SUBMISSION OF THE DEPARTMENT OF EDUCATION, SCIENCE AND TRAINING TO THE HOUSE OF REPRESENTATIVES STANDING COMMITTEE ON SCIENCE AND INNOVATION INQUIRY INTO THE COORDINATION OF THE SCIENCE EFFORT TO COMBAT THE NATION'S SALINITY PROBLEM

Relevant responsibilities of the Education, Science and Training Portfolio

The portfolio takes a national leadership role in education, science and training. It works with various stakeholders, State and Territory governments, other Australian Government agencies and a range of contracted service providers to provide high quality policy advice and services to the benefit of Australia.

As well as the Department of Education, Science and Training (DEST), the portfolio includes the following statutory bodies whose responsibilities relate to research and research training:

The Anglo Australian Telescope Board
The Australian Institute of Marine Science (AIMS)
The Australian Nuclear Science and Technology Organisation (ANSTO)
The Australian Research Council (ARC)
The Commonwealth Scientific and Industrial Research Organisation (CSIRO)

The CSIRO will be making a separate submission to the Inquiry and so data concerning the CSIRO is not included in this submission.

The Department supports the science and innovation framework through support for key advisory mechanisms such as the Prime Minister's Science, Engineering and Innovation Council (PMSEIC), the Chief Scientist, the Coordination Committee for Science and Technology and through administering programmes which provide targeted funding and international promotion of Australia's scientific and technological capabilities.

The Department's submission provides an overview of the portfolio programme funding that has been provided to support science and research on salinity. Due to the nature of the programmes administered by the portfolio that can be accessed to support salinity research, this submission primarily deals with point (b) of the terms of reference dealing with the linkages between research providers and the dissemination of research results.

National Research Priorities

Salinity and water have been identified as priority goals for research under one of Australia's four National Research Priorities – *An Environmentally Sustainable Australia*, announced by the Prime Minister in December 2002. The Priorities identify those areas that are of critical long-term importance to Australia and which require a whole of government approach.

All research and research funding bodies of the Australian Government will be expected to participate in implementing the priorities to the extent that it is consistent with their mandates or missions. Draft implementation plans have been submitted by these bodies to the Minister for Science and are currently under consideration by Government, with an announcement anticipated by the end of 2003.

Cooperative Research Centres

The Cooperative Research Centres (CRC) Programme, administered by DEST's Science Group, brings together multi-disciplinary teams of researchers and research users. It is an example of a major public/private partnerships programme of which a key feature is the importance of collaborative arrangements to produce outcomes of national economic, environmental and social benefit. These collaborative arrangements exist between organisations that include universities,

publicly funded research agencies, industry and government. The transfer of research results to the users is one of the major objectives of the programme.

Of the 71 CRCs that will be operating after the 2002 selection round, two have an identifiable focus on salinity research – the CRC for Landscape Environments and Mineral Exploration and the CRC for Plant-based Management of Dryland Salinity. Since their establishment in 2001, the Australian Government is providing $20.2 million and $27 million over 7 years respectively for each of these Centres. Appendix 2 provides more information on these CRCs.

There are other CRCs which undertake some salinity research as it impacts on their particular area of interest, however it is not possible to disaggregate the level of funding going into this research from the Centre's total funding. For example, the CRC for Viticulture (under its supplementary funding contract which is yet to be signed) will do research in the areas associated with developing strategies and procedures for maximising water use and minimising salinity risk. The CRC for Irrigation Futures will also be undertaking some research of relevance to salinity.

The latest evaluation of the CRC Programme, completed in 2003, found that national benefit CRCs had become more significant over the life of the programme, reflecting a demand by "research users involved in the application of scientific knowledge for resource sustainability, predominantly Government agencies involved in natural resource management, biodiversity and, more recently, biosecurity."[1]

The CRC evaluation report notes that the environmental CRCs were perceived as having a coordination role for environmental research in addition to performing important research in this field. Some benefits of CRC linkages with Government as well as other stakeholders are perhaps exemplified in this quote from the report:

"In areas such as water allocation, landscape management for salinity and water contamination, clean coal research, and greenhouse gas emissions, the Queensland Department of Natural Resources and Mines considers that CRCs have provided State agencies with a link to a broader set of skills than currently resides within agencies. In return, agencies have provided practical on-ground experience and often extensive data sets that could be used by the combined research group."

