

## **Submission to the House of Representatives Inquiry into the Coordination of the science to Combat the Nation's Salinity Problem**

By  
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This submission is based mainly on my experience since 1992 during which time I was closely involved in:

- The development and coordination of the National Dryland Salinity Program,
- The development and coordination of the National Land & Water Resources Audit program on dryland salinity, including close involvement in development of technical reports and the overall national report,
- Reviews of salinity and vegetation management aspects of the first phase of the NHT,
- An assessment of dryland salinity in wool growing lands for Land & Water Australia,
- Appraisal of the NDSP II contributions to questions on dryland salinity,

### ***How is the relevant scientific knowledge being utilised in the development, management and implementation of salinity programs?***

Salinity management programs are in place with different degrees of emphasis and sophistication across all State governments. These programs were given emphasis through the National Land & Water Resources Audit, and in response to findings and leadership of the Murray Darling Basin Commission, the Dept of Agriculture in Western Australia and the National Dryland Salinity Program (NDSP).

The National Action Plan for Salinity and Water Quality (NAP) is being delivered to regions through regional groups in all States (not sure what the current status is in WA). Responsibility for delivery of adequate planning and coordination lies with the regional groups who by and large have been relying heavily on State agencies, and on CSIRO Land & Water and private consultants to varying degrees for advice expertise and recommendations on what the relevant scientific knowledge is for the particular region, and how to use it in their planning and management decisions.

Relevant scientific knowledge is being incorporated with varying degrees of efficiency into State run programs and into regional group programs. Information out of the National Dryland Salinity Program is being delivered/promoted to a wide group of "targets" through a major communications effort in the next 12 months.

Much of the information derived from the National Land & Water Resources Audit has been made available on-line through the Australian Natural Resources Atlas and through hard copy material of theme reports. Some of this material is being incorporated into the NDSP communications program referred to above. However there was considerable material developed through specific project reports for the Audit which is not widely promoted and which is also highly relevant to those trying to manage dryland salinity.

One of the very important outputs from the NDSP was an evaluation of the contribution by airborne geophysics datasets to salinity mapping and risk assessment plus an analysis of the benefit/costs of the datasets. To a large extent this material has not been well publicised or promoted to those who have an interest in salinity mapping and risk assessment. A current evaluation of salinity assessment/mapping methods being undertaken for AFFA and EA should assist in the provision of objective statements on the contribution of airborne geophysics, and should be widely promoted to the regional bodies particularly those in NAP regions.

***The nature and effectiveness of the linkages between scientists and technologists conducting research into salinity, and those implementing salinity interventions on the ground.***

Technical support to those implementing salinity management interventions occurs through a number of avenues. There is variation across the States in terms of who provides it, and how it is delivered. Under the NAP, State agencies have commitments to provide some of the required support. However not all State agencies have research depth and are themselves dependent on external R&D organizations. With the wind down in extension services there are deficiencies in most states in terms of the extension network to act as the deliverers of information. These constraints are having some impact on the efficiency of planning, and the confidence and speed in making investment decisions within some regional groups.

A key requirement for all groups is ready access to the information pertinent to salinity management. Much of the information is held in State agency databases, libraries and reports in various states of currency. Even where there is active support from agencies in compiling and making this information available, considerable time delays can occur.

A key factor constraining the effectiveness of information transfer and application is the skills base available in aspects such as salinity risk assessment and evaluation of land use changes. A specific constraint is the restricted number of specialists with skills in landscape analysis and the application of geophysical data (e.g. airborne radiometrics, magnetics and electrical conductivity). Radiometrics and appropriate scale digital elevation models (DEM) are key datasets for the development of landscape and analytical frameworks for assessing, monitoring and evaluating land use change.

The common constraint faced by regional groups and government agencies is the lack of appropriately scaled data on soil and landscape attributes, and DEM's. In many of the catchments where dryland salinity is an issue, more detailed datasets than the current ones are required for evaluating land use changes at the sub-catchment or property scale.

***How current research into salinity and information on options to address the problem are being distributed across jurisdictions, agencies and to all relevant decision-makers.***

The NDSP has provided formal and informal opportunities for communication and sharing of information across the groups delivering research and technical support to those implementing salinity management programs through regular newsletters, specific workshops, promotion of research reports from the program, sponsoring workshops and conferences such as the Productive Use and Rehabilitation of Saline Lands conferences. Collaborative projects with the MDBC (for example, TOOLS for managing dryland salinity, Groundwater Flow System development, economic valuation methodologies and estimation of costs of dryland salinity) were all aimed at providing skills and tools to those implementing dryland salinity management activities.

