



CRC FOR
PLANT ~ BASED
MANAGEMENT
OF DRYLAND
SALINITY

The University of
Western Australia M081
35 Stirling Highway
Crawley
Western Australia 6009

Telephone ~
08 6488 8559
Facsimile ~
08 6488 2856
crcsalinity.com

ABN 72 420 023 855

HEAD OFFICE

Our ref: MA021

7 June 2005

Louise Gell
Secretary
Environment, Communications, Information Technology and the Arts
Parliament House
CANBERRA ACT 2600

Dear Louise

Inquiry into the extent and economic impact of salinity in the Australian environment

Please accept this public submission to the 'inquiry into salinity impact' being conducted by the Environment, Communications, Information Technology and the Arts References Committee.

Attached is a document headed "Recommended changes to improve the effectiveness of the national salinity program" which speaks predominantly to the first two terms of reference. It is an outcome of research and investigative work done by the CRC for Plant-based Management of Dryland Salinity, and has been reported elsewhere specifically through papers by Prof. David Pannell, one of our senior team.

However, I should give some context to the paper and the CRC's stake in this inquiry:

- The CRC Salinity is a collaborative R&D joint venture comprising state agencies and CSIRO in Western Australia, Victoria, South Australia and New South Wales; universities in WA, SA and NSW; the AWB Landmark agribusiness company nationwide; and R&D corporations.
- Our primary focus (70% CRC resources) is on plant-based technologies developed into farming systems and catchment management options for preventing further salinity over the longer term. We devote 30% of our resources to "living with salinity" – profitable farm production from saline land.
- We internally assess our work for hydrological impact (scale of salinity prevention or mitigation) and for net economic benefit (farm profitability and catchment outcomes).
- We have drawn to our work a critical mass of farm-to-catchment scale modelling, economics research and social policy investigation – to credibly comment on national programs.
- Our submission and appearance before the House of Representatives' Science and Innovation Committee's inquiry 'Science overcoming salinity: coordinating and extending the science to address the nation's salinity problem' featured prominently in its final report. Other submissions and reports relevant to national policy and



programs, involving the CRC Salinity or its senior managers, are listed in the attached submission.

- The CRC's submission to this latest Senate inquiry draws on a solid foundation of earlier work and representations to Australian Government policy making.

In proposing the 'recommended changes' attached, the CRC Salinity draws your attention to key observations and assumptions:

- We are committed to supporting the regional delivery model for national programs, and increasingly are working with catchment management authorities on R&D delivery. Importantly regional bodies have the potential to draw together sound science, National/State priorities and community preferences into a rational investment process and should be given time and relatively stable policy environment in which to work. However, we observe that their capacity to meet program and community expectations is uneven across Australia, reflecting an 'evolutionary process' from differing State/Territory starting points.
- Many of the issues associated with national programs are to do with their administration and pre-occupation with 'getting dollars on the ground'. Our analysis has identified situations where viable salinity management options are not available – that further investment in R&D or no action may be a better option than incentives or regulation. We will further develop and refine for CMA use an investment decision tool.
- We still get feedback praising the knowledge output of the former National Dryland Salinity Plan and lamenting no adequate replacement for it as a national network of salinity stakeholders. Although the CRC Salinity and Land and Water Australia have taken over NDSP's communication products, its former constituency don't have the same access to a coherent knowledge network.
- While the national political priority for salinity has diminished relative to water policy reform and the potential extent of dryland salinity is now less, it still remains a serious long term threat to water resources, biodiversity, infrastructure and land.

Much has been discussed, analysed and recommended regarding salinity in Australia. Rather than recounting that history the CRC Salinity's submission focuses specifically on recommended changes for the future.

Should we be invited to the References Committee hearings, Mr Alex Campbell Chair of our Board, Professor Pannell and myself would be only too pleased to communicate this contextual information in more detail, if asked.