The Australian Research Council

The ARC provides funding for basic research on a competitive basis for projects in all fields of research except clinical medical and dental research and training, and public health research and training. ARC programmes emphasise, where appropriate, the need for collaboration between researchers and, in the case of ARC Linkage, require interaction with the actual or potential users of the research results.

Funding approved for salinity related research has been increasing over the past 6 years (including 2003) with an investment totalling $16 million. A list of approved projects under the various grant programmes administered by the ARC is at Appendix 2.

For schemes whose funding is to commence in 2004 or later years, Australia's National Research Priorities (including salinity) form part of the selection criteria.

[1] Howard Partners, "Evaluation of the CRC Programme 2003", date, p iv.

The Australian Nuclear Science and Technology Organisation

Researchers from the Australian Nuclear Science and Technology Organisation (ANSTO) have investigated many of Australia's large aquifers using radioactive isotopes to determine the age, origin and flow path of aquifer waters. ANSTO also works with communities to identify the processes responsible for salt build-up, the source of the salt and the paths of water-flow transporting the salt to the land surface.

In one New South Wales town for example, the organisation examined rising seepage at the local high school and central business district. Researchers identified the local aquifer structure using electro-kinetic sounding, a sophisticated technique using a seismic source to ultimately generate an electric signal detected at the surface. Test results showed the various contributions to the saline seepage that was emerging at the high school oval. From identifying the source of the salt and then the flow path, it was possible for the community to decide on the best way to solve the problem. Overall, the project showed that the cost of lost water, constant irrigation and of fighting salinity mean some communities face radical decisions to control salinity.

The Innovation Access Programme – International Science & Technology

The Innovation Access Programme, administered by DEST's Science Group, has a number of elements which combine to promote innovation and competitiveness by increasing Australian access to global research and technologies and facilitating their uptake by Australian researchers and firms, particularly Small to Medium Enterprises (SMEs). Participants in the programme disseminate the results of their projects through a number of channels including reports, papers and articles; conferences, lectures, workshops and seminars; and through the involvement of Australian colleagues in continuing alliances strengthened by the programme.

Since responsibility for the science component of the IAP was transferred to DEST in 2002, six projects focussing on salinity research have been identified. Three under the Competitive Grants element totalling $54,188; two under the International Science and Technology Networks element totalling $10,000 and one under the Frontiers of S&T Missions and Workshops element totalling $24,000.

There is currently a review of the IAP-IS&T being undertaken to evaluate the efficiency and effectiveness of the Programme in meeting its objectives.

Other DEST programmes of potential relevance to salinity science

In its 2003 Budget, the Australian Government announced the 'Establishing International Centres of Excellence Initiative' to build an international profile for Australia's expertise and education excellence. The Initiative will provide approximately $35.5 million seed funding for the establishment of 4 International Centres of Excellence and to support international activities of the Cooperative Research Centre on Sustainable Tourism. Up to $6.7 million is available to assist in the establishment of an *International Centre of Excellence in Water Resources Management.* A tender process is currently under way to select the Centre consortium.

The primary objective of this Centre will be to build on Australia's domestic capacity in this area and to internationally showcase our expertise in Water Resources Management. This includes, but is not limited to demonstrating Australia's expertise in the efficient use of water for agriculture and other industries, providing increased protection of rivers and groundwater systems and the optimal use and management of water and wastewater in an urban and industrial waste context. The Centre will enrich Australia's competitiveness and existing capabilities in this field by establishing ongoing collaboration between relevant expert organisations within Australia and developing links and connections with relevant international organisations.

Role of PMSEIC

The Prime Minister's Science, Engineering and Innovation Council (PMSEIC) is the Australian Government's principal source of independent advice on issues in science, engineering and innovation and relevant aspects of education and training.

The Council meets in full session, twice a year, to discuss major national issues in science, engineering and technology and their contribution to the economic and social development of Australia. It is supported by a secretariat within the Office of the Chief Scientist located in DEST.

The significance of the policy interest in salinity was reflected in the December 1998 report to PMSEIC[2], *Dryland Salinity and Its Impacts on Rural Industries and the Landscape*.

The PMSEIC report found that; "while salinity is widely recognised as causing problems for agriculture it is less appreciated that dryland salinity causes serious damage to downstream water users, aquatic eco systems and biodiversity and to regional and urban infrastructure due to damage to foundations from shallow, saline groundwater."

[2] Australia. PMSEIC, *Dryland Salinity and Its Impacts on Rural Industries and the Landscape* (Canberra: Department of
Industry, Science and Resources, 1998), p5.