



**Natural Resource
Management Council**

Salinity Inquiry Submission No. ...54.....

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House of Representatives Standing Committee on Science and Innovation
House of Representatives
Parliament House
Canberra ACT 2600

INQUIRY INTO THE COORDINATION OF THE SCIENCE TO COMBAT THE NATION'S SALINITY PROBLEM

The Western Australian Salinity Research and Development Technical Committee (Salinity RDTC) welcomes the House of Representatives Standing Committee on Science and Innovation's inquiry into the Commonwealth Government's role in managing and coordinating the application of the best science in relation to Australia's salinity programs.

The Salinity RDTC is a consortium of scientists from Western Australian State agencies, universities and CSIRO Divisions involved in researching salinity problems within the state. It is a committee of the West Australian Natural Resource Management Council, a community and state agency body which reports to the Minister for the Environment and the Cabinet Standing Committee on Environmental Policy.

The Salinity RDTC has identified state salinity research priorities, carried out assessments of the Salinity Action Plan (1996), convened conferences and provided technical reviews of solutions to salinity for the Salinity Council, the predecessor of the NRM Council.

There have been some very successful state-federal partnerships established, for example with the National Dryland Salinity Program, the National Land and Water Resources Audit and within key programs of CSIRO. We look forward to building on these initiatives.

Scientific research has given us our current level of salinity knowledge and we know enough about salinity's causes and effects to commence some action now. But we need to continue our research to ensure our salinity management continues to be based on the best available scientific knowledge.

However in the past five years, there appears to be a developing culture in some salinity-related agencies that is more competitive than cooperative. This seems to be resulting in a duplication of efforts and in an overt focus on aspects of science which are less likely to result in managing salinity effectively.

There has also been an apparent dilution of the quality of science delivered where poor policy instruments have been chosen and some Commonwealth agencies are operating without



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undertaking adequate planning and consultation with a range of stakeholders, such as State Governments, Regional NRM Groups, catchment groups, and individual farmers. The community is rightfully demanding results from its research-based organisations and we strongly support your review of Commonwealth systems of salinity "management and coordination" to help achieve that goal.

The state Regional NRM Groups are a key partner in addressing salinity in WA. Their needs are for clear and consistent scientific advice on what will work in their specific areas. They are currently being encouraged to deliver salinity outcomes that could not be attained without sending many landholders bankrupt due to the lack of feasible economic options which compete with currently profitable industries and landuses. There are a number of promising vegetation and engineering options that require long-term investment before they can be adopted widely. In the meantime there is an urgent need to save strategic high value public and private assets at risk of salinity. Some Commonwealth programs are based on the presumption that economic solutions to salinity are already available and it is just a matter of widespread education of landholders and detailed planning of where these "solutions" need to be placed in the landscape.

We hope that the following submission will help in achieving a much better environment where both State and Commonwealth based science organisations can inform the community and from which Government can invest in credible and achievable outcomes.

Yours sincerely

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Submission by the:
**Salinity Research and Development Technical Committee for Western Australia -
A Committee of the West Australian Natural Resource Management Council
for the
House of Representatives Standing Committee on Science and Innovation**

**INQUIRY INTO COORDINATION OF SCIENCE TO COMBAT THE NATION'S
SALINITY PROBLEMS**

The House of Representatives Standing Committee on Science and Innovation is currently conducting an inquiry into the Commonwealth Government's role in managing and coordinating the application of the best science in relation to Australia's salinity programs.

The Inquiry entitled 'Managing, co-ordinating and implementing the best science to combat salinity: can it be done better?', aims to: "*investigate the federal role in the management and coordination necessary to ensure the successful application on the ground of the best scientific knowledge to address the salinity problem.*"

The Committee will specifically consider:

1. how the relevant science (including new scientific, technical and engineering knowledge) is being used in the management, implementation and coordination of salinity programs;
2. the linkages between researchers and those implementing salinity solutions, including the distribution of research across jurisdictions, agencies, and decision-makers; and
3. the adequacy of scientific and technical support to implement salinity management options.