Yours sincerely



Kevin Goss
Chief Executive Officer

Recommended changes to improve the effectiveness of the national salinity program

Submission to the 'Inquiry into the extent and economic impact of salinity in the Australian environment', Environment, Communications, Information Technology and the Arts References Committee, the Australian Senate

By the Cooperative Research Centre for Plant-based Management of Dryland Salinity

The experience and policy-relevant analyses by the CRC Salinity point to several recommendations that could improve the effectiveness and therefore long-term success of federal programs to reduce the economic impact of salinity.

Rigorous investment planning

A stronger accreditation process is required, making funds conditional on use of a rigorous approach to selection of investments by regional bodies. Investment decisions should be (a) science-based, (b) outcome-focused and (c) designed around an understanding of landholder adoption of conservation technologies. For instance, use of conventional decision tools such as benefit/cost analysis should be expected. There should be guidelines and training support for regional bodies in the use of such an approach to investment. The principle of adaptive management is important here – the measure of achievement should not be “dollars out the door by 30 June” but the level of confidence that investment will realize maximum impact over time, in the face of changing economic and environmental conditions.

Realistic selection of targets

A more rigorous approach to selecting resource condition targets is required, based on science and economics. The current approach of selecting aspirational targets and confusing targets with goals is counter-productive to the efficient operation of the program. The process adopted for end-of-valley targets under the Murray-Darling Basin Salinity Management Strategy gives some pointers – sufficient trend data and analysis, consultation around an interim target, and independent assessment and accreditation of the tools needed to estimate the economic impact of salinity management actions “in the river”. The range of targets needs to be sufficient to underpin accountability; it is not necessary to have a target for every catchment objective.

Priority-based allocation of funds to regions

A more rigorous approach to determining the relative allocation of funding to different regions is required, and it should understand the inherent differences in regions across Australia. Some are water supply catchments at risk from river salinity where the ‘catchment management’ approach is quite appropriate given externalities around the shared, high-value resources at risk. Typically this is the province of catchment management authorities (CMAs). Other regions, typically the drier zones, don’t have a ‘connected resource at risk’ and rational decision-making will be dominated by on-farm benefits and costs, or in the case of conservation areas and rural towns, on-site benefits and costs. In all cases, the funds allocation among regions should follow rigorous assessment of assets at risk, net benefits of actions and confidence in realizing those outcomes.

Guidelines for regional investment

There is an opportunity to develop guidelines (for use by both CMAs/regional bodies and the accrediting agency) on the implications of recent research findings for the types of salinity investments that are and are not appropriate in different circumstances. Research since 1995 has powerful implications for salinity management that are not reflected in many of the currently planned investments of CMAs or the design of the program. The implications include:

- CMAs require a much more targeted approach to funding on-ground works for salinity or use of market-based instruments (MBIs). Research indicates that relatively few locations justify funding for on-ground works or MBIs.

- CMAs require a much more critically selective use of extension/education approaches to “capacity building” for landholders. Research indicates that these are rarely likely to provide worthwhile salinity outcomes, often because existing salinity management practices are not adoptable by landholders on the required scale.
- CMAs need to appreciate that, in most circumstances, only a minimal degree of salinity mitigation is likely to occur when salinity is addressed as part of a broad package of NRM outcomes (e.g. general support and encouragement for establishment of perennials). It usually needs a highly concerted effort at any location to achieve improved dryland salinity outcomes.
- To underpin investment planning, CMAs need access to the capacity to analyse the trade-off between on-farm economic impacts, and off-farm salinity impacts.
- Where the main issue is protection of water resources, CMAs additionally need access to the capacity to analyse trade-offs between farm economics, on-farm and off-farm salinity, and water yield. Research shows that badly planned placement of perennials can have adverse impacts on all three objectives: river salinity, water yields and farm profits.
- CMAs need to be alert to the reality that some salinity is not avoidable, and that strategies to adapt to/make productive use of salinised land and water resources is likely to be part of the package of best responses.
- Where engineering works such as deep drainage are being advocated within a region, then CMAs will need consistency in State-wide application of principles for public investment and regulating potential environmental impacts, in a catchment management framework. The program should work with State governments to achieve this.
- Overall, to achieve salinity outcomes, CMAs need to apply an investment approach that is sensitive to the type of asset, and the biophysical and socio-economic circumstances relevant to that asset. Appropriate investment options vary case by case.

