Building Capacity of Integrated Landscape Science in SA

Current trends in the condition of South Australia's natural resources show that, while some improvements are occurring, the condition of our natural resources is declining due to increasing pressures of agricultural intensification, urbanisation, invasive species and climate change.

The State Strategic Plan, NRM Plan and South Australian Natural Resource Management Act 2004 provide the overarching guidance and delivery mechanisms for halting the decline in the condition of the State's natural resources. NRM reform has resulted in the division of the State into 8 regions charged with planning and managing natural resources within each of their jurisdictions.

Central to NRM planning is the concept of integration which is embedded in the goals of the State NRM Plan. Achieving these goals raises a series of challenges for the NRM Council, NRM Boards and State Agencies. Not least is the challenge of landscape scale integrated management in the face of limited financial, human and technological resources. What is required is:

- Robust legislative and institutional arrangements for the administration of NRM and plans that comply with intentions, and;
- An information base that is current, valid and relevant; and the physical and human resources for planning, implementing and monitoring.

South Australia is well placed in regard to the first requirement above. This document proposes a case for integrated landscape science that will deliver on the second requirement.

Need for Integrated Landscape Science

The COAG Natural Resource Management Ministerial Council clearly recognises the need for an integrated approach to addressing strategic NRM concerns, and using science to inform NRM decision-making.

Despite the very clear goals of the State NRM Plan for *landscape scale management*, *integrated management and communities … managing natural resources in an integrated way*, there is evidence that there is limited scientific capacity for this to be researched and developed let alone being integrated and implemented as part of progressive NRM management. An independent review identified a gap in the number of South Australian researchers with expertise in integrated modelling of NRM.

There has been significant scientific research in Australia and internationally devoted to better understanding of integration science in conjunction with landscape processes. This has been driven by the wholesale recognition and acceptance that managing landscapes in an integrated and systematic way is a critical, though difficult, requirement of planning to halt and reverse the decline in natural resources. It is important that there is integration of the physical environment, the community and the economy. This is a new and challenging research and innovation area at the interface of the development and application of complex systems science.

There exists mixed integrated landscape science capacity across Australia through such groups as the Ecology Centre (UQ), the Fenner School of Environment and Society (ANU) and the Landscape Logic CERF Hub (UTas). However, most existing

groups have a specific disciplinary focus e.g. the identification of conservation areas or the management of salinity particularly in agricultural systems.

The outstanding example of integrated landscape science is demonstrated in the South Australian-led Lower Murray Landscape Futures project. The Lower Murray Landscape Futures project is the most comprehensive example of a systematic and repeatable approach which specifically addresses the State NRM Goals of *landscape scale management, prosperous communities,* managing *natural resources in an integrated way* and *integrated management of biological threats*. The foundations for this have been building over the last 15 years and it would be regrettable if this significant advance was not capitalised on. Whilst other examples of advanced integrated landscape science are being developed in Australia only one has a specific regional NRM engagement.

Simply relying on improved component information and understanding will not address the most challenging management issue – how do you manage the whole with a reasonable appreciation of the consequences of individual actions. This cannot be done without invoking integrated landscape science. But this new and challenging form of systems science is currently under-developed, highlighting the need for a significant integrated landscape science capability to bring together the required expertise in a coordinated manner.

Our initial focus will be:

- The design of an assessment, prioritisation and monitoring system model framework to establish South Australia's environmental services market.
- Regional landscape futures to inform the viability of habitat conservation and restoration in carbon and ecosystem services trading environments.

A group of scientists and agency staff in South Australia, the Landscape Science Cluster Core Group have been meeting regularly to develop options for better coordination and collaboration of activities to address this need and to build the capacity of integrated landscape science in South Australia.

The group has:

- Met with agency staff from DFEEST to discuss how the cluster might sit in relation to the Constellation SA concept
- Prepared a Science Case for Integrated Landscape Science
- Prepared a draft business case for an Australian Centre for Integrated Landscape Science
- Organised a workshop "Integrated Landscape Science and Management Forum: A Showcase of National Initiatives and Products" on Thursday 13th March 2008. Leading experts and leaders in integrated landscape science will present the latest trends in this arena and senior managers from NRM regions, research organisations and agencies have been invited to attend.

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