Submission by the Salinity Research and Development Technical Committee

With 70 percent of the nation's affected land area, dryland salinity is a major problem in Western Australia. Land, water, infrastructure and biodiversity assets are either affected, or at imminent risk. In this state, salinity is obvious, its consequences immediately apparent and the time required to develop cost effective interventions running out, both in terms of community expectations and the rate of salinity encroachment.

The West Australian 2001 Salinity Taskforce recommended that a better balance be sought between capacity building (strongly supported by the National Action Plan and Natural Heritage Trust programs), strategic intervention to save public assets (eg biodiversity, water resources, and rural towns) and developing new land and water use systems (eg woody and herbaceous perennials, adaptation to salinity, innovative engineering solutions). The Commonwealth's current investment is not matching the State needs for strategic intervention and developing new systems.

Having developed significant salinity problems prior to many other States, Western Australia's needs may be a good indicator of national priorities in the near future.

In the context of the inquiry the Salinity RDTC contends that a much greater effort is required to ensure Federal Government programs deliver the relevant information and services required to assist state and regional jurisdictions manage salinity.

Salinity management needs to recognise that there can be three legitimate objectives: recovery (ie return a saline area to a non-saline condition), containment (ie stop, or greatly reduce, the rate of spread) and adaptation (living with salinity). The Western Australian State Salinity Strategy (2000) is built on this foundation and recognises the importance of prioritising the objectives for the various assets (land, water, biodiversity and infrastructure) that are affected by salinity.

The State has recently developed a Salinity Investment Framework and analysed the assets at a state level. It is currently being adapted to the regional level. While the Framework is useful, there are limitations in the analysis, particularly in determining a common base for comparing between asset classes. For example, how do you compare the value of an area of remnant vegetation with a water resource, a rural town or with an area of agricultural land?

Despite research limitations, it is usually a lack of funds rather than new knowledge that limits effective salinity management. For example, engineering interventions are able to manage salinity but the benefits are often lower than the costs and the risks are high. By contrast, for the management of agricultural land and broadacre assets (e.g. biodiversity), success is limited by the availability of economically viable perennial-based farming systems or options for the productive use of saline resources. Current programs that deliver neither assistance in the management of specific assets, nor research that delivers more effective management options, are not highly valued. This criticism, unfortunately applies to a number of the core Commonwealth activities for salinity.

Commonwealth salinity 'knowledge generators and information providers' range in scope and jurisdiction between the agencies (Bureau of Rural Science (BRS) – Department of Agriculture Fisheries and Forestry (DAFF), Geoscience Australia (GA), Murray-Darling Basin Commission (MDBC) and various divisions of CSIRO (see p6 of Inquiry paper) and related activities or programs (National Dryland Salinity Program (NDSP), CRC for Landscapes Environment Mineral Exploration (CRC LEME) and Plant-Based Management of Dryland Salinity (PBMDs), National Land and Water Resources Audit (NLWRA), *Healthy Country, Heartlands*). As such it is extremely difficult to track the developmental activities without constant monitoring of each of these sectors.

Only the NDSP offers any consistency and coordination of responses, although this cannot be expected to track more than its own investments and partners' contributions, unless adequately funded.

Further, the level of coordination of scientific and technical services provided by the named Commonwealth agencies (DAFF, BRS, GA, MDBC) in the areas of dryland and

irrigation salinity is discouragingly low and generally has little relevance outside the Murray-Darling Basin. Any national coordination that has occurred has been through the National Dryland Salinity Program and more recently through the PBMDS (but only for a subset of the relevant agencies and issues).

In terms of the documented focus areas required for 'good science' in salinity management (p5), the current Commonwealth provision of knowledge is focussed on mapping and monitoring groundwater systems and salinity hazards at the expense of the three other nominated key areas (developing new technologies and systems, engineering systems and new industries for saline resources). In other words, the portfolio of Commonwealth science investment in salinity needs to be more balanced. In particular, there is little or no communication, engagement and active involvement of the relevant Commonwealth agencies in salinity research in Western Australia. Involvement is limited to programs outside the core Commonwealth agencies, such as the NDSP, the National Land and Water Resources Audit, CSIRO Land and Water, and the Cooperative Research Centres.