Accountable National and State investment

There needs to be better integration into the program of issues that are better handled at scales larger than the regions (i.e. state or national). The following responses are usually better handled at a larger scale, and research indicates that they are often more cost-effective than the types of responses currently being prioritised by CMAs. They should be funded from core salinity program funds if required, rather than left to chance. This implies that a significant share of program funds should not be directed through CMAs.

- Development of improved technologies, such as more profitable (more adoptable) farming practices for salinity management.
- On-ground works on public lands (e.g. pumping in nature reserves, engineering responses to protect infrastructure and safe disposal).
- Legal/regulatory approaches (e.g. the need to purchase water rights to plant perennials in water resource catchments, as discussed in the National Water Initiative).
- Research to provide improved data for subsequent planning, including biophysical and socioeconomic research.

Reform the delivery model

The national salinity program should have clear protocols for the role of the private sector and sufficient flexibility to assist market development for these services. Natural resource management consultants, agribusiness companies and farm management advisers dominate the knowledge environment around regional bodies and landholders. This is a significant challenge for the CRC Salinity and has significant implications for delivery of knowledge in any national program:

- Clear rules of access and use of publicly funded information that supports planning and implementation actions. Restricted access to natural resource data in some states is an issue.
- Direct knowledge transfer to consultants in the public interest, including training, with a level playing field for cost-recovery.
- Development of modeling, planning and decision support tools for commercial use under proper licensed conditions. Access to date has been uneven, as has the attention to appropriate use.
- A policy of building a market for competent servicing of planning and decision needs, including the role of State funded information services and extension officers.

Further information

The CRC Salinity made written submissions to the House of Representatives Science and Innovation Committee's inquiry and report on the Commonwealth's role in managing and coordinating the application of the best science in relation to Australia's salinity programs; and to the Australian National Audit Office's performance audit of the National Action Plan for Salinity and Water Quality.

Kevin Goss, the CRC Salinity's Chief Executive Officer appeared before the House of Representatives' inquiry in two capacities – Chair of the National Dryland Salinity Program and Deputy Chief Executive of the Murray-Darling Basin Commission. Also, he assisted in the writing and communication of the Prime Minister's Science, Engineering and Innovation Council's 1999 occasional paper 'Dryland salinity and its impact on rural industries and the landscape' and directed the preparation of the ground-breaking Murray-Darling Basin Salinity Management Strategy (2001).

Professor David Pannell, a member of the CRC Salinity's senior management team, made written submissions to the House of Representatives' inquiry and to the ANAO audit in a private capacity. He has authored several landmark papers that have raised questions about the efficient delivery of the National Action Plan for Salinity and Water Quality.

Three references follow that speak specifically to the recommended changes above.

A framework for an improved salinity investment framework that is based on latest research and is sensitive to biophysical and socioeconomic circumstances has been prepared by Ridley and Pannell (2005).

Ridley, A., and Pannell, D.J. (2005). The role of plants and plant-based R&D in managing dryland salinity in Australia, *Australian Journal of Experimental Agriculture*, (forthcoming). see <http://www.general.uwa.edu.au/u/dpannell/ridpan37.pdf>

A major review of farmer adoption of conservation technologies has been prepared by Pannell *et al.* (2005).

Pannell, D.J., Marshall, G., Curtis, A., Vanclay, F., Barr, N. (2005). Understanding and promoting adoption of conservation technologies by rural landholders. *Australian Journal of Agricultural and Resource Economics* (submitted). see <http://www.general.uwa.edu.au/u/dpannell/dp0502.htm>

A review of dryland salinity that integrates economic, scientific, social and policy aspects is provided by Pannell (2001).

Pannell, D.J. (2001). Dryland Salinity: Economic, Scientific, Social and Policy Dimensions, *Australian Journal of Agricultural and Resource Economics* 45(4): 517-546. <http://www.general.uwa.edu.au/u/dpannell/dpap0101.pdf>