The current communication thrust by the NDSP is an excellent example of the sorts of packaging, and delivery of information to the various industry, regional, technical and local government groups managing dryland salinity nationally.

One of the strengths of the NDSP communication program is the credibility sustained by involvement in leading R&D activities nationally; a ready vehicle has existed for transfer and promotion of information across State and agency boundaries. If the NDSP does not continue in its current form, there is likely to be a serious impact on information transfer across the main stakeholder clients. State programs have not filled this role, and no other program seems likely to pick it up.

The NDSP has played a very important role in supporting the transfer of skills and the sharing of experiences and methods. It has provided a vital coordinating and networking process for the relatively few professionals involved in salinity management. The program has helped develop the capacity nationally in aspects such as salinity risk assessment, evaluation of management options and emphasised the need for social and economic factors to be incorporated into these activities.

***The adequacy of scientific and technical support for those on the ground implementing salinity management options.***

There is concern that the current levels of technical support are inadequate to meet the demands from regional groups. There is evidence that groups have been unable to obtain the desired level of technical input fast enough to meet their demands and those placed on them by the NAP agreements. This is likely to be due partly to the reduction in advisory services in government, but also to the lack of capacity across most States in terms of technical expertise in aspects related to salinity management.

This is also in a context where the understanding and capacity among the groups/clients is limited. The following is an extract from the report on the contributions to salinity management from NDSP II (Webb, 2003 page 20)\*.

### **Context of the contributions**

Capacity to address many of the questions relating to spatial impacts of land management options for dryland salinity is determined by the resources available, principally knowledge, time, skills, tools and data. The socio-economic environment within which the NDSP operates determines to a large degree the capacity for development of dryland salinity management solutions, and the likely benefits derived by clients/users of the information generated.

In many situations the questions being asked by catchment managers and landholders cannot be answered readily or at the level of confidence expected because of inadequate knowledge of the specific area/landscape, usually associated with lack of data at the appropriate scale. In addition, those asking the questions often do not have the time or skills to seek out and synthesise available data, and do not have the funds to commission appropriate skills and data collection to address the questions.

The following comment typifies the sort of environment into which the NDSP is attempting to deliver information.

“If the information cannot be distilled into a couple of pages in a way I can understand it, it won’t be applied”. (Feedback at a TOOLS workshop).

The other side of the coin to the comment above is that *dryland salinity management is extremely complex* and often the information on approaches, processes and evaluation of management options cannot be easily distilled into simple statements. There are no simple solutions that apply to all situations, because all landscapes are unique in terms of the way they behave hydrologically.

Some form of gradual learning is required to allow those who are asking the questions to make best use of the skills and knowledge available. This sort of constraint puts enormous challenges to supporting and funding groups with respect to achieving the potential benefits out of research and development. It emphasises the need for participative approaches and process that engage those groups asking the questions and making decisions on land and water management, from the early stages of project planning. *None of this is new to those involved in natural resource program development and delivery. However it is still arguably the weakest part of most programs and generally attracts the least amount of dollars.* Contrast this with the comparisons between R&D and marketing budgets in manufacturing industries!

NDSP II attempted to grapple with this issue through investment in several themes such as the Sustainable grazing on saline lands initiative, TOOLS, PROGRAZE and Million Hectares for the Future projects. These activities have all recognised the need to engage the clients/users in networks using processes which allow those involved to learn, inquire, adapt, trial at their pace in an environment which is supportive of their

needs. Whilst benefits out of these networks will take time to be realised, they have potential for long lasting impacts with those involved in them.

### ***Closing Comment***

There is a clear need for a national technically competent coordinating group or program that has close involvement of State agency and regional groups responsible for delivery of research and technical solutions to land and water managers. Very serious consideration should be given to retaining the National Dryland Salinity Program or replacing it with another program or structure that continues its key functions. At the very least, consideration should be given to creation of an ACLEP (Australian Collaborative Land Evaluation Program) style program that facilitates the development and transfer of consistent standards in technical methods for salinity assessment and management nationally.

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Adrian Webb (2003) Appraisal of the NDSP II Contributions to Questions on Dryland Salinity. Report to the National Dryland Salinity Program. April 2003