There is currently too much of a focus on:

1. mapping and monitoring at scales which are either too broad (Audit), or which rely on unaffordable technologies without any clearly defined benefit ("Ultrasound" salinity mapping - airborne electromagnetics¹);
2. collating and coordinating data at scales that have little practical use, or demonstrated benefit, in implementing salinity management of a defined asset (town, area of biodiversity, or farm business scale);
3. developing modelling platforms that are unusable without large investments in data collection (spatial and temporal data);
4. commissioning and then prescribing monitoring and evaluation frameworks that are unrealistic (require data which is unobtainable or from which trends could not be obtained during the life of funding programs) and for which there is no funding for their implementation;
5. extending salinity management systems which have a low probability of success (on salinity) at the scales described and have a very low probability of being adopted because of their economics (e.g. many revegetation systems);
6. providing regional community support officers who lack adequate technical skills and support;

¹ Western Australia pioneered the application of geophysics to dryland salinity problems 20 years ago and has larger areas covered by surveys than any other State. Our scepticism of the widespread applicability of airborne geophysics is therefore based on long experience of a wide range of applications.

7. delivering vast amounts of unstructured communication containing messages of limited local relevance, with poor communication skills and poor contact with local state agencies and resource managers;
8. work largely focussed on the Murray-Darling Basin (with the exception of the CRC for Plant-Based Management of Dryland Salinity). For example, we know of no significant program where BRS has been involved in WA.

Furthermore, in the three nominated priority areas (such as developing profitable perennial agricultural systems) many of the Commonwealth organisations are effectively inactive (e.g. BRS, Geoscience Australia). For example, neither of these organisations is a partner in the CRC for Plant-Based Management of Dryland Salinity. In other areas like so called 'mapping and monitoring' (airborne geophysics), BRS for example, has been apparently competing with other agencies, CRC LEME and private enterprise.

Recommendations

We make the following recommendations to provide the Inquiry with directions for use of public funds in the management and coordination of Commonwealth programs on salinity management.

A. How the relevant science (including new scientific, technical and engineering knowledge) is being used in the management, implementation and coordination of salinity programs;

Present Commonwealth directions in salinity research appear dominated by a focus on mapping, monitoring (technology driven), evaluation of systems known to be ineffective and capacity building (when profitable treatments are still required). It lacks emphasis on delivering research outcomes capable of assisting resource managers ('state-regional-local') to target and fund appropriate interventions (investment framework approach to asset management) that will result in achievable outcomes.

Recommendations:

- 1. Coordinate a greater focus on basic R&D, especially in the areas of engineering and productive use of saline land and water resources (upgraded role for CSIRO);***
- 2. Provide greater incentives for the application of enabling technologies (e.g. specific elements of geophysics, remote sensing systems) but only where they are able to deliver benefits that warrant the costs involved;***
- 3. Reduce the number of programs and agencies, internal competition for resources and ensure they focus programs on need, and into all states within the Commonwealth (e.g. move BRS salinity-related staff into Geoscience Australia or CSIRO);***
- 4. Enable organisations like Geoscience Australia to work in groundwater / NRM related areas – at present we understand their standing orders prevent this.***

B The linkages between researchers and those implementing salinity solutions, including the distribution of research across jurisdictions, agencies, and decision-makers;

The Commonwealth-State-Industry driven National Dryland Salinity Program is a well-respected and competent research manager and knowledge broker. It should be given much greater responsibility and resources to act as the agent for coordination and dissemination of research, where it has a proven track record. To be most effective it needs to be given the national salinity R&D coordination role and much greater funding than in the past, including funding from core Commonwealth programs. This is an urgent issue. With a substantial winding back in its funding base, the future viability of the NDSP is questionable.

