be enhanced. Encouraging the application of sustainable development principles and demonstrating, for both ethical and market purposes, that industries have successfully adopted those principles, whilst also remedying the problems created by past use of resources.

Strategy Framework for Sustainable Economic and Industrial Development: Corporate Strategy and Policy

Little detail is given regarding sustainable economic development; the terminology is used but not expanded upon.

Soil Conservation and Land Management Directions (2005)

The report sets specific *Objectives* relating to a number of natural resource management issues in the agricultural zones of South Australia. For example, 'For all Regions, by 2010, the Water & Wind Erosion Risk Indices are reduced to 35 days or less.'

Issues covered:

- Soil erosion
- Soil acidification
- Soil salinisation
- Water use efficiency
- Irrigation salinity
- Habitat restoration and revegetation.

Agricultural Sustainability Indicators for Regions of South Australia

This report is a first attempt to develop sustainability indicators for agriculture at a regional and State level. The sustainability indicators include:

- Farm income
- Productivity
- Managerial skills (including farmer education and implementation of sustainable management practices)
- Land and water condition (including water use efficiency and nutrient balance)

- Off-site environmental impact (including impact on nature conservation areas and accelerated wind erosion).

Programs

IRES – Irrigation Recording and Evaluation System – to improve the efficiency of irrigation systems for horticultural and field crops.

EMS – lead role in the Pilot Environmental Management Systems Programs

SOUTH AUSTRALIAN RESEARCH AND DEVELOPMENT INSTITUTE (SARDI)

Group Strategic Plan 2000-2004

Strategic Outcome: Ecologically sustainable development of the primary industries, resources and energy sectors.

SARDI will assist in and promote the protection and development of South Australia's natural resources. Strategies include:

- Conduct research that qualifies and addresses the impact of natural events and human activities on SA's natural resources.
- Provide advice and direction to guide the sustainable development of SA's natural resources.

PLANNING SA

Planning SA Charter

The *Vision* states 'Planning SA will be recognised for enhancing the quality of life for all South Australians by facilitating sustainable land use and built development.

DEPARTMENT OF HEALTH

Limited reference to land management issues but the Department regards human health as an integral aspect of NRM.

SA TOURISM

South Australia Tourism Plan

Responsible Nature-based Tourism Strategy

Both documents and the Department's Tourism Policy and Planning framework refer to 'sustainable tourism', i.e. tourism that protects the natural environment in which it operates.

SA WATER

Environmental Policy

Contains statement regarding 'best practice environmental management' but no elaboration of what this entails.

Strategic Plan 2005-2009

Vision: Water for growth, development and quality of life for all South Australians.

The Strategic Plan lists initiatives covering a range of issues including water quality management and monitoring, resource sustainability and minimizing the impacts of its activities.

TRANSPORT SA (Department of Transport, Energy and Infrastructure)

Recognizes biodiversity loss and salinity as Australia's most serious environmental issues. Has a policy of protecting native vegetation and significant vegetation during all its operations.

The Department's first Environment Strategic Plan **Changing the Culture** was released in 1998.

Transport SA also produces regional weed guides and various Operational Instructions on environmental issues (e.g. Managing native vegetation; *Phytophthora cinnamomi*).

FORESTRY SA

Annual Report 2004-2005

Environmental Management Policy – refers to:

- Sustainable plantation forestry
- Sound environmental management of plantations and native forests [Native Forest Reserves].

Actions include:

- Incorporate the principles and requirements of ecologically sustainable development into all management practices.
- Conserve and enhance the biodiversity of native forests.
- Cooperate with the community and agencies involved in environmental monitoring and impact assessment.
- Develop a cost effective Environmental Management System.

ForestrySA has an integrated management system, an integrated risk management framework (AS/NZ 4360: 1999), and is ISO 14001 and ISO 9001 certified.

Programs and publications

Farm Forestry: designing for increased biodiversity

Addresses issues relating to the management and enhancement of biodiversity as a part of farm forestry.

DEPARTMENT OF RECREATION AND SPORT

Environmental sustainability is referred to in many plans and strategies, e.g. various Sustainable Recreation Management Strategies identify impacts and appropriate management. (No specific reference to primary production land.)

3. NON-GOVERNMENT ORGANISATIONS

LOCAL GOVERNMENT ASSOCIATION OF SOUTH AUSTRALIA

Policy Manual of the Local Government Association of South Australia (2003)

Section on the Natural Environment refers to policies relating to biodiversity, native vegetation retention and management, water quality and ecologically sustainable management.

Local Government Association Natural Resources Management Scoping Study (2002)

This study identifies the role of the LGA and its members in natural resources management:

- As a regulator of natural resources affecting activities under specific obligations contained within state legislation
- As a manager of land and other resources also under specific obligations or agreement
- As a participant/partner in NRM, e.g. by participation in boards and groups.

Few areas directly relate to primary production but the following is an exception:

Relevant authority under the Development Act 1993 developing planning policy under the Development Act and assessing development applications impacting on NRM.

NATURE CONSERVATION SOCIETY OF SOUTH AUSTRALIA

A primary *Objective* of this organisation is 'to foster the conservation of the State's wildlife and natural habitats.'

SA DAIRY INDUSTRY

Dairying for Tomorrow – Sustaining our natural resources

Partnership project between Dairy Australia, National Land and Water Resources Audit and Australian Dairy Farmers. The project has two main aims, sustainability and best practice management.

Goal: Manage natural resources in a way that sustains industry vitality, maintains the resource intact for long-term use and protects and enhances the wider environment.

AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

No specific references to primary production resources. Operates the *Better Soils Project* (initiated in 1997).

SOUTH AUSTRALIAN FARMERS FEDERATION

SAFF is primarily an advocacy organization for farmers. The Association's *Vision* and *Mission* do not refer to resource sustainability. However, the Association has a Natural Resources section which 'endorses the concepts of sustainable agriculture and natural resource management whilst pursuing the protection of agriculture and property management rights in the following areas; integrated natural resources management, native vegetation, water resources, environmental management systems, pest animal and plant control, threatened species protection, fire management, biodiversity management and native title.'

APPLE & PEAR GROWERS ASSOCIATION OF SOUTH AUSTRALIA; CHERRY GROWERS ASSOCIATION OF SOUTH AUSTRALIA

These Associations have been involved with integrated pest management programs for over 25 years, and are currently involved with the Adelaide Hills Watershed EMS Program which covers a wide range of land and resource management issues.

WINE & GRAPEGROWERS ASSOCIATION OF SOUTH AUSTRALIA

Sustaining Success (2002)

This report has NRM as its main focus and the *Objectives* include environmental improvement and setting environmental standards.

Issues include:

Water – ecological flows, irrigation, groundwater, salinity, runoff, wetlands

Land – biodiversity, erosion, nutrient management, salinity, compaction, vegetation loss.