Recommendations:

- 5. Invigorate the existing and well-respected leadership role in salinity funding, knowledge management and coordination by the NDSP (to ensure Commonwealth jurisdictions are actively engaging all States, industry, and regional partners) in the development of targeted programs of R&D (to lessen the risk of over-resourcing low priority projects). The invigorated program could encompass irrigation and dryland salinity with a key role of coordinating and brokering research and development;***
- 6. Overtly remove any coordination of research and development activities from administrative programs (e.g. NAP and NHT) and coordinate them within management systems like that provided by NDSP. The existing Commonwealth programs have a very poor track record of choices, priorities and funding decisions for salinity science;***
- 7. Coordinate data and information management through a single entity, preferably the National Land and Water Resources Audit;***
- 8. Ensure investment in national programs (research, development, extension) and their coordination is matched by the capacity of industry, state and regions to implement actions. This requires a much greater involvement of users and potential beneficiaries in the early stages of program development;***
- 9. Prevent a repeat of the "Ultrasound era". Politicised processes that are related to such technologies create unrealistic expectations and cause distortions in the scientific process and integrity of information. Otherwise sensible knowledge-based organisations become driven by political processes and rational science and justified expenditure is the victim (e.g. BRS and airborne geophysics);***
- 10. Ensure that research into sustainable land use practices engages community, not just State and Commonwealth Government agencies.***

C. The adequacy of scientific and technical support to implement salinity management options.

Implementation plans for the management of salinity need to be developed on state and local jurisdictional bases. They need to be developed using objective criteria and support needs to be delivered at levels required to achieve the specified outcomes.

Recommendations:

- 11. Provision of relevant salinity management information is best achieved by providing requested resources and information to clients, i.e. public resource/asset managers (State agencies), industry-based organisations (e.g. Elders, Wesfarmers) and as a part of broader knowledge delivery programs (e.g. Australian Wool Innovation's Sustainable Grazing of Saline Lands project) to ensure they are incorporated into farm business operations;***
- 12. Progressive skilling and employment of Commonwealth-funded community support officers to allow them to provide appropriate technical advice and not just administration and policy support;***
- 13. If Commonwealth investment in salinity science were better considered and directed, a substantial re-allocation of funds between core Commonwealth NRM programs would be needed to increase investment in those areas that will enable the salinity objectives of programs to be properly achieved. In current circumstances, the science needed to achieve those objectives is lacking. However we would not support a substantial increase in science funding unless it was much better directed to priority areas than it is at present;***
- 14. Exert greater pressure on Rural Industry Research Funds (RIRFs) to pay a fairer share of the costs of researching sustainable land use systems. The Commonwealth should insist that its dollar-for-dollar matching contributions to funds collected from grower levies should be used for public good research to improve the sustainability of agriculture. Some RIRFs are beginning to accept their responsibilities in this area, others clearly are not. The AWI-funded Land, Water and Wool Program is an excellent model to follow. This Program funds nine sustainability initiatives including the Sustainable Grazing on Saline Lands (SGSL) initiative. SGSL is sponsoring Commonwealth-State Agency based research, the development of producer networks and major communication programs focused on the development of profitable uses for saline soils;***
- 15. There needs to be a focused source of information for catchment groups and individual farmers with linkages to the various initiatives such as NDSP, and RIRFs;***
- 16. The involvement of landholders in trials and research is essential to obtain effective outcomes. Programs such as SGSL are good examples of working with farmers on the development and demonstration of sustainable land use practices.***

Dryland salinity is an 'Australian' issue and as such we do not wish to imply by these suggestions that Western Australia does not work well with many Commonwealth jurisdictions. The State Government agencies represented on the Salinity RDTC and Regional Groups have supported active research programs with CSIRO in the assessment of new salinity management options through the CRC for Plant-Based Management of Dryland Salinity, studying the effectiveness and design of salinity management options, engineering and drainage assessment and modelling tool development.

The Salinity RDTC has supported the NDSP and NLWRA and sees vehicles such as this as ultimately one of the best ways to achieve our common goal of salinity management.

We thank you for the opportunity to make a submission to the Inquiry.